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ANALYSIS

Voting on the environment: Price or ideology? Evidence from Swiss referendums

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ABSTRACT

Studies on preferences for environmental quality usually posit that price and income explain most of the observed choices. Incorporating recent advances in the economics of non-selfish behavior into the traditional public choice approach, we argue that the willingness to contribute to public goods as well as social norms need to be taken into account when analyzing environmental voting outcomes. We study aggregate results of three ballot proposals in Switzerland put to vote in the year 2000 which foresaw different tax schemes on fossil energy. Our main results show that the aggregate level choice pattern is to be explained by income as well as structural attributes that make costs and benefits of the projects vary. More importantly, our results underline the importance of including variables pertaining to the notion of ideology, both in terms of statistical fit and obtaining unbiased estimates for price and income determinants.

1. Introduction

Empirical investigations of the demand for environmental goods usually focus on price and income effects. Following this approach, individuals' contribution to an environmental good has been consistently found to be related to the subjective benefits and costs expected, while a robust income effect shapes the willingness to contribute. These findings are well established, especially in a binding revealed preference contexts such as votes on environmental projects (Deacon and Shapiro, 1975; Kahn and Matsusaka, 1997; Kahn, 2002; Sciarini et al., 2007). While informative, this approach typically neglects two salient aspects. First, numerous environmental regulations deliver benefits that are, to a large extent, non-excludable and non-rival. In turn, a narrowly defined self-interested voter, taking into account only personal costs and benefits, will not consider the full amount of benefits and would have an incentive to free-ride on others' provisions. This view is, however, at odds with numerous real-life observations of contribution to public goods (Vatn, 2005; Meier, 2006), in particular concerning the acceptance rate of environmental ballots. Hence, voters' willingness to contribute to a public good at ballots will bear an important part in both the acceptance level and its variation across the population.

Second, environmental goods themselves can be the subject of an ideological dimension. This view, often found outside the economics profession, conjectures that individuals might also follow a 'logic of appropriateness' and make a choice consistent with roles of identities, rules, and institutions which shape human behavior (March and Olsen, 1998). Hence the acceptance of a particular project could be shaped by socially accepted rules or norms, regardless of the costs imposed and the recipients of the benefits of the improvements. In other words, respecting a certain set of rules could provide a benefit in itself, while deviating from these rules could be felt as a cost.

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The traditional public choice approach states that the median voter will cast his vote so as to receive highest attainable utility (Downs, 1957). However, as these 'ideological' or 'pro-social' aspects of choice have been incorporated into micro-economic theory (see for example Elster, 1989; Andreoni and Miller, in press), it is a logical extension to account for these factors when analyzing vote choices. Thus, while price and income determinants remain a central component of the voting choice, it is crucial to control for ideological factors contributing to the respondent's utility for both the understanding of voting outcomes and for obtaining correct estimates of price and income effects.

Direct democracy in Switzerland provides for a setting which allows us observing directly binding choices towards the provision of environmental goods. We study the voting outcome on three different taxes on fossil energy put to vote in September 2000 with aggregate, municipal-level data.[1] As its main consequence, the price increase for this type of energy source would have entailed financial repercussions on households but would also have improved the state of air quality and reduced CO_2 emissions. While two of the three projects were to subsidize renewable energy sources and thus to promote 'green energy', the third bill foresaw revenue recycling via social security contributions. All three bills were rejected by the electorate.

Our empirical results highlight the importance of price and income effects on the choice pattern and they perform very well explaining the variation in the acceptance rate across regions. More importantly, we obtain quantified evidence on the importance of the variables pertaining to the notion of ideology, showing that these significantly improve the statistical fit of our model. In addition, we find that the impact of the price variables generally reduces in magnitude when ideological variables are included, suggesting that the traditional approach might overestimate the importance of price effects.

While a better understanding of the demand for environmental public goods is the primary objective of this study, a second aspect is to highlight the public acceptability of climate policy. Indeed, science acknowledges that anthropogenic climate change has become one of the most important environmental issues in the past decades (Kolstad and Toman, 2005; IPCC, 2007). Thus, by studying voting outcomes of the three energy bills we contribute to the growing but still scarce literature on the public acceptance of climate change policies.

Following the introduction, we will explain the three ballot proposals in Section 2. Thereafter, we present the theoretical framework and provide for measures of price and income effects in Section 3, and ideology effects in Section 4. Section 5 is concerned with the econometric specification of our analysis and we discuss the estimation results in Section 6. The last Section concludes.

2. The three tax proposals

During the second half of the 1990s environmental interest groups and organizations gathered enough signatures for two popular initiatives to be submitted to the Swiss population.[2] The two popular initiatives, the 'solar initiative' and the 'energy–environment initiative', both aimed at taxing fossil energy and promoting renewable energy. After parliament had drafted two more modest and balanced counterproposals, the second of the two initiatives was withdrawn by its organizers leaving the total number of bills to be voted on at three. The following information stems from the official 'Voting Brochure' distributed to the population before every referendum (Conseil Fédéral, 2000).

The first of the three proposals, named *solar initiative*, would have levied a tax during twenty-five years on fossil and nuclear energy, starting at Swiss Francs (CHF) 0.001/kWh and increasing to 0.005/kWh (1 CHF≈0.82 US$). The estimated revenues of CHF 750 m per year would have been equally distributed for the promotion of solar energy and for energy efficiency solutions. Parliament and government rejected the initiative on the grounds that it favored solar energy disproportionately and neglected the promotion and further empowerment of hydrological power.

The counterproposal, the so-called *energy conservation* package, envisaged a tax of CHF 0.003/kWh during ten to fifteen years on non-renewable energy, starting in 2001. Revenues were to be used for four purposes where they would have been split equally for the promotion of renewable energy, for energy efficient solutions, for maintenance works on hydroelectric plants, and for energy-efficiency programs. The counterproposal was prepared by the Committee for the Environment, Spatial Planning and Energy (CESPE) of the Council of States, i.e. upper chamber of parliament, and received majority support by both chambers in parliament and by the Federal Council (Government).

The third project put to vote, the so called *green tax reform*, was the counterproposal designed by the CESPE to the energy–environment initiative. Of the three proposals it would have provided for the highest tax, gradually increasing to a maximum of CHF 0.02/kWh on non-renewable energy, with no temporal limitation. Revenues p.a. were expected to be around CHF 3 billion which would have been used to lower social security contributions for employers and employees (up to 0.65 percentage points).

In the voting brochure (Conseil Fédéral, 2000), the Federal Council highlighted the incentive nature of the bills and in turn the positive impact they would have had in terms of environmental quality, reducing the probability of natural catastrophes due to climate change as well as improving health of the current and future generations. Other arguments given in favor of the bills were the comparative advantage for the existing hydraulic energy sector and the promotion of energy-efficient technologies. The Federal Council underlined that the competitiveness of the Swiss economy would be preserved as all three proposals provided for full or partial exemption from the taxes for industries heavily dependent on non-renewable energy. Furthermore, the bills foresaw that parliament would be able to fix lower tax levels for energy sources already heavily touched by other taxes, such as gasoline or diesel.

[1] Thalmann (2004) analyzed the same bills with individual-level survey data.

[2] The Swiss political system allows anyone to require a referendum on a bill passed in parliamentary, provided one manages to gather 50,000 signatures within 100 days from citizens who have the right to vote. To launch a popular initiative in order to devise or amend a federal law or the constitution, 100,000 signatures must be collected within 18 months. If the required number of signatures is obtained, Parliament and Government may issue a voting recommendation and/or a counterproposal to the bill.