The Determinants of Voting Choices on Environmental Issues: A Two-Level Analysis*

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Abstract

The goal of the paper is to analyse the determinants of voting behaviour in ballots targeting environmental issues. To that end, we combine insights from the public choice and opinion formation theories. We use survey and contextual data on 27 popular votes (referenda or initiatives) in Switzerland from 1990 to 2003. Individual choices are modeled with a two-level cross classification model, where subjects are clustered with respect to both their administrative units and the project they participated in. Our results confirm that both individual and contextual factors influence the voting decisions, thus providing support for both strands of literature, and that the variance of individual-level parameters is substantially reduced when accounting for variations in contextual factors.

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1 Introduction

The purpose of this chapter is to test the relative weight of utilitarian, normative and cognitive determinants of voting choices on environmental issues. Environmental protection lends itself particularly well to such a test, since it is a typical valence issue (Kriesi 1999): at the level of principles virtually everybody agrees that something should be done about it, but the specific environmental measures often meet with resistance; faced with concrete proposals, many people realize that environmental protection comes at a price and tend to turn down measures which may affect their personal situation. In addition, environmental policies are often complex and have long-term implications that are hard to grasp for voters. They thus offer a promising basis for the test of the impact of cognitive factors on political attitudes.

Our analysis is grounded on a comprehensive model of the voters' decision that elaborates on Zaller's (1992) model of opinion formation. By emphasizing both the role of the elite discourse and the impact of cognitive factors on the reception and acceptance of that discourse, Zaller's model is particularly well-suited to illuminate the process of opinion formation that takes place during a referendum campaign.[1] We shall nevertheless argue that this model suffers from a cognitive bias and underestimates the normative or ideological sources of political choices, and we shall amend it accordingly. Moreover, we shall also extend the model in order to test the impact of additional possible determinants of the voting choices: Based on a review of the relevant public choice literature, we shall include utilitarian-based considerations in our model.

Our empirical tests are based on 27 popular votes (referenda or initiatives) on environmental issues held in Switzerland between 1990 and 2003. As the country with the most far-reaching experience in direct legislation and referendum campaigns, Switzerland constitutes a unique 'laboratory' for the study of direct democratic choices. Methodologically, we innovate by using a two-level cross classification model where people are clustered with respect to both their respective canton and the project submitted to the voters. This enables us to model two distinct, potentially relevant contexts and to test how they interact with individual factors and jointly

[1] During this phase the political elites tries to gain support for their view through campaign propaganda and voting recommendations.

influence the voters' decision. At both the individual and contextual levels we include factors measuring the three classes of normative, cognitive and utilitarian determinants. The individual data comes from the so-called VOX-surveys that are carried out after each popular vote. For the cantonal context we use aggregate data on the cantons' economic and political characteristics. Finally, at the ballot level we characterize the proposal submitted to the voters (its level of economic constraint) and the related referendum campaign (its conflictuality and its intensity).

The chapter is structured as follows. In the next section we develop our theoretical framework. From this we derive our hypotheses regarding the three sets of determinants on the voting choices on environmental issues. The data, the operationalization and the model are presented in section three. This sets the stage for the empirical tests that appear in section four. Section five concludes.

2 Theoretical framework

2.1 Cognitive and normative determinants: Zaller's model of opinion formation

Zaller's model of opinion formation is based on the assumption that the formation and change of individual opinions are driven by the political messages delivered by the elite. In Zaller's model, political awareness (or attentiveness), i.e. the degree of a citizens knowledge of or information about politics, plays the key role in the reception and acceptance of communications from the political elite. According to the reception axiom, the greater a person's awareness, the more likely she is to receive a given political message and to understand it. According to the resistance axiom, awareness regulates the acceptance or non-acceptance of the political communications to which a person is exposed in interaction with her political predispositions.[2] More specifically, it is assumed that individuals tend to resist arguments that are not consistent with their political predispositions, but only if they possess the contextual information that enables them to assess these arguments in light of their predispositions; the likelihood of resisting to

[2] Zaller (1992) defines them as stable, individual-level traits such as political values or ideological position on the left-right scheme.

inconsistent messages is thus expected to increase as a function of political awareness.

While we accept the basic thrust of this model, we believe that it puts too strong an emphasis on the impact of political awareness, and underestimates the importance of normative or ideological considerations (see also Sciarini and Kriesi 2003): in Zaller's model, predispositions do not have a direct impact on political attitudes; their influence is filtered through an individuals level of political awareness. We do not dispute the idea of interaction between predispositions and awareness, but we claim that internalized predispositions such as social norms or political beliefs have a separate and direct impact on the voters' decision.[3] This impact presumably holds especially true in popular votes on environmental protection, which belongs to the core beliefs of the left and is a matter of deep contention between the left and the right.

Zaller's conception that political predispositions regulate opinion formation in interaction with political awareness and our conception that predispositions have a separate and direct effect are not mutually exclusive, but may complement each other. It will be up to the empirical analysis to show the relative importance of the two mechanisms.

With regard to the role of elite discourse, we follow Zaller (1992) and make mainly two points. The first regards the intensity of the political messages delivered by the elite, and the second the direction of these messages. The intensity of the information flow, whatever its direction, has important consequences for the cognitive strategies used by voters. In short, intense campaigns increase both the quantity of information delivered to voters and the incentives to search for information. Bowler and Donovan (1998) have shown this for the case of referendum campaigns: Spending does not simply convert voters' opinions but may change the context of their decisions, bringing more attention to an issue and increasing voters' awareness of the ballot proposals.[4] Similarly, but in the context of US senate election campaigns, Kahn and Kenney (1999) have shown that intense election campaigns lead voters to regard their choice as more

[3] Arguing from a different perspective that of the heuristics strategies used by voters in direct democratic votes Kriesi (2005, chapter 6) makes a similar argument: according to what he calls the 'general partisan effect' party identifiers are likely to vote according to their party's line, independently from their issue-specific awareness. His empirical tests confirm that this effect is indeed considerable.

[4] Gerber and Lupia (1996) also find that campaign spending has an influence on the level of information of the citizens: the higher the spending, the higher their level of information.

important and encourage them to make more sophisticated decisions about competing candidates. By contrast, when campaign intensity is low, information about the election is scarce and voters have little incentive to make complicated judgments.[5]

Seen from the perspective of the mediating role that campaign intensity plays in the reception/acceptance mechanisms, the standard conception that the higher the campaign intensity the stronger the effects of awareness needs some qualifications. In a nutshell, we argue that the impact of campaign intensity on the awareness-related effects is 'curvilinear', meaning that these effects are highest when campaigns are moderately intense. When the referendum campaign is weakly intense, even the most aware voters have hardly any chance to get the political messages. Conversely, when campaign intensity is high even the least aware are likely to be reached by the communication flows and, therefore, to be able to scrutinize the compatibility between the political messages and their political predispositions. In other words, we expect that the influence of awareness on the voters' decision is reduced both when campaign is weakly or strongly intense, and that it reaches a high in intermediary situations.

Regarding now the direction of political messages, Zaller's argument is twofold. First, he expects the reception and resistance mechanisms to operate differently when a project is strongly supported by the elite and when the latter is divided. When there is consensus among the elite, a mainstream effect is likely to occur. In that case, popular support for the elite's proposal increases with citizens level of awareness, regardless of their political predispositions. By contrast, when the elite is divided, citizens are exposed to (typically) two competing flows of communication. As a result, a polarization effect is likely to occur. In this situation, the relationship between the level of political awareness and support for a given political message is expected to increase with the level of awareness among citizens whose predispositions are consistent with that message, but to decrease among those whose predispositions are not consistent with it.

Besides the mainstream and polarization effects, there is an additional and somewhat more subtle way by which the direction of the information flow mediates the awareness-related ef-

[5]Recent studies carried out in the context of the 1999 Swiss national elections support the view that campaign intensity has a disruptive effect on the process of opinion formation (e.g. Lachat and Sciarini 2002, Sciarini and Kriesi 2003).

fects. When political messages are one-sided, the individuals whose opinion is opposed to the dominant messages find themselves in what Zaller (1992) calls an easy learning situation. They face a change-inducing message which is easy to receive, even for the least aware voters. Given that the latter tend to uncritically accept the messages they receive, they are particularly likely to change their minds. The highly aware, by contrast, will recognize the dominant message as being inconsistent with their prior beliefs and will therefore resist it.

In contrast, individuals whose opinion is in line with the dominant message will find their opinion reinforced. They are in the so-called hard learning situation, where the countervailing messages are hard to receive, being of a much weaker intensity than the dominant one. In such a situation, only the most highly aware supporters have a chance to fulfill the first requirement for opinion change, i.e. to receive the countervailing message and to update their preferences accordingly. That is, while in standard situations awareness increases the resistance against inconsistent messages, its effect is more ambivalent in a hard learning situation. Here, the one-sidedness of political messages is expected to attenuate the polarization effect among supporters of the message.

Applying this argument to our study, and assuming that the dominant message delivered to the public comes from the right and opposes environmental protection which as we shall see is almost always the case we should witness a strong increase in environmental support as a function of political awareness among left voters (easy learning situation), and a moderate decrease in environmental support among right voters (hard learning situation).

2.2 The public choice approach

The positive theory of public choice takes into account self-interests of political actors, be they voters, public administrations, politicians, the industry or interest groups. Since the seminal paper by Buchanan and Tullock (1975)[6], this theory has often been used to explain the implementation of ecological policies in industrialized countries.

[6]In this paper Buchanan and Tullock were essentially concerned with externality control and environmental taxes. They demonstrated that direct regulation is used more frequently than taxes or charges, since it is easier for firms to withdraw from having to pay if emissions remain under a pre-defined level of output.

Seeing voters as utility-maximizers who choose according to their economic self-interest when making a political decision, the public choice approach identifies the individual interests of rational voters as the main predictor of the vote on environmental issues (e.g. Buchanan and Tullock 1975, Schneider and Volkert 1999). Accordingly, it puts a strong emphasis on anticipated consequences of individual decisions and on related costs-benefits calculations. Thus, it describes citizens as trading off their concerns for a better environment with economic concerns such as unemployment (e.g. Schneider and Volkert 1999). Citizens whose employment is safer will be more likely to accept environmental measures such as green taxes. Similarly, a recent study based on aggregate, communal data of three popular votes on green taxes held in Switzerland in September 2000, shows that environmental support varies closely according to the share of the active population working in the industry, the acceptance rate being substantially lower in communes with a large workforce in the industrial sector (Bornstein and Lanz 2005).

In a similar vein, Diekmann and Preisendoerfer (1992) maintain that people are ready to do something for the environment in low cost situations that do not imply major behavioural changes, but much less so in high cost situations that do require such major changes. Given that the individual situation varies from person to person, a given environmental measure may have negligible costs for some people but considerable costs for others. Consequently, the level of support for environmental measures is expected to vary both across individuals and across projects. More specifically, measures that impose no or only limited constraints on individual behaviour are expected to receive high support. Similarly, highly constraining measures are likely to be accepted by individuals who are not or hardly affected by them. By contrast, people who will bear the related adjustment costs are expected to reject the proposals.

Kriesi (1999) has applied the low cost hypothesis to the case of environmental measures against air pollution caused by car traffic in Switzerland. Analysing the attitudes of the public on nine environmental measures, he shows that these attitudes indeed vary considerably across measures. In addition, he finds some limited support for the low cost hypothesis that this variation depends on the level of constraints of the various environmental measures: The

more constraining a measure, the lower the support to that measure among car owners and car drivers. This relationship is, however, weak and no longer holds if political predispositions are controlled for: according to Kriesi's results, predispositions overall have a much stronger effect on environmental support than either constraints or awareness.

According to the public choice literature, education is another key variable for pro-environmental voting choices. Already in the 1970s Deacon and Shapiro (1975) and Fischel (1979) found that education together with occupation and income was a robust determinant of preferences on environmental protection. More recently, Kahn and Matsusaka (1997) analysed environmental votes in California and found a higher level of support for environmental measures among people with a higher level of education. Similarly, according to Kahn's (2002) study the acceptance of environmental regulation in the United States increases with the level of education. As an explanation, the author suggests that highly educated people are more aware of long-term risks of environmental damage to their health and to the society as a whole and are, therefore, more likely to accept short-run sacrifices. Thalmann's (2004) study of individual voting choices on three projects for taxes on fossil energy (green taxes) submitted to the Swiss people in September 2000 corroborates this view. Education also turns out to be a strong predictor of the acceptance of these green taxes according to a study based on communal data (Bornstein and Lanz 2005).

In this chapter we apply the analysis of the role of utilitarian determinants to the VOX-surveys. To that end, we shall test both the influence of car ownership on the voters' decision at the individual level, and the low cost hypothesis that this influence depends on the context. Our conceptualization of the context is twofold: we shall not only take into account the constraints of the projects submitted to the voters, but shall also explore the likely interactions with the cantonal contexts with respect to the rate of unemployment, the size of the industrial sector, and the share of car dependency.

2.3 Combining the three theoretical conceptions and the individual and contextual levels

The combination of individual and contextual (projects and cantons) determinants, together with the combination of three different theoretical perspectives (sociological, utilitarian, and opinion formation) results in a high number of possible causal links. In the present paper, we explore the relevance of a small set of configurations between individual and contextual characteristics. Up to now, we have focused on likely cross-level interactions from within a given theoretical perspective. Thus, we have hypothesized about the likely cross-level effects of individual and contextual constraints. However, we also have to take into account possible mixed interactions, that is, interactions between a determinant from a specific approach at the individual level, and a determinant from another approach at the contextual level. Thus, we assume that the impact of individuals' political predispositions (normative determinants) varies across cantons as a function of material constraints (utilitarian determinants). More specifically, we assume that the dilemma voters face when choosing between their environmental concerns and their economic concerns differs among voters, depending on their ideological orientation. Among right voters, the cantonal context (with respect to unemployment or the importance of the industrial sector) is expected to reinforce their 'intrinsic' reluctance towards environmental protection. Hence the hypothesis that the higher the unemployment rate or the size of the industrial sector of a canton the lower the environmental support among right voters. Among left voters, by contrast, political predispositions and cantonal context work at cross-purposes: while their internalized preferences would induce them to support environmental policy measures, the inclusion of the likely consequences for their own canton might prevent them from doing so. Therefore, we expect the relationship between cantonal economic characteristics and environmental support to be strongly attenuated for the left voters.

We can now summarize our hypotheses, specifying their theoretical origins and the level at which they operate (individual or cross-level, and which cross-level):

Hypothesis 1 (normative, individual level)

In each and every case, political predispositions have a distinct and direct impact on the voters'

decision, independently from political awareness; environmental support is higher among left voters than among right or far right voters.

Hypotheses 2 (cognitive, cross-level, projects)

2a. In cases of consensus among the elite, environmental support increases as a function of awareness, independently from political predispositions ('mainstream effect').

2b. When the elite is divided, environmental support increases as a function of awareness among left voters, but decreases as a function of awareness among right voters ('polarization effect').

2c. If the information flow is one-sided (against the environment), environmental support increases as a function of political awareness among left voters ('easy learning situation') and moderately decreases as a function of political awareness among right voters ('hard learning situation').

2d. The impact of awareness in interaction with political predispositions on environmental support is higher when the campaign is moderately intense than when it is weakly or highly intense.

Hypotheses 3 (utilitarian)

3a. (individual level) Environmental support is lower among car owners than among non car owners ('low cost' hypothesis).

3b. (cross-level, projects) The impact of car ownership on environmental support varies across projects: among car owners environmental support decreases with the level of material constraint (i.e. it is higher for low constraining than for highly constraining projects). Such interaction does not exist among non car owners ('low cost' hypothesis).

Hypothesis 4 (mixed normative-utilitarian, cross-level, cantons)

The effect of political predispositions on environmental support varies across cantons as a function of the unemployment rate, the size of the industrial sector and the share of car users: a high rate of unemployment (or industry, or car users) in a canton reduces environmental support among right voters and to a lesser extent among left voters.

3 Data, operationalization and model

We analyse data from the VOX-surveys carried out after each popular vote at the national level in Switzerland. The standardisation of the surveys resulted in a stacked dataset, where the respondents project-specific responses together with their background characteristics constitute a case. Very often, Swiss citizens have to vote on different issues on the same day. In the VOX-survey respondents are asked about each specific project that was submitted to the voters.[7] Consequently, each individual case contributes as many cases to the stacked file as there were propositions on the ballot on a given voting day (Kriesi 2005). For the present study this number was about 27000. After eliminating non-participants, that is, respondents who said they did not take part in the ballot,[8] our sample consists of 14279 observations.

The 27 votes on the protection of the environment included in our study addressed various issues, but they all aimed at abating pollution through measures such as withdrawal from nuclear power, green taxes on fossil energy, traffic reduction, water protection, taxes on private cars or trucks, promotion of public transportation, or the protection of a specific site or region. A complete list of the popular votes included in the analysis is reported in Table 1.

On the institutional level, 17 out of the 27 popular votes under study stem from popular initiatives launched by the left, the greens and/or environmental groups, and rejected by the right. The 10 remaining proposals were constitutional amendments put forward by the Swiss Government, counterproposals to (withdrawn) popular initiatives, or federal laws voted on by the Swiss Parliament but attacked by referendum.[9]

[7] For example, if there were three environmental proposals submitted to the Swiss people on a given voting day, each VOX-survey respondent appears three times in the database.

[8] In Switzerland, the average turnout in direct democratic votes is between 40 and 50%. Surveys often overestimate participation.

[9] As any constitutional amendment, counterproposals to popular initiatives must be submitted to a popular vote (compulsory referendum). Federal laws adopted by the Swiss parliament are subject to a facultative referendum: Any group may call for a final decision by the Swiss people by collecting 50'000 signatures of citizens in 100 days.

Table 1: List of the popular votes (projects) on environmental issues under study (1990 to 2003)

Date	Name of project	Result	% yes
01.04.1990	Popular initiative Stop the concrete for a restriction on road construction	no	29%
01.04.1990	Popular initiative for a region Morat/Yverdon without highways	no	33%
01.04.1990	Popular initiative for a region Knonauer Amt without highways	no	31%
01.04.1990	Popular initiative for a region Bienne/Soleure without highways	no	34%
23.09.1990	Popular initiative for an exit from nuclear power	no	47%
23.09.1990	Popular initiative for a construction ban on nuclear power plants	yes	55%
03.03.1991	Popular initiative for the promotion of public transport	no	37%
17.05.1992	Federal Law on the protection of the waters (GSchG)	yes	66%
17.05.1992	Popular initiative for the salvation of our waters	no	37%
27.09.1992	Confederations decision concerning the construction of a New Rail Link through the Alps (NRLA)	yes	64%
07.03.1993	Federal Law on the increase of fuel price	yes	55%
06.06.1993	Popular initiative 40 training grounds are enough environmental protection in the army	no	45%
20.02.1994	Confederations decision concerning an increase and prolongation of a highway tax	yes	69%
20.02.1994	Confederations decision concerning an increase and prolongation of a highway tax for trucks	yes	72%
20.02.1994	Confederations decision concerning an option for the introduction of a performance-related highway tax for trucks	yes	67%
20.02.1994	Popular initiative to protect the Alps from transit traffic	yes	52%
27.09.1998	Confederations decision concerning an incentive tax on trucks	yes	57%
29.11.1998	Confederations decision concerning the financing of public transport	yes	64%
12.03.2000	Popular initiative for a bisection of motorised traffic to improve living space	no	21%
24.09.2000	Popular initiative Solar Initiative	no	31%
24.09.2000	Counterproposal: Energy Conservation Package	no	45%
24.09.2000	Constitutional amendment: Green tax reform	no	45%
04.03.2001	Popular initiative for maximum speed of 30 km/h	no	20%
02.12.2001	Popular initiative For a secure pension system tax energy instead of work!	no	23%
18.05.2003	Popular initiative One Sunday per season without cars	no	38%
18.05.2003	Popular initiative Energy without nuclear power! For a closedown of nuclear power plants	no	34%
18.05.2003	Popular initiative MoratoriumPlus. For an exit from nuclear power	no	42%

3.1 Independent variables[10]

Individual level

Awareness

Our indicator of a citizen's degree of political awareness is a measure of issue- or project-specific awareness. It is based on two sets of questions asked in the VOX-surveys. The first set measures voters' knowledge of the title of a project submitted to the vote and their ability to describe its content. Respondents receive a point for correctly responding to each of these two questions. This knowledge test is little demanding[11] and results in a very high level of awareness (over 60% of highly aware). Following Kriesi (2005), we attempt to improve the scale by deducting a point from respondents who are unable to situate themselves with regard to a set of closed questions on the most important arguments of the campaign. While the resulting scale still overestimates awareness (according to our measure there are 57% of highly aware, 30% of moderately aware and only 13% of unaware), it nevertheless offers a valid indicator of the differences in the level of awareness existing in the Swiss electorate.

Political predispositions

The traditional left-right distinction remains the most dividing line in Swiss politics in general, and in environmental policy in particular. Following again Kriesi (2005) we base our measure of political predispositions on two questions regarding party identification and self-positioning on a left-right scale. For our present purposes we reduce the multiplicity of political parties existing in Switzerland to three political families and classify individuals accordingly: the conservative right (Swiss Peoples Party, Swiss Democrats and other parties of the radical right), the moderate right (Christian Democrats, Radicals, Liberals and other small parties), and the left (Social Democrats, Greens, Workers Party and other small left parties). Voters are classified in one of the three political families according to the party they identify with. Voters who do not identify

[10] See the Appendix for descriptive statistics of the independent variables.

[11] Thus, voters receive a point for giving a substantive answer to the second question, even if the answer is provided in the vaguest possible terms.

with a party, but position themselves clearly on one side of the left-right scale are added to the corresponding category. According to this operationalization, 29% of the sample display left political predispositions, 30% identify with the moderate right and 11% have far right preferences, whereas 30% are categorised as non-partisans.

Car ownership

Car ownership will serve as a measure of individual constraint with respect to environmental issues. It is generally difficult to capture the policy-relevant constraints of an individuals situation, except with respect to private transportation and car ownership, which offers a relatively simple 'objective' indicator of constraints on individuals. People who do not have a car can be considered as being unconstrained by any measures pertaining to road transportation except for the tax on trucks, which may affect them indirectly, via rising consumer prices of consumption goods. For that reason, and also because this is the only indicator measuring utilitarian considerations in the VOX-surveys, we focus on car ownership and distinguish people who do not own a private car from those who do.

Other independent variables: control variables

As control variables we include the usual suspects, namely gender, age, location (urbanity), religion, linguistic region and education. The case of education is somewhat particular, since the public choice approach clearly emphasizes its impact on the acceptance of environmental protection measures. However, education also matters in the opinion formation literature, where it is often used as a measure of general political awareness. It is therefore difficult to assign this variable to a specific approach.

Contextual level: project and related campaign

Conflictuality

Our indicator of the level of conflict among the elite is based on the recommendations that national political parties issue prior to each popular vote, which result in 'objective coalitions' between parties (Papadopoulos 1994). Kriesi (2005) distinguishes no less than five different

types of coalitions, but for our present purpose we can reduce this diversity to two basic situations: a situation of high conflict and a situation of low conflict among the Swiss party elite (dummy variable).

As mentioned above, our empirical material includes 17 popular initiatives that pitted the left against both the moderate and the far right. These votes are categorized as cases of 'high conflict'. The remaining 10 votes are coded as cases of 'low conflict'. Among them 4 are truly consensual, meaning that all four governmental parties recommended a yes-vote, whereas 6 votes are cases where only one or two governmental parties of the centre- or far right opposed the proposal. The small size of this 'low conflict' category prevents us from dividing it further, since we would end up with a too limited number of votes. One must nevertheless keep in mind that this category does not only comprise cases of consensus among the party elite.

Intensity

Our indicator of the intensity of campaigns is based on a dataset of newspaper ads published by the elite during such campaigns. Newspaper ads are one of the major means that political elites use to convince voters. They thus offer a straightforward measure of the intensity of the information flows delivered to the public prior to the popular vote. More specifically, we calculated the total surface of political ads in support or against a given project in six Swiss daily newspapers one month prior to each popular vote.[12] We use the natural log of the total surfaces for or against the projects, since we assume that the impact of the advertisements marginally decreases as a function of their size.

Material constraint

In addition to car ownership as a measure of constraints on the individual level, we introduce a similar measure at the project level. We characterise the policy proposals submitted to the voters according to the extent to which they impose constraints on the voter. More specifically,

[12]The newspapers are Le Matin, Le Journal de Genve/Le Temps, La Tribune de Genve, Neue Zrcher Zeitung, Tages-Anzeiger, Blick. We thank Hanspeter Kriesi who kindly provided us with this dataset of newspaper ads. Kriesi (2005) has demonstrated the validity of this indicator, for example in the analysis of the link between campaign intensity and political participation (see also Kriesis chapter in the present volume).

we classify each proposal on a scale ranging from 0 to 2 according to its implications with respect to car use. The most constraining measures are those that impose restrictive rules on private transportation (speed limits, traffic reduction) or that lead to a significant increase of taxes on cars, whereas the least constraining ones are those that have hardly any consequences in that respect (votes on nuclear energy, water protection, etc.). We shall use this threefold classification to test the low cost hypothesis and, more specifically, the likely cross-level effects between individual and contextual constraints.

Contextual level: canton

The 26 Swiss cantons differ strongly from each other with respect to their size, revenue, economic and financial situation, or administrative organization (see e.g. Bochsler et al. 2004). For our present purposes we focus on cantonal measures that enable us to test the hypotheses regarding the impact of cantonal constraints on the individual costs-benefits calculations.[13] As the period under study covers almost fifteen years (1990 to 2003), we use average values over the period.[14]

Industrial sector

Our indicator measures the percentage of the active population working in the industry.

Unemployment

As a measure of unemployment we use the average rate of unemployment at the cantonal level over the period 1990 to 2000.

Car dependency

In national censuses citizens are asked to indicate on what kind of transport they rely on to commute to work. Private car is the most important means of transportation for almost half of

[13] Our data comes from various publications of the Swiss Federal Statistical Office (Federal Population Census 1990 and 2000, Yearly economic data).

[14] To meet the conventional criteria of the two-level methods that there are at least 25 observations in each contextual group, we pool the two small half-cantons of Appenzell.

the Swiss workforce. We use this variable as an indicator of the level of car dependency in a canton.

3.2 Model

While multilevel regression models have been used to model the impact of geographical contexts of the electoral choice (see e.g. Jones et al. 1992), their application to the analysis of direct democratic votes is still scarce. Following in the footsteps of Kriesi's (2005) path-breaking study,[15] we apply multilevel models to the study of popular votes on environmental issues. In our model, voting choice is influenced by the characteristics of both the canton voters live in and the project – and related campaign – submitted to them. This model calls for a non-hierarchical multilevel design: we use a cross-classification model that partitions the outcomes variance according to both the cantonal level and the project-level. According to this technique, which is an extension of a standard two-level setting, each observation is nested in two different clusters that are crossed at level-2 and that are not hierarchically linked to each other.[16] This enables us to model causal heterogeneity between levels (cross-level interactions) while at the same time performing an analysis of level-specific contextual effects (Steenbergen and Jones 2002).[17]

Following Goldstein (2003) the cross-classified model can be described as follows. Let i be the subscript for individuals, $j1$ the subscript for the ballots, and $j2$ for the geographical regions, i.e. the cantons; parentheses group classifications at the same level. A basic cross-classified model is as follows

$$y_{i(j1j2)} = x_{i(j1j2)}\beta + \mu_{1j1} + \mu_{2j2} + \varepsilon_{i(j1j2)}$$

[15] Kriesi's study covers all popular votes held in Switzerland between 1981 and 1999 and uses two-level regression models (individual level and project level) to test the relative importance of the heuristic and a systematic paths of opinion formation that voters rely on when making a direct democratic choice.

[16] We allow the impact of variables to vary across levels; this provides a mean of partitioning the variance into different levels and to assign predictor variables to different organisational levels (see Heck and Thomas 2000).

[17] In addition, not taking into account one of the two contexts would lead to a specification error of the model, since preliminary research demonstrated that both the cantons and the ballots characteristics play a decisive role in individual voting choices. Finally, ignoring the dependency of the observations would lead to wrong statistical specification and underestimation of the standard errors of coefficients. This situation typically arises in OLS regression which ignores the clustering of the data (Steenbergen and Jones 2002).

where $x_{i(j1j2)}$ is the regressor matrix referring to the two contextual levels, μ_{1j1} and μ_{2j_2} are level-2 random variables specific to cantons and ballots respectively and $\varepsilon_{i(j1j2)}$ denotes residuals on level-1.

As the dependent variable is binary (it measures the acceptance or rejection of a given environmental project), we use a non linear estimation method and define f as the logit link function. Therefore we have

$$y_{i(j1j2)} = f\left(x_{i(j1j2)}\beta\right) + \mu_{1j1} + \mu_{2j2} + \varepsilon_{i(j1j2)},$$
$$\mu_{1j1} \sim \mathcal{N}(0, \sigma^2_{\mu_1}),\ \mu_{2j2} \sim \mathcal{N}(0, \sigma^2_{\mu_2}),\ \varepsilon_{i(j_1j_2)} \sim \mathcal{N}(0, \sigma^2_{\varepsilon})$$

where β, $\sigma^2_{\mu_1}$ and $\sigma^2_{\mu_2}$ are the parameters of interest. The models are estimated with MLwiN 2.0 using the iterative generalised least square algorithm (IGLS). The IGLS algorithm estimates separately the coefficients (or their mean across the macro-level units) and the variance-covariance matrix which comprises the variance value of the random coefficients.[18] In such a setting, computation procedure is relatively heavy and some simplifications and initial tests are needed to reach convergence. In order to check whether the data contained sufficient variance across contexts, we first estimated two separate two-level models one focusing on the project-specific level and the other on the cantonal characteristics. This initial test confirms that some of the individual predictors indeed vary across projects and/or across cantons. The final model combines cross-level interactions stemming from both the project and cantonal contexts.

4 Results

Table 2 presents the results of the two-level cross-classifications model that combines the effects of the two contexts' characteristics and the effects of the individual characteristics. The first columns provide the intermediary results regarding each context (project-specific and cantonal) separately. However, we focus on the results of the full model, i.e. the model including both the

[18] A complete description of the variance-covariance matrix in the case of a cross-classified model can be found in Rasbash and Goldstein (1994).

project-specific context and the cantonal context (last column).

The contextual effects determining the level of environment support from the reference category appear under the heading 'constant'. We can see that none of the cantonal level variables influences the overall level of environmental support. By contrast, the latter is significantly influenced by two of the three variables of the project context: conflictuality and intensity conflict among the elite substantially reduces the overall level of environmental support, whereas intensive campaigns enhance it. Besides their impact on the general level of environmental support (constant), contextual variables also matter in interaction with several individual variables. Or, to put it differently, several individual variables have a different impact on environmental support across cantons and across projects. Three types of cross-level interactions turn out to be statistically significant: the interactions between car ownership and the level of constraints of the projects[19], between political predispositions (left or moderate right) and cantonal characteristics, and between political predispositions and awareness, on the one side, and the characteristics of the projects (conflictuality and intensity), on the other. We discuss these cross-level interactions in detail below.[20]

Next, Table 2 shows that all but one socio-demographic aspect included as control variables have a significant impact: controlling for all other factors, environmental support is generally higher among women, among young voters, among German-speaking citizens, and among well-educated people; only religion does not have any effect on environmental support.

[19]We also checked for likely cantonal variations in the impact of car ownership, but we found none.

[20]We applied a Wald test on each random effect (variance components) of the two separate two-level models. All estimates were highly statistically significant as P-values range between 0.001 and 0.029. This test is an approximation of the chi-square test on the log-likelihood value. This test is no longer available for the final model as the software uses a pseudo 3-level hierarchical setting (Rasbash, et al. 2004).

Table 2: The determinants of environmental support: Cantonal model, ballot model, and full (cross-classified) specifications

			Cantonal model		Ballot model		Full model	
Individual level	**Cantonal level**	**Ballot level**	Coeff.	(s.e.)	Coeff.	(s.e.)	Coeff.	(s.e.)
Constant			0.39	(0.33)	-1.05*	(0.81)	-0.67	(0.96)
	% industry		-0.83	(0.78)	-	-	-1.25	(1.28)
	% unemployment		0.01	(0.05)	-	-	0.03	(0.07)
	% car users		-0.58	(0.57)	-	-	-0.23	(0.90)
		material constraint	-	-	-0.07	(0.12)	-0.08	(0.13)
		intensity	-	-	0.20***	(0.08)	0.20***	(0.08)
		conflictuality (=1)	-	-	-1.26***	(0.19)	-1.26***	(0.19)
Socio-demographic variables								
Gender (0=woman)			-0.20***	(0.04)	-0.22***	(0.04)	-0.21***	(0.04)
Age (centered)			-0.05***	(0.02)	-0.05***	(0.02)	-0.05**	(0.02)
Region (0=German)			-0.21**	(0.10)	-0.31***	(0.05)	-0.26**	(0.13)
Urbanity (0=rural)			0.14***	(0.04)	0.19***	(0.04)	0.14***	(0.05)
Religion (catholic=1)			0.02	(0.04)	-0.01	(0.04)	0.02	(0.05)
Education (0=secondary school to 3=university)			0.25***	(0.03)	0.27***	(0.03)	0.27***	(0.03)
Independent variables								
Car owner (=1)			-0.74***	(0.05)	-0.60***	(0.12)	-0.57***	(0.12)
		**material constraint*	-	-	-0.22**	(0.11)	-0.23**	(0.11)
Awareness (0=low)			0.09**	(0.05)	0.07*	(0.05)	0.10**	(0.05)
Left (=1)			2.20***	(0.43)	1.12***	(0.11)	2.27***	(0.55)
	** % of industry*		-1.3	(1.21)	-	-	-0.14	(1.54)
	** % unemployment*		-0.08	(0.07)	-	-	-0.05	(0.08)
	** % car users*		-2.07***	(0.87)	-	-	-2.32**	(1.05)
Moderate right (=1)			0.53	(0.45)	-0.31***	(0.11)	0.57	(0.55)
	** % industry*		-2.72***	(1.25)	-	-	-2.50*	(1.55)
	** % unemployment*		-0.25***	(0.07)	-	-	-0.29***	(0.08)
	** % car users*		1.81***	(0.82)	-	-	1.76**	(0.97)
Far right (=1)			-0.45***	(0.16)	-0.46***	(0.16)	-0.43***	(0.17)
Awareness*left			0.07	(0.07)	-2.78***	(0.56)	-2.46***	(0.56)
		**intensity*	-	-	0.27***	(0.06)	0.23***	(0.06)
		**conflictuality (=1)*	-	-	3.30***	(0.61)	2.77***	(0.62)
		**conflictuality*intensity*	-	-	-.309***	(0.07)	-0.26***	(0.07)
Awareness*moderate right			0.05	(0.07)	1.36**	(0.69)	1.43**	(0.72)
		** intensity*	-	-	-0.10*	(0.07)	-0.11*	(0.07)
		**conflictuality (=1)*	-	-	-1.26*	(0.74)	-1.42**	(0.77)
		**conflictuality*intensity*	-	-	0.09	(0.08)	0.10*	(0.08)
Awareness*far right			-0.19**	(0.10)	-0.19**	(0.10)	-0.19**	(0.10)

Note:Level-1 effects in normal print, level-2 effects in italics; $^{***}p \leq 0.01$,$^{**}p \leq 0.05$, $^{*}p \leq 0.1$.

Turning to the specific individual and cross-level effects, we first note that the coefficient for car owner is statistically significant and has the expected negative sign: environmental support is lower among voters who own a car than among voters who do not. In addition, the effect of car ownership is modified by the level of constraints of the project submitted to the vote. The negative sign of the interaction term suggests that the effect of car ownership is, as expected, stronger for highly constraining projects than for weakly constraining ones. Figure 1 helps to clarify the amplitude of the effect. It is based on the predicted probability of voting for the environment among car owners and non car owners, for different levels of projects constraints. We calculate these probabilities for a 'standard' combination of individual characteristics (a woman of average age and low education, non-Catholic, from a rural German-speaking canton, unaware and non partisan), while fixing the other contextual characteristics at their means (industry, unemployment, car users) or at their base value (intensity, conflictuality).

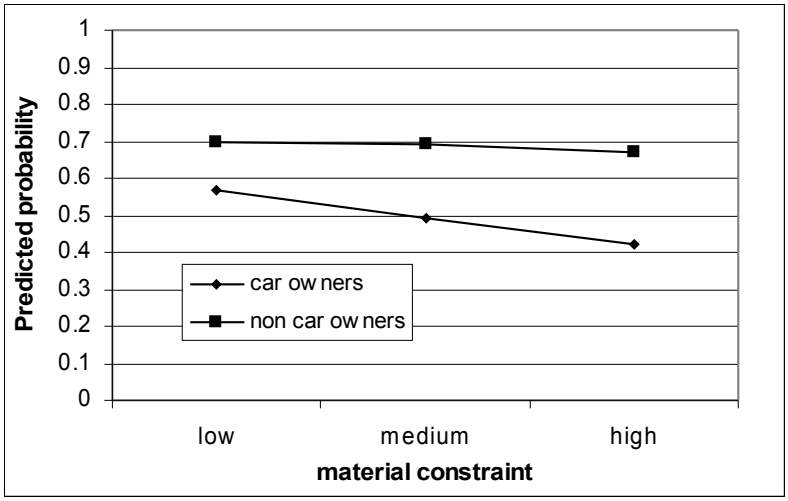

Figure 1: Predicted environmental support among car owners and non car owners, for different levels of material constraint

Figure 1 shows that environmental support is high and fairly stable among voters who do not own a car. Among car owners, by contrast, environmental support is substantially lower when projects are constraining, than when they are not. As a result, the difference in environmental

support between car owners and non car owners increases from 13% to 25% as we move from little constraining projects to highly constraining ones. Both the individual effect of car ownership and the cross-level interaction with the projects' constraints bring support for the utilitarian view that voters behave according to their self-interest (hypotheses 3a and 3b).

According to Table 2, awareness has a very weak impact on the voting choice, which means that *ceteris paribus* the voters' issue-specific awareness does not alone contribute to environmental support. However we will see below that awareness is in fact a crucial variable, but that it influences the voting choice in interaction with other variables.

The next group of factors concerns political predispositions. The coefficients for left and far-right voters support our first hypothesis that political predispositions have a distinct and direct impact on environmental attitudes, independently of political awareness. At both poles of the political spectrum predispositions appear as highly statistically significant. They operate, of course, in opposite directions: in comparison with the reference category (the non-partisans) political predispositions dramatically increase environmental support among left identifiers, and equally strongly reduce it among far-right followers. It is among the latter that the normative considerations matter most: according to our empirical tests, among far right voters environmental support does neither vary across contexts, nor as a function of political awareness. In other words, for this specific category of voters political attitudes towards environmental protection are mainly determined by internalized, normative, preferences.

By contrast, hypothesis one does not hold for moderate right voters, who do not distinguish themselves from the non-partisans. Among moderate right identifiers, ideology influences environmental support only in interaction with the context and with awareness. First, we see that two out of the three cantonal variables have the expected reinforcement effect: The higher the share of the secondary sector or the unemployment rate of a canton, the lower the level of environmental support among moderate right followers. Unexpectedly, car dependency has a reverse effect: the higher the share of car users the higher environmental support. Among left voters, political predispositions and cantonal constraints operate at cross-purposes. Among this specific category of voters the non significance of two of the cantonal measures (unemploy-

ment rate and size of the industrial sector) is thus conform to our theoretical expectations. Car dependency constitutes once again an exception, since it has a significant impact on the level of environmental support among left voters: The higher the share of car users, the lower the support for the environment. We will come back below to the counter-intuitive results regarding car dependency.

Second, the coefficient of the interaction term between political predispositions and awareness suggests that environmental support increases as a function of political awareness among moderate-right voters. Conversely, we see that among left identifiers awareness has a negative and very strong impact on environmental support. However, this holds only for projects with low conflict among the elite (the reference category). When the elite are divided, environmental support rises substantially as a function of political awareness among left voters. This effect, in turn, is attenuated by the inclusion of the intensity of the referendum (see the sign of the coefficient of the interaction term between left, awareness, conflictuality and intensity). The resulting picture is fairly complex and hard to grasp based on the coefficients.

To get a clearer view of the overall effects, we calculate the predicted probabilities of voting for the environment for the four categories of voters (left, moderate right, far right and non-partisans), and for different values of awareness, while setting again the other variables at their mean or at their reference value. Figure 2 presents the results for the cases of high conflict among the elite (see figure 4 for the cases of low conflict).

Figure 2 highlights the overriding importance of political predispositions: at each level of political awareness, including at the lowest one, environmental support is substantially higher among left voters than among (moderate or far) right identifiers, or among non-partisans. In addition to this ideological effect, Figure 2 also highlights the role of cognitive determinants of the 'Zaller type'. For two categories of voters the impact of political predispositions on environmental support is indeed mediated by political awareness: as anticipated in hypothesis 2b one witnesses a polarization effect between left voters and moderate-right voters; among the former the higher political awareness, the higher the level of environmental support, the difference between the lowest and the highest level of awareness reaching up to 28%; among the latter,

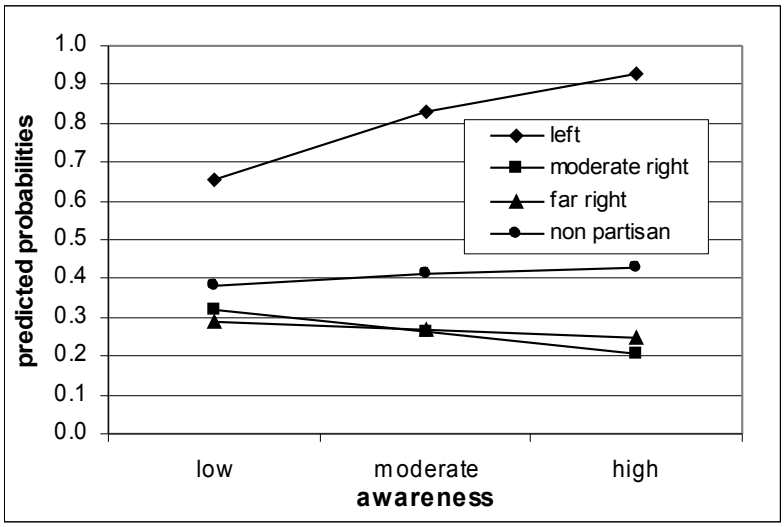

Figure 2: Predicted environmental support as a function of political predispositions and political awareness, in cases of high conflict among the elite

by contrast, environmental support (moderately) decreases as a function of political awareness the difference between the lowest and the highest level of awareness is only 9%. Finally, and as was already clear from Table 2, awareness does hardly play a role among far right voters or among non-partisans.

How can we account for this asymmetrical polarization effect between the left and the moderate right? In our view, and in conformity with our hypothesis 2c, the asymmetry is mainly due to the one-sidedness of the information flow during the campaign. While in Switzerland the information virtually never favours the left, the imbalance is particularly lopsided in cases of popular initiatives launched (or supported) by the left (Kriesi 2005). The analysis of the share of newspaper ads published by the yes camp (left) and the no camp (right) during the month prior to the popular votes corroborates this claim: in the 17 popular initiatives under consideration, the right outspends the left on average by a ration of 4 to 1. As a result, the left has difficulties in reaching voters, who receive many more messages coming from the right and inducing them to vote no than messages inducing them to vote yes. In such circumstances, left voters find themselves in an 'easy learning situation' (Zaller 1992). They are faced with an intense flow of

communication from the right which is easy to receive even for the least aware among them. But while the latter tend to uncritically accept any messages they receive and hence to vote no the highly aware left voters resist to the dominant messages that they recognize as being in contradiction with their own predispositions. Hence the strong polarization effect among left voters.

The moderate right identifiers, by contrast, find themselves in a 'hard learning situation'. Given that the dominant message comes from the right, even the unaware voters from this camp can receive that message. In such a situation, only the most aware right voters have a chance to receive the weak, countervailing, message from the left, and to update their preferences accordingly. The weak differences in environmental support between unaware and aware voters from the moderate right is thus conform to our expectations. It confirms that this specific situation attenuates the impact of one's political awareness on the reception/acceptance mechanisms.

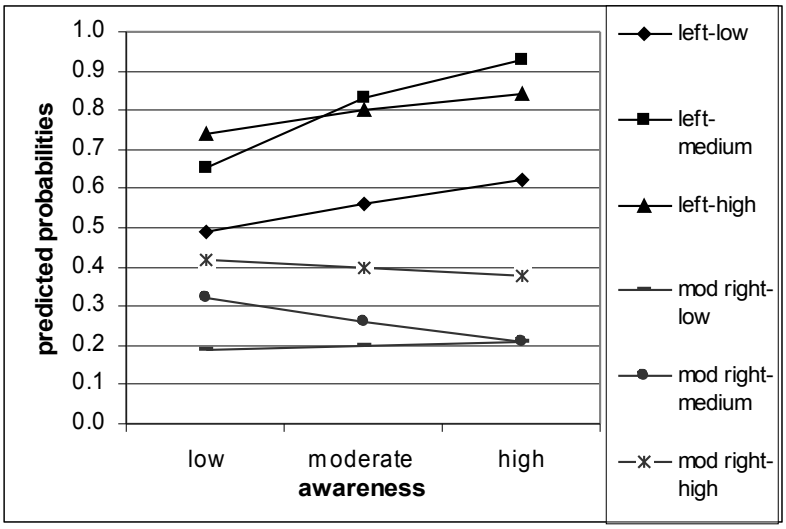

Figure 3: Predicted environmental support as a function of political predispositions and political awareness, in cases of high conflict among the elite, for different levels of campaign intensity (low, medium, high)

The inclusion of campaign intensity (Figure 3) does not modify the picture substantially, but tends to support the assumption 2d that the awareness-related effects are the strongest in cases

of moderately intense referendum campaigns. In particular, we see that the upward trend among left voters (easy learning) is stronger when the intensity of the referendum campaign is medium, than when it is low or high. Among moderate right voters, a moderately intense campaign leads to a more pronounced polarization effect. In other words, the polarization effect is the strongest when voters encounter neither too few nor too many political messages.

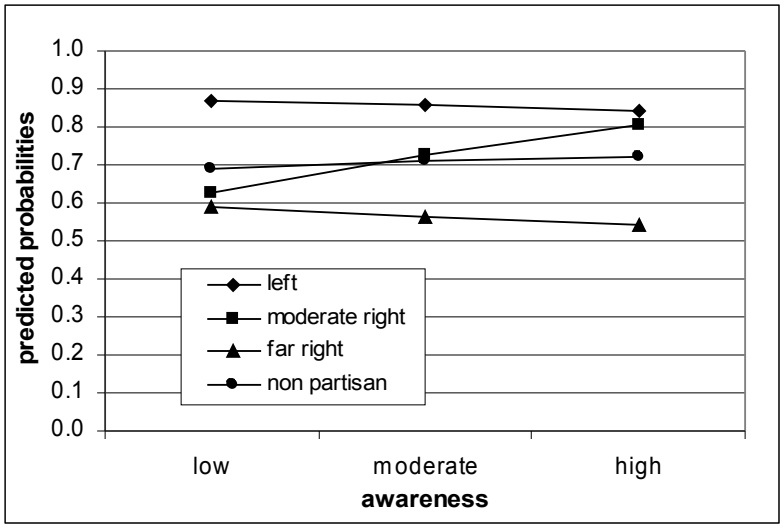

Figure 4: Predicted environmental support as a function of political predispositions and political awareness, in cases of low conflict among the elite

We now turn to the cases of low conflict among the elite (Figure 4). The results first confirm the importance of the normative determinants, with left voters substantially more favourable to environmental proposals than the other categories. Second, we see that the expected mainstream effect (hypothesis 2a) holds only among moderate right voters, the difference in environmental support increasing from 0.63 among the unaware to 0.81 among the highly aware. Among left voters, by contrast, such an upward trend is lacking. Contrarily to our expectations environmental support slightly decreases with political awareness. There are two reasons which may explain this result. The first regards again the characteristics of the political messages. As already mentioned, our cases of low conflict mix cases of true consensus among the elite with cases where one or even two parties of the right oppose the left. A look at the spending on news-

paper ads confirms that we are far from a consensus among the elite: for the 10 votes included in the 'low conflict' category the average share of ads surface supporting the corresponding environmental proposal is below 50%. In other words, voters were not facing unanimous messages, but fairly contrasting ones; while parties' recommendations overwhelmingly supported the environmental proposals the political messages delivered by the elite during the campaigns were more ambivalent. This ambivalence has different consequences among moderate right and left voters: among the former the political messages supporting the environment help the most aware voters to update their preferences and to vote in line with their party line, that is, in favour of the environmental proposals; left voters, by contrast, find themselves in a situation that comes close to a hard learning situation, with an unusual share of messages supporting the environment. Under these circumstances, only the most aware left voters have a chance to receive the no-message and to update their preferences accordingly.

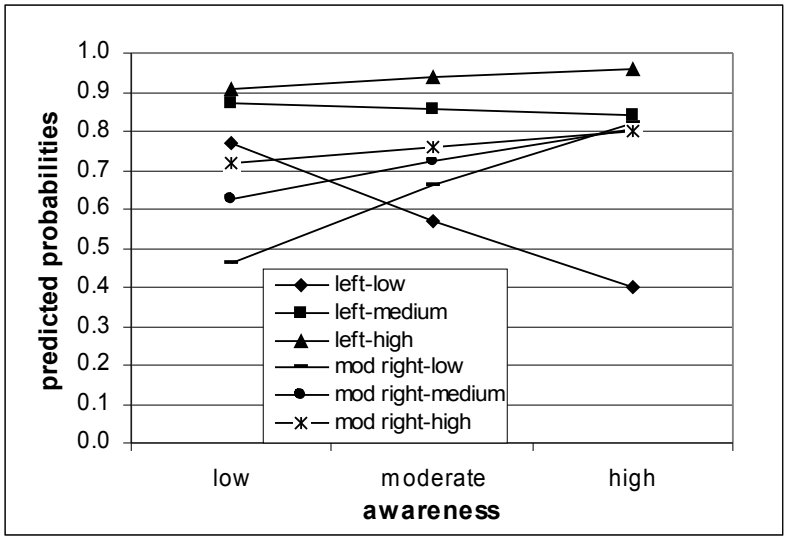

Figure 5: Predicted environmental support as a function of political predispositions and political awareness, in cases of low conflict among the elite, for different levels of campaign intensity (low, medium, high)

The second reason concerns the intensity of the referendum campaign (Figure 5), where we see that the impact of awareness on environmental support positive among moderate right

voters and negative among left voters is the highest when the intensity of the referendum campaign is minimal. In this situation, the difference across political awareness is considerable: It exceeds 35% between the lowest and the highest level of awareness among both the left and the moderate right voters. The scarcity of political messages presumably reinforces the mechanisms described above: among left voters the scarcity of political messages reinforces the effects resulting from the 'hard learning situation'; similarly, among moderate right voters, given the scarcity of messages only the most aware have a chance to receive the messages supporting the environment. On the other hand, Figure 5 does not confirm the hypothesis 2d that awareness-related effects are the strongest when the campaign is moderately intense.

Finally, we turn to our fourth hypothesis, which combines insights from the sociological and from the public choice approaches, by looking at the joint effects of individual political predispositions and cantonal characteristics (Figures 6-8).

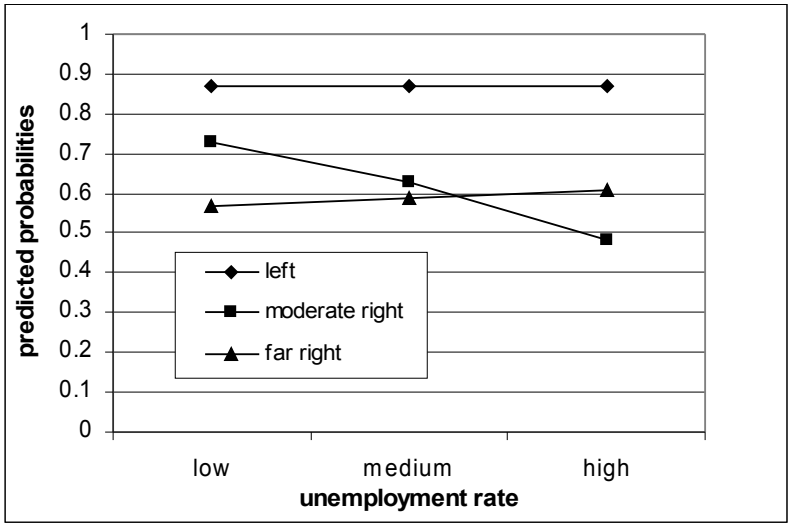

Figure 6: Predicted environmental support as a function of political predispositions and cantonal context: unemployment rate

Remember that a high percentage of unemployment (or industrial sector or car dependency) is expected to reinforce the effect of political predispositions among moderate right voters, whereas the cantonal mediating effect is likely to be attenuated among left voters, where it

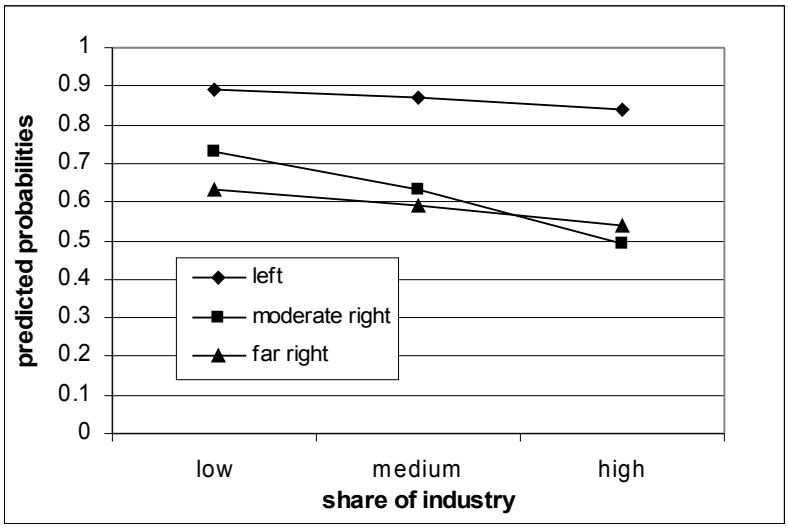

Figure 7: Predicted environmental support as a function of political predispositions and cantonal context: size of the industrial sector

operates at cross-purposes with political predispositions. These expectations are at least partly born out in our results: for two out of the three cantonal measures (unemployment rate and size of the industrial sector), environmental support dramatically decreases among moderate right voters as one passes from a canton with low unemployment (or with a weak industrial sector) to a canton with high unemployment (or with a strong industrial sector); the respective differences in support for the environment are 35% with respect to the unemployment rate and 24% with respect to the size of the industrial sector. In other words, among moderate right voters individuals' predispositions and cantonal economic constraints reinforce each other and jointly contribute to severely reducing environmental support.

By contrast, but still in line with hypothesis four, we see that environmental support hardly varies with the share of unemployment (or of industry) among left identifiers. This means that among this specific category of voters cantonal, utilitarian-like, constraints do not attenuate the effects of political predispositions. Or, to put it differently, this means that internalized predispositions outweigh utilitarian considerations.[21]

[21]One might be tempted to suspect that the strong effects of unemployment and industry among moderate right

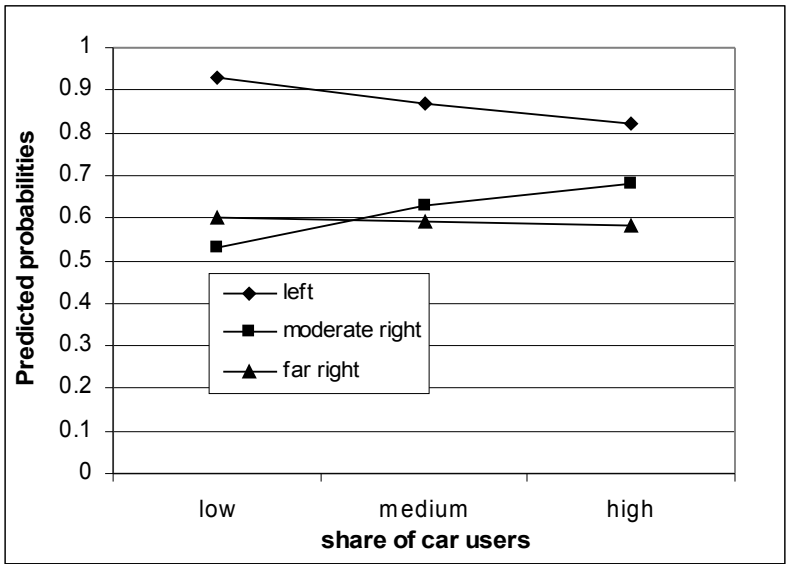

Figure 8: Predicted environmental support as a function of political predispositions and cantonal context: share of car users

On the other hand, the results regarding car dependency clearly contradict our hypothesis. First, environmental support significantly decreases among left voters as a function of the share of car users in their canton (the difference in support between the canton with the lowest share and the canton with the highest share of car users is 11%). In this specific case the cantonal context has a disruptive effect on left political predispositions. Secondly, and more intriguing, environmental support substantially increases as a function of car dependency among moderate right voters: the higher the share of car users in a canton, the higher the environmental support (with a 15% difference in support between the lowest and the highest category). How can we account for this unexpected result? One should first note that unlike the other two measures of the cantonal context, car dependency does not pertain to the economic situation of a given

voters is an artefact of the linguistic variable: unemployment and industry are higher in the French-speaking and Italian-speaking cantons that, in turn, are overall less favourable to environmental protection than the German-speaking ones. Two arguments contradict this view. First, the fact that the downward trend does not hold among left voters. Second, and more importantly, Table 2 reveals that the inclusion of the contextual variables indeed reduces the significance of the individual linguistic variable. However, these contextual variables mostly affect the intercept, but not the slope. In other words, these contextual variables affect the overall level of environmental support, but not the impact of the linguistic variable on the level of environmental support.

canton but to the transportation means employed by citizens to commute to work. In that sense, it is less a measure of economic constraints, than a measure of the habitual behaviour of Swiss citizens with respect to private and public transportation across cantons and across political camps. Elaborating our argument along this line, we calculate the correlation between the share of car owners (individual data) and the share of car users (aggregate data) among left voters and among right voters (N = 25 cantons). The coefficient turns out to be far higher among the former (0.82) than among the latter (0.39). Thus, the likelihood to own a car increases substantially as a function of the cantonal share of car users among left voters, whereas it does hardly depend on the cantonal context among right voters.

This result suggests that left voters living in cantons with a low share of car users display a higher readiness to bear the burden in terms of the freedom of movement of not having a car. Among them, general pro-environmental political predispositions and acceptance of the individual consequences of not owning a car reinforce each other. Among left voters living in cantons with a high share of car users, by contrast, utilitarian considerations (lower readiness to accept a reduction of their individual freedom) and pro-environmental predispositions operate at cross-purposes, which resulted in a lower level of environmental support in popular votes. Hence the slight downward trend of Figure 8.

The situation is completely different among moderate right voters: In all cantons almost all individuals from this political camp own a car. However, moderate right voters living in cantons with a high share of car users are especially likely to suffer from the related consequences (traffic jam, noise, pollution, etc). This may induce them to shift to more environmental-friendly attitudes. Moderate right voters living in cantons with a lower share of car users, by contrast, are less likely to be affected by such cross-pressures. Hence the upward curve of Figure 8.

5 Conclusion

In this paper we explored the relative weight of normative, cognitive and utilitarian determinants on environmental voting choices of Swiss citizens. To that end, we applied an innovative method combining individual survey data with contextual data from both the project-specific

and cantonal levels. The results do not demonstrate that a given set of determinants is substantially superior to the others. Rather, all three sets of determinants contribute in some way to the explanation of the voters' decision. First, normative considerations, which we measured through peoples political predispositions, have a strong impact on environmental support. However, this holds mostly for voters from both poles of the political spectrum, and especially for far right voters: their reluctance towards the protection of the environment proved to be immune against both individual and contextual variations; it did neither vary as a function of political awareness nor across projects or cantons. Left identifiers also display environmental attitudes that significantly differ from those of right voters and of voters without political predispositions. But of course, among them internalized normative preferences translate into strong pro-environmental attitudes. In addition, among left voters political predispositions turned out to operate both separately and in interaction with political awareness and/or with the context. Finally, among moderate right voters political predispositions have no distinct impact on environmental support. They only matter in interaction with awareness and/or with the context.

While our findings tend to support our first hypothesis that political predispositions have a distinct and direct impact on environmental support, they also provide some consistent support for the set of cognitive hypotheses (2a to 2d), inspired by Zaller's (1992) work on opinion formation. These hypotheses state that the effect of political predispositions is mediated by individuals' level of political awareness and that this joint effect, in turn, varies according to the characteristics of the campaign (direction and intensity). For both left and moderate right voters, the results display some visible polarization and mainstream effects as well as patterns corresponding closely to the hard and easy learning situations described by Zaller (see below). Finally, despite the fact that we could use only a crude measure of economic constraints (car ownership), our results bring some strong support for the public choice claim and for our hypothesis 3 that voters make their choice based on utilitarian, costs-benefits calculations. First, car owners are consistently less supportive of the environment than non car owners. Second, among the former and only among them there is a negative relationship between the level of a project's constraints and environmental support.

The latter result highlights the usefulness of the cross-level classification method. The twofold contextual clustering projects and cantons provides an important added value and leads to several interesting findings. While the result regarding car ownership and constraints is straightforward, the cross-level interactions regarding cognitive determinants are more complex but overall in line with our hypotheses. Thus, the joint impact of elite's conflict and campaign intensity helps to account for the asymmetrical polarization and mainstream effects. When the elite is divided and the campaign is moderately intense, environmental support displays the expected polarization effect, that is, environmental support increases as a function of political awareness among left voters and decreases among moderate right voters. The fact that this effect is more pronounced among left voters than among right voters is compatible with the one-sidedness of the communication flow disfavouring the environment. This leads to an easy learning situation among left voters and to a hard learning situation among right voters.

The effects are less clear-cut in cases of low conflict among the elite: the expected mainstream effect only holds for moderate right voters and mainly when the campaign is weakly intense. While the direction and intensity of the political messages may again help to account for this asymmetrical effect, the results regarding the cases of low conflict lack consistency and are, therefore, not conclusive. Similarly, the result that awareness-related effects are stronger when the campaign is weakly intense contradicts hypothesis 2d. Remember, however, that the low conflict category includes both truly consensual projects and projects that were contested by one or two governing parties.

Finally, the cross-level interactions between normative determinants (predispositions) at the individual level and utilitarian effects (cantonal characteristics) at the contextual level bring interesting findings. On the one hand, we found encouraging support for our hypothesis 4 that a high unemployment rate or a sizeable industrial sector reduces environmental support among moderate right voters and much less so among left voters. On the other hand, the result regarding the share of car users contradicts our theoretical expectations, but it helps us to refine our argument regarding the joint impact of utilitarian considerations and cantonal context: among left voters utilitarian considerations reinforce political predispositions in cantons where people

only weakly rely on cars to commute to work, but work at cross-purposes in cantons where people strongly rely on cars. Utilitarian considerations have a reverse effect among moderate right voters: they reinforce their sceptical attitudes towards environmental measures in cantons with a low share of car users, but tend to attenuate them in cantons with a high share of car users.

This result opens a promising avenue for further research. It encourages us to investigate additional cross-level interactions mixing normative, cognitive and utilitarian determinants at the individual and contextual levels.

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Appendix: Data description

Variable	Mean	Standard Error	Minimum	Maximum
Gender	0.55	0.004	0	1
Age (centered)	-0.0092	0.0083	-1.825	2.652
Linguistic region	0.24	0.004	0	1
Urbanity	0.64	0.004	0	1
Religion	0.42	0.004	0	1
Education	1.35	0.007	0	3
Car driver	0.82	0.003	0	1
Political predispositions	1.23	0.008	0	3
Political awareness	1.44	0.006	0	2
Intensity of messages (ln)	9.573	0.0096	6.08	11.69
High vs. low conflict	0.69	0.004	0	1
Material constraint	0.83	0.006	0	2
Car dependency	0.42	0.0006	0.169	0.562
Industrial workforce	0.27	0.0005	0.136	0.421
Unemployment	3.183	0.0089	1.23	5.47