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Rain, Emotions and Voting for the Status Quo

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ABSTRACT

Rain, Emotions and Voting for the Status Quo*

Do emotions affect the decision between change and the status quo? We exploit exogenous variation in emotions caused by rain and analyze data on more than 400 ballot propositions in Switzerland for the years 1958 to 2014 to address this question. The empirical tests are based on administrative ballot outcomes and individual postvote survey data. We find that rain decreases the share of votes for a change. Our robustness checks suggest that changes in the composition of the electorate or changes in information acquisition do not drive this result. In addition, we provide evidence that rain might have altered the outcome of several high-stake votes. We discuss the psychological mechanism and document that rain reduces the willingness to take risks, a pattern that is consistent with the observed reduction in the support of change.

JEL Classification: D03, D72

Keywords: emotions, voting, status quo, risk aversion, rain, direct democracy, turnout

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1 Introduction

Politics fuels emotions and emotions motivate political engagement and decisions over and above cognitive evaluations.[1] Emotions can serve as a beneficial guide to decision-making, but sometimes may lead decision-makers astray.[2] We study how emotions affect the fundamental decision about whether to keep or change the status quo. We exploit rainfall as an exogenous source of variation in emotions (Lambert et al., 2002; Hirshleifer and Shumway, 2003; Kamstra, Kramer and Levi, 2003;) and examine whether voters are more or less likely to support a policy change on a rainy voting weekend.

Most decisions involve the choice between keeping the status quo or opting for change. The human tendency to maintain the status quo, usually the default option, has been documented in a variety of real life choices.[3] The status quo effect has been attributed to risk preferences and uncertainty (Samuelson and Zeckhauser, 1988), loss aversion (Kahneman, Knetsch and Thaler, 1991), and also cognitive load (Danziger, Levav and Avnaim-Pesso, 2011; Augenblick and Nicholson, 2016). Little is known, however, about the effect that emotions have on the tendency to choose the status quo in such decisions. This is surprising in view of the recent contributions in economics which have demonstrated the pervasive impact of emotions on human decisions (Loewenstein, 2000; Caplin and Leahy, 2001; Kahneman and Thaler, 2006; DellaVigna, 2009; Haushofer and Fehr, 2014).

In this paper, we explore the effect of emotions on the support of the status quo. We analyze a novel data set that contains more than 860,000 municipal-level vote outcomes from 417 propositions at the federal level of Switzerland's direct democracy between 1958 and 2014. We use administrative voting and individual postvote survey data to estimate the effect of rain on the propensity to vote for the status quo. We find that rain on a voting weekend decreases support for changing the legal status quo. A simple simulation indicates

[1] For reviews on emotions in economics, politics and political philosophy, see, e.g., Elster (1998, 1999) and Marcus (2000).

[2] An excellent general account on emotions and decision-making is provided in Lerner et al. (2015). The bridge to economic reasoning is nicely built in Loewenstein (2000).

[3] These include, for example, the decision to use default retirement plans (O'Donoghue and Rabin, 2001), the greater willingness to become an organ donor if donating is the status quo option (Johnson and Goldstein, 2003), or supporting the incumbent candidate (Lee, 2008).

that this rain effect potentially swayed several vote outcomes. We address two explanations, other than emotional reactions, for a substantial negative relationship between rain and the share of yes votes. First, we test whether changes in the composition of the constituency can explain the empirical regularity. Second, we investigate whether the use of different information channels is responsible for the rain effect. In addition, we show that the effect is driven by citizens who cast their ballot card on the voting weekend, rather than by those who vote beforehand by mail. Moreover, our results suggest that the effect of rain also prevails in narrow and high-turnout votes.

Switzerland provides a unique setting to study citizens' policy choices as most major political decisions are determined by popular votes. These political decisions are highly salient due to broad media coverage. Vote outcomes from referendums and popular initiatives are binding. Examples of high-stake ballots include Switzerland's vote on its membership in the European Economic Area, a proposal to introduce a federal debt brake, and several votes on the introduction of a comprehensive minimum wage scheme. Importantly, Swiss voters have substantial experience with popular votes. Thus, our findings are robust to the concern that the influence of psychological factors vanishes as individual experience increases (List, 2003; Levitt and List, 2008). Finally, the framing of the decision emphasizes the potential new future legal situation. In the official description of the ballot proposals, the new alternative statutory or constitutional law is explicitly discussed in reference to the current legal status quo. Accordingly, an approval of the policy change always requires a yes vote, while adherence to the status quo requires a no vote. This enables a straightforward interpretation of the effect of rain on vote outcomes.

What might drive this rain effect? We discuss several psychological mechanisms and conclude that a specific version of the projection bias (Loewenstein, O'Donoghue and Rabin, 2003) offers the most plausible explanation. Emotions affect risk aversion and consequently alter the evaluation of the policy options (Schwarz, 2012). The intuition is straightforward. While positive emotions lead to more optimistic evaluations of change, negative emotions lead to more cautious appraisals. Consistent with this, we document that reported willingness to take risks is lower if it rains, based on complementary data.

We think that our results are important for two reasons. First, the direct democratic votes that we study are collective decisions with major policy implications. If psychological factors alter such collective choices, we should take this evidence into account for institutional design. Second, our findings from field data suggest that negative emotions lead people to favor the status quo. This tendency may be relevant in other domains – for instance, in labor market decisions and health choices. Choice architects should thus be aware that decisions may be affected by external emotional cues that systematically affect peoples' trade-offs between change and status quo.

This study relates to at least three strands of research. First, we add to a growing literature that explores the role of emotions for decision-making in field settings (DellaVigna, 2009). Studies have exploited the fact that the performance of a favored sports team affects mood, and consequently influences the ruling of judges, the evaluation of politicians, and family conflicts (Healy, Malhotra and Mo, 2010, 2015; Card and Dahl, 2011; Fowler and Montagnes, 2015; Eren and Mocan, 2016). Our study is, to our knowledge, the first that explicitly tests whether the effect of emotions operates through "an impact on risk-aversion ... or a projection of the emotions to economic fundamentals" (DellaVigna, 2009, p. 359).

Second, we add to the new field of behavioral political economy that investigates why and how citizens vote based on a broader account of human motivation. In this vein, DellaVigna et al. (2016) document that social image concerns are important in explaining why people vote. Augenblick and Nicholson (2016) show that choice fatigue can cause voters to make decision shortcuts, for example, by voting for the status quo. Berggren, Jordahl and Poutvaara (2010) provide evidence that voters use visual cues, such as a candidate's physical appearance, as a heuristic to assess politicians.

Third, we contribute to the recent work on the effects of rain on elections. This literature has argued that rainfall exclusively alters the cost of voting. This in turn impacts turnout (Hansford and Gomez, 2010; Fraga and Hersh, 2011; Lind, 2015*a*; Arnold and Freier, 2015; Fujiwara, Meng and Vogl, 2016) and participation rates in political rallies (Madestam et al., 2013). Our findings suggest that rainfall not only alters voting results by changing the constituency, but also directly affects the voting decisions of citizens. Our evidence from observational data complements previous experimental findings by Bassi (2015) who shows that weather conditions affect how voters evaluate the incumbent.

We proceed as follows. Section 2 provides background on the institutional environment in Switzerland, our data sources, and our empirical strategy. Section 3 explores the effect of rain on vote outcomes. We first present the main results and then conduct two placebo tests. In addition, we explore alternative explanations for the main empirical regularity including a change in composition of the electorate due to rain. Finally, we highlight the substantial size of the rain effect. In Section 4, we discuss aspects of the likely mechanism behind the relationship between rain and voting behavior and other aspects that are relevant for the assessment of the generality of our findings. Section 5 concludes and suggests directions for future research on emotions and choice between change and the status quo.

2 Institutions, Data and Empirical Strategy

2.1 Institutions

A citizen's ability to decide on basic policy issues is fundamental to any democratic system with elements of direct democracy. Direct democratic participation is a constitutive element of the Swiss political system. Citizens decide on several policy propositions throughout the year. Most important for our study is that a yes vote is always a vote for change. This means that we can concentrate on the share of yes votes when evaluating the support for change. The outcome of a popular vote is binding and may lead to major changes in public policy. Notable important propositions include votes on the participation in the integrated market of the European Union, fundamental changes to the federal tax code, and votes on the future of the social security system.[4]

Ballot propositions can be divided into two categories: referendums and popular initiatives. A mandatory referendum takes place for every proposed amendment of the federal constitution. In addition, federal laws approved by both chambers of parliament are put to

[4]An overview of popular votes at the federal level in Switzerland is provided on the official webpage of the Swiss government at `https://www.admin.ch/gov/en/start/documentation/votes.html`.

a popular vote if a committee of citizens submits 50,000 valid signatures. Popular initiatives allow citizens, parties, and interest groups to propose constitutional amendments. A vote takes place if the initiators have collected 100,000 valid signatures.

People fill in ballot cards at home and traditionally bring them to the ballot box on the voting weekend. The ballot card arrives by mail two to three weeks before the vote takes place. The ballot boxes are open on Saturday and Sunday and they are located in the city hall or in a public building. The ballot cards state the type of popular vote and the title of the proposition.

As an alternative to voting at the polling station, all Swiss cantons have gradually introduced postal voting since 1978, most of them during the 1990s (Hodler, Luechinger and Stutzer, 2015). This has altered the way people vote. While all voters formerly had to cast their votes at the ballot box before the introduction of postal voting, a fifth of voters did so in 2005 (Federal Chancellery, 2005). However, roughly one third of the voters still cast their votes via mail in the week preceding the voting weekend (Federal Chancellery, 2005). More than half of the votes cast in our sample were cast at the ballot box or within the week before the vote.

2.2 Data

We make use of three comprehensive data sources for our analysis. First, we draw on administrative data on municipal vote outcomes for the years 1958–2014 from the Swiss Federal Statistical Office (SFS, 2015). These data contain vote outcomes (for the averages across municipalities, see Figure A.2) and turnout information for all Swiss municipalities and federal propositions. In total, we have data on more than 860,000 municipal-level vote outcomes from 417 propositions in 2,538 municipalities. On average, there are three voting weekends per year (see Figure A.1 for the distribution over months). We complement this data with vote recommendations for propositions from parties based on Swissvotes, a database maintained by the University of Berne and Année Politique Suisse (Swissvotes 2012).

For additional analyses, we also add information on the electoral strength of parties at the municipal-level in federal parliamentary elections from 1971–2007. For each voting date, we assign the latest election outcome, or, in the case of the years before 1971, the electoral outcome in 1971. These data are provided by the Swiss Federal Statistical Office (SFS, 2015).

Second, we base our analysis on individual voting decisions from postvote surveys for the years 1996–2006 (FORS 2014).[5] Several Swiss universities and the private research institute, GFS, administer these postvote surveys, called VOX surveys, after each voting weekend. A representative sample of roughly 1,000 voters is contacted by phone. The resulting data contain information on whether and how respondents voted, the method of voting (via mail or via ballot box at the polling station), a few socio-economic characteristics, political ideology, knowledge about the vote issues and which information channels voters used.

Third, we use data on local rainfall that stems from the Swiss Federal Office of Meteorology (MeteoSwiss 2015). It includes information on rainfall between 7 a.m. and 7 p.m.[6] An advantage of our setting is the great variation in rainfall over time and space due to the specific topography of Switzerland shaped by the Jura Mountains and the Alps.[7] We gathered rain data on all popular votes from 1958–2014 based on 116 automated meteorological stations (see Appendix, Figure A.6, for a map of the stations).

To construct a variable for rainfall at the municipal-level, we interpolate station-level rain data using the inverse distance weighting function for the nearest three stations. As rain conditions in the mountains can be considerably different from those in the lowlands and in the foothills of the Alps, we excluded 17 weather stations above an altitude of 2,000 meters. We further dropped all stations with a distance larger than 30 kilometers from a municipality's set of stations. We construct an indicator variable for rain that is equal to one for a municipality if it rained any time between 7 a.m. and 7 p.m. on the Saturday or the Sunday of the voting weekend.

[5]Note that for the year 1997 there is no municipality identifier available, thus we cannot use the data for this year.

[6]Our rain variable at the 12-hour-level provides us with a more relevant time frame than most studies that also include nightly rainfall.

[7]Appendix Figures A.1, A.3, A.4 and A.5 provide an illustration of the temporal and spatial variation in rainfall in our data. The descriptive statistics are depicted in Table A.1 in the Appendix.

2.3 Empirical Strategy

The extensive municipal and individual data allow us to explore the effect of rain, controlling for a substantial amount of observed and unobserved heterogeneity. We examine the effect of rain on political decisions with the following econometric model using municipal data:

$$Y_{jp} = \eta_j + \delta_p + \alpha \, \mathrm{Rain}_{jp} + X'_{jp}\beta + \varepsilon_{jp}, \tag{1}$$

where j indexes municipalities, p indexes proposals; Y_{jp} is our outcome of interest, namely the share of yes votes in percentage points; η_j is a municipality fixed effect; δ_p is a proposition fixed effect; α is the coefficient of interest; Rain_{jp} is a dummy that is one if it rained in municipality j; X'_{jp} is a matrix of covariates that may include variables such as turnout; β is a vector of coefficients; and ε_{jp} is an idiosyncratic error term.

Standard errors account for clustering in the 26 cantons. We cluster at the cantonal level to take into account both spatial correlation in rain and serial correlation in voting behavior. This is analogous to state-level clustering for the United States, which is commonly regarded as most conservative option and therefore the recommended one (Cameron and Miller, 2015). Note that the null hypothesis that rain has no effect on the share of yes votes is rejected for both data sets at conventional significance levels whether we use voting weekend, municipality or two-way clustered standard errors.

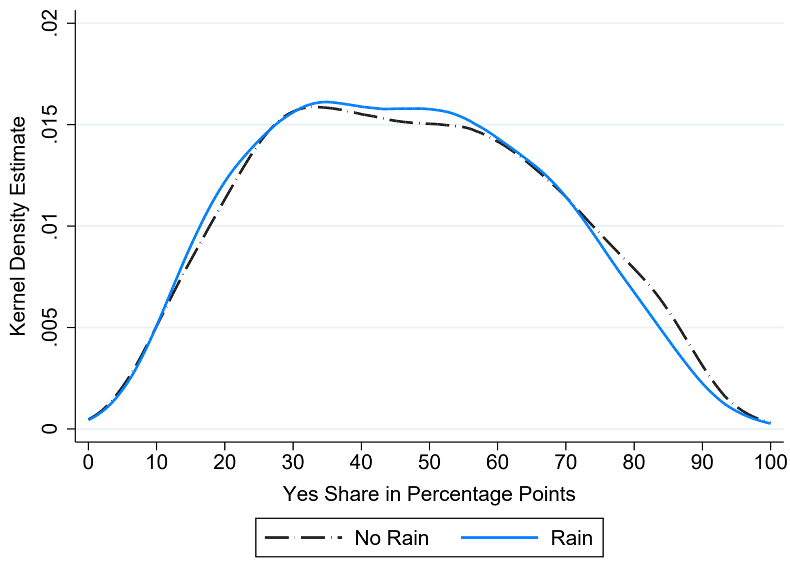
We complement the analysis of municipal voting data with a detailed investigation of how rain affects voting decisions using individual-level data and building on an estimation equation similar to equation (1). This allows us to control for covariates as well as to estimate the effect of rain on ballot box voters and postal voters separately. Appendix B provides a detailed exposition of the model at the individual-level.

3 Rain, and Votes Against the Status Quo

3.1 Main Results

We show the bivariate relationship between the share of yes votes and rain in the raw data in Figure 1. It displays the density of the share of yes votes in percentage points on dry (dashed black line) and rainy days (solid blue line). The figure reveals that the share of yes votes is considerably lower on rainy days. While the average yes share is 47.1 percentage points on dry days, it is 46.2 percentage points on rainy days. This descriptive evidence should be interpreted with caution. It might be that municipalities with high average rainfall are more likely to oppose political reforms per se. We therefore turn to the regression analysis that allows us to identify the effect of rain on the share of yes votes holding constant characteristics that are specific to municipalities and propositions. We first consider the administrative, municipal-level data and second the individual-level postvote survey data.

Figure 1: Rain and the Share of Yes Votes in Percentage Points



Note: The figure shows two estimated densities of the yes vote share in percentage points for rainy voting weekends (blue solid line) and dry voting weekends (black dashed line). The density estimates stem from the Epanechnikov kernel function (bandwith = 3.0) based on 862,670 municipal-level vote outcomes.

Municipal Data — Table 1 presents our main results from the municipal data set. Column (1) shows the raw difference in means. It indicates that propositions on rainy voting weekends have a yes share that is about one percentage point lower than propositions on dry voting weekends. This difference might be the consequence of temporal and spatial dependence that creates a spurious relationship between rain and the share of yes votes.

Table 1: Effect of Rain on the Share of Yes Votes in Percentage Points, Municipal Data 1958–2014

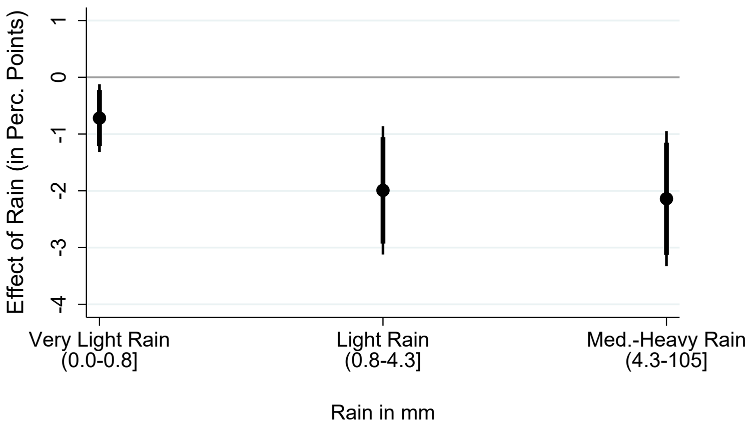
Dependent Variable	Share of Yes Votes [0–100]			
	(1)	(2)	(3)	(4)
Rain Indicator	-0.98**	-1.32**	-1.28***	-1.24***
	(0.39)	(0.57)	(0.38)	(0.39)
Proposal FE		✓	✓	✓
Municipality FE			✓	✓
Mun. Trends				✓
Observations	862,670	862,670	862,670	862,670
Clusters	26	26	26	26
R-squared	0.00	0.69	0.71	0.72

Note: The table shows the estimated effect of rain on the share of yes votes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

To hold constant common shocks caused by timing, such as seasonal effects or aggregate opinion shocks, we include proposal fixed effects in column (2). The estimated coefficient for rain is -1.32. In column (3), we add municipality fixed effects to address the concern that municipalities with more rain may be more conservative. The effect of rain remains unchanged. Finally, we include linear municipal time trends in column (4) to demonstrate that spatio-temporal trends do not drive our results. In Table A.2 in the Appendix, we provide evidence that the rain effect prevails in specifications with cubic trends, municipal-month or municipal-year fixed effects. The stability of the coefficient estimate to the inclusion of these granular fixed effects implies that short-term fluctuations in rain drive our results. We use specification (4) as our baseline model for the municipal data set throughout the rest of the paper to capture not only time and spatial fixed effects, but also municipality-specific trends.[8]

In an additional analysis, we regress the share of yes votes on terciles of rainfall to investigate the functional form between the two variables. Figure 2 depicts that even very light, as well as, light levels of rainfall decrease the share of yes votes. These low levels of rainfall are analogous to dark skies and some rain.[9] The results are similar if we use rainfall quintiles instead of terciles as indicated in Figure A.8 in the Appendix.

Figure 2: Flexible Relationship between Rain in Terciles and the Share of Yes Votes in Percentage Points, Municipal Data



Note: The figure shows coefficient estimates for the effect of rain on the share of yes votes in percentage points together with a 95% confidence interval (thin line) and a 90% confidence interval (thick line) using municipal data. The point estimates are based on regression model (4) in Table 1 with indicator variables for the terciles of rainfall. The reference category is zero rainfall.

Postvote Survey Data — We also estimate the effect of rain on the propensity to vote yes using individual data from postvote surveys. The results are reported in Table 2. The point estimate of rain is consistently negative in all specifications and varies between -1.84 and -3.15. It is robust to the inclusion of proposal and municipality fixed effects as well as covariates that comprise age dummies, gender, dummies for income categories and a dummy for holding a university degree. We also estimate the relationship between rain and

[8]The coefficient of rain is statistically significant when we use the voting weekend, the municipality or the twoway clustered standard errors, see Table A.3 in the Appendix.

[9]The Swiss Metereological Service classifies rain of 2mm per hour as heavy rain. In comparison, rainfall of up to 4mm over the entire voting weekend can be considered as light rain. Therefore, we name the two lowest terciles light and very light rain.

voting yes using a more flexible functional form. Figure A.7 in the Appendix demonstrates that the negative effect of rain is pronounced even for propositions with light rainfall, which is qualitatively equivalent to the results from municipal data. In sum, our main estimates from the two high resolution data sets suggest that there is a sizeable effect of rain on vote choices. This effect prevails even when we control for a large set of fixed effects and individual covariates.

Table 2: Effect of Rain on the Share of Yes Votes in Percentage Points, Postvote Survey Data 1996-2006

Dependent Variable	Voted Yes [0,100]			
	(1)	(2)	(3)	(4)
Rain Indicator	-2.02*	-1.84*	-2.93**	-3.15**
	(1.13)	(1.05)	(1.38)	(1.28)
Proposal FE		✓	✓	✓
Municipality FE			✓	✓
Covariates				✓
Observations	29,510	29,510	29,510	29,510
Clusters	26	26	26	26
R-squared	0.00	0.14	0.20	0.21

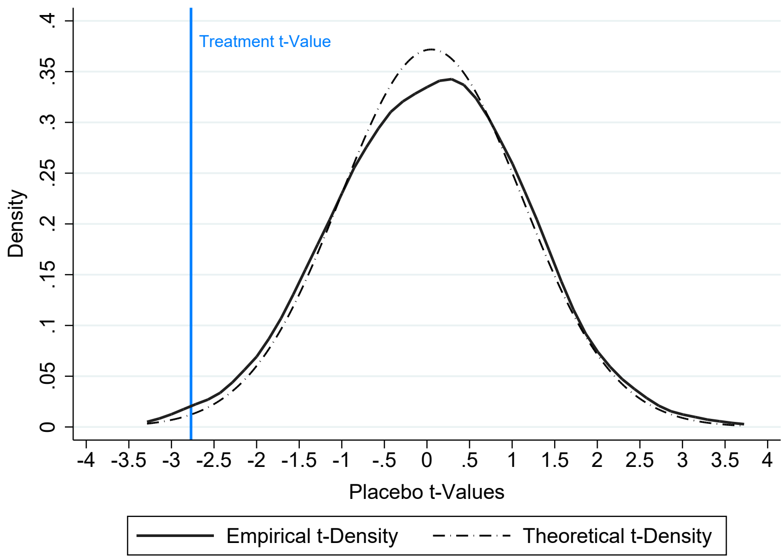
Note: The table shows the estimated effect of rain on the propensity to vote yes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.2 Placebo Tests

We examine the plausibility of the rain effect in two ways. First, we conduct a placebo test by randomizing rainfall across voting weekends. Second, we exploit an institutional change – the introduction of postal voting – which allows voters to cast their votes before the official voting weekend.

Random Rainfall — Due to the high spatial and time series correlation in rainfall data, the precision of the rain effect may be overestimated (Lind, 2015*b*; Cooperman, 2016). To address this concern, we follow Lind (2015*b*) and Fujiwara, Meng and Vogl (2016) by using flexible time trends. In a separate specification, we use municipal-year fixed effects to account for spatial correlation over time (see Table A.2 in the Appendix). We also check whether the estimated rain effect is spurious in a placebo study that randomizes voting weekend rainfall (Lind, 2015*b*). We assign future or past voting weekend weather randomly to another voting weekend and run our baseline specification 500 times. Intuitively, this method randomizes rain maps across voting weekends. We then compare our main results in Table 1 with the distribution of placebo estimates.

Figure 3: Randomized Rainfall



Note: This figure shows the empirical distribution of t-values under placebo rainfall, the average t-value under our baseline specification, as well as the theoretical t-distribution. Since we randomize rain at the voting weekend level, we use standard errors clustered at voting weekend in all specifications here. The theoretical t-distribution therefore has 163 degrees of freedom. Note that we have fewer observations, 671,000 on average, than in our baseline sample. This is because our panel is unbalanced and randomization of votedate rainfall therefore leads to missing values. To obtain a plausible t-value for the comparison, we computed the effect of true voting weekend rainfall in the same reduced samples and averaged the resulting t-values. The average t-value of the treatment, -2.77, is depicted by the blue line. The critical empirical t-value at the 1% level is -2.72. The t-value of the treatment in the full sample with voting weekend clustering is -3.20.

Figure 3 shows the resulting coefficients divided by their standard errors (black solid line) together with the theoretical t-distrbution (black dotted line). As expected in a placebo study, the distribution of t-values is centered at zero. The vertical blue line depicts the t-value of our baseline specification. It indicates that the size of the coefficient estimate lies in the outer tail of the coefficient distribution. The obtained t-value of -2.77 is slighly larger in absolute value than the critical empirical t-value at the 1% level, which is -2.72. Thus, our regression coefficient for rain is statistically significant at the 1% level when compared to the empirical distribution of t-values under the null hypothesis.

Postal Voting — Swiss cantons gradually introduced the possibility of postal voting in addition to voting at the ballot box, which resulted in an increase in individuals who cast their ballot card by mail before the voting weekend (Hodler, Luechinger and Stutzer, 2015). We exploit this procedural change to shed light on the plausibility of our findings. Since rain on the voting weekend should have no effect on early postal voters, we expect larger effects in time periods with no postal-voting option. Accordingly, we compare the effect size of rain before and after the introduction of postal-voting based on the municipality data. For the individual-level data, we test whether postal voters are affected by rain on the voting weekend. For both samples, we explore whether voters with access to postal voting might be affected by rain before the voting weekend.

Table 3 reports the results for the municipal data. The effect of rain in periods with no postal voting option is -1.4 percentage points (columns 1 and 2). It is 0.4 percentage points higher than the effect on municipalities that offered supplementary postal voting (columns 3 and 4), although the two coefficients are not statistically significantly different. Note that the negative effect of rain after the introduction of postal voting is plausible as still a considerable fraction of voters continued to vote at the ballot box.

A substantial fraction of voters, 37% on average in 2005, cast their votes in the week preceding the voting weekend (Federal Chancellery, 2005). This means a rain effect is plausible in the week before the voting weekends in periods with postal voting, while we expect to observe no effect of rain preceding the voting weekend in periods without postal voting. Columns (2) and (4) in Table 3 add an indicator for the share of rainy days in the five days prior to the voting weekend. This indicator ranges from 0, no rain, to 1, rain on all days. The entries suggest that the pre-weekend rain has no effect if there is no option to vote by mail, while pre-weekend rain has an effect if there is this possibility. For instance, if it rains

Table 3: Sensitivity of the Rain Effect to Postal Voting

Dependent Variable	Share of Yes Votes [0–100]			
	No Postal		Postal	
	(1)	(2)	(3)	(4)
Rain Indicator	-1.40***	-1.39***	-1.00***	-0.95**
	(0.46)	(0.48)	(0.45)	(0.45)
Share of Rainy Days Week Before Vote		-0.24		-2.18**
		(1.08)		(0.9)
Proposal FE	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mun. Trends	✓	✓	✓	✓
Observations	440,670	440,441	422,000	421,820
Clusters	26	26	26	26
R-squared	0.69	0.69	0.79	0.79

Note: The table shows the estimated effect of rain on the share of yes votes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. The variable capturing the share of rainy days in the five days before the vote date ranges from 0 to 1. On average it rained two out of five days before the voting weekend, which is equivalent to a share of rainy days in the week before the vote of 0.4. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

one day more than expected given the typical rainfall patterns, the yes share is reduced by a substantial 0.5 percentage points.

The individual postvote survey data allow us, in addition, to distinguish traditional ballot box voters from postal voters, as respondents are asked about their methods of voting. In columns (1) and (2) of Table 4, we estimate separate regressions for the ballot box voters and postal voters. The effect of rain on the propensity of ballot box voters to vote yes is -5.95 percentage points and roughly six times larger than the point estimate of rain on individuals who vote by mail, which is by itself not statistically significantly different from zero.[10] Instead, postal voters might be affected by rain in the last week before the voting weekend. While our estimates are imprecise, the results from the postvote survey data are

[10]The share of voters voting at the ballot box as indicated by the postvote survey seems to be reliable. In 2005, slightly more than 20 percent voted at the ballot box according to the postvote survey, which is consistent with official estimates (Federal Chancellery, 2005). Unfortunately, this was the only year in which comprehensive administrative data on postal voting was gathered.

Table 4: Effect of Rain on Ballot Box vs. Postal Voters

Dependent variable	Voted Yes		Ballot Box Voter
	(1) Ballot Box Voters	(2) Postal Voters	(3) All
Rain Indicator	-5.95***	-1.02	-1.54
	(1.88)	(1.57)	(2.62)
Share of Rainy Days Week Before Vote	-0.62	-6.52	-0.60
	(2.62)	(4.96)	(4.81)
Proposal FE	✓	✓	✓
Municipality FE	✓	✓	✓
Covariates	✓	✓	✓
Observations	11,159	17,903	29,473
Clusters	26	26	26
R-squared	0.28	0.24	0.35

Note: The table shows the estimated effect of rain on the propensity to vote yes (columns 1 and 2) in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. The variable capturing the share of rainy days in the five days before the vote date ranges from 0 to 1. On average it rained two out of five days before the voting weekend, which is equivalent to a share of rainy days in the week before the vote of 0.4. The dependent variable in column (3) is either 0 or 100, depending on whether the voter voted at the ballot box or not. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

consistent with the results from the municipal data. In a further check, we test whether rain affects the probability to observe ballot box voters rather than postal voters on a rainy voting weekend in column (3). The results suggest that there is no selection to the ballot box due to rainfall. In conclusion, the results from the two data sets provide strong evidence that the effect of rain is not spurious, but is substantially driven by those voters whose decisions – due to the timing of their vote casting – are expected to be most affected by rainfall.

3.3 Alternative Explanations

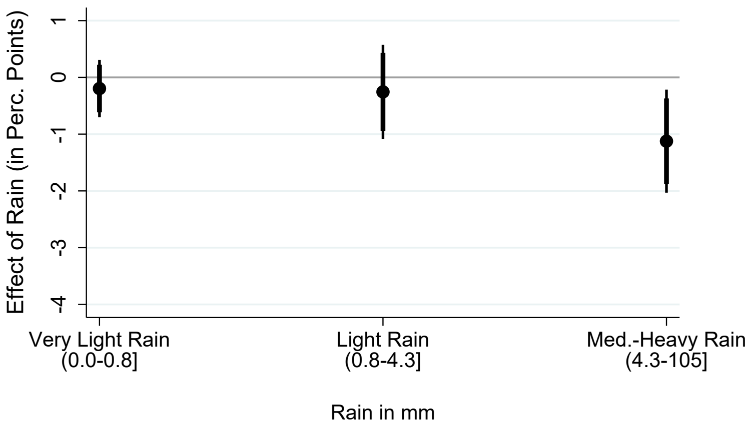
We focus on two possible alternative explanations, other than emotions, that could drive the effect of rain on support for the status quo. First, we explore whether the effect of rain might operate through a change in the composition of the electorate. Second, we study whether rain affects individual information acquisition.

Change in the Electoral Composition — A growing literature provides evidence that rain affects turnout by altering the costs of voting (Hansford and Gomez, 2010; Fraga and

Hersh, 2011; Lind, 2015*a*; Arnold and Freier, 2015; Fujiwara, Meng and Vogl, 2016). If rain affects the electoral composition by including fewer people who are willing to give up the status quo, the rain effect could not be interpreted as an emotion effect, but rather as a compositional effect. We undertake three tests to explore this alternative channel.

First, we examine the relationship between rain and overall turnout. If we regress turnout on an indicator variable for rain on the voting weekend, municipality fixed effects, proposal fixed effects and municipal time trends, we estimate a coefficient of the rain indicator of -0.33 with a standard error of 0.28. We also find no statistically significant effect of rain on turnout in the postvote survey data, the estimate being +0.59 with a standard error of 1.26. Several reasons may account for the arguably small and statistically insignificant effect of rain on turnout. With few exceptions, all municipalities have their own ballot boxes which translates into short travel distances. This is in contrast to the US context where polling stations tend to be far away. In addition, polling stations are usually well organized and queues outside the polling station are very rare.

Figure 4: Flexible Relationship between Rain in Terciles and Turnout in Percentage Points, Municipal Data

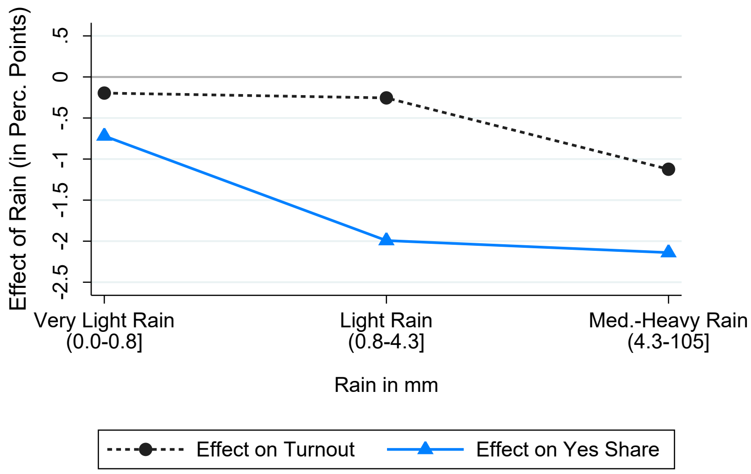


Note: The figure shows coefficient estimates for the effect of rain on turnout in percentage points together with a 95% confidence interval (thin line) and a 90% confidence interval (thick line) using municipal data. The point estimates come from a regression of turnout on indicator variables for terciles of rainfall while controlling for municipality fixed effects, proposal fixed effects and municipal time trends. The reference category is zero rainfall.

Previous research has pointed out that the effect of rain on turnout might not be uniform with heavy rain having the most detrimental effect on voters' probability of going to the polls. To explore this, we estimate our main equation for turnout by using three dummies for the different terciles of rainfall. Figure 4 shows the results of this regression. The effect of rain on turnout is only statistically significantly different from zero for medium to heavy rainfall.[11]

In stark contrast, the effect of rain on the share of yes votes is negative and statistically significant already at very low levels of rainfall. Figure 5 compares the results for both turnout and the propensity to vote yes (both in percentage points). The figure indicates that low levels of rainfall do not depress turnout but still decrease the yes share. At least at low and medium levels of rain, the effect on the yes share seems not to be driven by changes in aggregate turnout due to rainfall.

Figure 5: Effect of Rain on Turnout vs. Effect of Rain on the Share of Yes Votes, Municipal Data



Note: The figure shows coefficient estimates for the effect of rain on turnout in percentage points (black dots) and on the yes share in percentage points (blue triangles) using municipal data. The dots are retrieved from regression model (4) in Table 1 using turnout or the yes share as dependent variable and with indicator variables for terciles of rainfall instead of one indicator. The reference category is zero rainfall.

Even if rain has no effect on aggregate turnout, it might be that rain affects voting outcomes via the turnout channel if the turnout reaction is heterogeneous across groups in the population. Consider, for instance, a situation in which leftist voters with a high propensity to vote yes abstain on rainy days, while rightist voters with a low propensity to

[11]This effect is driven by the highest quintile of rainfall (see Figures A.9 and A.10 in the Appendix).

vote yes are motivated to go to the polls if it rains. If the positive and negative effect are similar in absolute value terms and both groups are of similar size, aggregate turnout does not change, but rain affects voting outcomes purely by changing the electoral composition.

In our second test, we explore the possible unequal impact of rain on turnout for different groups of voters with individual-level data. Tables A.4 to A.6 report the turnout reaction for different subsamples of voters conditional on past turnout, knowledge, party preferences, ideology and socio-demographic characteristics. None of the point estimates are statistically significantly different from zero, but there are some differences in absolute size. Table A.4 indicates that the negative rain effect is more pronounced for voters who rarely vote than for marginal- and always-voters. Similarly, rain seems to depress the turnout of voters with a low level of political knowledge more than the turnout of voters with high political knowledge. Table A.5 divides voters along party lines and reveals that individuals with centrist views are most likely to abstain on rainy voting weekends. As socio-economic conditions are important determinants of turnout and voting behavior, we also divide the sample by income, age, and gender. Table A.6 reveals that high-income individuals and women are most likely to react to rain.

How do these heterogeneous turnout reactions translate into aggregate voting outcomes? To explore this question, we simulate the compositional effects of rain based on the heterogeneous turnout reactions reported in Tables A.4 through A.6. In a first step, we use the turnout differences across groups derived from the above variables, weight them according to group size and multiply them with the average yes share of the particular group. Finally, this allows us to predict the yes share for each group under rainfall corrected for compositional changes. We do the same computation for days with no rainfall. The comparison of the predicted yes shares allows us to obtain an estimate for the change in yes votes as a consequence of compositional changes. We then correct our main estimate for the effect of rain on the propensity to vote yes for this composition effect and depict the corrected coefficients in Figure A.11 in the Appendix. The blue line indicates the baseline estimate and the black dots the corrected coefficients derived from the turnout reaction of different groups of voters across several variables. The figure suggests that the corrected estimates are very similar to the baseline estimates. Accordingly, compositional changes do not drive our main effect of rain on the support for change.

The reason why compositional changes have a negligible impact on vote outcomes are twofold. First, the turnout reactions are relatively small and thus alter the electoral composition only to a small extent.[12] Second, preferences for change are not too different across groups.[13]

Our third test incorporates proxies for the electoral composition into our main analysis. We start by controlling for turnout in our preferred specification using municipal data. The entries in column (1) of Table 5 suggest that controlling for turnout does not affect the coefficient of rain. It remains statistically significant with a value of -1.3 percentage points. The estimated coefficient remains equal if we control for turnout deciles, as indicated in column (2). To account for differential mobilization of parties as a consequence of rain, we interact turnout with party shares in the last parliamentary elections, both measured at the municipal-level. Moreover, we interact party shares and turnout with the federal party recommendations for the votes. We do this because voters of a certain party may only be motivated to vote when their party issues a recommendation. The size of this effect may depend on the importance of the proposition, which is why we interact party recommendations with turnout. In addition, we control for the lagged yes share, to account for electoral trends. The results reported in column (3) suggest that a flexible control for electoral composition does not affect the substantive size of the estimate. We also do not find a heterogeneous reaction in turnout or yes share conditional on whether the a priori composition of the municipal electorate is rather right-wing, left-wing or center-oriented, see Table A.7 in the Appendix.

[12]Note that male voters gain the most weight in the electorate from 47.2% on days with no rain to 48.8% on rainy days.

[13]The highest spread in preferences for change is between individuals who prefer the left-wing party (52% yes share) and those who prefer the right-wing party (39% yes share).

Table 5: Robustness of the Rain Effect to Compositional Changes

Dependent Variable	Share of Yes Votes (Municipal Voting Data)			Voted Yes (Individual Voting Data)		
	(1)	(2)	(3)	(4)	(5)	(6)
Rain Indicator	-1.27***	-1.27***	-1.10**	-3.18**	-3.02**	-3.03**
	(0.38)	(0.38)	(0.52)	(1.32)	(1.37)	(1.33)
Turnout	-0.09***		-0.15***			
	(0.01)		(0.05)			
Turnout Deciles		✓				
Party Shares Last Election			✓			
Party S. × Turnout			✓			
Party S. × Party Recomm.			✓			
Party Recomm. × Turnout			✓			
Party S. × Party R. × Turnout			✓			
Lagged Yes Share			✓			
Preferred Party				✓		✓
Ideology					✓	✓
Average Turnout				✓	✓	✓
Means of Voting				✓	✓	✓
Proposal FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Mun. Trends	✓	✓	✓			
Covariates				✓	✓	✓
Observations	862,670	862,670	703,173	29,510	29,510	29,510
Clusters	26	26	26	26	26	26
R-squared	0.72	0.72	0.73	0.22	0.22	0.22

Note: The table shows the estimated effect of rain on the share of yes votes (columns 1 to 3) or the propensity to vote yes in percentage points (columns 4 to 6) using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. In cases of non-available election data, we replaced the missing values by those of the nearest election year. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We also re-estimate the main specification using the sample of individual voting data. In column (4) of Table 5, we control for partisan preferences by including dummies indicating a voter's most preferred party. In column (5), we control for ideology captured as dummies based on a left-right scale ranging from 0 to 10. In column (6), we include partisan preferences and ideology jointly. In all three specifications, we control for for the average turnout and the means the citizens used to cast the vote. The effect of rain on the probability of voting yes remains similar in magnitude and statistically significant. In supplementary tests, we check whether specific parties or ideologies drive our results. We depict the stability of our estimated coefficient of rain on voting yes to leaving out specific parties or ideological positions in Figures A.12 and A.13 in the Appendix. The results of the three tests strongly suggest that the negative relationship between rain and voting for the status quo is not due to a compositional change of the electorate.

Information Acquisition — Instead of changing the composition of the electorate, rain might affect voting decisions by altering the type of information sources which citizens consult. If it rains, voters may spend more time reading the information booklet that comes with the ballot card or instead they may watch television. Our data provides us with information about the type of information voters use to gather knowledge about the propositions. The information channels include TV, radio, newspapers, and official government leaflets. In a first step, we control for the type of information voters use. The results in column (1) of Table A.8 in the Appendix show that the estimated effect size is very similar to the baseline model with a point estimate of -3.25 percentage points. We also check whether rain has an impact on proposition knowledge, which in turn might affect the voting decision. We estimate the effect of rain on the probability that a voter knows the exact title of the proposition for all voters as well as for ballot box voters only. The results suggest that rain has no statistically significant effect on knowledge about a proposition.

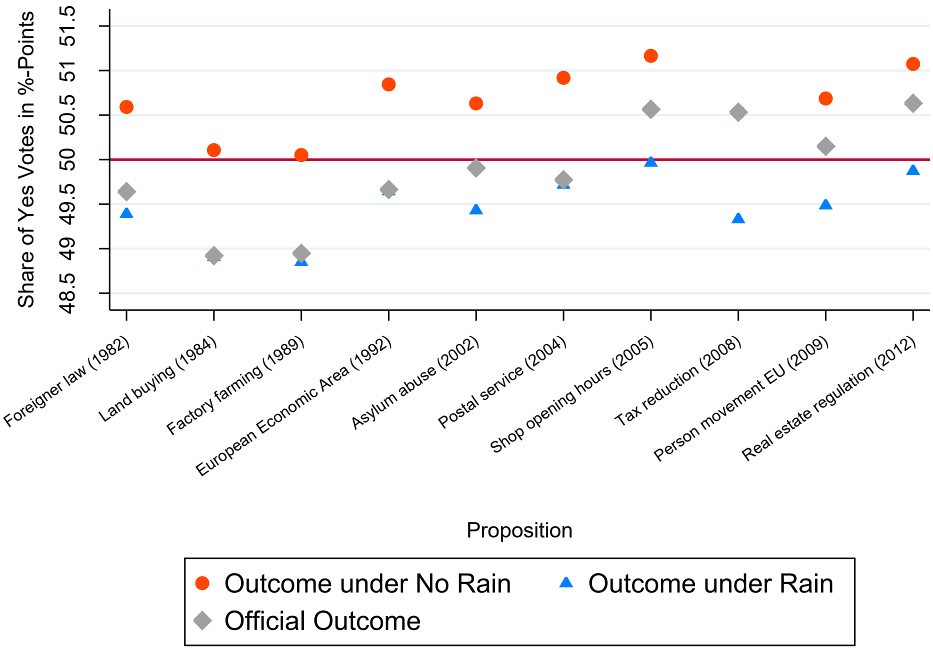
3.4 Relevance of the Rain Effect

The results thus far have established a stable and precisely measured effect of rain on the share of yes votes. One might, however, argue that the size of the rain effect is too small to affect aggregate vote outcomes. We therefore simulate the impact of rain for all 417 propositions in our sample. Among these popular votes, 32 exhibit a yes share between 48.8% and 51.2%. We illustrate the results showing the propositions for which rainfall could have changed voting outcomes in Figure 6. The blue triangle depicts the predicted outcome if it had rained in all municipalities, the orange circle indicates the predicted outcome if rain had been completely absent across all municipalities.[14] The grey square is the official vote outcome. Among the ten popular votes which might have turned out differently under

[14] Note that both outcomes are probable, see Appendix, Figure A.5.

different rain conditions is the vote on Switzerland's membership in the European Economic Area in 1992. On the weekend of this vote it rained in 95% of the municipalities. The proposal was rejected by a narrow margin of voters and, based on our simple simulation, might have well been swayed if there had been no rain. This illustration thus suggests that fundamental collective policy choices could have been affected by rainfall.

Figure 6: Relevance of the Rain Effect



Note: This figure depicts all propositions that would have had a different outcome with and without rain based on our main results. "Outcome under No Rain" indicates the share of yes votes if there had been no rain on the voting weekend in all municipalities. "Outcome under Rain" indicates the share of yes votes had there been rain on the voting weekend in all municipalities.

4 Discussion

The main analysis provides evidence that the effect of rain on voting decisions is neither driven by changes in the composition of the electorate, nor by changes in information acquisition. Our findings are consistent with the notion that voters' decisions are a direct consequence of negative emotions caused by rainfall. In this section, we explore a potential psychological mechanism underlying the rain effect, test whether the effect is robust to high-stake situations, examine whether negative emotions may lead specifically to an increase in support for traditionalist conservative positions, and also whether the effect is driven by swing voters.

Psychological Mechanisms — Up to this point our results suggest that incidental emotions, defined as emotions caused by factors that should not be relevant for a particular decision context (Lerner et al., 2015), may have an impact on vote choices. A large body of literature in behavioral economics, psychology and medicine has demonstrated that bad weather leads to negative emotions (see, e.g., Lambert et al., 2002; Kamstra, Kramer and Levi, 2003; Hirshleifer and Shumway, 2003). However, how do these negative emotions affect individual support for the status quo? In our view, the most plausible explanation is a specific version of state dependent preferences.

The most prominent characterization of state dependent preferences is formalized by the concept of the projection bias (Loewenstein, O'Donoghue and Rabin, 2003). The main idea is that individuals project their current preferences, which depend on their emotional state, into the future. These projected preferences distort the perception of future payoffs. In particular, the projection bias suggests that transitory emotional states have a large effect on decision-making. Important forward-looking decisions, even after careful deliberation, may thus be swayed by contemparenous emotional cues (Loewenstein, 2000). An example of projection bias is the empirical regularity that a 4WD vehicle looks much more useful on rainy days, while a convertible car offers a higher projected future utility on sunny days (Busse et al., 2015).[15] In our context, voters who are in a negative emotional state caused by rainfall may project this negative state into the future when evaluating the payoffs of a new policy. Note, however, that the theoretical formulation of projection bias does not yield any prediction with respect to exactly how emotions affect the support for the status quo.

A psychological mechanism that specifies how positive and negative emotions may alter status quo support is subsumed under feelings-as-information (Johnson and Tversky, 1983; Schwarz, 2012). It postulates that individuals become more risk averse if they experience

[15] For further examples see Conlin, O'Donoghue and Vogelsang (2007) and Simonsohn (2010).

negative emotions. As a consequence, they may evaluate the status quo relatively more favorable.[16] Evidence from laboratory experiments support the claim that individuals act more risk averse if they experience negative emotions (Schwarz, 2012; Haushofer and Fehr, 2014; Cohn et al., 2015). Previous contributions that use observational data have pointed out that feelings-as-information may affect stock market behavior, since positive emotions caused by good weather increase stock returns (Hirshleifer and Shumway, 2003; Kamstra, Kramer and Levi, 2003; Bassi, Colacito and Fulghieri, 2013).[17]

Exploring the psychological mechanism that drives the effect of emotions requires data on risk aversion. As the postvote survey data offers no information on risk attitudes, we use data from the Swiss Household Panel. This survey contains information on the willingness to take risks from a similar population in the same institutional environment. If feelings-as-information is the reason why emotions affect support for the status quo, we expect that individuals are less willing to take risks on rainy days.

In Table 6, we show the estimates of the rain effect on a dichotomized measure of willingness to take risks derived from a scale ranging from 0 to 10, whereby 10 indicates "I am willing to take risks" and 0 indicates "I avoid taking risks".[18] If the willingness to take risks is larger than the median value 5, the dependent variable is 100, and zero otherwise. We regress this indicator on a rain indicator that is one if there was any rain on the exact day of the interview in the respective municipality. We find that rain decreases the probability of being ready to take risks by roughly 2.7 percentage points in the most comprehensive specification in column (4). There, we control for month and municipality fixed effects as well as for several covariates including gender, age dummies, income and education dummies. Using the same rainfall terciles as with the municipal-level data, we find that light rain most heavily affects the willingness to take risks as depicted in Figure A.14 in the Appendix. This

[16]In the present policy context, voters decide on reforms which are inherently risky, see e.g., Fernandez and Rodrik (1991) and Augenblick and Nicholson (2016).

[17]A competing hypothesis to feelings-as-information is the mood maintenance hypothesis. It postulates that individuals become more risk-averse if they experience positive emotions, because they want to preserve their current positive emotional state, and conversely, they are more-risk affine if they experience negative emotions (Isen, 2005).

[18]This questionnaire item is very similar to the one in the German Socio-Economic Panel, which was experimentally validated by Dohmen et al. (2011). Note that our results hold also when we use the the scale from 0 to 10 rather than an indicator variable.

is consistent with the effect of rain on the yes share. In sum, these findings offer evidence suggesting a causal mechanism whereby rainfall affects risk aversion and consequently makes people more likely to choose the status quo. This points to feelings-as-information as being the most plausible psychological mechanism.

Table 6: Effect of Rain on the Willingness to Take Risks, Swiss Household Panel Data (Cross-Section of 2009)

Dependent Variable	Willing to Take Risks [0,100]			
	(1)	(2)	(3)	(4)
Rain Indicator	-2.14**	-3.75***	-3.17***	-2.70**
	(0.94)	(0.93)	(1.04)	(1.14)
Month FE		✓	✓	✓
Municipality FE			✓	✓
Covariates				✓
Observations	7,233	7,233	7,233	7,233
Clusters	26	26	26	26
R-squared	0.00	0.00	0.01	0.06

Note: The table shows the estimated effect of rain on the propensity to be willing to take risks in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. Rain Indicator is 1 if there was any rain on the exact date of the interview in the respective municipality. The mean of the willingness to take risk indicator is 47 percentage points. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

High-Stakes Votes — Psychological factors might play no role in high-stakes situations (List, 2003; Levitt and List, 2008). We offer two specific tests of the generality of our main effect. The first test splits the sample of propositions according to turnout and closeness. Columns (1) and (2) of Table 7 report the results for the regressions using above- and below-median turnout. Median turnout in our sample is 42 percentage points. High turnout propositions are arguably those collective decisions that are considered highly important by a large fraction of voters. The results suggest that the rain effect prevails in high-turnout propositions. Additionally, we also show the results of a sample split into close and not close votes. We classify votes as close if the difference between yes and no votes ex-post is less than 10 percentage points. The results in columns (3) and (4) indicate that rain decreases support for a change from the status quo in both close and not close propositions. Overall, the results sustain that the effect of emotions on support for the status quo extends to important political decisions.

Table 7: Sensitivity of the Rain Effect to High Turnout and Close Votes

Dependent Variable	Share of Yes Votes [0-100]			
	High Turnout (1)	Low Turnout (2)	Close Votes (3)	Not Close Votes (4)
Rain Indicator	-1.26***	-1.41**	-1.08***	-1.32**
	(0.36)	(0.58)	(0.34)	(0.57)
Proposal FE	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mun. Trends	✓	✓	✓	✓
Observations	457,988	404,682	296,588	513,998
Clusters	26	26	26	26
R-squared	0.70	0.72	0.31	0.78

Note: The table shows the estimated effect of rain on the share of yes votes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain Indicator is 1 for all rainy voting weekends. High turnout corresponds to above median turnout. Median turnout is 42 percentage points. Close votes correspond to an ex post difference in vote share of less than 10 percentage points. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Status Quo vs. Right-Wing Votes — We explore another alternative interpretation of our results, namely that negative emotions increase the support for traditional and conservative propositions. Since change is favored by the left-wing parties in some popular votes and by the right-wing parties in others, we are able to separate the effect of emotions the support for the status quo from the effect on traditionalist conservative positions.[19] To do this, we split our sample according to the party recommendations. If emotions increase the likelihood that voters will vote for conservative propositions endorsed by a right-wing party, we expect to find that rain has a positive rather than a negative effect for this subset of propositions. Table A.9 in the Appendix shows the results for the different sample splits according to the vote recommendations. The results suggest that rain decreases the share of yes votes for all propositions independent of whether the proposals are supported by left-

[19] A prominent example for a policy change supported by the right-wing parties was the vote on asylum abuse in 2002, which demanded much stricter standards regarding asylum seekers. In about half of the votes in our sample, the right-wing parties supported a change from the status quo.

or right-wing parties. Thus, it seems that emotions affect the support for the status quo in general, rather than the support for specific partisan policies.

Swing Voters — We would expect that citizens with less intense policy preferences, often called swing voters, are particularly affected by transitory emotions.[20] In order to identify swing voters in popular votes, we predict the probability of voting yes for each voter based on his or her individual characteristics. For these predictions, we use dummies for age, gender, income, university degree, preferred party, ideology, average participation in votes, as well as cantonal fixed effects. We then separate the electorate into terciles with respect to the predicted propensity to vote yes. We thus have three groups, the status quo voters ($0.12 < P(\text{Yes}) < 0.44$), the swing voters ($0.44 \leq P(\text{Yes}) \leq 0.49$) and the reformists ($0.49 < P(\text{Yes}) < 0.70$).

For these three groups, we run the main regression. The results are presented in Table A.10 in the Appendix. We observe that the swing voters are the ones who are substantially more likely to cast a yes vote rather than a no vote if it rains, while there are no statistically significant effects on the other two groups. Consistent with this, we see the largest absolute effect of rain on vote outcomes within municipalities that are in the middle tercile with respect to their average share of yes votes.[21]

5 Conclusion

This study provides the first real-world evidence on the relationship between emotions and preferences for the status quo. We use exogenous variation in rainfall to show that individuals who experience negative emotions are 1.2 percentage points less likely vote for change. We explore several mechanisms. Our findings are most consistent with a theory of feelings-as-information; that is, the notion that negative emotions lead to less optimistic judgments (Schwarz, 2012).

[20] In the 1995 parliamentary elections, the share of swing voters was estimated to be around 33% (Lutz, 2012).

[21] Note that we do not see statistically significant heterogeneity in turnout due to rainfall across the groups, either at the individual or at the municipal-level. Results available upon request.

The societal consequences of emotional choices can be substantial. Our simulation indicates that emotions not just alter individual voting behavior, but may also sway aggregate vote outcomes. A notable example is the referendum on Switzerland's membership in the European Economic Area in 1992. This proposal was rejected by a narrow margin of voters on a rainy weekend. Our results suggest that the voting outcome might well have been swayed by positive emotions due to good weather.

This suggests that citizens are well advised to take important decisions on separate days. Even if the decision maker were aware of the possibility of being influenced by rainfall, it might be difficult to alleviate the effect of transitory emotions on behavior. The impact of weather on voting outcomes also has implications for the agenda-setting power of governments. Anecdotal evidence suggests that the Scottish independence vote was intentionally scheduled to a date with a pleasant weather forecast (Sayers, 2014).

The impact of emotions on the tendency to choose the status quo likely extends beyond the domain of voting behavior. Kahneman, Knetsch and Thaler (1991) have pointed out that the status quo effect is a well-known phenomenon in financial and insurance markets as well as in other domains. Thus far, we have a very limited understanding of how emotions affect the choice between change and the status quo in decision-making with respect to household finances, health, education and labor supply (see, e.g., Haushofer and Fehr, 2014). Exploring the impact of emotions in these domains appears to be a fruitful area for future research.

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Appendix (For Online Publication)

A Additional Tables and Figures

Table A.1: Descriptive Statistics

Data	Municipal Voting Data 1958–2014				Postvote Survey Data 1996–2006[†]			
	Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Yes Share in %-Points	46.59	20.76	0	100	46.50	49.88	0	100
Rain Indicator	0.55	0.49	0	1	0.70	0.46	0	1
Rain in mm	2.67	5.78	0	104.50	5.25	7.23	0	64.50
Turnout	43.58	13.26	0.16	100				
Postal Voting Dummy	0.49	0.49	0	1				
Ballot Box Voters					0.38	0.49	0	1
Mail Voters					0.61	0.49	0	1
Observations	862,670				29,510			

Note: [†]There is no municipal identifier available for the year 1997. Therefore we do not use this year.

Table A.2: Effect of Rain on the Share of Yes Votes in Percentage Points, Variants of Fixed Effects

Dependent Variable	Share of Yes Votes [0–100]			
	(1)	(2)	(3)	(4)
Rain Indicator	-1.25***	-1.27***	-1.20***	-1.31***
	(0.40)	(0.41)	(0.37)	(0.43)
Proposal FE	✓	✓	✓	✓
Municipality FE	✓	✓		
Mun. Trends	✓	✓	✓	
Mun. Trends: Quadratic	✓	✓		
Mun. Trends: Cubic		✓		
Mun. x Month FE			✓	
Mun. x Year FE				✓
Observations	862,670	862,670	862,670	862,670
Clusters	26	26	26	26
R-squared	0.72	0.72	0.73	0.80

Note: The table shows the estimated effect of rain on the share of yes votes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3: Effect of Rain on the Share of Yes Votes in Percentage Points, Clustering of Standard Errors

Dependent Variable	Share of Yes Votes (Municipal Voting Data)			Voted Yes (Individual Voting Data)		
	(1)	(2)	(3)	(4)	(5)	(6)
Rain Indicator	-1.24***	-1.24***	-1.24***	-3.15**	-3.15**	-3.15*
	(0.41)	(0.05)	(0.41)	(1.32)	(1.54)	(1.53)
Cluster:						
Vote Weekend	✓			✓		
Municipality		✓			✓	
Mun.×Vote Weekend†			✓			✓
Clusters	164	2,538	164×2,538	22	1,355	22×1,355
Proposal FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Mun. Trends	✓	✓	✓			
Covariates				✓	✓	✓
Observations	862,670	862,670	862,670	29,510	29,510	29,510
R-squared	0.72	0.72	0.72	0.21	0.21	0.21

Note: The table shows the estimated effect of rain on the share of yes votes (columns 1 to 3) or the propensity to vote yes (columns 4 to 6) in percentage points using OLS. Standard errors (in parentheses) are clustered as indicated. †Community×Vote Weekend means that clustering is allowed in both dimensions, that is it allows for twoway clustering as specified by (Cameron, Gelbach and Miller, 2011). The rain indicator is 1 for all rainy voting weekends. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4: Effect of Rain on Turnout in Percentage Points by Past Turnout and Knowledge, Postvote Survey Data 1996-2006

Dependent Variable	Turnout [0,100]				
	Distant Voters (1)	Marginal Voters (2)	Always Voters (3)	Knowledge (4)	No Knowledge (5)
Rain Indicator	-3.98	1.22	-0.33	1.56	-1.81
	(3.11)	(2.28)	(1.27)	(1.65)	(1.50)
Mean Yes Share	39.01	44.16	47.84	46.52	44.81
Proposal FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Covariates	✓	✓	✓	✓	✓
Observations	2,542	6,068	7,741	7,387	7,840
Clusters	26	26	26	26	26
R-squared	0.42	0.27	0.23	0.26	0.28

Note: The table shows the estimated effect of rain on the propensity to vote using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Average turnout: 65.16%, maximum number of observations containing turnout: 19,794. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.5: Effect of Rain on Turnout in Percentage Points by Party and by Ideology, Postvote Survey Data 1996-2006

Dependent Variable	Turnout [0,100]							
	Left P. (1)	Center P. (2)	Right P. (3)	No P. (4)	Other (5)	Left I. (6)	Center I. (7)	Right I. (8)
Rain Indicator	2.83	-1.78	1.00	3.51	-2.98	2.30	-1.20	-0.38
	(2.32)	(2.67)	(4.61)	(2.94)	(2.32)	(1.82)	(1.99)	(1.94)
Mean Yes Share	52.11	48.53	39.11	43.88	47.61	50.90	45.00	43.82
Proposal FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Covariates	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,892	2,777	1,872	5,719	3,352	4,803	7,493	4,352
Clusters	26	26	26	26	26	26	26	26
R-squared	0.39	0.43	0.53	0.33	0.41	0.32	0.29	0.35

Note: The table shows the estimated effect of rain on the propensity to vote in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Average turnout: 65.16%, maximum number of observations containing turnout: 19,794. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.6: Effect of Rain on Turnout in Percentage Points by Socio-demographics, Postvote Survey Data 1996-2006

Dependent Variable	Turnout [0,100]					
	Low Inc. (1)	High Inc. (2)	Older (3)	Younger (4)	Male (5)	Female (6)
Rain Indicator	1.09	-2.66	-0.77	1.64	1.97	-2.15
	(1.32)	(2.32)	(1.36)	(1.98)	(1.69)	(1.67)
Mean Yes Share	44.81	49.74	47.28	45.46	46.84	46.12
Proposal FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Covariates	✓	✓	✓	✓	✓	✓
Observations	11,471	5,177	8,465	8,183	8,368	8,280
Clusters	26	26	26	26	26	26
R-squared	0.29	0.23	0.24	0.23	0.27	0.25

Note: The table shows the estimated effect of rain on the propensity to vote in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Average turnout: 65.16%, maximum number of observations containing turnout: 19,794. High income is one if self-declared income is above 7,000 Swiss Francs (there are five categories, the highest being equivalent to earning more than 9,000). Older is one if an individual is older than median age, which is 46. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7: Sensitivity of the Rain Effect Conditional on Partisan Preferences of Municipalities

Dependent Variable	Share of Yes Votes [0–100]			Turnout [0–100]		
	Left (1)	Center (2)	Right (3)	Left (4)	Center (5)	Right (6)
Rain Indicator	-0.85***	-1.04***	-1.37**	-0.29	-0.48	-0.38
	(0.30)	(0.34)	(0.55)	(0.27)	(0.36)	(0.23)
Proposal FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Mun. Trends	✓	✓	✓	✓	✓	✓
Observations	460,843	441,754	448,592	460,843	441,754	448,592
Clusters	26	26	26	26	26	26
R-squared	0.75	0.71	0.75	0.72	0.64	0.76

Note: The table shows the estimated effect of rain on the share of yes votes (columns 1 to 3) or turnout (columns 4 to 6) in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Classification according to above median share of right, center or left-wing parties in the last national council election. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.8: Robustness of the Rain Effect to Change in Information Sources

Dependent variable	Voted Yes	Individual Knowledge†	
	(1) All Voters	(2) All Voters	(3) Ballot Box Voters
Rain Indicator	-3.25**	0.56	1.79
	(1.31)	(2.88)	(4.45)
Information Channel	✓		
Proposal FE	✓	✓	✓
Municipality FE	✓	✓	✓
Covariates	✓	✓	✓
Observations	26,459	28,628	10,776
Observations	26	26	26
R-squared	0.22	0.27	0.43

Note: The table shows the estimated effect of rain on the propensity to vote yes (column 1) or the propensity to know the title of the proposition (columns 2 and 3) in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Information channel includes dummies for information sources a voter used. †Knowledge is 100 if the voter knows the title of a proposition and 0 otherwise. We only include voters that voted at the ballot box in column (3). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.9: Effect of Rain on the Share of Yes Votes by Party Recommendation

Dependent Variable	Share of Yes Votes [0–100]	
	Left (1)	Right (2)
Rain Indicator	-0.96***	-1.17**
	(0.30)	(0.51)
Proposal FE	✓	✓
Municipality FE	✓	✓
Mun. Trends	✓	✓
Observations	335,957	526,713
Clusters	26	26
R-squared	0.69	0.64

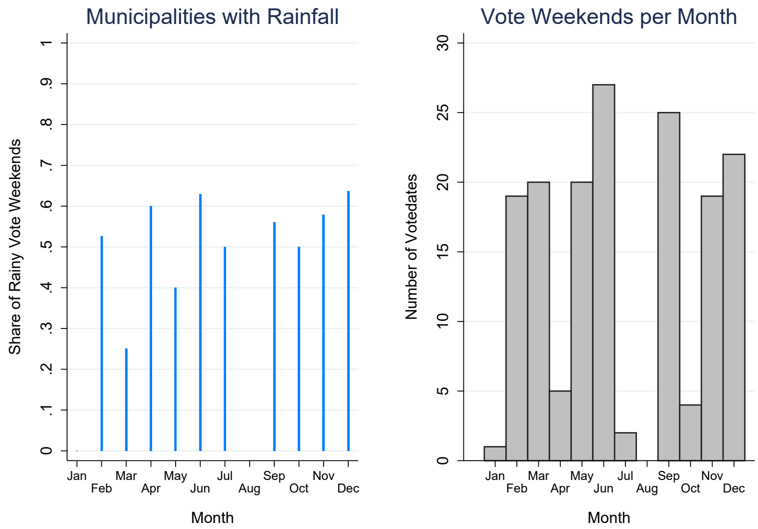
Note: The table shows the estimated effect of rain on the share of yes votes in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Right corresponds to a vote recommendation to vote yes of the SVP (right-wing) or the FDP (center-right). Left corresponds to all votes where there was no such recommendation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.10: Sensitivity of the Rain Effect Conditional on the Propensity to Vote Yes

Dependent Variable	Voted Yes [0,100]			Share of Yes Votes [0–100]		
	Status Quo Voter (1)	Swing Voter (2)	Reformist Voter (3)	Status Quo Mun. (4)	Swing Mun. (5)	Reformist Mun. (6)
Rain Indicator	2.23	-6.72**	-0.78	-0.87*	-1.32**	-0.91***
	(2.17)	(2.54)	(2.47)	(0.45)	(0.58)	(0.30)
Proposal FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Mun. Trends	✓	✓	✓	✓	✓	✓
Observations	9,835	9,830	9,831	287,869	287,498	287,303
Clusters	26	26	26	26	26	26
R-squared	0.28	0.28	0.32	0.68	0.69	0.73

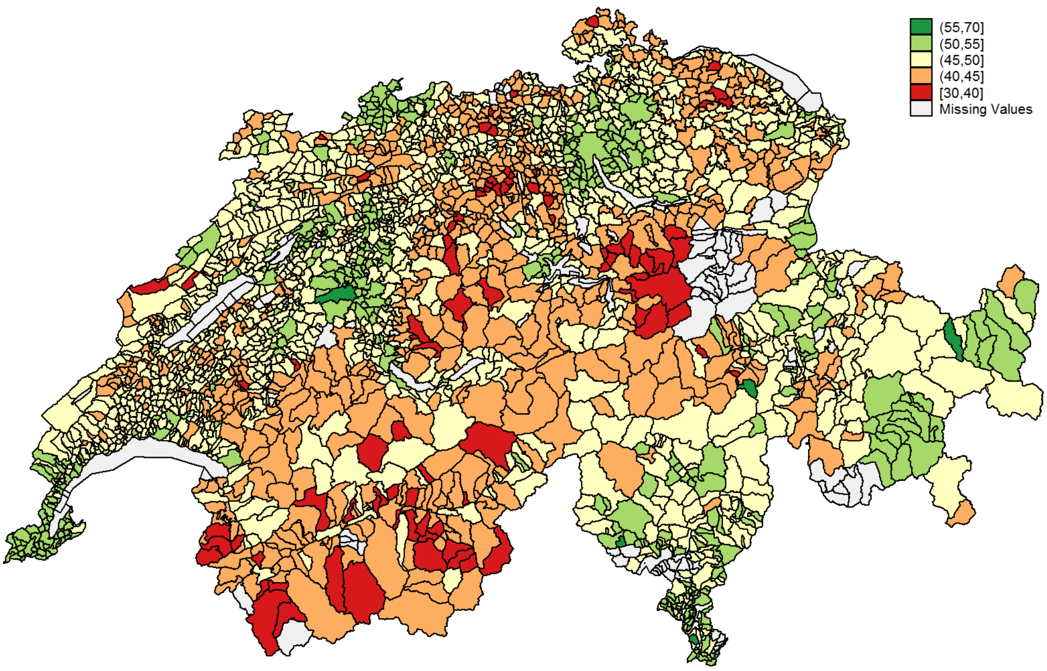
Note: The table shows the estimated effect of rain on the propensity to vote yes (columns 1 to 3) or the share of yes votes (columns 4 to 6) in percentage points using OLS. Standard errors (in parentheses) are clustered at the cantonal level. The rain indicator is 1 for all rainy voting weekends. Propensities of yes votes at the individual-level: status quo voters ($0.12 < P(\text{Yes}) < 0.44$), swing voters ($0.44 \leq P(\text{Yes}) \leq 0.49$) and reformists ($0.49 < P(\text{Yes}) < 0.70$). Average share of yes votes at the municipal-level: $0.32 < Share(Yes) < 0.45$, $0.45 \leq Share(Yes) \leq 0.48$ and $0.48 < Share(Yes) < 0.59$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure A.1: Distribution of Votes and Rain over Months



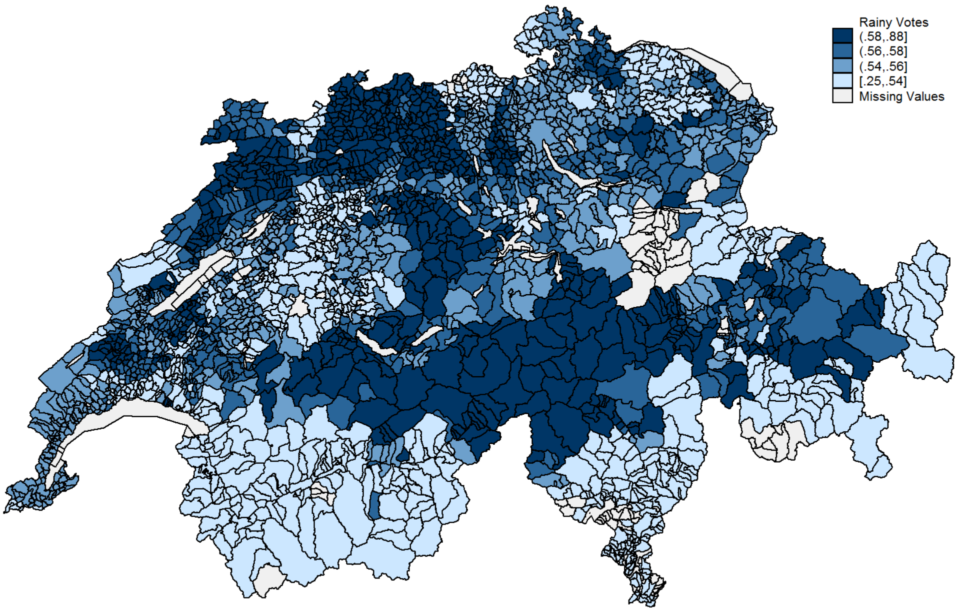
Note: The figures show the distribution of voting weekends over months and the share of communities with rainy voting weekends by month.

Figure A.2: Map of the Share of Yes Votes



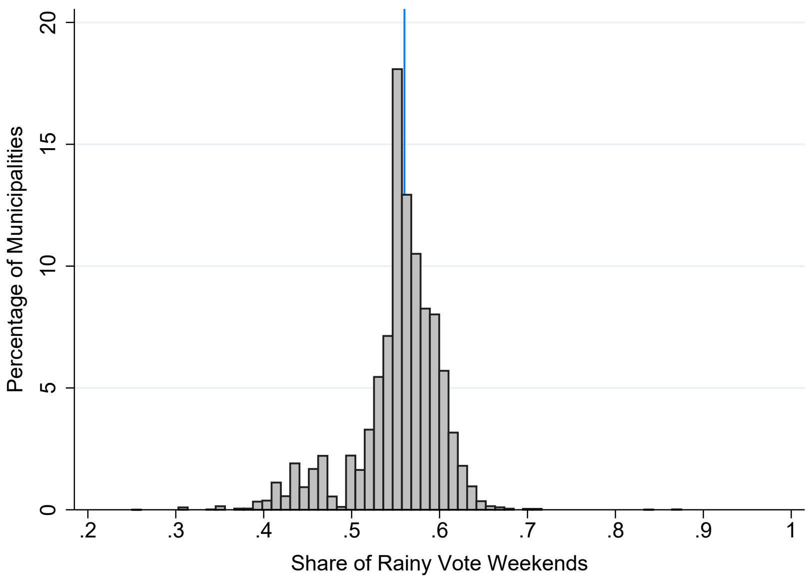
Note: The figure shows the average share of yes votes by municipality.

Figure A.3: Map of the Share of Rainy Vote Weekends



Note: The figure shows the share of rainy voting weekends. Note that the clusters with the high share of rainy weekends lie in the Alps and over the Jura mountains.

Figure A.4: Distribution of the Share of Rainy Vote Weekends over Municipalities



Note: The blue line indicates the average share of rainy voting weekends which is 55%.

Figure A.5: Share of Communities with Rainfall by Date

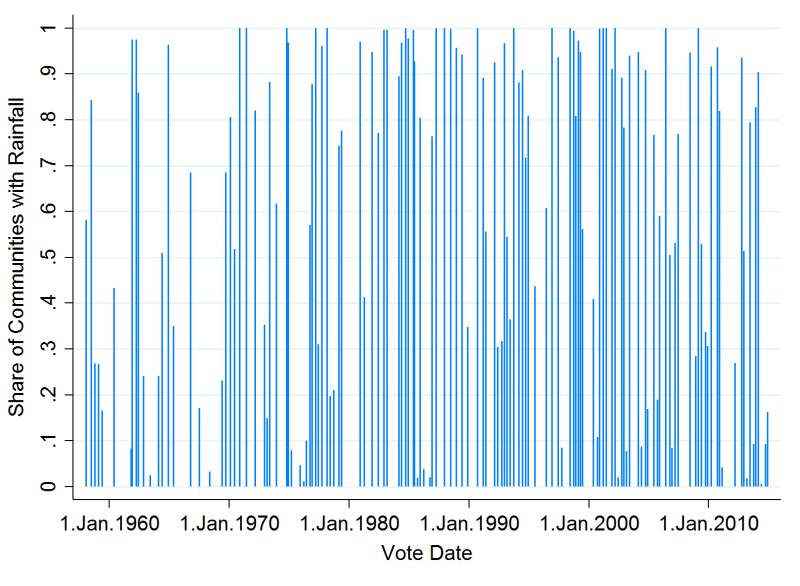


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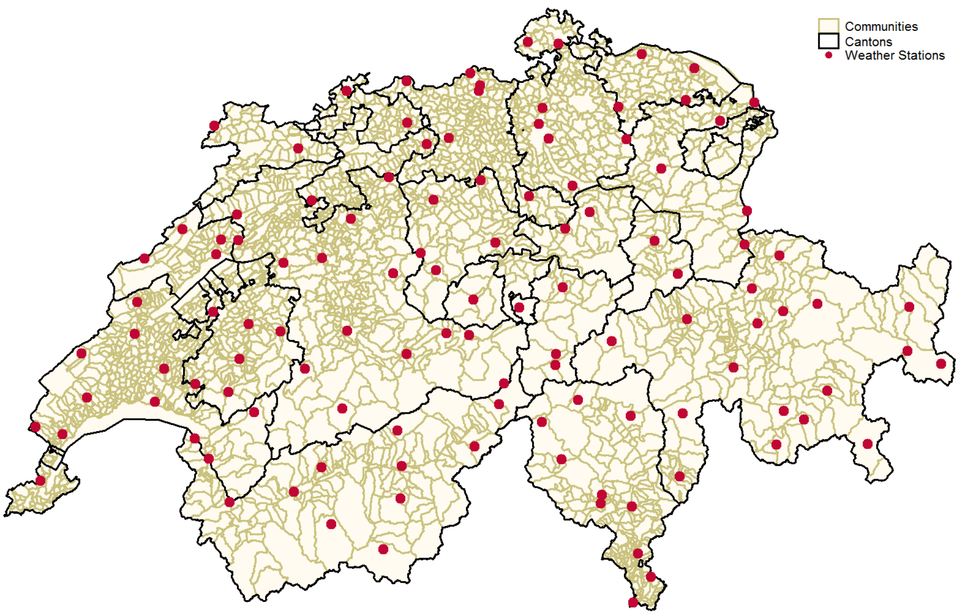
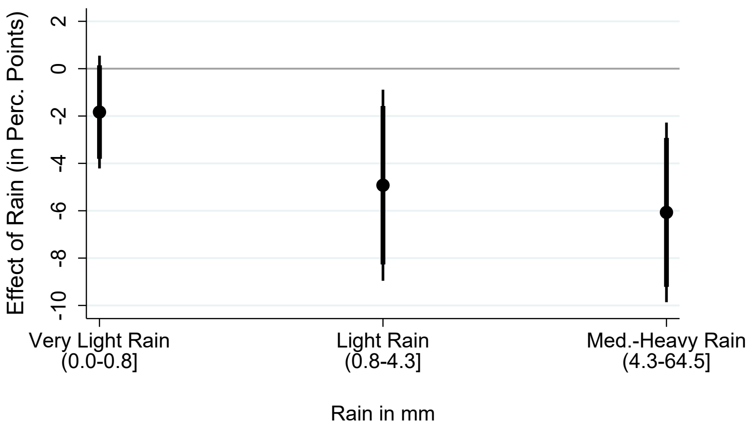
Figure A.6: Map of Weather Stations



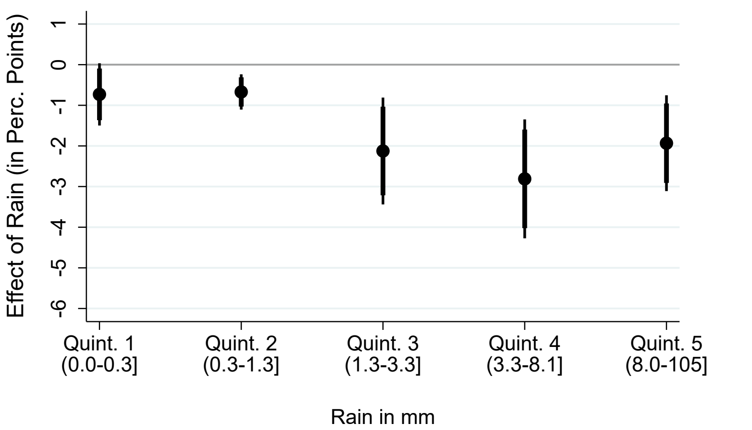
Note: The figure shows the weather stations we use for our analysis.

Figure A.7: Flexible Relationship between Rain in Terciles and Share of Yes Votes in Percentage Points, Postvote Survey Data



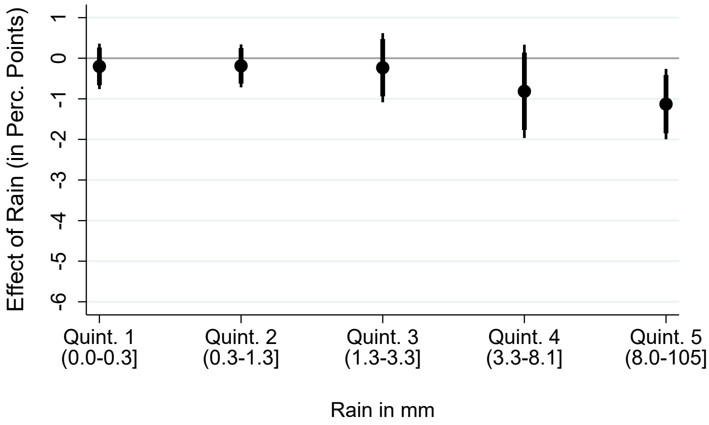
Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points using postvote survey data. The reference category is zero rainfall.

Figure A.8: Flexible Relationship between Rain in Quintiles and Share of Yes Votes in Percentage Points, Municipal Data



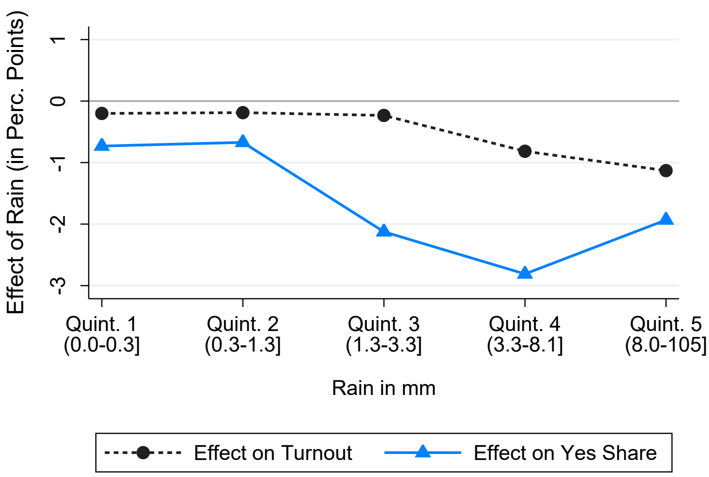
Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points using municipal data. The dots are retreived from regression model (4) in Table 2 with indicator variables for the five quintiles of rainfall instead of one indicator. The reference category is zero rainfall.

Figure A.9: Flexible Relationship between Rain in Quintiles and Turnout in Percentage Points, Municipal Data



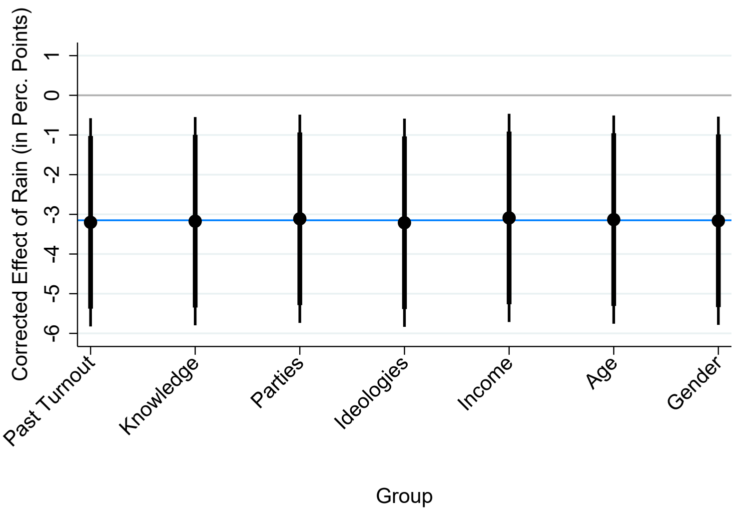
Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points using municipal data. The dots are retrieved from a regression of turnout on indicator variables for the five quintiles of rainfall while controlling for municipality fixed effects, proposal fixed effects and cantonal trends. The reference category is zero rainfall.

Figure A.10: Effect of Rain on Turnout vs. Effect of Rain on Share of Yes Votes, Municipal Data



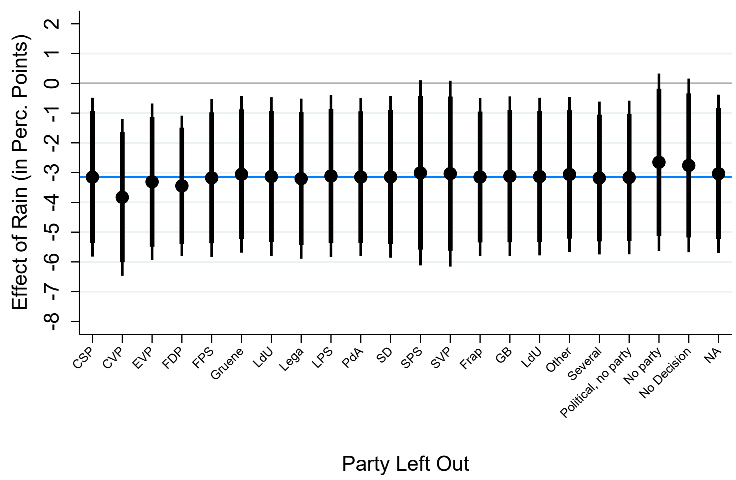
Note: The figure shows coefficient estimates for the effect of rain on turnout in percentage points (black dots) and on the yes share in percentage points (blue triangles) using municipal data. The dots are retrieved from regression model (4) in Table 1 using turnout or the yes share as dependent variable and with indicator variables for quintiles of rainfall instead of one indicator. The reference category is zero rainfall.

Figure A.11: Selection Corrected Coefficients, Postvote Survey Data



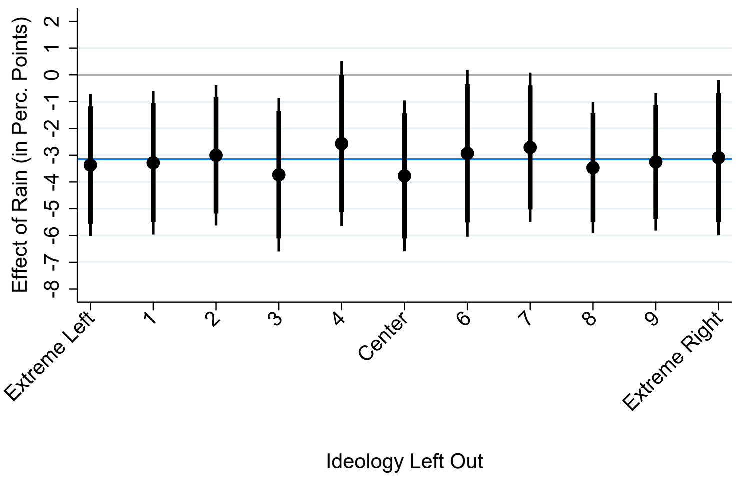
Note: The figure shows turnout corrected coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points with postvote survey data. The baseline estimate is shown with the blue solid line. The depicted coefficients are corrected by heterogeneous selection within groups of voters, for instance conditional on their past turnout behavior. Marginal voters are less likely to vote if it rains and are more likely to vote no – the opposite holds true for more frequent voters. Accordingly the coefficient estimate is adjusted downwards, since we likely underestimate the true rain effect.

Figure A.12: Sensitivity to Sample Selection by Party Preferences



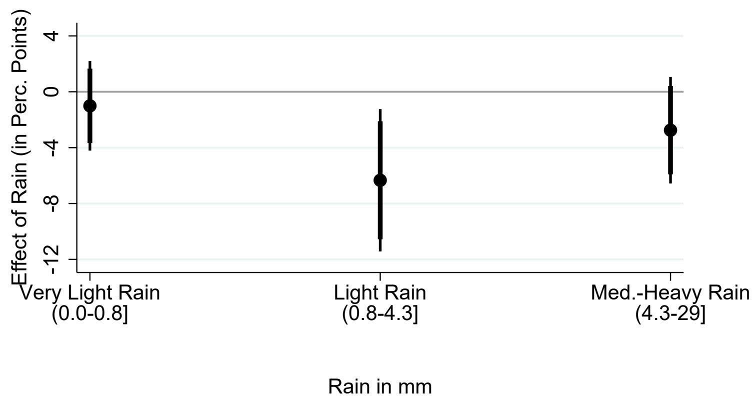
Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points with postvote survey data. The estimate resulting from all data is shown with the blue solid line.

Figure A.13: Sensitivity to Sample Selection by Ideology



Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the share of yes votes in percentage points with postvote survey data. The estimate resulting from all data is shown with the blue line.

Figure A.14: Flexible Relationship Between Rain in Terciles and the Willingness to Take Risks



Note: The figure shows coefficient estimates, 95% confidence intervals (thin line) and 90% confidence intervals (thick line) for the effect of rain on the propability that an individual is willing to take risks based on data from the Swiss Household Panel. The reference category is zero rainfall.

B Econometric Model for Individual Voting Decisions

In a similar vein as with the municipal data, we estimate the effect of rain in the propensity of an individual to vote yes using the postvote survey data. We use the following specification:

$$Y_{ijp} = \eta_j + \delta_p + \alpha \, \text{Rain}_{jp} + X'_{ijp}\beta + \varepsilon_{ijp}, \tag{2}$$

where i indexes voters, j indexes municipalities and p indexes propositions; η_j is a municipal fixed effect, Rain_{jp} is a dummy that captures rain in municipality j when voters vote on proposition p; X'_{ijp} is a matrix of individual-level covariates; ε_{ijp} is an idiosyncratic error term. In our baseline specification, we include dummies capturing the following covariates: gender, age, income categories and holding a university degree.