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ORIGINAL ARTICLE

Political support and tax reforms with an application to Italy

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Abstract In 2001 the Italian government introduced a personal income tax reform to be implemented in successive phases. In 2004 taxes were reduced to all income levels with higher gains for low-income and high-income individuals than for middle-income ones. A large debate arised. This paper explores the political economy reasons under this tax reform, mainly the attempt of the government to attract the uncertain voters (swing voters). A probabilistic voting model is introduced to capture the importance of swing voters. The model predicts that the average personal income tax rate tends to be lower for groups of lower income, higher preference for leisure and containing more politically mobile voters (swing voters). However, data from Italian polls show that, while the tax reform was a good strategy to attract swing voters, the specific design of the reform, which favored high-income and low-income individuals, but not the middle class, was not the more appropriate strategy.

Keywords Swing voters · Probabilistic voting · Survey evidence · Applied political economy

1 Introduction

Tax reforms are at the centre of the economic and political debate in all European countries. Changes of the personal income tax schedule have been recently implemented or planned in several European countries (see Bernardi & Profeta, 2004, for a review). A general trend is to reduce the complexity of the income tax which becomes closer to a flat rate tax. Nevertheless, the effect on tax progressivity is not clear, since we mainly observe a reduction of marginal tax rates at the top of the income distribution and at the bottom, with the middle classes generally left unchanged. A clear example of reforms in this direction is Italy. In 2001 the Italian government introduced a personal income tax reform to be implemented in successive phases. A first phase, implemented in 2003, focused on reducing taxes for the bottom income

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levels. Together with a second phase, implemented in 2004, the reduction of taxes produced higher gains for low-income and high-income individuals than for middle-income ones.

Equity and efficiency arguments have been advocated to justify these changes: the reduction of bottom tax rates has been largely justified by equity arguments, while the reduction of top tax rates by incentive-efficiency arguments.[1] Financial constraints are also crucial to limit tax rates reductions at all levels of income and/or to target them to more numerous income-groups.

I argue that political constraints are a crucial determinant of tax reforms. Many governments introduce tax reforms as an attempt to attract votes, especially the support of voters uncertain about their vote at next elections, which may be decisive to win next elections. Italy is again a good example. The tax reform was implemented in Italy in 2004 with the explicit motivation of attracting the large number of uncertain voters.

This paper introduces a political economy model and an empirical analysis to explain the role of political support for tax reforms, with an application to the Italian case. I first provide information about the personal income tax reform in Italy and some stylized facts showing how capturing the uncertain voters was decisive for winning the next elections and how the issue of taxation could have been used by the government to reach this purpose. Second, I build a political economy model to capture these stylized facts, in particular the importance of uncertain voters. In a probabilistic voting model[2] these voters are defined swing voters. They are ideologically neutral individuals, who are indifferent between two opposite parties, and who can be easily captured by each party through a policy (such as taxation) in their favor. The political success of a party depends on its ability of attracting the swing voters, i.e., the more mobile voters. There are three groups of individuals: rich, middle-income and poor, with different size, and two political parties. The political game will determine the equilibrium personal income tax rates for each group and the level of a general transfer financed by the taxes on personal income. This implies that the policy-space is multidimensional, and a Nash equilibrium of a majoritarian voting game may fail to exist. To solve this problem, the probabilistic voting model turns out to be appropriate. A simple version of this model delivers three predictions about the average tax rate on personal income, which is (i) higher for groups with higher income (progressivity), (ii) lower for groups with higher preference for leisure, (iv) lower for groups with more relative political influence, i.e. groups which contain more swing voters. Third, using data from 2004 Italian polls, I provide evidence that capturing the swing voters was crucial for the next elections and that the issue of taxation was a good strategy to reach this purpose. However, these data also show that the swing voters concentrated at the "centre" of the political spectrum, but were almost uniformly distributed among income classes. Thus, the specific strategy of the reform, which tended to favor high-income and low-income individuals, but not the middle class, was not the best strategy to win next elections. I argue that other reasons may explain this specific strategy, mainly the fact that middle-income groups represented a large tax base and cutting taxes to this group would lead to a too large loss of revenues.

This paper belongs to the literature of political economy of taxation. For a survey of the existent models, see Hettich and Winer (1999) and Profeta (2004). Probabilistic voting models have been often used to explain redistributive policies (see Persson & Tabellini, 2000; Profeta, 2003), while there are very few analysis of political economy applied to taxation and

[1] Atkinsons (2004) provides alternative models to explain the evolution of top incomes in connection with taxation.

[2] See Hettich and Winer (2000) for a discussion on alternative approaches in the political economy literature.

specific tax reforms (see Profeta, 2004). The paper is also related to a growing literature which uses survey evidence to analyze individual's preferences for redistribution (see Ravallion & Lokshin, 2000; Alesina & La Ferrara, 2001; Corneo & Gruner, 2002; Bernasconi, 2004).

The paper is organized as follows. Section 2 introduces the political problem and shows stylized facts for Italy. Section 3 introduces the probabilistic voting model and its results, Section 4 provides an empirical analysis. Conclusions are in Section 5.

2 Some stylized facts

This section provides some stylized facts indicating the importance of swing voters to gain political support, with reference to the case of a recent (2004) Italian personal income tax reform. These facts will suggest that a way to gain political support is to propose and implement reforms, such as a tax reform, which may capture the votes of individuals uncertain about their vote at next elections.

The facts shown here focus on Italy in the period 2001–2004. The center-right government leaded by Silvio Berlusconi was elected in 2001. One of the main arguments in its electoral campaign was the reduction of taxes. Before the reform, the progressive personal income tax included 5 brackets: a tax rate of 18% applied to incomes below 10329 euro, 24% for incomes between 10329 and 15494 euro, 32% for incomes between 15494 and 30987 euro, 39% for incomes between 30987 and 69722 euro and 45% for incomes above 69722 euro. The first intervention of the new government in 2003 was targeted to the bottom incomes. It introduced a new scheme of deductions, which delivered a no tax area for incomes below euro 7500 (for employees). The tax brackets and tax rates were also rearranged: 23% for incomes below 15000 euro, 29% between 15000 and 29000, 31% between 29000 and 32600, 39% between 32600 and 70000 and 45% for incomes above 70000. The second intervention represented a deeper change of the tax schedule: 3 brackets, with a tax rate of 23% for incomes below 26000 euro, 33% between 26000 and 33500 and 39% for incomes above 33500. Moreover, at least for 2005, an additional 4% applied to incomes above euro 100000 (thus, a tax rate of 43% for incomes above 100000). These changes only partially realized the promises of the government: the initial reform proposed in 2001, contained in the "contract" that Mr. Berlusconi signed with the Italians before his election, included the total exemption from taxation for individuals with income below euro 11000 and a personal income tax schedule based on two tax rates only, 23% for incomes up to euro 100000 and 33% above this level.

The crucial period for this analysis are the last months of 2004, i.e. just before the implementation of the second phase of the reform. During these months, dominated by the debate on the personal income tax reform, political scientists, politicians, journalists and Mr. Berlusconi himself (see *Corriere della Sera* 18/11/2004) pointed out that taxes were a crucial issue to attract those individuals still "uncertain" about their vote at next elections (April 2006), that these uncertain people constituted a numerous group, and thus their votes would be decisive at next elections. In other words, the government realized that these "uncertain" people were the swing voters, and if the tax reform represented a policy platform which pleased them, this was a good strategy to win next elections.

The crucial role of uncertain voters in connection with tax reforms is proved by the survey evidence that I report here, summarized as follows.

- Taxation was a crucial issue in the policy platform proposed by the government.

During the electoral campaign in 2001, the centre-right coalition set taxation at the centre of its economic program, promising to the electorate to "cut taxes for everyone." This attracted the trust of many voters, with respect to the opposite coalition: a poll conducted by UNICAB in 2001 found the right-wing coalition to be more credible than the opposition on such issues as taxation, safety and immigration. In April 2004, according to a poll conducted by ISPO 19.6% of people who voted for the winning coalition found taxation the most important issue, against an average on the total sample of only 11.3%.

Taxation increased the number of people who supported the elected government at the 2001 elections and were then disappointed after a few years, because the promised "tax cut" was not realized yet. According to an ISPO poll in February 2004, 70% of the Italians thought that taxes were too high and unequally distributed among citizens. Interestingly, this criticism was almost uniformly distributed across the different political parties, meaning that this was not an "ideological" issue, but an issue over which voters were rather ideologically neutral, hence evaluating their welfare from the proposed policy before voting. This also suggests that it was a quite popular issue, and that it could move voters.

- There was an increasing number of voters who claimed to be uncertain about their vote at next elections.

After one year of government, 13% of the electorate of the major winning party (*Forza Italia*) declared to be disappointed (ISPO, 12/6/2004). In January 2004, 27.6% of the same electorate declared that they did not know what party to vote at next elections, with only 40% confirming their 2001 choice (ISPO 28/1/2004). Interestingly, they were mainly women and educated individuals, holding a degree. In march 2004, 39.3% of this *Forza Italia* electorate declared to be uncertain about their vote at the next European elections and to give priority to the issue of taxation (ISPO, 3/4/2004). Before the European elections in June 2004, only 45% of the *Forza Italia* electorate would confirm its vote (ISPO, 17/5/2004), while 21.8% was uncertain (which represented the largest share, if compared with the share of uncertain voters in the electorate of the other parties). In September 2004, 22% of the electorate of the centre-right coalition at the European elections declared himself oriented towards not voting or being uncertain (ISPO, 22/9/2004). In October 2004, 12% of the electorate of the winning party declared to be unsatisfied, while in November 2004 this percentage increased up to 17%. Taxation issues were responsible for much of this discontent: in November 2004, more than 40% of the electorate of the winning party declared to be disappointed by the government decisions about taxes (ISPO, 12/11/2004). Moreover, people who declared themselves uncertain were generally unsatisfied (55% in October 2004, 59% in November 2004, ISPO 2/11/2004). A survey conducted by C. Erminero for Fondazione Rodolfo De Benedetti revealed that in November 2004 about 30% of the total population was uncertain about his vote at next elections.

These stylized facts suggest that during the year 2004 the Italian government realized that the number of uncertain voters was increasing and that to attract them could have been essential to win next elections. It also realized that a crucial issue was taxation, an issue over which voters evaluated the effects of the proposals, independently from their ideology. While the promise of a tax reform was able to attract votes during the electoral campaign of 2001, most of the discontent of voters towards the government in 2004 depended on the delay of its implementation. Thus, in 2004 the government implemented the tax reform as a top priority to re-attract disappointed, uncertain voters.

In the following section I build a theoretical model that captures this crucial role of uncertain (swing) voters in tax reforms policies.

3 A probabilistic voting model

This section introduces a probabilistic voting model, the main features of the economic and political environment and the results of the model. A final discussion on the prediction of the model concludes it.

3.1 The economic environment

The society is composed of H groups of voters of different income, denoted by $h = 1, \ldots H$. Each group has different size, n^h is the proportion of group h in the total population, so that $\sum_{h=1}^{H} n^h = 1$. Individual's preferences are identical within groups and depend on consumption (c^h) and leisure (l^h), according to a quasi-linear utility function[3]:

$$u(c^h, l^h) = c^h + \psi^h \log l^h \tag{1}$$

Individuals in different income groups may have different utility from leisure ψ^h, which will induce them to have different incentives to supply labor. The parameter ψ is also meant to capture different "internal motivation" to effort of individuals of different income, which may play a key role in the supply of individual effort.[4]

Individuals have to pay an income tax at an average tax rate[5] $t_h (h = 1, \ldots H), 0 < t_h < 1$, and they receive a transfer G from the government, which is equal for all individuals.[6] The budget constraint of an individual in group h is the following:

$$c^h = w^h(1 - t^h)(1 - l^h) + G \tag{2}$$

where w^h is the unitary wage per hour worked.

Individuals in group h choose the level of leisure and consumption which maximize the utility at Equation (1) under the budget constraint at Equation (2):

$$\begin{aligned} l^h &= \max\left(\frac{\psi^h}{w^h(1 - t^h)}, 0\right) \\ c^h &= w^h(1 - t^h) - \psi^h + G \end{aligned} \tag{3}$$

Since $0 < l^h < 1$, I assume $\psi^h < w^h(1 - t^h)$.

[3]Quasi-linearity simplifies the model, since the income effects only show up in the linear component, i.e. consumption. It is a common assumption in this kind of redistribution models, see Persson and Tabellini (2000).

[4]In other words, individuals who have low self-esteem and regard themselves as lazy will not enjoy a marginal increase in leisure time (ceteris paribus) as much as those who feel they have worked hard. There is a growing theoretical literature on the existence of moral motivations to effort (Kreps, 1997; Frey, 1997; Benabou & Tirole, 2003; Cervellati, Esteban, & Kranich, 2004) and a few empirical studies (Deci, Kroestner, & Ryan, 1999; Gneezy & Rustichini, 2000; Frey & Jegen, 2001).

[5]I assume that taxes cannot be negative. In this paper I only look at personal income taxes, but I can justify the non negativity constraint with the idea that each individual has to pay many different taxes.

[6]Assuming G equal to all income groups simplifies the analysis and allows to focus on political issues, as it will be clear in the next section. G can also be interpreted as a general public good or welfare program.

The indirect utility of an individual in group h is thus:

$$W^h = w^h(1 - t^h) - \psi^h + G + \psi^h \log \psi^h - \psi^h \log w^h - \psi^h \log(1 - t^h) \tag{4}$$

3.2 The political institution

The public policy vector is defined by the tax rates for all groups: $q = (t^1, t^2, \ldots t^H)$. Taxes are collected to finance the general transfer G (similar to Winer, 2001). To handle political equilibria with a policy space inherently multi-dimensional, I use a model with probabilistic voting (as in Lindbeck & Weibull, 1987, which in turn build on probabilistic voting models by Hinich, Ledyard, & Ordershook, 1972, Coughlin & Nitzan, 1981a,b; Coughlin, 1992. See also Persson & Tabellini, 2000).

Consider two parties, or candidates, labeled A and B. Before the election takes place, the parties commit to a policy platform, q^A and q^B. They act simultaneously and do not cooperate. Each party chooses the platform which maximizes its expected number of votes.[7] Platforms are chosen when the election outcome is still uncertain. The two parties differ along some other dimension relevant to the voters than the announced policy, which may reflect ideological elements. Voters are heterogenous with respect to their ideological preferences.

Voter j in group h votes for party A if

$$W^h(q^A) - W^h(q^B) + \delta + \sigma^j > 0 \tag{5}$$

where $W^h(q^A)$ is the indirect utility (Equation (4)) of voters in group h under government policy q^A, $W^h(q^B)$ is the indirect utility of voters in group h under government policy q^B, and the term $(\delta + \sigma^j) \gtrless 0$ reflects voter j's ideological preferences for party A. This term includes two components: δ, which is common to all voters, and σ^j, which is idiosyncratic. The first component, δ, reflects the general popularity of party A. I assume that this is a random variable uniformly distributed on $(-1/2d,\ 1/2d)$, with expected value equal to 0 and density d. This component represents the source of electoral uncertainty, since it is realized between the announcement of the party platforms and the election. The second component, σ^j, reflects the individual ideology of voter j. Voters are distributed within each group according to a uniform distribution on $(-1/2s^h,\ 1/2s^h)$, where the density is s^h and the mean is zero.[8] Notice that s^h may differ across groups: a group with higher density is a more ideologically homogeneous group.

Each group has neutral voters, called "swing voters", who are indifferent between party A and B. The identity of the swing voters is crucial when a party considers whether to deviate from a common policy announcement, $q^A = q^B$, or not. Suppose party A decides to decrease taxes of group 1 financed by a budget-balanced increase of taxes to group 2. Party A expects a gain of votes from group 1 equal to the number of swing voters in group 1, and a loss of votes from group 2 equal to the number of swing voters in group 2. If group 1 has a higher

[7] This approach is standard in the literature. Alternatively, the objective of the party can be to maximize the probability of winning, which would leave the results unaffected.

[8] In general, both δ and σ^j may have expected values different from zero, reflecting the across groups difference in average ideology.

number of swing voters than group 2, this will lead to a net gain of votes. As a consequence, each party tries to attract the more mobile voters. Formally, the swing voter in group h is identified by σ^{sv} where

$$\sigma^{sv} = W^i(q^B) - W^i(q^A) - \delta \tag{6}$$

Voters with σ^h lower than σ^{sv} vote for party B and voters with σ^h higher than σ^{sv} vote for party A.

Therefore, the vote share of party A in group h can be expressed by

$$\pi^{A,h} = s^h(W^h(q^A) - W^h(q^B) + \delta) + \frac{1}{2} \tag{7}$$

Each party maximizes the expected total number of votes from all groups. Given the definition of $\pi^{A,h}$, the objective function of party A can be expressed as follows:

$$\max\ E\left(\sum_{h=1}^{H} n^h \pi^{A,h}\right) \tag{8}$$

Substituting the expression for $\pi^{A,h}$ and given the previous assumptions about the distribution functions, party A will choose q^A such as to maximize the following objective function:

$$\sum_{h=1}^{H} n^h s^h (W^h(q^A) - W^h(q^B)) \tag{9}$$

where $W^h(q^A)$ is defined at Equation (4).

Equation (9) makes clear that parties seek to please the more numerous and/or more mobile voters. If the number of swing voters is the same in all groups, the groups get equal weight in the candidate's decision, which turns out to be maximizing the average voter's utility. However, if the groups are different in how easily their votes can be swayed, the group which contains more swing voters is more responsive to policy and gets a higher weight in the party's objective.[9] Notice that the size of the group (n^h) is different from the number of swing voters (s^h) that it contains.[10]

[9]The objective function of the party resembles the objective function of an utilitarian social planner, with the only difference being the weights given to ideologically different groups. In particular, if all groups have equal s, the linearity of the utility function implies that $G = 0$ and $t^h = 0$ for all groups. This allows to focus on the fact that taxes may be motivated only by political reasons (the different s in different groups), which is the aim of the paper. For a discussion of the traditional optimal taxation approach *versus* the probabilistic voting approach, see Hettich and Winer (1999) and Profeta (2004).

[10]The size of a group depends on the number of its members, while the number of swing voters depends on the number of members of the group who are indifferent between voting for a party or for the opposite, and are likely to vote for the party who proposes the policy which favors them. In other words, there are more swing voters in a group more ideologically homogeneous. Thus, the number of swing voters may be at maximum as large as the size of the group (if all members are "swing").

Party B solves a symmetric problem. Parties act simultaneously, taking the choice of the other party as given, and do not cooperate. Thus, taking q^B as given, party A solves the problem at Equation (8) subject to the following budget constraint:

$$G = \sum_{h=1}^{H} n^h t^h w^h (1 - l^h) \tag{10}$$

where l^h is optimally defined at Equation (3).

3.3 The probabilistic voting equilibrium

Substituting Equation (4) into Equation (9), party A solves the following problem:

$$\begin{aligned} &\max_{t^{1A}, t^{2A}, \ldots, t^{HA}} \sum_{h=1}^{H} n^h s^h (G^A - G^B + w^h (t^{hB} - t^{hA}) + \psi^h (\log(1 - t^{hB}) - \log(1 - t^{hA})) \\ &\text{s.t. } G^A = \sum_{h=1}^{H} n^h t^{hA} w^h (1 - l^h) \end{aligned} \tag{11}$$

It is easy to show that the first order conditions for a specific tax rate i, $i = 1 \ldots H$, can be expressed as follows:

$$\frac{s^i}{\sum_{h=1}^{H} n^h s^h} - 1 + \frac{\psi^i t^i}{w^i (1 - t^i)^2 - \psi^i (1 - t^i)} = 0 \tag{12}$$

Define $\bar{s} \equiv \sum_{h=1}^{H} n^h s^h$ the average density. The term $s^i / \bar{s}$ identifies the relative political influence of group i which depends on his density, s^i relative to the average density, $\bar{s}$.

From Equation (12), for individuals with a density higher or equal than the average density ($s^i \geq \bar{s}$), the non-negativity constraint on the level of tax rate is binding, and they will not be taxed ($t^i = 0$), while individuals with a density lower than the average density ($s^i < \bar{s}$) will be positively taxed ($t^i > 0$). For these people, the most preferred level of tax rate, ($0 < t^i < 1$) results[11]:

$$t^i = 1 - \frac{\sqrt{\psi^{i2} s^{i2} + 4 w^i (\bar{s} - s^h) \bar{s} \psi^i} - \psi^i s^i}{2 w^i (\bar{s} - s^i)} \tag{13}$$

Proposition 1. *If positive, the most preferred level of tax rate of the individual in group i increases with his wage and decreases with his preference for leisure and his relative political influence.*

Proof: From Equation (13) it is easy to show that $\frac{\partial t^i}{\partial w^i} > 0$, $\frac{\partial t^i}{\partial \psi^i} < 0$, $\frac{\partial t^i}{\partial \frac{s^i}{\bar{s}}} < 0$. □

The results can be summarized as follows:

[11] Notice that the second order condition requires that $t^i < 1 - \frac{\psi^i s^i}{2 w^i (s^i - \bar{s})}$, which is always satisfied for $s^i < \bar{s}$.

(i) groups with a higher wage will pay a higher tax rate. This is because a higher tax rate for richer individuals has a direct negative effect on their utility, but a larger positive effect for the utility of all groups via an increase of the total level of transfer. Moreover, given the budget-balanced constraint, it is more convenient to impose a higher tax on richer groups. This result is in line with the observed progressivity of personal income taxes, a crucial feature of the current systems. In a politico-economic environment this standard result of the optimal taxation literature remains valid.[12]

(ii) groups with lower preference for leisure will pay a higher tax rate. This result is in line with the idea,[13] recently developed in several papers (see Piketty, 1995; Kreps, 1997; Frey, 1997; Benabou & Tirole, 2003; Cervellati, Esteban, & Kranich, 2004) that moral motivations may affect the level of effort and the preferences for redistribution.[14]

(iii) groups with a higher density will pay a lower tax rate. This is because these groups have more weight in the objective function of the party. The role of the density is peculiar of the probabilistic voting model: more density means more swing voters and this makes the specific group more attractive for the parties. Interestingly, the level of taxation does not depend on the size of the group (n^h). This result is different from the prediction of the standard median voter models, where the size of each group plays a fundamental role. In probabilistic voting instead, what is fundamental is the number of swing voters. In other words, even a minority (a group which has a small size) may be favored by a reform, if it contains many swing voters.

4 An empirical analysis

The model presented in Section 3 explains how important may the swing voters be in the decisions of the government about tax reforms. This is consistent with the evidence presented in Section 2 for Italy, where the intention of attracting the swing voters drove the implementation of the personal income tax reform of 2004. In this section I try to make a further step. Using the predictions of the theoretical model, I examine whether the specific design of this tax reform was the best strategy for the government to gain the political support of the swing voters.

As analyzed by several Italian economists (see *www.capp.unimo.it* and *www.lavoce.info*), the reform had two main results: (i) it reduced the total level of revenues, and thus of the general transfer G, by reducing the level of taxes for all income groups, (ii) it provided higher gains for low-income or high-income individuals than for middle-income ones. Baldini, Bosi, Giannini, and Guerra (2004) estimate that, at individual level, income groups who had a reduction of their taxes by more than 1% were those with income between 20000 and 40000 euro and with income above 75000 euro. For this latter group, the gain was larger and reached almost 4% for the incomes above 100000 euro. The effect of the original reform (with two

[12]It would be interesting to explore the dynamics of the progressivity in this context, but it is out of the scope of this paper and I plan to focus on this aspect in a future research.

[13]This result is in line with a recent argument used to explain why in general redistribution is higher in Europe *versus* the US, stressing the idea that the "poor" in Europe are more "lazy" in terms of internal motivations to individual effort, because they believe that luck plays a more important role than effort. This implies higher redistribution in Europe *versus* US. See Alesina, Glaeser, and Sacerdote (2001), Alesina, Di Tella, and Mac Culloch (2003), Alesina and Glaeser (2004).

[14]It would be interesting to analyze the dynamics of these internal motivations across income groups, to observe whether possible changes correspond to some of the changes in the tax structures. Several crucial aspects of taxation, for instance tax compliance and tax evasion, may affect these individual motivations.

brackets only) would have favored even more the richest individuals, with a reduction in their taxes by more than 10%. The evidence shown in Section 2 suggests that the first outcome of the reform, i.e. the reduction of level of taxes for all income groups, was consistent with the intention of the government of attracting the uncertain swing voters. However, according to the model, the more appropriate strategy would have been to target the reform on favoring the groups containing more swing voters. Thus, it is interesting to understand who were the uncertain voters, if they were concentrated in some groups classified according to specific criteria (for instance income) and if these groups were at the end the beneficiaries of the tax reform.

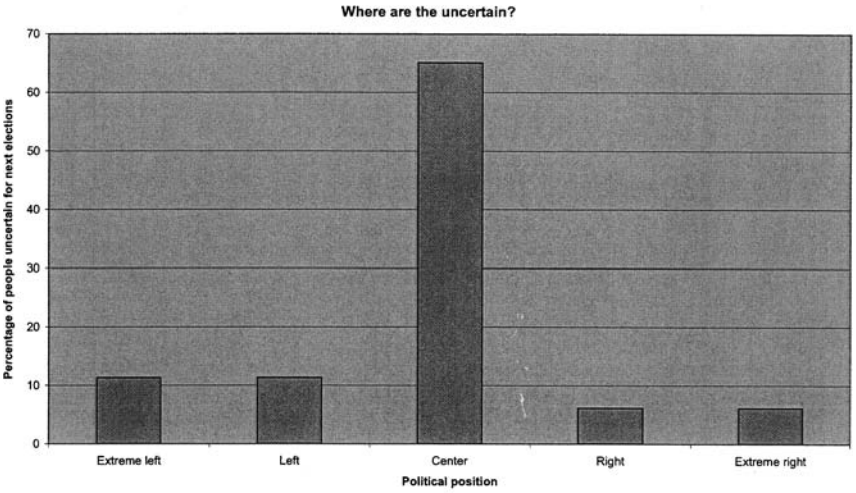
A first clear evidence related to the identity of the uncertain voters is that they were mainly at the "centre" of the political spectrum. In October 2004, 47% of the uncertain voters for the next elections declared to position themselves at the centre, 26% at centre-right, 29% at centre-left and only 20% at left and 13% at right (ISPO, 28/10/2004). A survey conducted by Fondazione Rodolfo De Benedetti in 2004 reveals that several people declared themselves at the centre, and many of these voters were uncertain about next elections. Figure 1 illustrates the distribution of uncertain people (people who declared they did not know whether to vote or which party to vote) along a line representing their political positions[15]: more than 65% of the total number of uncertain concentrated at the centre. Interestingly, this position also collected the more mobile voters: 38% of voters at the center declared that they planned to change their vote with respect to 2001 elections, versus only 19% of voters at the two extreme positions (*www.lavoce.info*). This result suggests that swing voters concentrated at the centre of the political position and thus the government should have looked at these people to target the swing voters. Was this the group favored by the tax reform? At a first sight, the data do not seem to support this conclusion. In fact, using the Fondazione Rodolfo De Benedetti survey (2004) data, I aggregate the individuals in 3 broad groups: poor (with a net family income lower than 1000 euro per month), middle-income (between 1000 and 2500 euro) and rich (above 2500 euro).[16] Figure 2 shows that rich individuals were less polarized than middle-incomes and poor at the extremes political positions. More than 50% of the rich concentrated at the center. However, middle-income and poor groups also concentrated around the center (56.28% and 51.39% respectively). It is not clear thus that a reform which favored low and high income groups could capture individuals at the centre of the political spectrum, where swing voters concentrated. Moreover, from the same data I calculate that 19% of the poor was uncertain about their vote at next elections, 14% of the middle and only 10% of the rich. This means that while targeting the reform on the poor may have been a good strategy to gain votes from the uncertain voters, the fact that the reform favoured top incomes cannot be justified on this grounds.

To better identify the uncertain people in Table 1 I perform a simple multilogit regression, based again on the 2004 Fondazione Rodolfo De Benedetti survey data.[17] Individuals were asked: "Which party would you vote if next sunday there would be political elections?". I aggregate the answers in three outcome-groups: "center-right coalition", "center-left coalition", "uncertain" (people who declared they did not know whether to vote, or which party to vote). I perform a multilogit regression taking the outcome group "center-right coalition" as the

[15]The survey asks people to locate themselves along a line 0–10. I have aggregated some intermediate positions to produce the spectrum in Figure 1.

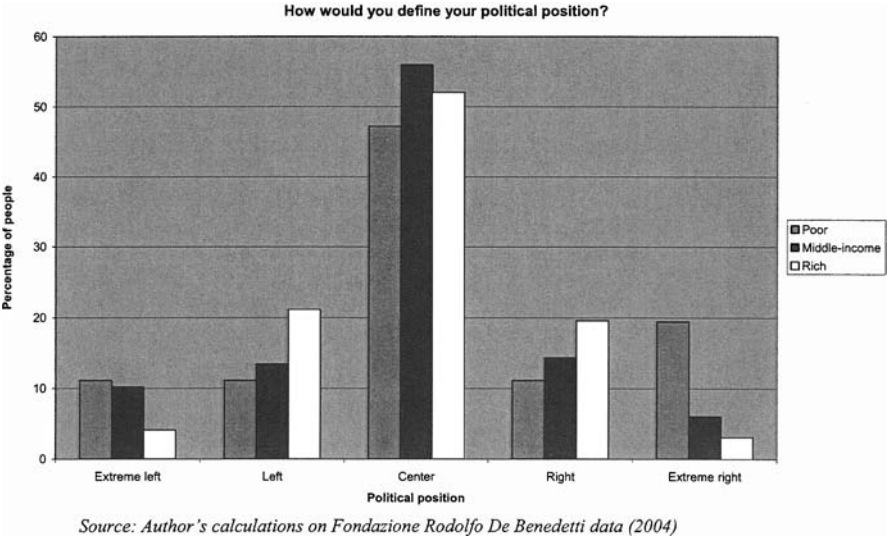
[16]The information on income is given by classes. I checked that alternative ways of grouping the classes do not change this pattern.

[17]A description of variables is in the appendix. I am aware of the limits of analysis conducted on survey data (see Bernasconi, 2004). However I believe that they may still provide interesting insights.



Source: Author's calculations on Fondazione Rodolfo De Benedetti data (2004)

Fig. 1



Source: Author's calculations on Fondazione Rodolfo De Benedetti data (2004)

Fig. 2

comparison group. Table 1 shows the probability of each outcome predicted after multilogit and the marginal effects of each dependent variable. The outcome "center-right coalition" has a predicted probability of 0.4488, while the outcome "center-left coalition" of 0.4037 and the outcome "uncertain" of 0.1474. This result confirms that capturing the votes of the uncertain individuals was decisive to win the next elections. The coalition able to capture these uncertain voters would have obtained the majority of votes and winned the elections. The table also shows the impact of different variables on the probability of each of the three outcomes to emerge. The variables capture the political identification (right, center or left),

income (rich or poor) and personal characteristics (gender, education, age, region) plus two dummy variables that capture the impact of self-employed and unions.

As expected the table shows that being at the center of the political spectrum was significant in increasing the probability to be uncertain, and thus potentially swing voters. Holding a university degree or a union membership and being old decreased the probability to be uncertain. Declaring a political position at the right and being old, instead, increased the probability to vote for the center-right coalition, while holding a university degree and belonging to a union decreased it. Finally, declaring a political position at the left, holding a university degree and belonging to a union was significant in explaining the probability to vote for the center-left coalition, while being self-employed decreased this probability. Being poor or rich was not significant in affecting the probability of any possible outcome, so that the identity of the uncertain-swing voters did not depend on their income. It is thus very difficult to justify the targeting of the tax reform to favor specific income groups (low and high) upon the strategy of gaining the uncertain voters. To reach this result, the govern-

Table 1 Question: Which party would you vote if next sunday there would be political elections?

Data source: Fondazione Rodolfo De Benedetti, Indagine pensioni 2004, Carlo Erminero
Dependent variable: Party. Possible outcomes: "center-left" (a party of the center-left coalition), "center-right" (a party of the center-right coalition), "uncertain" (don't know whether to vote, or don't know which party to vote).
Independent variables:
Political. From a variable "Political spectrum", taking values from 1 (extreme left) to 11 right (extreme right), I construct three dummy variables:
- Right: dummy variable taking value 1 if the declared political position is 11, 0 otherwise
- Left: dummy variable taking value 1 if the declared political position is 1, 0 otherwise
- Center: dummy variable taking value 1 if the declared political position is 5, 6 or 7, 0 otherwise.

Income. From a variable "Family income", which identifies 7 bands of incomes, I construct two dummy variables:
- Rich: dummy variable taking value 1 if the family income is higher than 2500 euro net per month, 0 otherwise
- Poor: dummy variable taking value 1 if the family income is lower than 500 euro net per month, 0 otherwise

Personal. The other variables are controls for personal characteristics:
- Female: dummy variable taking value 1 if the individual is female, 0 if male
- Elementary: dummy variable taking value 1 if the individual holds at maximum the elementary school title, and 0 otherwise
- University: dummy variable taking value 1 if the individual holds a university degree, 0 otherwise
- Self-employed: dummy variable taking value 1 if the individual works as self-employed, 0 otherwise
- Union: dummy variable taking value 1 if the individual belongs to a union, 0 otherwise
- Old: dummy variable taking value 1 if the age is higher than 65 years old, 0 otherwise
- Young: dummy variable taking value 1 if the age is between 18 and 25 years old, 0 otherwise
- North-East: dummy variable taking value 1 if the individual lives in the North-Eastern area of Italy, 0 otherwise
- Center: dummy variable taking value 1 if the individual lives in the Center of Italy, 0 otherwise
- South: dummy variable taking value 1 if the individual lives in the South of Italy, 0 otherwise

Results: Multinomial logistic regression
N. Obs: 358
LR:−320.79
Pseudo R2:0.1351
Marginal effects after multilogit estimation

(*Continued on next page*)

Table 1 (*Continued*)

Variable	*dy/dx*	Std.Err.	Significance[a]
Outcome 1: center-right Probability (Party = center−right) = 0.4488			
Rich	−0.677	0.0709	
Poor	0.0732	0.2596	
Center	−0.0848	0.0708	
Right	0.2521	0.1423	*
Left	−0.3755	0.0971	***
Female	−0.032	0.0769	
Elementary	−0.1352	0.3088	
University	−0.1527	0.08	*
Self-employed	0.133	0.0959	
Union	−0.18	0.071	*
Old	0.5822	0.0368	***
Young	−0.0198	0.163	
North-East	−0.1097	0.1017	
Center	0.034	0.1004	
South	0.12	0.0884	
Outcome 2: center-left Probability (Party = center−left) = 0.40375			
Rich	0.033	0.078	
Poor	−0.22	0.176	
Center	−0.0508	0.0711	
Right	−0.177	0.1357	
Left	0.2438	0.1425	*
Female	0.0497	0.074	
Elementary	0.1458	0.2238	
University	0.2717	0.082	**
Self-employed	−0.1482	0.0856	*
Union	0.2633	0.07	***
Old	−0.4269	0.0353	***
Young	−0.1807	0.1419	
North-East	−0.0089	0.0956	
Center	0.0217	0.0968	
South	−0.1214	0.0809	
Outcome 3: uncertain Probability (Party=uncertain)=0.1473			
Rich	0.0337	0.0664	
Poor	0.1487	0.2451	
Center	0.1356	0.0564	*
Right	−0.0751	0.071	
Left	0.1316	0.1438	
Female	−0.0177	0.0479	
Elementary	−0.0106	0.1462	
University	−0.119	0.0399	**
Self-employed	0.0148	0.0609	
Union	−0.083	0.0483	*
Old	−0.155	0.028	***
Young	0.2	0.142	
North-East	0.1187	0.0834	
Center	−0.0559	0.0169	
South	0.0009	0.056	

[a]* significant at 10%, ** significant at 5%, *** significant at 1%. None means not significant

ment would have better targeted the reform using different criteria. In fact, the data show that the only crucial feature that distinguished uncertain voters was their identification with a central political position in the political spectrum. This was independent from the level of income, meaning that there were not very rich people nor very poor ones among them, but a large mass of people, who shared "moderate" ideas of reforms. These people tended to approve a general cut of taxes and reward the government with their votes, but they did not necessarily gain if the beneficiaries were very few low and high income individuals. A reform of this type may have even induced them to feel disappointed. A policy of targeting middle income voters would have instead been a better strategy. In fact, middle-income individuals were more concentrated at the center of the political spectrum (see Figure 2) than rich and poor. Other factors may also justify indirectly this conclusion. Table 1 shows that age and education were crucial. Old individuals (older than 65 years old) were less likely uncertain than people of other ages, while they were significantly oriented towards the center-right. If age and income are correlated, it was unnecessary to target the reform on the highest levels of income. Also, individuals holding a university degree tended to oppose more the center-right government, while not being uncertain. Again, if the level of education is a good predictor of the level of income, the government seemed to attract the consensus of these individuals by reducing their taxes. But they were not swing voters, they were individuals who largely planned to vote for the opposite coalition. Therefore, if the reform aimed at attracting swing voters to win the elections, it would have been done by better focusing on the true uncertain voters, who were more concentrated among middle-income individuals.

5 Conclusions

This paper highlights the role of swing voters to support tax reforms. Tax reforms are implemented in many countries because of political reasons, mainly the attempt of the government to win the elections by gaining the votes of the uncertain voters. Tax reform itself may attract many swing voters and the specific design of the reform, favoring the groups containing more swing voters, may represent a good strategy to win the elections.

The paper introduces a very simple model which focuses on the role of mobile voters. However, the main results (proposition 1) are robust to a more complex specification, in which G is not endogenous, but it represents an exogenous constraint to the government maximization problem ($G^A = G^B = R$).[18]

In the Italian case, the current government has explicitly declared to use the personal income tax reform as a way to attract the uncertain voters. This paper collects survey evidence that confirms that this was an appropriate strategy to win next elections, since the uncertain voters were essential and the tax reform could drive their decision. However, when turning to the specific design of the reform, this strategy was not the more appropriate one, since swing voters were not concentrated in the income groups which gained the most from the reform.

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[18]This specification would make explicit the redistributive nature of taxation.

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