

Are voters better informed when they have a larger say in politics?

Working Paper**Author(s):**

Benz, Matthias; Stutzer, Alois

Publication date:

2002

Permanent link:

<https://doi.org/10.3929/ethz-a-004375083>

Rights / license:

[In Copyright - Non-Commercial Use Permitted](#)

Originally published in:

Working paper / Institute for Empirical Research in Economics 119



Institute for Empirical Research in Economics
University of Zurich

Working Paper Series
ISSN 1424-0459

Working Paper No. 119

**Are Voters Better Informed When They Have a
Larger Say in Politics?**

Matthias Benz and Alois Stutzer

June 2002

Are Voters Better Informed When They Have a Larger Say in Politics?

by

Matthias Benz*

Alois Stutzer

University of Zurich

University of California at Berkeley

June 5, 2002

Abstract: Public choice theory takes citizens as rationally ignorant about political issues, because the costs of being informed greatly exceed the utility individuals derive from it. The costs of information (supply side) as well as the utility of information (demand side), however, can vary substantially depending on the political system under which citizens live. Using a large survey from Switzerland, we present empirical evidence that citizens are politically better informed when they have more extended participation rights in the political process. The results corroborate theoretical arguments and circumstantial evidence that voter information should be treated as endogenously determined by political institutions. (100 words)

Keywords: voter competence, direct democracy, information costs, rational ignorance

JEL-codes: D70, D80, H00

* Address for correspondence: Institute for Empirical Research in Economics, Blümlisalpstr. 10, 8006 Zürich, Switzerland; phone: +41-1-634 37 32; fax: +41-1-634 49 07; e-mail: matbenz@iew.unizh.ch, astutzer@iew.unizh.ch. We wish to thank Marianne Sulzer for excellent research assistance, Bruno S. Frey, Bruno Heyndels, Gebhard Kirchgässner, Reiner Eichenberger, and various participants at the European Public Choice Meeting for helpful comments and the Swiss National Science Foundation for financial support.

Are Voters Better Informed When They Have a Larger Say in Politics?

1 Introduction

Democracy rests on a dilemma: On the one hand, as Downs (1957) noted, voters have low incentives to inform themselves on political issues. As an individual vote is most unlikely to change the overall outcome at the ballots, voters will not only tend to abstain from an election or a vote, but also remain 'rationally ignorant' about the alternatives to decide on. On the other hand, it is widely believed that well informed citizens are an essential prerequisite for a well functioning and stable democracy. If citizens do not have sufficient information about the policies or governments they vote for, they may be disappointed by the actual consequences of their decisions, which in turn can undermine the acceptance and legitimacy of democracy as a political system.

Public choice scholars have indicated several ways out of this dilemma. It has been argued that in reality, a variety of institutions exist that lower citizens' information costs. Perhaps most importantly, voters can use party ideologies to proxy for the 'true' consequences of their vote. But they also use other information 'shortcuts'. Citizens pay attention to the past performance of a government (for a survey on vote and popularity functions, see Nannestad and Paldam 1994); they judge the reputation of candidates (Lupia and McCubbins 1998, Popkin 1991); they evaluate voting recommendations by interest groups (Schneider 1985, Lupia 1994, Bowler and Donovan 1998, Christin et al. 2002); or they collect political information as a by-product of mass media consumption. In one way or another, all these approaches analyze how information costs are reduced *within* a given political system.

In this paper, we attempt to analyze the relationship between information and democracy from a somewhat different angle. We empirically test whether the *level of voter information itself is dependent on the political system* under which citizens live. The idea that voter information should be treated as endogenously determined by political institutions has been advanced by several authors (e.g. Cronin 1989, Bohnet and Frey 1994, Frey 1994 and Kirchgässner, Feld and Savioz 1999).¹ They theoretically argue that a political system that gives citizens more political participation possibilities will change the demand for political information as well as

¹ Advocates of direct or participatory democracy have argued for years that more 'self-governance' would increase citizens' competence and interest in communal life (e.g. Barber 1984, Mansbridge 1983 and Pateman 1970).

the supply of it. An illustrative example is the introduction of the Maastricht Treaty in various European countries. In the countries where citizens had the right to vote on it (e.g. Denmark), politicians had to engage much more in explaining the Treaty to the citizens than in countries where no referendum took place (e.g. Germany). For the citizens, on the other hand, the incentives to be informed were greater, as the intense discussions before the referendum transformed the fact of ‘having a reasoned opinion’ partly into a private good. As a consequence, relatively high information levels on the content of the Treaty were observed among Danish citizens. This and other examples offer suggestive evidence that voters are better informed when they have a larger say in the political process; however, there is a lack of more systematic evidence in the literature. In this paper, we conduct an empirical investigation in an attempt to partly fill this gap.

We focus on voter information in Switzerland. We exploit two sources that allow us to study how different political institutions affect voter information: First, data on voter information is obtained from a large survey conducted in Switzerland after the national elections in 1996. The survey asked a representative sample of approximately 7500 citizens questions about three fundamental characteristics of the Swiss political system. For each of these questions, answers can clearly be determined to be ‘right’ or ‘wrong’. We use the proportion of right answers an individual states as a proxy measure for an individual’s level of political information more generally. The second data source is based on the fact that the extent of citizens’ political participation rights differs substantially among the 26 Swiss cantons. This institutional variation existing within Switzerland is used to explain the differences in citizens’ information levels revealed by the data. The results indicate that citizens are better informed when they have more political participation rights.

We also investigate whether political participation possibilities affect discussion intensity, which in the literature is seen as an important transmission channel that leads to higher voter information.² We find that in more direct democratic jurisdictions citizens indeed seem to discuss more often about political issues.

The remainder of the paper is organized as follows. Section 2 discusses the theoretical arguments on how voter information is shaped by political institutions, especially the political participation rights of the citizens. Section 3 presents the data. Section 4 contains the empirical results and a discussion of their robustness. Concluding remarks are offered in section 5.

2 Voter Information and Political Institutions

Political institutions influence voter information in a variety of ways. In representative democracies, the institutional structures usually favor the emergence of a small number of parties (often two). One essential role of political parties can be seen in reducing the voters' information costs (Downs 1957, 93 ff.). By having an ideological position which voters can focus on, parties serve to reduce complexity: voters can choose between a few parties and need not be well informed about the whole range of policies the parties propose to pursue. In representative democracies, a variety of other information saving mechanisms exist, as already mentioned in the introduction. Representative democracies, however, are just one form of political system in the possible range from autocracies to fully direct democracies. An essential feature of political institutions is to what degree they allow citizens to directly participate in the political process, i.e. whether citizens are just allowed to vote in elections (if at all) or whether they also have the possibility to vote on particular issues. This paper focuses on a comparison of political systems that grant citizens relatively few direct participation rights (representative democracies) with political systems that give citizens more direct participation possibilities (direct democracies).

From a theoretical point of view, voter information will be of different size and quality in more direct democracies because of changes in the supply of political information and the demand for it (see e.g. Eichenberger 1999, Frey 1994, Kirchgässner, Feld and Savioz 1999). On the supply side, the possibility for voters to decide on single issues via initiatives and referenda provides incentives for potential information suppliers like the government, political parties, and especially interest groups. If they want to win a referendum, they are forced to inform the public about the reasons why they are for or against a particular policy. Thereby, it is often not enough to emphasize an ideological position, but specific information on the issue at stake has to be provided, and the arguments and information of the opponents have to be taken up and discussed. This results in a discussion process, which frequently involves politicians and citizens, usually much more often than every four years when elections take place. The political information supplied in more direct democracies will not only be quantitatively larger, but also qualitatively different. Compared to elections, referenda are less personalized, which favors the supply of issue related information. Moreover, it restricts the possibility of politicians to hide behind an image or a reputation which in representative democracies might secure them reelection. In a referendum campaign, politicians are

² This analysis might inform proponents of deliberative democracy (e.g. Dryzek 1990, Fishkin 1991) who seek an institutional environment for an open political discourse.

repeatedly forced to explain their arguments for or against a concrete policy measure and cannot focus on one or two core aspects of their party program (which are often rather unspecific, like 'improving the health care system').

On the demand side, citizens ask for more political information mainly because they frequently are involved in the (often intense) discussions taking place before a referendum. Although being informed remains largely a public good also in more direct democracies, the discussion process nevertheless creates some substantial private incentives that increase the demand for information. In discussions, "having an opinion" is partly transformed into a private good, for two reasons. First, individuals consider it as a value per se to have an opinion (Hirschman 1989). Second, not having a certain level of information excludes an individual from discussions, or is viewed negatively by others. This is especially the case when important political issues are to be decided and thus discussions are intense. An example is the referendum on whether Switzerland should join the European Economic Area in 1992. In the weeks preceding the vote, it was almost impossible not to get involved in the fierce discussions on the subject, and consequently, the incentives to be informed were high. Evidence shows that Swiss citizens were actually better informed about the EEA and the EU after the referendum than citizens of neighboring countries already belonging to the EU (Eurobarometer Schweiz 1991, cit. in Bohnet and Frey 1994: 345).

The theoretical arguments concerning the supply and demand of political information suggest that voters will be politically better informed when they have larger direct participation possibilities in the political process. This is, however, not to say that voters are always perfectly informed. One of the core arguments against direct democracy has always been that voters are not informed *well enough* to make decisions on single issues. The argument is still debated. There exists a number of well founded skepticisms, but also a variety of good arguments that even relatively low levels of voter information are sufficient for direct democratic decisions (see e.g. Lupia 2001 for a survey of the arguments). In any case, this paper is not concerned about the *absolute* level of voter competence and whether it is 'high enough'. Rather, a comparative institutional view is applied. In the following empirical section, we attempt to test the hypothesis that voters are *relatively* better informed when they live in more direct democracies.

3 Data

The empirical analysis is based on a survey conducted by political scientists after the general national elections in Switzerland in 1995 ('SELECTS 1996', Delagrande et al. 1995). The database is well suited for our purposes because it allows assessing voters' information about political issues. The survey includes three questions about fundamental characteristics of the Swiss political system; such questions are rarely asked in surveys because of their examinatory character. The survey also contains an unusually large number of observations (roughly 7,500) and information on important control variables.

Respondents had to answer the following three questions: (1) "How many parties are in the Federal Council?" (2) "Who was the president of the Federal Council in 1995?" And (3) "How many signatures are required for an initiative?" Responses to these questions can clearly be assigned to the three categories 'right answer', 'wrong answer' and 'refused to answer'.³

Are these questions well suited to assess voter information? Clearly, the answers do not directly measure the political information citizens have, for example, on a specific referendum issue. One might even argue that this kind of information is simply not important, because it is concerned with factual knowledge that might not help to make more competent direct democratic decisions. We agree that the answers to these questions *per se* are rather unimportant. Still, they can be seen as good proxy measures for the 'true' political information levels of citizens. All the questions relate to basic characteristics of the Swiss political system. This is an advantage vis-à-vis knowledge on a particular issue, because the consequences of specific referenda often affect citizens and cantons differently, which biases information supply and demand. Moreover, for the questions to be good proxy measures, the only requirement is that they are positively correlated with the 'true' political information level. This is a rather weak, and in our view plausible, assumption. A look at the descriptive statistics shows that there is enough variation for such a positive correlation to be possible: by far not every citizen knows all the answers to the questions (the average score of correct answers is 1.41), and there is substantial variation (std. dev. 1.03). Only about 18 % of the respondents answer all the questions correctly; 29 % have two correct answers, 29 % one correct answer, and 24 % do not give any correct answer or do not answer any questions at all.

³ The right answers were: there are four parties in the Federal Council; the president of the Federal Council in 1995 was Kaspar Villiger; and the number of signatures required for an initiative is 100,000.

The answers to the three questions are used to construct an index of political information. The index counts every correct answer as one index point, i.e. the maximum value of the index is three (if all questions were answered correctly) and the minimum value is zero. Importantly, every “refused answer” is counted as a “wrong answer”. This procedure is chosen because a large number of respondents (38 %) refuses to answer at least one of the three questions. Not answering a question can be seen as a relatively cheap way of avoiding a wrong answer. Thus, it seems unproblematic to combine ‘refused answers’ and ‘wrong answers’ into a single category.⁴ The resulting index on political information serves as the dependent variable.

The main factor that is put forward to explain citizens’ information levels are institutions of direct democracy. In Switzerland, direct democratic institutions exist on the federal as well as on the state level (the 26 Swiss cantons). As the federal institutions apply equally to all Swiss citizens, an empirical analysis cannot identify the *level effect* that these federal institutions of direct democracy have on the citizens’ information. Instead, the empirical analysis has to be concerned with the variation around the average information level (that is formed by Swiss federal institutions). We therefore use the institutional variation across the 26 Swiss cantons as the main explanatory variable. This will provide a lower bound for the effects of institutions on voter information, because only cantonal institutional variation is exploited. However, the extent of political participation possibilities differs substantially for citizens living in different cantons. Some cantons can be characterized as more representative democratic, whereas others are more direct democratic. We use an index developed by Stutzer (1999) that measures the degree of political participation possibilities in a canton on a scale between one and six.⁵ The highest value of the democracy index is observed for the canton Basle Land (5.69), and the lowest direct participation rights are to be found in canton Geneva (1.75). For all cantons, the index averages 4.22 index points (std. dev. 1.24). The index has been applied in a series of other papers, e.g. Frey and Stutzer (2000), Küttel and Kugler (2001), Schaltegger and Feld (2001). Here, the degree of direct political participation possibilities is used to explain the differences in information levels observed among Swiss citizens.

⁴ However, the results are not sensitive to this choice and remain qualitatively similar when only the questions answered are included in the index (but, of course, information on 38 % of all the observations is not taken into account); see section 4.2.

⁵ In cantons, the major direct democratic instruments are the popular initiatives to change the canton's constitution or laws, a compulsory and optional referendum to prevent new laws, or the changing of existing laws, and an optional financial referendum to prevent new state expenditure. However, citizens’ access to these instruments differs substantially from canton to canton. Thus, for example, the number of signatures required to launch an initiative or an optional referendum, or the time span within which the signatures have to be collected, varies. The referendum on public expenditures may be launched at different levels of additional outlays.

The survey provides information on other characteristics that political economists have identified as important determinants of voter information. Individuals state their educational level (8 categories) and their gross household income (11 categories); for both variables, voter information is likely to increase. Moreover, information can be expected to be less costly to individuals when they are members of a political party, or when they are married or living with a partner (for theoretical arguments supporting these predictions see Matsusaka 1995).⁶ There is no clear prediction for naturalized citizens versus native citizens. While the latter have grown up with political rights, naturalized citizens learn a lot about political institutions during the naturalization process. Apart from these variables, the survey includes information on age, gender, and place of residence of individuals (city, agglomeration or countryside). We complement the data set with information on the population size of the cantons individuals live in. The effects of population size are not unambiguous from a theoretical viewpoint: information might be higher in small cantons, because social interaction is more intense. On the other hand, individuals in large cantons might benefit from economies of scale in information production. As socio-demographic characteristics and other control variables are not available for all the individuals interviewed, the final sample for the empirical test of institutional effects on voter information consists of 6,447 usable observations.

In a second step, we also assess whether differences in participation possibilities affect the intensity of political discussions among citizens. Here, the dependent variable consists of the individual answers to the question: “Did you discuss with other people which party or candidates to vote for?” Answers are coded ‘yes’ or ‘no’. However, in this case, only individuals who actually voted in the general election were asked the question. This reduces the sample size to 4016 observations. Note also that the question relates to discussions about the general election, and not about an initiative or a referendum. Nevertheless, we consider this dependent variable as a sufficient proxy measure to present preliminary evidence on discussion intensity, which in the literature is seen as the main transmission channel that leads to higher voter information in more direct democracies.

4 Empirical Analysis

4.1. Institutional Effects on Voter Information

To get an intuition of the relationship between political participation possibilities and voter information, results are first presented graphically. Figure 1 plots the average information

⁶ A strict empirical test is hampered by potentially strong effects of selection.

level of citizens living in a canton against the index of political participation possibilities. As can be seen, the raw data clearly indicate a positive correlation.

[Figure 1 about here]

This raw relationship could, of course, be due to third factors that are correlated both with institutionalized participation rights and with voter information. For example, it might be that voter information is higher in small cantons, and small cantons are at the same time more direct democratic. In a multiple regression analysis, such alternative explanations can be controlled for. In table 1, we present the main results from a multiple regression analysis that includes all the control variables presented in the last section. A weighted ordered probit model is used in order to exploit the ranking information contained in the scaled dependent variable. The weighting variable that is applied allows representative results on the individual level for Switzerland. Moreover, the estimated standard errors are adjusted to clustering of observations at the cantonal level. This is necessary because individual data are combined with data that are aggregated for the 26 cantons.⁷

[Table 1 about here]

The estimation results in table 1 show statistically significant effects of several demographic and socio-economic factors and, most importantly, the institutional factor on voter information. The results can be interpreted as follows: a positive coefficient indicates that the probability of being politically better informed increases, compared to any given level. The marginal effect indicates the change in the probability that an individual is better informed by one index point when the independent variable increases by one unit. Alternatively, it can be interpreted as an increase in the share of persons that answer a given number of questions correctly.⁸ In the case of dummy variables, the marginal effect is evaluated with respect to the

⁷ Ignoring the clustering in the estimation model is likely to produce downward biased standard errors, due to the effects of aggregate variables on individual data (Moulton 1990). To get unbiased standard errors for the aggregate variable ‘extent of political participation rights’, the cantons are used as sampling units.

⁸ Alternatively, the marginal effect indicates the change of the probability belonging to a particular information level when the independent variable increases by one unit.

reference group. The marginal effects provided in table 1 indicate the average probability change over all four scores of the voter information index.

The estimation results show that institutional differences affect voter information. Citizens are politically better informed in cantons with more extended direct democratic participation rights, *ceteris paribus*. An increase in the index of direct democratic rights by one point raises the probability of a person being better informed by one index point by 1.9 percentage points. This effect is in itself sizeable:

(i) When the full range of the institutional variable is considered, i.e. when individuals in canton Basle Land (with the highest democracy index of 5.69) are compared to citizens in canton Geneva (with the lowest direct participation rights of 1.75), the marginal effect of political participation rights on voter information amounts to 7.5 percentage points. The size is comparable to the effect of, for instance, having attended a diploma school instead of having completed only compulsory education, of being member of a political party, or of having a household income of 9,000 Sfr. instead of 5,000 Sfr.

(ii) The improvement affects everybody, i.e. the institutional factor is important in an aggregate sense. In comparison, being better educated ‘only’ raises the information levels of those who have actually got a better education.

Table 1 furthermore indicates that the results for the other variables included are in line with theoretical predictions. The overall regression thus seems reliable, and the dependent variable obviously captures more than just random differences in citizens’ information levels. For education and income, we both find positive and statistically significant effects. Voter information is more or less monotonically increasing in education, and the size of the marginal effects confirms that education is indeed an important predictor of information levels. The results for income are similar, although the marginal effects are smaller and information seems not to monotonically increase in income. An explanation for this might be that education and income are highly correlated. Voter information is also found to be significantly higher when an individual is a member of a political party, whereby causality for this partial correlation can go in both directions. Furthermore, it is found that individuals who are born as Swiss citizens are better informed than those who are naturalized later in life. We get somewhat ambiguous effects for the marital status variables: singles are relatively best informed, although they cannot profit from potential economies of scale in information production that emerge from living with a partner or being married. On the other hand, married people, and those living with a partner, are better informed than divorced or widowed

individuals. Voter information, furthermore, is found to increase in age and to be higher for men and for people living in cities. The effect for population size cannot easily be interpreted because the relation with voter information seems to be u-shaped, with a minimum around a population of 350,000. However, the linear term of population size is not significant. An alternative specification (not presented) that only includes the linear term yields statistically significant positive effects for population size. At the upper end of the scale, population size seems to have positive effects on voter information, consistent with an argument of economies of scale in information production.

4.2. Sensitivity Analysis

In the following, various robustness checks are conducted to analyze the sensitivity of the findings. The results are summarized in table 2. We report how the coefficient on the institutional variable is changed when alternative specifications are estimated or when sample choice is different.

First, we analyze citizens' information for every question that is included in the index separately. The results are presented in the specifications (2) to (4) in Table 2. The reported coefficients indicate that the institutional effect is not driven by a single question. For two of the three questions, results are positive and significant. For the question on signature requirements for initiatives, however, there is no relationship if only this single question is considered.

Second, the basic specification (as presented in table 1) is augmented with two dummy variables on language group membership, one for French speaking and one for Italian speaking citizens. Language group effects are potentially important for two reasons. There might be cultural differences between the language groups that influence information demand and supply in the French speaking and Italian speaking parts of Switzerland. Perhaps more importantly, citizens in the French speaking and Italian speaking regions often claim that they are overruled by the German speaking majority in votes on referenda and initiatives. Then, it might be natural that information levels for these language groups are lower simply because they perceive being informed as not worthwhile. Language group effects can influence the estimates on the institutional variable, because the cantons where French and Italian speaking citizens live are, at the same time, less direct democratic than the German speaking cantons. Including language group dummies in specification (5) indeed reduces the coefficient of political participation possibilities on voter information by half (it remains statistically

significant, however). French speaking and especially Italian speaking citizens are substantially less informed on political issues. This difference can be due to the causes mentioned above, but it might as well be a result of these citizens actually having lower political participation rights. The issue of which explanation is correct may not be disentangled efficiently in the econometric analysis. Note, however, that the institutional variation among German and French speaking cantons is sufficient to estimate significant positive effects of political participation possibilities on voter information.

Third, we exclude all the individuals from the sample who refused to answer at least one of the three questions on voter information. Thus, only individuals are considered who answered all questions, be it correctly or incorrectly. A first specification without language group effects produces results similar to those for the larger sample. The coefficient on the institutional variable is of the same magnitude and statistical significance. However, it is reduced somewhat further (to one fourth of the original effect) when language group effects are included in a second specification, and statistical significance of the effect falls to the 80% level.

[Table 2 about here]

Fourth, we replicate the results with a similar survey conducted after the general elections in 2000 (“Selects 2000”). The survey in 2000 asked the same questions on voter information as the 1996 survey, which allows for the construction of an identical index on voter information, and it contains largely the same control variables. The regression results indicate that the institutional effect on voter information is very sensitive to this replication. The coefficient on political participation possibilities is slightly negative, although not statistically significant. It is difficult to explain this result, especially as the findings for the 1996 survey seem to be very robust. One reason for the differences might lie in the different survey designs. In 2000, substantially less citizens were interviewed (in total 2,230, with a substantial number of missing observations). Another explanation is that for one of the questions (the one on the president of the Federal Council), correct answers are unusually high in 2000 (84% compared to 75% in 1996). This can be explained by the exceptional popularity of the then president, Adolf Ogi. Indeed, a look at the single questions reveals that there is a strong negative effect between direct democracy and the knowledge of the president of the Federal Council in 2000. For the other questions on the number of parties in the Federal Council and the number of

signatures required for an initiative, the regressions reveal positive relationships. Overall, these countervailing effects cancel out, resulting in essentially a zero relationship between political participation possibilities and overall voter information. This leads us to conclude that our main results for the 1996 sample can be considered as sufficiently reliable. Nevertheless, further research using different surveys on voter information and data from other countries is needed to provide a broader and more precise picture of institutional effects on voter information.

4.3. Institutional Effects on Discussion Intensity

One transmission channel that leads from extended political participation rights to higher voter information is the discussion process. Private and public political discussion affects voter information levels mainly on the demand side: when citizens are more frequently involved in political discussions, “having an opinion” and being informed is transformed partly into a private good. In this subsection, it is empirically investigated whether political participation possibilities indeed influence discussion intensity among citizens.

Table 3 presents results from a weighted probit regression that links discussion intensity to the same explanatory variables as already included in table 1. Discussion intensity is measured as the individual answers to the question: “Did you discuss with other people which party or candidates to vote for?”. The answers are coded “yes” or “no”, which results in a dichotomous dependent variable. Regressions again adjust for clustering of observations at the cantonal level.

[Table 3 about here]

Table 3 confirms that the extent of political participation possibilities affects discussion intensity. Citizens are more involved in political discussions in cantons with more extended direct democratic participation rights, *ceteris paribus*. An increase in the index of direct democratic rights by one point raises the proportion of persons having discussed the election with other people by 5.3 percentage points. The magnitude of the effect is sizeable, especially when the full range of institutional variation within Switzerland is taken into account. Citizens living in the most direct democratic canton are 21 percentage points more likely to discuss with fellow citizens than people with the lowest political participation possibilities. The effect is comparable to those of substantial increases in education and income.

The control variables in general have plausible signs and exert significant influences on discussion intensity. Education and income are important predictors of discussion intensity, as is being born as a Swiss citizen. For other control variables, the results are more ambiguous. Marital status, population size and place of residence seem not to affect discussion intensity systematically, although they somewhat affected voters' information level. For gender being male and age, negative correlations are estimated. Men thus seem to discuss political issues less with others, but nevertheless are better informed voters.

4.4. Sensitivity Analysis

We again conduct robustness checks to analyze the sensitivity of the findings on discussion intensity.

First, the basic specification (as presented in table 3) is augmented with two dummy variables on language group membership, one for French speaking and one for Italian speaking citizens. The reasons for this are largely the same as already discussed above: cultural differences between the language groups might influence discussion intensity in the French and Italian parts of Switzerland, or it might be lower because these citizens feel they are often overruled by the German speaking majority and are thus less interested in national politics. The estimated effect for the institutional variable is indeed sensitive to the inclusion of language group differences. The coefficient falls to 0.01 ($t=0.299$), whereas French speaking (coeff. $=-0.518$, $t=-4.189$) and Italian speaking citizens (coeff. $=-0.236$, $t=-4.966$) discuss political issues substantially less with their fellow citizens. Due to the low variation within the French speaking cantons in the extent of political participation rights, it is again not possible to empirically distinguish in conclusion whether this is the case because these citizens actually have lower political participation rights, or whether this just reflects cultural differences. Both explanations might be correct. We have to conclude that the institutional effect on discussion intensity is not reliable enough to make clear statements. As the question on discussion intensity was not asked in the 2000 survey, we cannot replicate the findings using the survey conducted after the 2000 elections.

5 Conclusions

This paper empirically tests the theoretically well founded notion that voters are better informed when they have a larger say in the political process. Using survey data from Switzerland, we find supportive evidence for this prediction. Voter information is to a

substantial degree endogenous to the political institutions under which citizens live. Larger direct participation possibilities result in higher information levels. Comparing the size of the estimated effects, we find that the influence of more political participation possibilities is substantial: the range is comparable to an increase in education from just compulsory education to having attended a diploma school, or an increase in household income from 5000 SFr. to 9000 SFr. Apart from income and education, the regressions include several other control variables that political economists have identified as important determinants of voter information, e.g. party membership or marriage. For all these control variables, we find significant effects with the expected signs, indicating that our dependent variable captures more than just random differences in voter information. Various sensitivity checks support the general result. However, the institutional effect of extended participation possibilities on voter information is found to be sensitive to replication with a similar, although much smaller, survey conducted in 2000. An empirical explanation for the difference in results is provided. Nevertheless, we believe that our study presents for the first time systematic empirical evidence that voters are better informed when they have a larger say in politics. The findings complement the theoretical arguments and the circumstantial evidence previously advanced in the literature.

The findings have important policy consequences. If voter information is to be increased (a claim that is regularly heard), governments and policy advisors often focus on increasing the general education of the population, or they start information campaigns on specific issues they themselves find important. We empirically find that raising education, for instance, indeed has the desired effects. However, investing in education will only raise information levels of those who actually get a better education, and can be considered as relatively costly. Information campaigns often only provide superficial information and consist of one-way communication, thus hardly leading to long term increases in voter information levels. Our results point to an institutional alternative. Higher voter information might be achieved by giving citizens more direct participation possibilities. Extended referendum and initiative rights might achieve the same goals at lower costs. Moreover, an institutional change affects all the citizens, thus raising information levels on average, and not just for subgroups involved in information increasing programs.

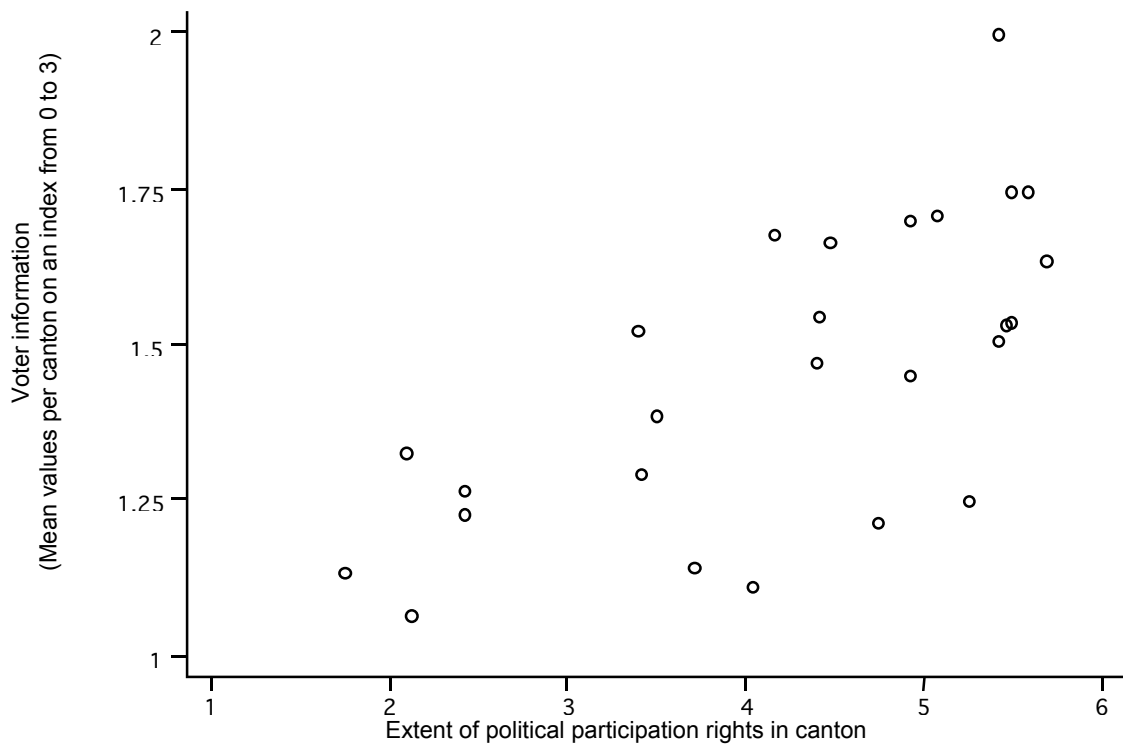
We also investigate whether political discussion intensity among citizens should be treated as endogenously determined by political institutions. Private and public discussions about political issues are presumed to be a major transmission mechanism for the effect of direct

democratic institutions on voter information. First findings seem to support the hypothesis. However, the empirical results are sensitive to the inclusion of differences between the three large Swiss language regions over and above the institutional variation. While further research is needed, current evidence suggests that a promising remedy for an often claimed voter alienation and apathy in politics could be seen in giving citizens more political participation rights.

References

- Barber, Benjamin R. (1984). *Strong Democracy: Participatory Politics for a New Age*. Berkeley: University of California Press.
- Bohnet, Iris and Bruno S. Frey (1994). Direct-Democratic Rules: The Role of Discussion. *Kyklos* 47(3): 341-354.
- Bowler, Shaun and Todd Donovan (1998). *Demanding Choices: Opinion, Voting, and Direct Democracy*. Ann Arbor: University of Michigan Press.
- Christin, Thomas, Simon Hug and Pascal Sciarini (2002). Interests and Information in Referendum Voting: An Analysis of Swiss Voters. Forthcoming in *European Journal of Political Research*.
- Cronin, Thomas E. (1989). *Direct Democracy. The Politics of Initiative, Referendum and Recall*. Cambridge, MA: Harvard University Press.
- Delgrande, Marina , Peter Farago, Ulrich Klöti, Hanspeter Kriesi, Wolf Linder, Ruth Nabholz, Daniel Schloeth, Boris Wernli (1995). *Eidgenössische Wahlen 1995: Befragung der Wählerinnen und Wähler nach den Wahlen –1995*. Université de Genève.
- Downs, Anthony (1957). *An Economic Theory of Democracy*. New York: Harper and Row.
- Dryzek, John S. (1990). *Discursive Democracy: Politics, Policy and Political Science*. Cambridge: Cambridge University Press.
- Eichenberger, Reiner (1999). Mit direkter Demokratie zu besserer Wirtschafts- und Finanzpolitik: Theorie und Empirie. In: Hans Herbert von Arnim (ed.) *Adäquate Institutionen: Voraussetzung für "gute" und bürgernahe Politik?* Schriftenreihe der Hochschule Speyer. Berlin: Duncker & Humblot.
- Fishkin, James S. (1991). *Democracy and Deliberation: New Directions for Democratic Reform*. New Haven: Yale University Press.
- Frey, Bruno S. (1994). Direct Democracy: Politico-Economic Lessons from Swiss Experience. *American Economic Review* 84(2): 338-348.
- Frey, Bruno S. and Alois Stutzer (2000). Happiness, Economy and Institutions. *Economic Journal* 110 (466): 918-938.
- Hirschman, Albert O. (1989). Having Opinions - One of the Elements of Well-Being? *American Economic Review* 79(2): 75-79.
- Kirchgässner, Gebhard, Lars Feld and Marcel R. Savioz (1999). *Die direkte Demokratie: Modern, erfolgreich, entwicklungs- und exportfähig*. Basel et al.: Helbing and Lichtenhahn/ Vahlen/ Beck.
- Küttel, Dominique and Peter Kugler (2001). Explaining Yield Spreads of Swiss Canton Bonds: An Empirical Investigation. University of Basel, Working Paper.
- Lupia, Arthur (1994). Shortcuts versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections. *American Political Science Review* 88: 63-76.
- Lupia, Arthur (2001). What We Should Know: Can Ordinary Citizens Make Extraordinary Choices? Forthcoming in P. Martin and R. Nadeau (eds). *Making Big Choices: Individual Opinion Formation and Societal Choice*.
- Lupia, Athur and Mathew McCubbins (1998). *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* New York: Cambridge University Press.

- Mansbridge, Jane (1983). *Beyond Adversary Democracy*. Chicago: University of Chicago Press.
- Matusaka, John G. (1995). Explaining Voter Turnout Patterns: An Information Theory. *Public Choice* 84: 91-117.
- Moulton, Brent R. (1990). An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. *Review of Economics and Statistics* 72(2): 334-338.
- Nannestad, Peter and Martin Paldam (1994). The VP-function: A Survey of the Literature on Vote and Popularity Functions after 25 Years. *Public Choice* 79(3-4): 213-245.
- Pateman, Carol (1970). *Participation and Democratic Theory*. Cambridge: Cambridge University Press.
- Popkin, Samuel L. (1991). *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. Chicago: University of Chicago Press.
- Schaltegger, Christoph and Lars Feld (2001). On Government Centralization and Budget Referendums: Evidence from Switzerland. University of St. Gallen, Working Paper.
- Schneider, Friedrich (1985). *Der Einfluss der Interessengruppen auf die Wirtschaftspolitik: Eine empirische Untersuchung für die Schweiz*. Bern: Haupt.
- Stutzer, Alois (1999). Demokratieindizes für die Kantone der Schweiz. Working Paper No. 23. Institute for Empirical Research in Economics. University of Zurich.



Data source: Selects 1996.

Figure 1: Correlation between Voter Information and Political Participation Rights

Table 1: Political Participation Possibilities and Voter Information

Dependent variable: voter information index

Variable	Weighted ordered probit		
	Coefficient	z-value	Marginal effect (average for all scores)
<i>(1) Institutional factor</i>			
Extent of political participation rights	0.096**	5.065	0.019
<i>(2) Demographic factors</i>			
Age	0.012(*)	1.970	0.002
Age squared	-2.210 e ⁻⁶	-0.034	-0.000
Female		Reference group	
Male	0.584**	15.295	0.115
Naturalized citizen		Reference group	
Native Swiss citizen	0.361**	4.061	0.070
Compulsory education		Reference group	
Basic vocational training	0.082	0.685	0.016
Vocational training	0.175*	2.638	0.034
Diploma school	0.309**	3.356	0.061
High school	0.550**	5.443	0.107
Higher vocational education	0.526**	7.420	0.102
Higher vocational college	0.487**	4.945	0.095
University degree	0.948**	10.452	0.173
Married		Reference group	
Living with partner	-0.031	-0.324	-0.006
Single	0.141*	2.226	0.028
Divorced	-0.186*	-2.415	-0.036
Widowed	-0.062	-0.752	-0.012
<i>(3) Socio-economic factors</i>			
Household income below Sfr. 2,000		Reference group	
Household income Sfr. 2,000-3,000	-0.026	-0.255	0.005
Household income Sfr. 3,001-4,000	0.124	1.296	0.024
Household income Sfr. 4,001-5,000	0.022	0.241	0.004
Household income Sfr. 5,001-6,000	0.089	0.755	0.017
Household income Sfr. 6,001-7,000	0.269*	2.534	0.054
Household income Sfr. 7,001-8,000	0.267*	2.075	0.053
Household income Sfr. 8,001-9,000	0.332**	3.307	0.066
Household income Sfr. 9,001-10,000	0.459**	4.998	0.089
Household income Sfr. 10,001-12,000	0.260*	2.321	0.052
Household income more than Sfr. 12,000	0.185	1.456	0.037
Living in city		Reference group	
Living in agglomeration	-0.075(*)	-1.788	-0.015
Living on countryside	-0.102*	-2.075	-0.020
Size of population in canton (in '000s)	-0.268 e ⁻³	-1.076	0.000
Size of population squared	0.367 e ⁻⁶ (*)	2.030	0.000
<i>(4) Other political factor</i>			
Member of political party	0.300**	4.954	0.060
Observations	6449		
Prob > chi ²	0.0000		

Pseudo R²

0.09

Notes: Level of voter information is measured on a three-point scale. White estimator for variance. Significance levels: (*) $0.05 < p < 0.10$, * $0.01 < p < 0.05$, ** $p < 0.01$.

Data source: Selects 1996.

Table 2: Sensitivity Analysis
 Dependent variable: voter information

Specification	Coefficient			Sample size
	Political participation rights	Dummy for French speaking region	Dummy for Italian speaking region	
(1) Specification as in table 1	0.096** (0.018)	–	–	6449
(2) Only single question on Federal Council composition as dependent variable	0.122** (0.033)	–	–	6449
(3) Only single question on Federal Council President as dependent variable	0.114** (0.018)	–	–	6449
(4) Only single question on signature requirement for initiatives as dependent variable	-0.003 (0.013)	–	–	6449
(5) As in table 1, but with language group dummies	0.054** (0.018)	-0.160* (0.061)	-0.381** (0.036)	6449
(6) Only individuals who answered every question	0.099** (0.022)	–	–	4102
(7) As in (6), but with language group dummies	0.026 (0.019)	-0.271** (0.063)	-0.635** (0.041)	4102
(8) Replication with the Selects 2000 survey	-0.028 (0.028)	–	–	1772

Notes: The regressions include the same control variables as in table 1. Standard errors are in parentheses. Regressions are weighted ordered probit. Standard errors are adjusted for clustering at the cantonal level. Level of voter information is measured on a three point index. Significance levels: (*) 0.05 < p < 0.10, * 0.01 < p < 0.05, ** p < 0.01.

Data sources: Selects 1996 and 2000.

Table 3: Political Participation Possibilities and Discussion Intensity

Dependent variable: discussion intensity

Variable	Weighted probit		
	Coefficient	t-value	Marginal effect
<i>(1) Institutional factor</i>			
Extent of political participation rights	0.143**	4.993	0.053
<i>(2) Demographic factors</i>			
Age	-0.022*	-2.476	-0.008
Age squared	0.134 e ⁻³	1.520	0.000
Female		Reference group	
Male	-0.246**	-6.200	-0.090
Naturalized citizen		Reference group	
Native Swiss citizen	0.212**	2.786	0.081
Compulsory education		Reference group	
Basic vocational training	0.189	1.150	0.067
Vocational training	0.324*	2.390	0.118
Diploma school	0.537**	3.481	0.174
High school	0.521**	3.607	0.171
Higher vocational education	0.447**	3.265	0.150
Higher vocational college	0.493**	4.852	0.163
University degree	0.393**	3.433	0.134
Married		Reference group	
Living with partner	0.131	1.121	0.040
Single	-0.002	-0.026	-0.000
Divorced	0.214	1.380	0.075
Widowed	-0.028	-0.256	-0.010
<i>(3) Socio-economic factors</i>			
Household income below Sfr. 2,000		Reference group	
Household income Sfr. 2,000-3,000	0.269	1.416	0.094
Household income Sfr. 3,001-4,000	0.339	1.689	0.117
Household income Sfr. 4,001-5,000	0.289(*)	1.712	0.101
Household income Sfr. 5,001-6,000	0.322(*)	1.917	0.112
Household income Sfr. 6,001-7,000	0.290	1.482	0.101
Household income Sfr. 7,001-8,000	0.461*	2.246	0.154
Household income Sfr. 8,001-9,000	0.842**	5.053	0.249
Household income Sfr. 9,001-10,000	0.492*	2.255	0.162
Household income Sfr. 10,001-12,000	0.628**	4.772	0.199
Household income more than Sfr. 12,000	0.695**	3.741	0.215
Living in city		Reference group	
Living in agglomeration	0.011	0.103	0.004
Living on countryside	0.107	0.840	0.039
Size of population in canton (in '000s)	0.407 e ⁻³	1.017	0.0001
Size of population squared	-0.163 e ⁻⁶	-0.487	-0.000
<i>(4) Other political factor</i>			
Member of political party	0.119	1.427	0.043
Observations	4016		
Prob > chi ²	0.0000		
Pseudo R ²	0.07		

Notes: Discussion intensity is measured as a dichotomous variable. White estimator for variance. Significance levels: (*) $0.05 < p < 0.10$, * $0.01 < p < 0.05$, ** $p < 0.01$.
Data source: Selects 1996.

Working Papers of the Institute for Empirical Research in Economics

No.

50. Albrecht Ritschl and Ulrich Woitek: *Did Monetary Forces Cause the Great Depression? A Bayesian VAR Analysis for the U.S. Economy*, July 2000
51. Alois Stutzer and Rafael Lalive: *The Role of Social Work Norms in Job Searching and Subjective Well-Being*, December 2000
52. Iris Bohnet, Bruno S. Frey and Steffen Huck: *More Order with Less Law: On Contract Enforcement, Trust, and Crowding*, July 2000
53. Armin Falk and Markus Knell: *Choosing the Joneses: On the Endogeneity of Reference Groups*, July 2000
54. Klaus Reiner Schenk-Hoppé: *Economic Growth and Business Cycles: A Critical Comment on Detrending Time Series*, May 2001 – Revised Version
55. Armin Falk, Ernst Fehr and Urs Fischbacher: *Appropriating the Commons – A Theoretical Explanation*, September 2000
56. Bruno S. Frey and Reiner Eichenberger: *A Proposal for a Flexible Europe*, August 2000
57. Reiner Eichenberger and Bruno S. Frey: *Europe's Eminent Economists: A Quantitative Analysis*, September 2000
58. Bruno S. Frey: *Why Economists Disregard Economic Methodology*, September 2000
59. Armin Falk, Ernst Fehr, Urs Fischbacher: *Driving Forces of Informal Sanctions*, May 2001
60. Rafael Lalive: *Did we Overestimate the Value of Health?*, October 2000
61. Matthias Benz, Marcel Kucher and Alois Stutzer: *Are Stock Options the Managers' Blessing? Stock Option Compensation and Institutional Controls*, April 2001
62. Simon Gächter and Armin Falk: *Work motivation, institutions, and performance*, October 2000
63. Armin Falk, Ernst Fehr and Urs Fischbacher: *Testing Theories of Fairness – Intentions Matter*, September 2000
64. Ernst Fehr and Klaus Schmidt: *Endogenous Incomplete Contracts*, November 2000
65. Klaus Reiner Schenk-Hoppé and Björn Schmalfuss: *Random fixed points in a stochastic Solow growth model*, November 2000
66. Leonard J. Mirman and Klaus Reiner Schenk-Hoppé: *Financial Markets and Stochastic Growth*, November 2000
67. Klaus Reiner Schenk-Hoppé: *Random Dynamical Systems in Economics*, December 2000
68. Albrecht Ritschl: *Deficit Spending in the Nazi Recovery, 1933-1938: A Critical Reassessment*, December 2000
69. Bruno S. Frey and Stephan Meier: *Political Economists are Neither Selfish nor Indoctrinated*, December 2000
70. Thorsten Hens and Beat Pilgrim: *The Transfer Paradox and Sunspot Equilibria*, January 2001
71. Thorsten Hens: *An Extension of Mantel (1976) to Incomplete Markets*, January 2001
72. Ernst Fehr, Alexander Klein and Klaus M. Schmidt: *Fairness, Incentives and Contractual Incompleteness*, February 2001
73. Reto Schleiniger: *Energy Tax Reform with Exemptions for the Energy-Intensive Export Sector*, February 2001
74. Thorsten Hens and Klaus Schenk-Hoppé: *Evolution of Portfolio Rules in Incomplete Markets*, October 2001
75. Ernst Fehr and Klaus Schmidt: *Theories of Fairness and Reciprocity – Evidence and Economic Applications*, February 2001
76. Bruno S. Frey and Alois Stutzer: *Beyond Bentham – Measuring Procedural Utility*, April 2001
77. Reto Schleiniger: *Global CO₂-Trade and Local Externalities*, April 2001
78. Reto Schleiniger and Stefan Felder: *Fossile Energiepolitik jenseits von Kyoto*, June 2001
79. Armin Falk: *Homo Oeconomicus Versus Homo Reciprocans: Ansätze für ein Neues Wirtschaftspolitisches Leitbild?*, July 2001
80. Bruno S. Frey and Alois Stutzer: *What can Economists learn from Happiness Research?*, October 2001
81. Matthias Benz and Alois Stutzer: *Was erklärt die steigenden Managerlöhne? Ein Diskussionsbeitrag*, June 2001
82. Peter A.G. VanBergeijk and Jan Marc Berk: *The Lucas Critique in Practice: An Empirical Investigation of the Impact of European Monetary Integration on the Term Structure*, July 2001
83. Igor V. Evstigneev, Thorsten Hens and Klaus Reiner Schenk-Hoppé: *Market Selection of Financial Trading Strategies: Global Stability*, July 2001
84. Ernst Fehr and Urs Fischbacher: *Why Social Preferences Matter - The Impact of Non-Selfish Motives on Competition, Cooperation and Incentives*, January 2002
85. Bruno S. Frey: *Liliput oder Leviathan? Der Staat in der Globalisierten Wirtschaft*, August 2001
86. Urs Fischbacher and Christian Thöni: *Excess Entry in an Experimental Winner-Take-All Market*, January 2002
87. Anke Gerber: *Direct versus Intermediated Finance: An Old Question and a New Answer*, September 2001

The Working Papers of the Institute for Empirical Research in Economics can be downloaded in PDF-format from <http://www.iew.unizh.ch/wp>

Institute for Empirical Research in Economics, Blümlisalpstr. 10, 8006 Zurich, Switzerland

Phone: 0041 1 634 37 05 Fax: 0041 1 634 49 07 E-mail: bibiewzh@iew.unizh.ch

Working Papers of the Institute for Empirical Research in Economics

No.

88. Klaus Reiner Schenk-Hoppé: *Stochastic Tastes and Money in a Neo-Keynesian Econom*, August 2001
89. Igor V. Evstigneev and Klaus Reiner Schenk-Hoppé: *From Rags to Riches: On Constant Proportions Investment Strategies*, August 2001
90. Ralf Becker, Urs Fischbacher and Thorsten Hens: *Soft Landing of a Stock Market Bubble. An Experimental Study*, January 2002
91. Rabah Amir, Igor V. Evstigneev, Thorsten Hens, Klaus Reiner Schenk-Hoppé: *Market Selection and Survival of Investment Strategies*, October 2001
92. Bruno S. Frey and Matthias Benz: *Ökonomie und Psychologie: eine Übersicht*, Oktober 2001
93. Reto Schleiniger: *Money Illusion and the Double Dividend in the Short Run*, October 2001
94. Bruno S. Frey: *Flexible Citizenship for a Global Society*, November 2001
95. Ernst Fehr and Armin Falk: *Psychological Foundations of Incentives*, November 2001
96. Takeshi Momi: *Excess Demand Functions with Incomplete Markets – A Global Result*, January 2002
97. Colin F. Camerer and Ernst Fehr: *Measuring Social Norms and Preferences using Experimental Games: A Guide for Social Scientists*, January 2002
98. Lars P. Feld and Bruno S. Frey: *Trust Breeds Trust: How Taxpayers are Treated*, January 2002
99. Aleksander Berentsen and Guillaume Rocheteau: *Money and Information*, January 2002
100. Aleksander Berentsen and Guillaume Rocheteau: *Money and the Gains from Trade*, January 2001
101. Aleksander Berentsen and Guillaume Rocheteau: *On the Efficiency of Monetary Exchange: How Divisibility of Money Matters*, January 2002
102. Daniel Waldenström and Bruno S. Frey: *How Government Bond Prices Reflect Wartime Events. The Case of the Stockholm Market*, January 2002
103. Bruno S. Frey and Stephan Meier: *Selfish and Indoctrinated Economists?*, January 2002
104. Bruno S. Frey and Stephan Meier: *Two Concerns about Rational Choice: Indoctrination and Imperialism*, January 2002
105. Rafael Lalive and Josef Zweimüller: *Benefit Entitlement and the Labor Market: Evidence from a Large-Scale Policy Change*, January 2002
106. Ernst Fehr and Urs Fischbacher: *Third Party Punishment*, February 2002
107. Bruno S. Frey and Stephan Meier: *Pro-Social Behavior, Reciprocity or Both?*, February 2002
108. Thorsten Hens, Klaus Reiner Schenk-Hoppé and Bodo Vogt: *On the Micro-foundations of Money: The Capitol Hill Baby-Sitting Co-op*, March 2002
109. Anke Gerber and Marc Oliver Bettzüge: *Evolutionary Choice of Markets*, March 2002
110. Rafael Lalive, Jan C. van Ours and Josef Zweimüller: *The Effect of Benefit Sanctions on the Duration of Unemployment*, March 2002
111. Reto Föllmi and Josef Zweimüller: *Structural Change and the Kaldor Facts of Economic Growth*, March 2002
112. Rafael Lalive and Josef Zweimüller: *Benefit Entitlement and Unemployment Duration: The Role of Policy Endogeneity*, April 2002
113. Simon Gächter and Arno Riedl: *Moral Property Rights in Bargaining*, January 2002
114. Simon Gächter and Ernst Fehr: *Fairness in the Labour Market – A Survey of Experimental Results*, April 2002
115. Reto Föllmi and Urs Meister: *Product-Market Competition in the Water Industry: Voluntarily Nondiscriminatory Pricing*, May 2002
116. Bruno S. Frey and Stephan Meier: *Museums between Private and Public - The Case of the Beyeler Museum in Basle*, June 2002
117. Bruno S. Frey: *Publishing as Prostitution? Choosing Between One's Own Ideas and Academic Failure*, June 2002
118. Bruno S. Frey and Matthias Benz: *From Imperialism to Inspiration: A Survey of Economics and Psychology*, May 2002
119. Matthias Benz and Alois Stutzer: *Are Voters Better Informed When They Have a Larger Say in Politics?*, June 2002

The Working Papers of the Institute for Empirical Research in Economics can be downloaded in PDF-format from <http://www.iew.unizh.ch/wp/>

Institute for Empirical Research in Economics, Blümlisalpstr. 10, 8006 Zürich, Switzerland

Phone: 0041 1 634 37 05 Fax: 0041 1 634 49 07 E-mail: bibiewzh@iew.unizh.ch