

# Social Incentives and Voter Turnout: Evidence from the Swiss Mail Ballot System

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## Abstract

This paper uses a natural experiment to document the impact of social pressure on voting behavior. The main hypothesis is that social pressure creates incentives to vote for the purpose of being *seen* at the voting act. This incentive is particularly high in small and close-knit communities. Empirically, I analyze the effect of postal voting on voter participation in Switzerland. Optional postal voting decreased the voting costs, but simultaneously removed the social pressure to vote. In spite of the large reduction in voting costs, the effect on aggregate turnout was small. However, voter participation was more negatively affected in the smaller communities. This lends support to the view that social incentives played a role for certain people's voting decisions.

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# 1 Introduction

The fact that people vote is a longstanding puzzle to economists. Since instrumental benefits are close to zero, but not the costs from going to the polls, a rational individual should abstain from voting (Downs, 1957). The “Voting Paradox” describes the fact that in spite of the economic prediction of a very low voter turnout, a fairly large amount of people goes to the polls.

Economists have tried to solve the voting paradox, either by departing from the standard framework of expected utility maximization, or by assuming that the voting act as such gives utility (called “expressive benefits”).<sup>1</sup> Expressive motives mentioned in the literature include benefits from self-expression, a satisfaction from contributing to the functioning of democracy, and a pleasure from fulfilling a civic duty. This last civic duty benefit assumes existence of a social norm that a good citizen should go to the polls, which certain individuals must have internalized (see Riker & Ordeshook, 1968). Evidence from surveys suggests indeed that citizens with a strong sense of civic duty are more likely to vote (Knack, 1992, and Opp, 2001).

Even though the literature has long acknowledged this internally enforced sense of civic duty, the impact of social pressure or social rewards (external enforcement of norms) on voting behavior has largely been ignored.<sup>2</sup> Particularly challenging seems to be the fact that these social incentives are hard if not impossible to measure.

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<sup>1</sup>Dhillon & Peralta (2002) and Geys (2006) provide overviews of the large literature.

<sup>2</sup>Exceptions are Uhlaner (1989), Shachar & Nalebuff (1999), Schram & van Winden (2001), who argue that by exerting social pressure and appeals to the sense of civic duty, certain individuals might be convinced to cast a vote despite the non-pivotal role. Also, Knack (1992) and Opp (2001) find that citizens are more likely to vote, if they have politically active friends or partners. However, this result could be due to sorting: citizens with a high interest in politics are more likely to choose friends and partners with similar interests.

The key innovation of this paper is to use a natural experiment, which allows me to shed light on this particular motivator to vote: the introduction of optional mail voting in Switzerland.

The intuition behind this experiment lies in the opposite effects, postal voting (or other modern voting tools such as internet voting) have on economic and social incentives to vote. Concerning the first, the obvious effect is a reduction in voting costs, with a positive effect on turnout. Secondly, mail- or internet voting renders the voting act unobservable.<sup>3</sup> If social pressure matters for voting decisions, the presence of mail-in ballots provides an opportunity to escape. Therefore, the more social concerns matter for voting decisions, the more distinctive the mail ballot system's trade-off between cost reduction and a reduction in social incentives.

While previous voting models cannot easily account for a negative turnout effect of mail-in or internet voting alternatives, a positive turnout effect is consistent with both traditional voting models and with those that include a concern for social motives. The sharpest test for social pressure arises from looking at the effect of postal voting in different-sized communities. A large number of anthropological studies have documented that social control is particularly strong in small and close-knit communities. People know each other and gossip about who does their civic duty and who does not.<sup>4</sup> Therefore, the relief from social pressure is supposedly the highest in small communities and *ceteris paribus*, also this negative "social

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<sup>3</sup>In Switzerland, apart from being seen at the voting booth, there is no public information about whether people voted or not.

<sup>4</sup>As the anthropologist Sally Engle Merry writes (1984, p. 272): "The role of gossip in achieving social control in stable, bounded, morally homogeneous, and close-knit communities where escape and avoidance are difficult differs markedly from its function in large, fluid, open and morally heterogeneous communities where escape and avoidance are realistic opportunities ...".

effect” on turnout.<sup>5</sup>

The Swiss experiment is excellent for the question at hand. Poll-voting was never replaced by mail-voting and neither were poll stations closed during the period of investigation. This allows me to identify the effect of social pressure in the cleanest way possible. Since going to the polls was always possible, the main “social effect” of postal voting was removal of social pressure, and not removal of consumption benefits arising from the polls.

I study turnout for federal party elections (“Nationalratswahlen”) between 1971 and 2003.<sup>6</sup> Federal elections bear two advantages: First, the voting subject is unchanged over time and second, instrumental benefits are the same in every Canton and community (votes are counted on a national level). In a difference-in-difference framework, I study the impact of optional postal voting on Cantonal turnout. The effect is small (an increase in 2 percentage points), and not statistically different from zero.

This result is remarkable, since in Switzerland, every citizen (above 18) is automatically registered, and gets the election documents delivered at home. Since voting by mail requires no more than dropping the documents into the nearest letter box, the costs from executing the voting act virtually drop to zero. As such, if voting costs were the main inhibitor to vote, one would expect a big increase in voter turnout. This did not happen. And, as the data suggest, endogeneity is unlikely to play a major role.

The sharpest test for social incentives concerns the reaction in different-sized communities. First, I compare differently-structured Cantons. I find indeed that there was a more

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<sup>5</sup>In Switzerland, community size captures connectedness pretty well, with social control being particularly strong in small-sized communities. Apart from daily experience, data support this view. For instance, mobility is lower in smaller communities, which creates incentives to invest in social capital (Glaeser, Laibson & Sacerdote, 2002; Zingg & Benz, 2003).

<sup>6</sup>Elections are held every 4 years. Since women received the right to vote in 1971, it serves as a natural starting point.

negative turnout effect in Cantons with a high share of people living in small communities. Second, I collected communal turnout data for the same elections. There is strong evidence that small and large communities reacted differently to the option of mail-in-ballots. For instance, in the communities of the Cantons with a legal duty to vote,<sup>7</sup> postal voting decreased turnout by 2,5 percentage points in small communities (with less than 1000 inhabitants), and had no effect in the other communities. In the whole sample of Swiss communities, postal voting increased average participation by 3 percentage points, but this effect is roughly 50 % lower in small communities.

Overall, the different reaction of small and large communities to the introduction of postal voting seems to be a robust empirical regularity. This is highly suggestive for social concerns playing a role. Nevertheless, several robustness tests are conducted to rule out competing explanations.

First, I collected more detailed community level data for the Canton Zuerich. The Canton Zuerich is the largest in terms of population and has a wide range of community data. I document that the main community-level results prevail if various controls for income and wealth are added. Second, I provide evidence that the most plausible alternative explanation - heterogeneity in poll-voting costs (which might be correlated with community size) - cannot account for the empirical evidence. To gain information on the communities' poll-voting costs, I conducted a survey in the Canton Zuerich. The Canton Zuerich has 171 communities and gave citizens the possibility to vote by mail in 1994. By sending out questionnaires to

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<sup>7</sup>At the time when postal voting was introduced, there was only one Canton (Schaffhausen), which enforced the voting duty with a symbolic 2 Euro fine (see Funk, 2007). In the other Cantons, the voting duty was entirely unenforced, there was only a passage in the law saying that voting is a civic duty. Nevertheless, the perception that voting is important might be higher in these Cantons and therefore the social pressure to appear at the polls as well.

all the presidents of the communities, information about the number of poll-stations, the opening days, the opening hours of the polls and the share of mail-votes was gathered.

As I then show, the more negative reaction of small communities to the introduction of mail voting is not due to lower poll-voting costs. In fact, community size is highly significant in explaining the pre/post-mail voting turnout drop, even when communities' poll-voting costs are controlled for. Also, the communities with the *shortest* (and most unfavorable) poll-station opening hours experienced the biggest drop after mail voting. While voting cost considerations predict exactly the opposite (i.e. the largest turnout increase in the communities where poll-voting was very inconvenient), social incentives provide a rationale. In the communities, where there is one poll-station, open for a very limited time (in one community, for instance, the poll is open only half an hour on the voting weekend's Saturday and Sunday), social pressure was maximal, and the escape effect provided by mail voting as well.

The main results can be summarized as followed:

(1): The addition of a low-cost voting mechanism to the traditional poll-voting did not significantly increase aggregate turnout in the Swiss Cantons. (2): The structure of the community matters for the reaction to mail voting. (3): Social concerns seem to be able to explain the following empirical regularities: that turnout hardly increased after the introduction of a low-cost voting scheme, that turnout decreased relatively more in small communities, and that communities with high poll-voting costs experienced a more negative effect on turnout than the others.

In order to put the significance of these results in a broader context, I relate them to several strands of literature (Section 2). Section 3 describes the main hypotheses, Section 4

displays the basic regressions and Section 5 some robustness tests. Section 6 concludes.

## 2 Relation to the Literature

By arguing that social incentives (social pressure, social esteem) motivate certain people to go to the polls, I shed light on the question “Why do people vote”. The approach chosen in this paper falls into the category of models that aims at explaining voting decisions with a non-instrumental value, in particular a “social value” (see Geys, 2006, for a review). Recent attempts along these lines have been group-based voter models, which see the individual as part of a social group. Group-utilitarian models take as given a share of ethical voters: these adopt a strategy that maximizes the group’s welfare (if followed by all group members).<sup>8</sup> Other models emphasize the leader-follower relationship within a group. Even though it might not be instrumentally rational to vote for an individual, a group leader may have an effect if he can convince enough followers to vote. By exerting social pressure and appeals to the sense of civic duty, certain individuals might be convinced to cast a vote despite the non-pivotal role (see Uhlaner, 1989; Shachar & Nalebuff, 1999; Schram & van Winden, 2001). As Shachar & Nalebuff note (1999, p. 535): “We believe that social pressure is very important ... The more people in a social network that encourage a person to vote, the more likely that person is to vote and to encourage others to do the same.”<sup>9</sup>

The key contribution of this paper is to exploit a natural experiment that allows to em-

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<sup>8</sup>Group identity is created from opposing views on which candidates or proposals are good or bad (Feddersen & Sandroni, 2006; Coate & Conlin, 2004).

<sup>9</sup>In a similar spirit, Amaro-de-Matos & Barros (2004) model individual voting decisions dependent on the decisions made by the individuals in his/her social network. Interdependent decision making can lead to very high, or very low turnout, depending on the initial feeling for or against voting. In contrast to Amaro-de-Matos & Barros (2004), I emphasize external enforcement of norms and highlight the role of information about and observability of individuals’ voting acts.

pirically measure the relevance of social incentives in voting decisions. To have a theoretical guideline, I rely on two features (1): the observation long acknowledged by anthropologists that group-size and group-cohesion matter for the extent of social pressure, and (2): that observability of the voting act facilitates exertion of social pressure. This allows me to go beyond the contributions on social pressure by stating testable conditions under which social pressure generates higher turnout: namely, small community size and a poll-voting regime. Note further that the above-mentioned group-utilitarian and civic-duty models (as well as any calculus of voting equation including some sort of consumption benefit) predict an increase in turnout to the introduction of a low-cost voting scheme and no different reaction depending on community size.<sup>10</sup> Due to the contrasting predictions from models that do and do not account for social incentives, I believe to empirically demonstrate that social incentives matter, and to an extent that may even offset the cost-reduction effect of modern voting tools. As such, this is the first paper that presents testable hypotheses on social incentives and voter turnout and an empirical assessment with a real-world experiment.

Second, the paper is related to the literature on pro-social behavior. The pioneering work on the theory side is Benabou & Tirole (2006), who analyze the relationship between monetary and non-monetary incentives and pro-social behavior in a very elaborate and general way.<sup>11</sup> My theory is a bit more tailored to the voting case (where monetary incentives are absent) and highlights the importance of community size for the degree of social pressure.

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<sup>10</sup>Since the sense of civic duty or the ethical preferences are not affected by a low cost voting tool, more people vote as voting costs go down. Similarly, the key mechanism in Shachar & Nalebuffs' paper is to look at leader effort, which is tied to the closeness of an election. Since the elections studied in this paper are proportional elections, the instrumental benefit per election and individual is roughly the same. The key novelty and difference to these models is that I relate the degree of social pressure by co-citizens to the community size and the voting system, and subject it to an empirical test.

<sup>11</sup>Ellingsen & Johannesson (2008) focus on the role of esteem as a source of pro-social behavior, and study the interference of principals choosing monetary incentives with the agents' desire to be esteemed by those.

Empirically, the results seem to suggest that giving citizens the opportunity to signal good behavior helps fostering pro-social behavior. Similarly, adding an opportunity that allows to escape social pressure might reduce pro-social behavior. This is in line with recent experimental work by Tadelis (2007), who finds that cooperation increases in a trust game if defection is made public.

Finally, the paper also sheds light on the effectiveness of vote-by-mail. Most of the studies on this subject analyzed what happened when Oregon (as the first American state) replaced the polls in certain elections by all-by mail.<sup>12</sup> Karp & Banducci (2000), for instance, compare turnout in the mail elections with turnout in previous (ballot) elections and found turnout to be slightly higher in presidential and primary elections, but lower in midterm general elections. However, as Kousser & Mullin (2007) argue, the first two all-mail elections in Oregon were highly contested, and therefore, just comparing turnout in the all-mail elections with previous elections wrongly attributes these supply-side factors to the mail-voting system. Kousser & Mullin (2007) improve on previous US studies by exploiting the fact that Californian state law mandates vote-by-mail to small districts. Comparing districts with and without vote-by-mail, the authors find even a negative effect of mail voting on turnout in general elections. However, as my study shows, the effect of giving the option to vote by mail must not be the same for small and large districts, and as such, the authors' estimates might be a lower bound of the true effect. The advantage of studying postal voting in Switzerland is that the Cantons introduced the (same) system of optional postal voting at different points of time. Therefore, difference-in-difference-estimation is possible, which allows to absorb all unobserved heterogeneity between the Cantons as well as to control for

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<sup>12</sup>The first all-by-mail election took place in 1995, and three years later, voters approved to implement vote-by-mail in all primary and general elections.

common trends in turnout behavior. My study neither points to a turnout boost after the introduction of mail-in ballots.<sup>13</sup> However, since community structure seems to be crucial for the effectiveness of modern voting tools, the results may differ from country to country.

### 3 Theoretical Background

The standard calculus of voting model describes the payoff from voting as the net of the instrumental benefit from voting minus the voting costs. Since instrumental benefits are close to zero,<sup>14</sup> a positive payoff from voting can be achieved by introducing some consumption benefits. Riker & Ordeshook (1968), for instance, assume that certain citizens experience an intrinsic pleasure from fulfilling the voting duty. In contrast to this internal benefits from obeying the social norm to vote, external benefits of norm-adherence depend on being observed (and possibly esteemed) by others.

In Switzerland (as well as other countries), there exists a fairly strong norm that a good citizen should go to the polls. As such, as long as poll-voting was the only option, there was an incentive (or pressure) to go to the polls only to be *seen* handing in the vote. The motivation could be hope for social esteem, better trades if perceived as a cooperative person (Posner, 2000), or the avoidance of social stigma attached to non-voting. I posit that in small communities, people know each other better and gossip about who fulfills civic duties and who doesn't. Therefore, these social benefits were particularly high in this type of community.

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<sup>13</sup>Luechinger, Rosinger and Stutzer (2007) estimated the impact of postal voting on turnout in initiatives (rather than turnout in elections). Even though turnout at initiatives is highly volatile due to the perceived relevance of the vote at hand, the authors estimate an impact of postal voting that is quite comparable to mine (while I estimate an effect of 2.3 percentage point increase, they find a slightly higher effect of 2.9 in the most similar econometric specification).

<sup>14</sup>In winner-takes it all elections, instrumental benefits can be described as  $I = p \cdot B$ , with  $p$  being the probability of being decisive and  $B$  the relative gain from being decisive. In proportional elections,  $p$  can be thought of the probability that the favorite party gets one additional seat and  $B$  the benefit thereof.

Hypothesis 1: In a situation where poll-voting is the only option, social incentives create a negative relationship between turnout and community size.

Clearly, since people vote if total benefits exceed voting costs, they are more likely to do so in small communities where social benefits from voting are high.<sup>15</sup> While a negative correlation between turnout and community size can be explained with varying instrumental benefits in the classical calculus of voting, social incentives lead to a negative correlation even for *given* instrumental benefits.

Hypothesis 2 predicts the consequences from switching from a pure poll voting system to a mixed system (poll- and postal voting) in the presence of social concerns.

Hypothesis 2: If postal voting is allowed next to poll-voting, the effect on turnout differs with respect to community size. The larger the community, the more positive the effect of postal voting on turnout.

Intuitively, introducing postal voting weakens the signal from going to the polls. While before, a citizen who did not show up at the polls could be identified as a shirker, it may be a mail voter now. Therefore, in small communities where social pressure forced a substantial share of people to go to the polls, turnout decreases relatively more as soon as mail voting and the possibility of cheating is given.

Hypothesis 2 differs from what a standard calculus of voting model would predict. In the calculus of voting equation (including some consumption benefits stemming from voting), the introduction of optional postal voting affects turnout *only* through its decrease in voting costs. As such, the prediction is an unambiguous increase in turnout, which is independent

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<sup>15</sup>For a more rigorous analysis, see the theoretical model in Funk (2004).

of community size. In contrast, the effect of postal voting on aggregate turnout is ambiguous if social incentives matter. While postal voting still decreases voting costs, it also removes the social pressure to vote, which might (or might not) offset the cost-reduction effect.

A negative estimated effect of postal voting on turnout is hard to explain with standard voting models. However, it is compatible with the idea of voting due to social concerns. A positive estimated effect on the other hand is compatible with both, models with and without social concerns. Therefore, the sharpest test for social incentives results from comparing the turnout reaction to postal voting in different-sized communities.

## 4 An Empirical Analysis of Mail-in Ballot Voting

### 4.1 Switzerland and the Mail-in Ballot Voting System

Switzerland is a small federalist country with roughly 7 million inhabitants. The country consists of 26 major districts (called “Cantons”), which are further divided into minor districts (called communities, “Gemeinden”). The 26 Cantons have their own constitution and legislative power and are free to pass laws, as long as they do not contradict with federal law.

As for the regulation of the voting process, the Swiss Cantons differ with respect to the use of postal voting. While certain Cantons introduced the *option* of postal voting already in the 80’s, the majority gave citizens the possibility to vote by mail in the 90’s (see table 1).

— insert Table 1 here —

Initiator behind the whole postal voting debate was a federal law enacted in 1976, which invited the Cantons to establish a facilitated system for postal voting. The federal law wanted to make sure that also disabled people or people on vacations could vote, and wanted to allow them to request a mail ballot.<sup>16</sup> This necessary change in the voting system was taken by some Cantons to introduce the general possibility to vote by mail (automatic postal voting), while certain Cantons just introduced voting by mail on request.<sup>17</sup> From reading the parliamentary debates, I learnt that the main argument favoring automatic postal voting was a higher convenience for the voters, and the main argument against it a fear of misuse. In certain Cantons, the communities were against the introduction of automatic postal voting because of the administrative costs connected to the system change. In 1994, the federal law was revised and prescribed all Cantons to introduce the system of automatic postal voting. From then on, there was only some variation left with respect to the time until the process of voting by mail was organized.

The Swiss voting procedure is very simple, both by mail and in the polling booths. In contrast to the United States, where voters have to register, every eligible citizen from Switzerland *automatically* receives the (election) documents per mail. If voting by mail is allowed, a return envelope is added to the election documents, so that the voter has only to put a stamp on the envelope and to drop it in the letter box. Since the alternative is to bring the filled-out documents to the polls, the transaction costs from postal voting are much lower.

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<sup>16</sup>Since the organization of the voting is at the Canton-level, the federal government wanted each Canton to give the citizens the means or requesting a mail ballot.

<sup>17</sup>Since writing a letter to request a mail vote involves substantial time, the gain in transaction costs (compared to poll voting) is not evident. Therefore, in the analysis and in table 1, I only count automatic mail-voting, where the gain in transaction costs is large. Note also that the vote-by-mail system never replaced the polls, but was offered as a further option.

The goal of the empirical part is to analyze the effect of postal voting on turnout and to check for differences in different-sized communities. The Cantonal variation in the timing of introduction allows for difference-in-difference estimation, which is an advantage for estimating the effect of postal voting on aggregate turnout.<sup>18</sup>

## 4.2 Econometric Model and Canton-Level Results

The subject of investigation is voter participation at national parliamentary elections (“Nationalratswahlen”) from 1971 to 2003 (elections are held every four years). Similar to the American House of Representatives, the “Nationalrat” is the one (of the two legislative chambers), where the number of seats assigned to each Canton (region) corresponds to the population of the Canton. The election is for parties, with the different parties’ weight being (roughly) determined by the proportion of votes received (proportional representation).

Analyzing turnout for this type of election bears several advantages. First, the voting subject is unchanged over time. If the voting subject changed over time (as is the case for initiatives), turnout would be heavily influenced by the political relevance of the vote at hand. In contrast, for the type of elections I study, supply-side shocks are minimal. Since these parliamentary elections are entirely proportional, the instrumental value of voting is the same for every election (and Canton). “Closeness-of-race” effects that are prevalent in winner-takes it all elections are basically absent. The only conceivable supply-side effect stems from party-behavior (e.g. parties increasing advertising or parties choosing provocative platforms). However, since this is likely to affect turnout in all cantons, it is accounted for by the election fixed-effects. Second, the voting day(s) are determined on a national level.

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<sup>18</sup>Without variation in the timing of introduction, it would be impossible to distinguish the effects of general trends in voting behavior from the impact of the new voting system.

Therefore, shocks on turnout due to weather conditions are similar in the Cantons as well. As such, Cantonal turnout in these elections seems to be quite a clean measure of turnout behavior.

When estimating the impact of optional postal voting on turnout, I control for factors that might affect voter participation next to the voting system. As control variables, I use a Cantons' population size, its communal structure, age structure, education, unemployment, income, and for whether Cantons had symbolic fines for non-voting.<sup>19</sup> The data appendix provides a detailed description of the variables and its sources.

Summary statistics are presented in table 2. As can be seen therefrom, early and late introducers differ most in terms of language. The fact that German and French-speaking Cantons attach different importance to voting by mail is not surprising for a Swiss. For many political issues, German and French-speaking Cantons show consistently different voting patterns. There is even a term “Roestigraben”, which refers to the different (voting) behavior in these two language-regions. Furthermore, large Cantons (in terms of population), Cantons with a lower share of educated people and Cantons with more direct-democratic control were among the early introducers.<sup>20</sup>

— insert Table 2 here —

In the subsequent analysis, I estimate the impact of optional vote-by mail on turnout,

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<sup>19</sup>In Switzerland, half of the Cantons had a legal duty to vote embodied in the law (see Funk, 2007). From these 13 Cantons, 8 had no enforcement at all and 5 had symbolic fines for non-voting (of normally less than 1 \$). Before allowing to vote-by mail, all except one Canton (Schaffhausen) had abolished these symbolic fines. Nevertheless, since most of these switches occurred within the sample period, I want to control for possible changes in turnout behavior. In contrast, out of the 8 Cantons with an unenforced voting duty, only two Cantons decided to abolish the legal duty to vote. The effect of this unsanctioned legal obligation to vote is mostly captured by the Canton-Fixed Effects (see also Funk, 2007).

<sup>20</sup>Interestingly, however, turnout did not differ between more and less direct-democratic Cantons.

controlling for the factors described above. To account for unobserved heterogeneity between the Cantons and general trends in voting behavior, I include Canton- and Election Fixed Effects. The model to be estimated is the following:

$$VT_{st} = \alpha_s + \gamma_t + b_1 \cdot Postal_{st} + b \cdot Z_{st} + u_{st} \quad (1)$$

$VT_{st}$  denotes voter turnout (in percentage) in Canton (state)  $s$  in election  $t$ .  $Postal$  is a dummy variable, taking a value of 1 if automatic postal voting is granted, and 0 otherwise.  $Z$  are the controls and  $\alpha_s$  and  $\gamma_t$  are the Canton- and Election-Fixed Effects.

Since the clearest predictions of the model concern different-sized communities, I also estimate the effect of postal voting in differently structured Cantons. In particular, I estimate a model with an interaction term:

$$VT_{st} = \alpha_s + \gamma_t + b_1 \cdot Postal_{st} + b_2 \cdot Small \cdot Postal_{st} + b_3 \cdot Small + b \cdot Z_{st} + u_{st} \quad (2)$$

$Small$  measures the proportion of cantonal residents living in small communities (i.e. communities with less than 1000 inhabitants). In Switzerland, there exist data about the number of people who live in communities with different sizes. The smallest size is “less than 1000 people”, and the highest is “more than 100’000”. All in all, 8 classes are distinguished. Obviously, the expectation is that  $b_2$  is negative, since social pressure is stronger in Cantons with a higher fraction of people living in small-knit communities.

Table 3 shows the regression results. Standard errors are depicted in parantheses and are clustered at the Canton level.

As can be seen from the first column, the introduction of postal voting did not significantly

increase voter turnout. However, if we estimate a model with an interaction term (column 2), the coefficient before the postal dummy as well as the interaction term become statistically significant. Concerning economic significance, I calculate that in the Cantons, where no citizens live in small communities, the average increase in turnout is 6,5 percentage points after postal voting was introduced. In contrast, in the Canton with the highest share of people living in small communities (=36 %), the predicted effect on average turnout is minus 7 percentage points. Clearly, community structure matters.

— insert Table 3 here —

The variable share small and most of the controls are quite correlated with the Canton-Fixed Effects, and therefore lose their significance. However, as shown in Appendix 1, it is important to control for both, Canton-Fixed effects and the controls. Inclusion of Canton-Fixed effects affects the magnitude of the estimated postal voting dummy and makes it larger. The sign of the interaction term is always negative, albeit stronger when Canton-Fixed Effects and Controls are included. Note also that the main results prevail if a different education measure is employed.<sup>21</sup>

Summing up, I find evidence that the structure of the Canton matters for the overall effect of (optional) vote by mail on turnout. Cantons with a higher proportion of people living in small communities experienced a more negative (or less positive) effect on turnout. This differential impact in small and large communities cannot be explained by endogeneity.

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<sup>21</sup>Yearly data are available for the number of high school degrees issued, which I used to build the previous “flow-measure” of education: the number of high-school degrees in percentage of the relevant age group. From the census data (which are available on a decennial basis), I received information on the share of people in possession of a higher education, which I used to construct an alternative “stock-measure” of education (see Appendix 1).

However, endogeneity may bias the estimated postal voting dummy (column 1, table 3). In particular, it would be worrisome if the cantons, which had experienced a large decline in turnout, introduced postal voting first. To test this, I first check for different trends in turnout prior to adoption. As can be seen from the summary statistics, early and late adopters had no different change in turnout between 1971 and 1975.

To systematically test for longer-term effects of past turnout on the introduction of postal voting, I also estimated a probit model, where the dependent variable takes a value of 1 in the year of switch and 0 otherwise. In Appendix 2, it is shown that past turnout cannot explain the probability of switching to postal voting. Therefore, postal voting was not introduced after a particularly large drop in turnout. What about omitted variables, that might be correlated with the introduction of postal voting and the outcome measure? From the history around the adoption process, one might ask why the politicians in a certain Canton cared more about the convenience of the voting process, or why the parliamentary members in one Canton were more afraid of misuse than parliamentary members in other Cantons. Certainly, culture (which is very different between German- and Non-German speaking Cantons) plays a role, and plausibly, Cantons which care more about direct democratic participation might also care more about having a convenient voting process. This at least could explain the correlation between direct democracy and early adoption. However, since culture or means of direct democratic participation are largely time-invariant, they are accounted for by Canton Fixed Effects. As such, they are unlikely to bias the estimated postal voting dummy.

### 4.3 Community Level Results

While the Cantonal data suggest that community structure matters, a more direct way to test the theory is to analyze community level data. Since all votes have to be handed in at the community level, data exist for community turnout for exactly the same federal elections. Unfortunately, detailed community-level data are often unavailable.

As a first cut, I perform a similar analysis as before, and include community fixed effects, age structure and a measure of higher education as controls.<sup>22</sup> Later on, the communities in the Canton Zuerich will be analyzed as a robustness test, where detailed community level data are available.

The main regression equation to be estimated is the following:

$$VT_{ct} = \alpha_c + \gamma_t + b_1 \cdot Postal_{ct} + b_2 \cdot Small_c \cdot Postal_{ct} + b_3 \cdot Small_c + b \cdot Z_{ct} + u_{ct} \quad (3)$$

$VT_{ct}$  now denotes voter turnout in community  $c$  at election  $t$ . In equation (3), the coefficient of interest is  $b_2$ , measuring the different reaction of small and large communities. The dummy variable  $Postal \cdot Small$  takes a value of 1, if postal voting is given and the community had less than 1000 inhabitants at the time of introducing postal voting.

Table 4 first row shows the results for all communities together. The estimated effect of optional vote by mail on turnout is 3,2. As can be seen from the second column, the effect of postal voting again depends on community size. For small communities, the effect of postal voting on turnout was around 2,4 percentage points, which is 45 % smaller than in large communities.

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<sup>22</sup>All data are from the census and available on a decennial bases. Intermediate years have been interpolated. Education is measured as the percentage of the population that possesses a higher (tertiary) education.

However, I would expect differences between communities in German and Non-German speaking Cantons, since the culture in French- and Italian Speaking Cantons is more “Southern European” and I would expect social pressure to be generally weaker. Columns (2) and (3) confirm the suspected differences between these two types of Cantons. The total effect of postal voting on turnout is larger in Non-German Speaking Cantons, and the difference between larger and smaller communities is smaller. In both cases, however, there are significant differences in the effect, mail-in-ballots have on turnout in small and large communities. Column (4) restricts the sample to the Cantons that have (or had) a legal duty to vote embodied in their constitution. In these Cantons, the effect of the introduction of postal voting on turnout is the most negative, most likely due to the higher social pressure to appear at the polling booth.

In sum, there is robust evidence that citizens in different-sized communities reacted differently to the introduction of mail-in-ballot as an alternative to poll-voting.

— insert Table 4 here —

## **5 Robustness: The communities in the Canton Zuerich**

### **5.1 Controlling for income and wealth**

A potential drawback of the previous analysis might be the lack of a large number of controls. For instance, one could think of income as an additional important factor (next to education) that affects voter participation. To gather such data, I contacted the bureau of statistics of the Canton Zuerich, which has a rich data set. I obtained communal data on the population

size, the age structure, education, the local tax rates, but also on average/median income and wealth.<sup>23</sup> Table 5 upper part presents summary statistics. To have a proper control group for difference-in-difference estimation, I also collected community level data for the neighbouring canton St. Gallen (see Table 5 lower part). St. Gallen has the same language, a similar party-structure,<sup>24</sup> and the Swiss-German culture. It is slightly smaller than Zuerich, with 86 communities, 10 percent of which have less than 1000 inhabitants. Zuerich in contrast has 171 communities of quite different sizes. While the biggest community (Zuerich) has more than 300'000 inhabitants, more than twenty percent of the communities can be described as small, with a population of less than 1000 inhabitants.

— insert Table 5 here —

The chosen sample ranges from 1983-2003, since St. Gallen introduced postal voting in the year 1979 and Zuerich in the year 1994. To start with, I analyze the effect of postal voting on turnout in the communities of the Canton Zuerich alone. To account for time-varying factors on turnout, I include a linear trend. As can be seen from Table 6 first column, postal voting had a negative effect on turnout, which was much larger in small communities. Estimating election-fixed effects instead of a linear trend (as is done in column 2, where the communities of St. Gallen are added) does not greatly affect the estimated coefficients.

— insert Table 6 here —

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<sup>23</sup>Median values for income and wealth are only available since the nineties though.

<sup>24</sup>Both Cantons have a strong right-wing party (SVP).

To investigate the sensitivity of the results with respect to various income measures, I had to restrict the sample again to Zuerich, since no such communal data could be found for the Canton St. Gallen. However, as can be seen from columns (1) and (2), the loss from having to estimate a linear time trend instead of election fixed effects is not tremendous. Columns (3) and (4) add average communal income as well as average wealth to the baseline estimation (1). While the effect of postal voting on turnout becomes less negative when average income is included, the coefficient of the interaction term hardly changes. Average wealth does not seem to matter for voting behavior.

Data on the communities' median income and wealth are only available for the nineties, which reduces the sample. The coefficient before the interaction term becomes slightly less negative. Yet, the difference between the estimations using average and median income is due to the different sample period, and not the different income measures. When re-running columns (3) and (4) with the sample used in (5) and (6), the differences between taking the average or median income become marginal.

Overall, we see that even with more controls, the main result that different-sized communities reacted differently to the introduction of postal voting remains valid.<sup>25</sup>

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<sup>25</sup>I can only speculate why the total estimated effect of postal voting is more negative in Zuerich than in the other Cantons' communities (the relevant comparison would be the communities in Cantons with a legal voting duty). Since in the communal analysis, I focus on the different reaction between small and large communities, I weight all communes equally. In the Canton Zuerich, there is a particular large community (the "city Zuerich", which is the biggest in whole Switzerland). Therefore, the estimated effect of postal voting on *average* communal turnout is likely to be more negative compared to a Canton, where a large number of inhabitants (as in the city of Zuerich) is distributed over several instead of one large commune. In Zuerich, there have also been the largest fines for non-voting. While abolished in 1985, the norm that voting is important might still have been relatively strong there.

## 5.2 Accounting for communities' different Poll-Voting Costs

Before attributing this different reaction to social incentives, I want to be sure that it is not caused by different poll-voting costs of small and large communities. Theoretically, the observed response to vote by mail could also stem from larger communities having higher poll voting costs. In that case, the introduction of convenient postal voting would cause a more positive/less negative effect on turnout in large compared to small communities. The previously estimated size-effect could then simply capture the reaction to different poll-voting costs rather than to different social incentives.

To test whether this was the case, I need measures for the communities' poll voting costs. Since no such data were available, I conducted a survey in the 171 communities of the Canton Zuerich. By E-Mail, the presidents of the communities were contacted and asked about several cost factors as well as the use of postal voting.<sup>26</sup> Overall, 110 responses were obtained. Since I conducted the survey in summer 2003, the elections 1983-1999 are covered.

With this information three cost variables were built: The number of poll stations per populated acres, the average number of days, the polls are open, and the average number of hours, the poll stations are open per day. The goal is to compare, which factors can better explain the cross-sectional turnout drop after mail voting: community size or poll-voting costs. The dependent variable is turnout 1991 minus turnout 1999, which is mostly positive and therefore measures the drop in turnout.

Table 7 first column estimates the effect of community size for the 110 communities which

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<sup>26</sup>The precise questions for extracting this information were the following: How many poll stations do you have in your community? How many days are the different stations open and how many hours on each day? Were there any changes between the 1983 and 1999 elections, and if so, which ones? What share of votes was handed in by mail in the different elections?

filled out the survey. As can be seen therefrom, small communities had a 5 percent larger turnout drop between 1991 and 1999. The variable small community can account for 14 % of the variation in the turnout-drop between the communities. Column 2 analyzes the explanatory power of the measures for the poll-voting costs. Only opening hours seem to matter, but with an unexpected sign. Communities which had polls open for fewer hours, had experienced a larger drop than the others. This is against the expectation that in communities with short opening hours, the reaction to mail voting should be more positive. However, if poll-hours were very narrow, social pressure might have been stronger and the escape effect larger. Column 3 adds measures for the opportunity costs of time from voting, but none of them are significant. In the last column, all controls are added. As can be seen therefrom, community size is highly significant and has roughly the same size as in column 1. Therefore, the larger turnout drop in smaller communities is not due to different poll-voting costs in these communities. Note further that community size is the strongest single predictor for explaining the turnout drop.

— insert Table 7 here —

### **5.3 Alternative Measures of Social Pressure**

The extreme scenario for social pressure would be a community with one polling place, which is open on one day during a very limited period of time. Even though this extreme case does not exist, there are a couple of communities which come close to this description. For instance, in the community “Dorf”, there is one poll-station, which is open for half an hour on both days of the voting-weekend. As such, there is a total of 1 hour time, where one

can cast the vote. Obviously, due to the flexibility brought by mail-in ballots, economic factors would suggest the biggest turnout increase in this type of community. However, social pressure suggests exactly the opposite.

Subsequently, I would like to contrast the communities with very restricted poll-hours to the others. The main measure I consider is the total number of poll-hours, during which one can cast a vote. This measure is computed as the sum of opening hours over the different poll-stations. While the mean lies at 7 opening hours, there is substantial variation, with the minimum being 1 hour and the maximum 49 hours. *Ceteris paribus*, the more opening hours, the less strong signaling motives, but the lower the transaction costs from voting.

— insert Table 8 here —

Table 8, first column shows that communities with long opening hours reacted differently to mail voting than the ones with short opening hours. As can be seen from the highly significant coefficient, communities with long (short) opening hours had a more positive (negative) reaction to mail voting. This supports the view that social incentives matter. From a voting costs perspective, one would have expected a more positive turnout effect in communities with short opening hours, and therefore a negative sign. Columns (3), (4) and (5) decompose the indicator “total opening hours” into its components average number of poll stations, average number of opening days and average number of opening hours. Only poll hours has a significant sign. Accordingly, communities with short opening hours showed a larger decline in turnout. Again, this goes with the social incentive story, but not with the cost-saving argument.

## 6 Conclusions

In Switzerland, postal voting was introduced with the aim of increasing the convenience of the voting process. Since the costs from mail voting are much lower than the costs from poll voting, the (economic) expectation was a substantial increase in voter turnout.

The empirical analysis of this paper shows that this did not happen. The introduction of optional postal voting increased aggregate Cantonal turnout at parliamentary elections by 2.3 percentage points, but the effect is statistically not different from zero. In contrast to this small average effect, substantial effects in differently-structured Cantons were found. I calculate that the effect of postal voting on turnout was 6,5 percentage points in the Cantons where nobody lives in small communities with less than 1000 inhabitants. In contrast, turnout declined up to 7 percentage points in the Canton with the highest share (i.e. 36%) of citizens living in small communities. A replication of the same procedure with community-level data confirms that the turnout decrease was particularly a “small-community”-phenomenon.

My explanation for this pattern is a change in social incentives, most likely in the external benefits of norm-adherence. Under a pure poll-voting system, there was social pressure to vote, which was particularly strong in small communities. With the option of postal voting, a mail voter and a non-voter became observationally equivalent, which removed the social pressure to vote.

Given that people react to social incentives, what implications does this have for the design of policies? Concerning the case of voting, it is not entirely clear whether one wants to foster participation of people who vote out of social concerns. As such, even if new voting tools such as mail-in ballots or internet voting reduced turnout, the composition of voters

might change towards a higher share of intrinsically motivated (and maybe better informed) voters. Whether and to which extent this happens is an interesting question for future research.

Outside the area of voting, there are public goods (like blood-donations), where an increase in the number of donors seems socially desirable per se. More real-world evidence on which types of institutions foster pro-social behavior could serve as important guidelines for solving collective action problems. So far, it seems that providing space for signaling may achieve a certain effect.

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## 8 Cantonal Data

Population: number of inhabitants (per Canton and year). Cantonal data on population were collected in the population census, which was conducted roughly every ten years. Intermediary values were obtained by linear interpolation.

Age: percentage of inhabitants in different age classes (per Canton and year). The following age classes are considered: 0-19, 20-39, 40-59, 60-64, 65-74. The data stem from the population census as well. Missing data were obtained by linear interpolation.

Higher Education: Number of “high-school degrees” per number of 15 to 19 year old people. High-school is put in quotation marks, because the Swiss school system is different from the American one. After six years of primary school (commonly attended from 6 to 12 years), there are three options: the “Realschule” (lowest level), the “Sekundarschule” (intermediate level) and the “Gymnasium” (highest level, denoted as “high-school”). While completion of the first two types of education takes between two and three years, “high-school” lasts six years. Therefore, “high-school” is commonly completed at age 18 and the number of “high-school”-degrees per number of 15 to 19 year old teenagers represents an adequate indicator for the frequency of attendance of higher education. Data source: Statistical Yearbooks of Switzerland.

Unemployment Rate: Number of unemployed persons per active population, in percentage. The active population consists of individuals working more than 6 hours per week. Unemployment Rates in Switzerland are measured in relation to the active population. Data Source: State Secretariat for Economic Affairs (seco).

Income: Average Cantonal per capita income. The data stem from the bureau of statistics. One missing year (1971) was obtained by linear interpolation.

Close-Knit Community Structure: Percentage of people living in communities with less than 1000 inhabitants. The data stem from the population census as well. Missing data were obtained by linear interpolation.

Voting Fine: A dummy variable which takes a value of 1, if the Canton has a fine for non-voting. The fines are minimal and bear a symbolic rather than economic character.

**Table 1: Postal Voting in the different Cantons**

<u>Canton</u>	Introduction Postal Voting	<u>Canton</u>	Introduction Postal Voting	<u>Canton</u>	Introduction Postal Voting
Basel-Land (BL)	1978	Basel-Stadt (BS)	1995	Wadt (VD)	2002
St. Gallen (SG)	1979	Zug (ZG)	1995	Neuenburg (NE)	2003
Appenzell Innerrhoden (AI)	1979	Freiburg (FR)	1995	Tessin (TI)	-
Solothurn (SO)	1980	Schaffhausen (SH)	1995	Wallis (VS)	-
Thurgau (TG)	1985	Glarus (GL)	1995		
Appenzell Aussenrhoden (AR)	1988	Uri (UR)	1995		
Bern (BE)	1991	Graubunden (GR)	1995		
Aargau (AG)	1993	Obwalden (OW)	1995		
Zuerich (ZH)	1994	Geneve (GE)	1995		
Luzern (LU)	1994	Jura (JU)	1999		
Nidwalden (NW)	1994	Schwyz (SZ)	2000		

*Notes:* The table depicts the year, automatic postal voting was given as an option (in addition to poll voting). A federal law was enacted in March 1994 and put into force in December 1994, which prescribed the Cantons to introduce a system of mail-in ballot voting. Since there was no time limit specified, until when the Cantons had to change the system, there is some variation in the timing of introduction. "Early introducers" are the Cantons, which implemented a system of mail-in-ballots before 1995 (first column), and "late introducers" the others (second and third column).

**Table 2: Summary Statistics for Canton-Level**

	1971-2003				
	<u>Early Adopters</u>		<u>Late Adopters</u>		T Statistic Difference
	Mean	Std. Dev	Mean	Std. Dev	
<b>Turnout</b>					
Overall	46,8	9,8	47,0	11,6	0,2
Drop Turnout 1971-1975	-5,6	4,0	-6,4	11,6	-0,2
<b>Population Structure</b>					
Population (in 1000)	370,8	354,2	176,4	144,6	-5,8
Citizens living in communities with less than 1000 inhabitants (%)	6,7	4,7	14,7	11,5	6,5
Citizens living in communities with less than 1500 inhabitants (%)	23,3	10,3	26,3	17,5	1,4
Rural (%)	35,8	25,5	41,0	34,8	1,2
<b>Control Variables</b>					
Age 0 to 19 (%)	27,4	3,8	26,6	4,7	-1,4
Age 20 to 39 (%)	29,7	2,3	29,9	2,0	0,6
Age 40 to 64 (%)	29,1	2,8	29,3	2,6	0,7
Age 65 to 74 (%)	7,9	0,9	8,1	1,0	1,2
75 and Older (%)	5,9	1,4	6,1	1,6	1,1
Education (%)	2,0	0,9	3,0	1,5	5,9
Unemployment Rate	1,1	1,3	1,5	1,7	1,9
Pc. Income (in 1000 Sfr.)	31,5	13,2	34,0	16,9	1,3
Voting Fine	0,1	0,3	0,1	0,3	-1,2
<b>Language</b>					
Non-German	0	0	0,3	0,5	7,0
<b>Direct-Democracy</b>					
Mandatory Law-Referendum	0,7	0,5	0,4	0,5	-4,1

*Notes:* The table reports summary statistics. Early adopters are the Cantons that implemented postal voting before the federal law prescribed it. Late adopters are the others. Turnout is measured in percentage of the eligible population, population is measured in 1000, community structure is captured by the share of cantonal residents living in communities with less than 1000/1500 inhabitants, rural is the percentage of Cantonal residents living in rural areas. The share of residents living in age classes 0-19, 20-39, 40-64, 65-74, >75 is measured in percentage. Education measures the percentage of high-school degrees of the people aged between 15 and 19. The unemployment rate is defined as the percentage of unemployed persons of the active population (i.e. working 6 hours per week or more). Income is in annual 1000 Sfr., and Voting Fine a dummy for whether the Canton has a fine for non-voting. Language Non-German is a dummy variable taking values of 1 if the language is French or Italian, and Mandatory Law-Referendum takes a value of 1 if the Canton has such an institution for ordinary expenses.

**Table 3: Postal Voting, Turnout and Structure of the Canton**

	(1)	(2)
Dummy Postal	2,2 (1,7)	6,5 (2,6)**
Dummy Postal* Share Small		-0,4 (0,1)**
Share Small		0,1 (0,5)
Population	-0,05 (0,03)	-0,04 (0,03)
Unemployment Rate	-0,7 (0,8)	-0,9 (0,7)
Education	0,6 (0,8)	1,3 (0,6)**
Income	0,1 (0,1)	0,0 (0,1)
Dummy_Fine	3,0 (2,2)	4,6 (2,5)*
Age-Dummies	YES	YES
Canton-Fixed Effects	YES	YES
Election-Fixed Effects	YES	YES
Observations	228	228
R-squared	0,76	0,78

*Notes:* Dependent variable is turnout at the federal elections 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999 and 2003. Dummy Postal measures the availability of Postal Voting and Small is the Cantonal share of citizens living in small communities with less than 1000 inhabitants. All estimations include Fixed-Effects. Robust standard errors clustered at the Cantonal level in parentheses. \*\*\*: significant at 1 percent, \*\*: significant at 5 percent, \*: significant at 10 percent.

**Table 4: The Effect of Postal Voting in different communities**

	(1)	(2)	(3)	(4)				
	All Communities	Non-German Speaking	German Speaking	Cantons With Voting Duty				
Dummy Postal	3,2 (0,25)***	4,36 (0,33)***	4,79 (0,38)***	6,22 (0,51)***	2 (0,36)***	3,33 (0,44)***	-0,59 (0,37)	0,43 (0,45)
Dummy Postal* Small		-2 (0,41)***		-1,97 (0,58)***		-2,74 (0,53)***		-2,58 (0,50)***
Small	4,01 (3,14)	3,62 (3,61)	1,77 (3,15)	1,38 (3,15)	8,26 (0,44)***	9,31 (0,51)***	9,3 (0,43)***	10,42 (0,49)***
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Community-Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Election-Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	19847	19847	8399	8399	11448	11448	10306	10306
R-squared	0,76	0,72	0,78	0,78	0,75	0,75	0,76	0,76

*Notes:* Dependent Variable is communal turnout at the federal elections 1979, 1983, 1987, 1991, 1995, 1999 and 2003. Dummy Postal measures the availability of Postal Voting and Small is a dummy measuring whether the community had less than 1000 inhabitants at the time postal voting was introduced or not. As control variables, I use different age classes and the share of inhabitants holding a higher ("tertiary") education. (1) includes all communities, (2) the communities in Non-German-Speaking Cantons, (3) the communities in German-Speaking Cantons, (4) the communities in the Cantons that have/had a legal duty to vote. Standard errors are clustered at the community level.

**Table 5: Summary Statistics for Community-Level Data, Zuerich**

	1983-2003			
	Mean	Std. Dev	Min	Max
<b><u>Zuerich</u></b>				
<b>Turnout</b>				
Overall	50,7	9,4	31,1	99,3
<b>Population Structure</b>				
Community Size	7060	28290	213	365043
<b>Control Variables</b>				
Age 20 to 39 (%)	30,2	3,8	18,7	44,8
Age 40 to 64 (%)	32,5	3,8	19,5	45,4
Age 65 to 80 (%)	9,0	2,4	2,6	18,3
Education (%)	12,0	6,0	2,1	42,1
Tax Rate	114,8	12,4	69,0	133,0
Median Income (in 1000 Sfr.)	45,3	5,9	29,0	69,3
Average Income (in 1000 Sfr.)	51,9	16,2	20,9	161,0
Median Wealth (in 1000 Sfr.)	60,1	35,2	7,0	233,3
Average Wealth (in 1000 Sfr.)	267,8	299,0	26,6	3761,1
Percentage changed lists	58,7	7,2	35,4	97,4
<b>Survey-Data (110 communities)</b>				
Number of poll-stations	3,5	2,9	1,0	21,0
Av. opening days (per poll-station)	1,7	0,4	1,0	3,0
Av. opening hours (p. station and day)	1,2	0,4	0,3	3,5
Total opening hours (=Av. Stations*Av. Days * Av. Hours)	7,1	7,1	1,0	48,9
Share votes handed in by mail	9,5	17,9	0	79
<b><u>St. Gallen</u></b>				
<b>Turnout</b>				
Overall	44,7	6,7	31,0	68,1
<b>Population Structure</b>				
Community Size	4741	8021	248	75664
<b>Control Variables</b>				
Age 20 to 39 (%)	28,9	2,7	19,8	36,4
Age 40 to 64 (%)	28,2	3,2	21,1	38,6
Age 65 to 80 (%)	9,5	2,3	2,6	18,3
Education (%)	7,3	3,3	0,3	24,6
Tax Rate	148,0	16,0	90,0	175,0

*Notes:* The table reports summary statistics for the communities of the Cantons Zuerich and St. Gallen. Age structure is measured by the share of people in the different age classes. Education is defined as the share of citizens older than 19 holding a high-school degree and higher. The community tax rate is defined in percentage to the federal tax rate. Income is the yearly median income in 1000 Sfr. (only available for the Canton Zuerich). Data on Poll-Stations stem from the survey conducted in the Canton Zuerich. Poll stations are the number of polling places in the community. Poll days measured the average number of days, the polling stations are open and polling hours the average number of hours, the poll stations are open per day.

**Table 6: Robustness with Respect to Different Income/Wealth Measures**

	(1)	(2)	(3)	(4)	(5)	(6)
	ZH	ZH, SG	ZH	ZH	ZH	ZH
Dummy Postal	-3,20 (0,57)***	-3,4 (0,7)***	-2,44 (0,62)***	-3,23 (0,58)***	-3,27 (0,91)***	-3,77 (0,69)***
Dummy Postal* Small	-5,21 (0,46)***	-5,6 (0,9)***	-5,30 (0,46)***	-5,22 (0,46)***	-3,52 (0,59)***	-3,42 (0,6)***
Average Income			-0,07 (0,023)***			
Average Wealth				0,001 (0,001)		
Median Income					-0,09 (0,069)	
Median Wealth						-0.010 (0,008)
Education	0,4 (0,1)***	0,3 (0,1)**	0,3 (0,07)**	0,2 (0,087)**	0,4 (0,1)***	0,4 (0,1)***
Tax Rate	0,0 (0,02)	0,0 (0,02)	0,0 (0,02)	0,0 (0,02)	0,0 (0,03)	0,0 (0,02)
Controls for Age Structure	YES	YES	YES	YES	YES	YES
Community-Fixed Effects	YES	YES	YES	YES	YES	YES
Election-Fixed Effects	NO	YES	NO	NO	NO	NO
Observations	1024	1564	1024	1024	682	682
R-squared	0,90	0.85	0,90	0,90	0,90	0,90

*Notes:* Dependent Variable is communal turnout at the federal elections 1983, 1987, 1991, 1995, 1999 and 2003. Dummy Postal measures the availability of Postal Voting and Small is a dummy measuring whether the community has less than 1000 inhabitants or not. The previous controls are age structure, education (defined as the share of people older than 19 holding a high-school degree and higher), the community tax rate and a linear time trend. Average income and wealth data are available for the whole sample, while the median income and wealth is available since the nineties. Standard errors are clustered at the community level.

**Table 7: Poll Voting Costs and the Response to Postal Voting**

	(1)	(2)	(3)	(4)
	Drop Turnout	Drop Turnout	Drop Turnout	Drop Turnout
	1991-1999	1991-1999	1991-1999	1991-1999
<u>Social Incentives</u>				
Small Community	4,8 (1,7) <sup>***</sup>			5,0 (2,1) <sup>**</sup>
<u>Voting Cost Incentives</u>				
# Poll-Stations per 100 ha		0,1 (0,3)	-0,3 (0,5)	-0,5 (0,4)
Av. # Poll Days		0,7 (0,97)	0,7 (0,97)	-0,1 (0,9)
Av. # Poll-Opening Hours p. Day		-3,7 (0,9) <sup>***</sup>	-3,8 (0,9) <sup>***</sup>	-4,5 (1,5) <sup>***</sup>
<u>Opportunity Costs</u>				
Education			0,3 (0,2)	0,3 (0,4)
Income			-0,3 (0,2)	-0,1 (0,3)
<u>Other Controls</u>				
Age Class 20-39				0,5 (0,7)
Age Class 40-64				0,4 (0,6)
Age Class 65-80				0,8 (0,7)
Tax Rate				0,1 (0,1)
Observations	110	110	110	110
R-squared	0.14	0.09	0.13	0.27

*Notes:* The dependent variable is the communities turnout drop between 1991 and 1999. Small is a dummy measuring whether the community has less than 1000 inhabitants or not. Poll stations are per 100 hectares populated area. Poll days measures the average number of days, the polling stations are open. Polling hours are the average number of polling hours, the poll stations are open per day. Income is the median income in 1000 Swiss Franks. All other controls are defined as in Table 6. The control variables are taken for the year 1991. Robust standard errors in parantheses.

**Table 8: Alternative Proxys for Social Pressure**

	(1) ZH	(2) ZH	(3) ZH	(4) ZH
Dummy Postal*Total Hours	0.1 (0,1)***			
Dummy Postal*Poll Stations		-0.4 (0.3)		
Dummy Postal*Poll Days			-1.1 (0.9)	
Dummy Postal*Poll Hours				2.2 (1.2)*
Education	0.3 (0,2)	0.3 (0,2)	0.4 (0,2)	0.3 (0,2)
Age class 20-39	-0.2 (0,3)	-0.2 (0,2)	-0.2 (0,3)	-0.1 (0,3)
Age class 40-64	0.2 (0,2)	0.1 (0,2)	0.1 (0,2)	0.2 (0,2)
Age class 65-80	0.8 (0,2)***	0.7 (0,2)***	0.8 (0,2)***	0.8 (0,2)***
Community Fixed Effects	YES	YES	YES	YES
Election Fixed Effects	YES	YES	YES	YES
Observations	550	570	555	550
R-squared	0.90	0.90	0.90	0.89

*Notes:* Dependent Variable is communal turnout at the federal elections 1983, 1987, 1991, 1995 and 1999 for the communities in the Canton Zurich. Total Hours is the sum of the total opening hours over the different poll stations in a community. Poll stations measures the number of poll stations in a community. Poll days stands for the average number of days, the poll-stations are open and poll-hours the average opening hours per station and day. All estimations include Community-Fixed Effects and Election-Fixed Effects. Standard errors clustered at the community level in parantheses.

### Appendix 1: Canton Level Results, Stepwise Regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dummy Postal	-1,43 (3,84)	3,04 (1,7)*	2,32 (1,66)	2,2 (1,7)	1,48 (1,56)	1,75 (4,09)	5,91 (2,51)**	4,99 (2,69)*	6,46 (2,8)**	5,02 (2,47)*
Dummy P*Share Small						-0,23 (0,17)	-0,29 (0,11)**	-0,28 (0,13)*	-0,38 (0,14)**	-0,31 (0,12)**
Share Small						0,23 (0,14)	0,39 (0,44)	0,38 (0,54)	0,11 (0,49)	-0,02 (0,49)
Education1 (Flow)				0,57 (0,78)					1,28 (0,64)*	
Education2 (Stock)					1,41 (1,41)					0,64 (1,17)
All Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Age-Classes	NO	NO	YES	YES	YES	NO	NO	YES	YES	YES
Canton-Fixed Effects	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Election-Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	228	228	228	228	228	228	228	228	228	228
R-squared	0,13	0,74	0,75	0,76	0,77	0,16	0,76	0,77	0,78	0,78

Notes: Dependent Variable is turnout at the federal elections 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999 and 2003. Dummy Postal measures the availability of Postal Voting and Small is the Cantonal share of citizens living in small communities with less than 1000 inhabitants. Column (1) is the baseline specification. Column (2) adds Canton Fixed Effects. Columns (3) adds controls for age classes. Column (4) adds all previously used controls. Column (5) adds an alternative education measure: the percentage of people with a higher education ("tertiary education"). Since these data are available on a decennial basis, intermediate values have been interpolated. The same logic applies to columns (6)-(10). Standard errors are clustered at the Canton level.

## Appendix 2: Endogeneity of Adoption

	Pr(Switch to postal)			
	(1)	(2)	(3)	(4)
Turnout last election	-0,003 (0,002)	-0,004 (0,002)*	-0,001 (0,002)	-0,002 (0,002)
Turnout second-last election	-0,000 (0,002)	-0,000 (0,003)	0,000 (0,001)	0,000 (0,002)
Turnout third-last election		0,001 (0,002)	-0,001 (0,002)	0,001 (0,002)
Election-Fixed Effects	NO	NO	NO	YES
Controls	NO	NO	YES	YES
Observations	221	216	215	170
Pseudo R-squared	0,02	0,02	0,2	0,3

*Notes:* Dependent Variable is the switching to postal voting, which takes a value of 1 in the year of the switching, and 0 otherwise. The model is probit, with marginal coefficients being reported. The controls in column (4) are the same as in table 3. Robust standard errors reported.