Appendix

In the appendix, we provide additional information and material for different parts of the paper. In Table A1, we provide an overview of the variables we use in the paper along with a short description of the operationalization and sources. The summary statistics for the main estimations in Table 1, Table 2, and Table 3 can be found in Table A2 and Table A3. In addition, maps for the geographical distribution of the instruments are displayed in Figure A1. The maps for the geographical distribution of yes shares for the two votes in 1866 are presented in Figure A2.

Moreover, we provide a number of supplementary materials and conduct several robustness tests. The distribution of disenfranchised voters by canton is shown in Figure A3. Data on the temporal persistence of landholding inequality in Switzerland on the national level is displayed in Figure A4. In Figure A5, we present a correlation matrix of the instruments and multiple modernization indicators.

Estimations using non-linear specifications of the relationship between landholding inequality and support for suffrage extension are available in Table A4. Quantitative evidence that urbanization and not landholding inequality drove net migration between districts can be found in Table A5. Moreover, we cover the link between the mechanisms outlined in the paper and support for suffrage extension in Table A6. Our main estimations from the paper including the share of excluded voters as a control variable are provided in Table A7. We also provide estimates for the individual votes in Figure A6 and IV estimates for the mechanisms in Figure A8. Sample size calculations for our instrumental variables using the range coefficient sizes of the second stage estimates presented in Table 1 can be found in Figure A7.

In the last two sections of this appendix, we provide qualitative evidence on how social control was exercised in areas characterized by high levels of landholding inequality. In addition, we demonstrate that in the 19th century, Switzerland suffered from rural depopulation, as citizens migrated to urban and more industrialized areas.

Table A1: Variable Description

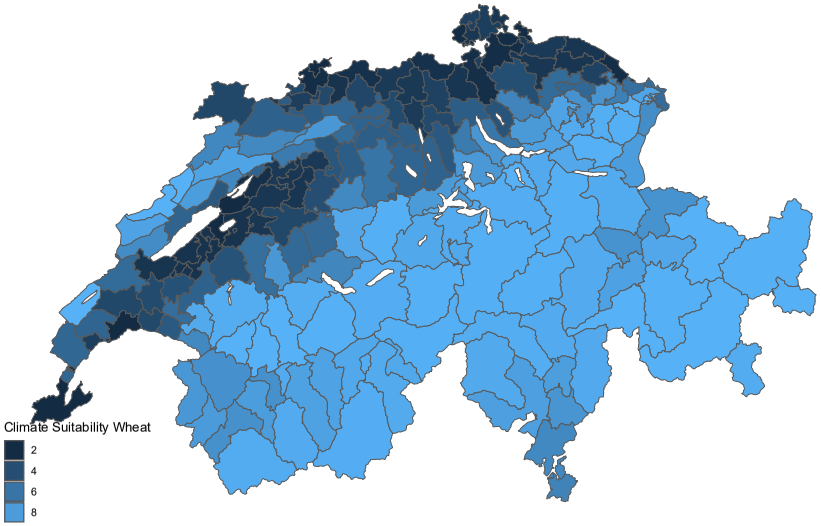
Variable	Description	Source
Yes Share	District-level yes share of all four popular votes on suffrage extension between 1866 - 1877	Cantonal Archives
Turnout	District-level turnout for the popular votes on suffrage extension in 1875 & 1877	Cantonal Archives
Voter Density	District-level number of voters per km^2	Cantonal Archives
Associations	Presence of Grütli associations & meetings	Newspaper "Der Grütlianer" 1871-1875
Climate Suitability Wheat	District-level score of climate suitability of wheat; lower values display better conditions; expert classification is based on rain and temperature for the period 1901-1960	Jeanneret and Vautier (1977)
Nutrient Storage Capacity	District-level score of nutrient storage capacity of soil; higher values display higher capacity; Measured as cation-exchange capacity	Eidgenössisches Justiz- und Polizeidepartement et al. (1980)
Ruggedness	Riley et al. (1999) Terrain Ruggedness Index	Federal Office of Topography (2020)
Landholding Inequality	Landholding inequality, computed based on von Hippel et al. (2017)	Statistisches Bureau des eidgenössischen Departement des Innern (1910)
Catholic District	Dummy variable, capturing whether majority of the population is Catholic	Statistisches Bureau des eidgenössischen Departements des Innern (1872)
German District	Dummy variable, capturing whether majority of the population is German-speaking	Statistisches Bureau des eidgenössischen Departements des Innern (1872)
Share Disenfranchised	Share of voters that are officially disenfranchised in a canton	Bundesrat (1885)
Urbanization	Share of larger settlements in a district	Ritzmann-Blickenstorfer (1996)
Population Size	Size of the population in a district	Statistisches Bureau des eidgenössischen Departements des Innern (1872)
Share Non-Cantonal Citizens	Share of inhabitants with citizenship from another canton in a district	Statistisches Bureau des eidgenössischen Departements des Innern (1872)
Infant Mortality	Infant mortality rate in a district	Statistisches Bureau des eidgenössischen Departement des Innern (1881)
Education Spending p. Pupil	Spending on education per pupil in a district	Kinkelin (1875)
Share Poorly Trained Teachers	Share of self-trained teachers (vs. training in a teacher college) in a district	Kinkelin (1875)
Education Performance	Average grade of all recruits across all subjects (reading, writing, numeracy, history) in a district	Statistisches Bureau des eidgenössischen Departement des Innern (1876)
Intra-Migration	Within-country net migration flow of a district 1870-1880, weighted by the population in 1870	Statistisches Bureau des eidgenössischen Departements des Innern (1872)

Table A2: Summary Statistics: Main Estimation

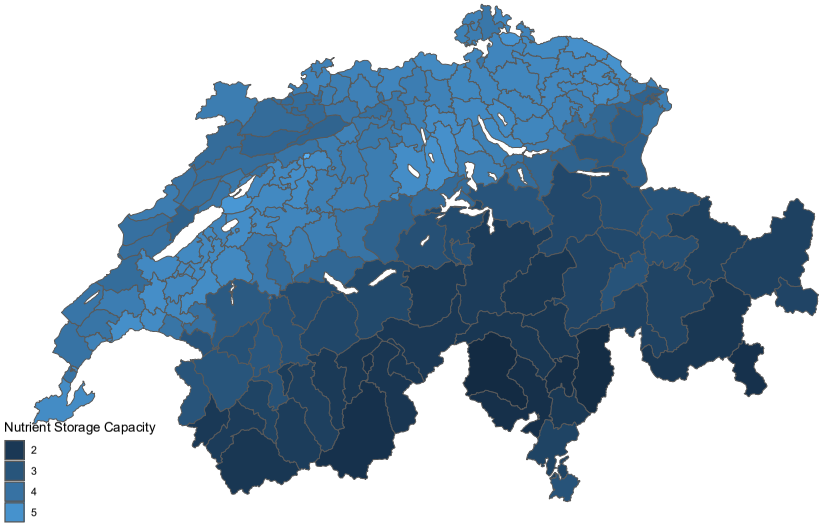
	Nobs	Mean	Median	SD	Min	Max
Yes Share	708	0.43	0.42	0.26	0.00	0.99
Climate Suitability Wheat	732	2.94	2.41	2.47	0.00	7.00
Nutrient Storage Capacity	732	3.79	4.10	1.01	1.50	5.96
Ruggedness	732	122.98	90.14	86.39	15.49	331.81
Landholding Inequality	732	0.54	0.53	0.08	0.39	0.76
Catholic District	732	0.44	0.00	0.50	0.00	1.00
German District	732	0.69	1.00	0.46	0.00	1.00
Share Disenfranchised	712	0.14	0.11	0.07	0.01	0.26
Urbanization	732	0.21	0.11	0.27	0.00	1.00
ln Population Size	732	9.38	9.42	0.64	7.26	11.44

Table A3: Summary Statistics: Mechanisms

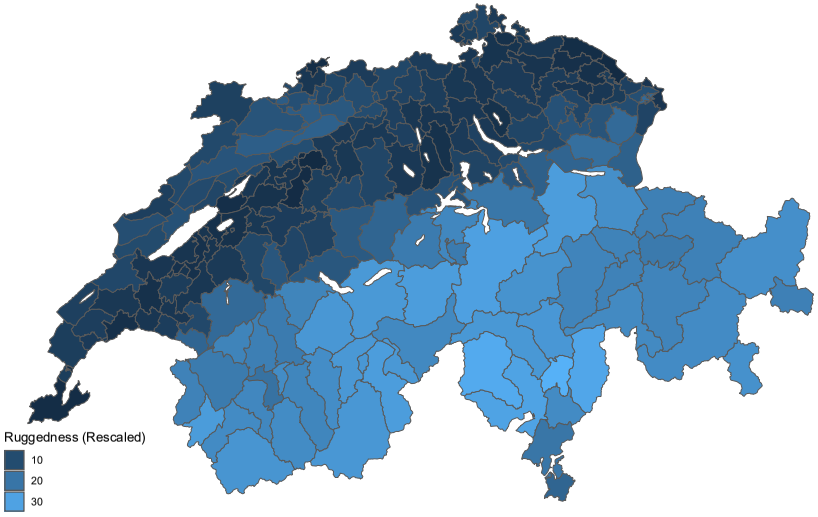
	Nobs	Mean	Median	SD	Min	Max
Education Spending p. Pupil	170	19.61	19.33	8.79	5.77	59.38
Share Poorly Trained Teacher	170	0.23	0.15	0.26	0.00	1.00
Education Performance	170	2.30	2.26	0.30	1.72	3.13
ln Voter Density	183	2.90	3.08	0.95	0.25	5.61
Associations	183	0.55	1.00	0.50	0.00	1.00
Turnout 1875	183	0.64	0.69	0.18	0.20	0.97
Turnout 1877	183	0.54	0.55	0.19	0.16	0.91
Share Disenfranchised	178	0.14	0.11	0.07	0.01	0.26
Share Non-Cantonal Citizens	173	0.09	0.06	0.09	0.00	0.46
Poverty (Infant Mortality)	183	261.61	248.87	69.65	135.69	636.94
Landholding Inequality	183	0.54	0.53	0.08	0.39	0.76
Catholic District	183	0.44	0.00	0.50	0.00	1.00
German District	183	0.69	1.00	0.46	0.00	1.00
Urbanization	183	0.21	0.11	0.27	0.00	1.00
ln Population Size	183	9.38	9.42	0.64	7.26	11.44



(a) Climate Suitability for Wheat

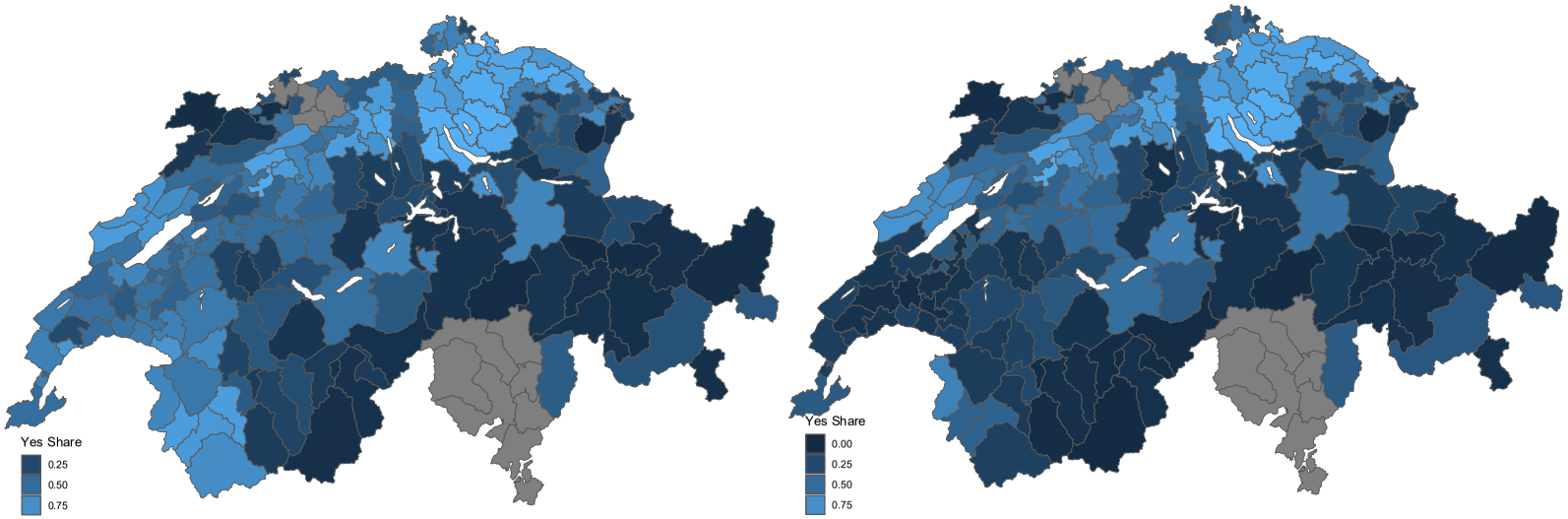


(b) Soil Quality (Nutrient Storage Capacity)



(c) Ruggedness

Figure A1: Maps (Instruments)



(a) Yes Share Popular Vote on Suffrage Extension (Cantonal Elections/Votes), 1866

(b) Yes Share Popular Vote on Suffrage Extension (Municipality Elections/Votes), 1866

Figure A2: Support for Suffrage Extension on the District Level (Votes 1866)

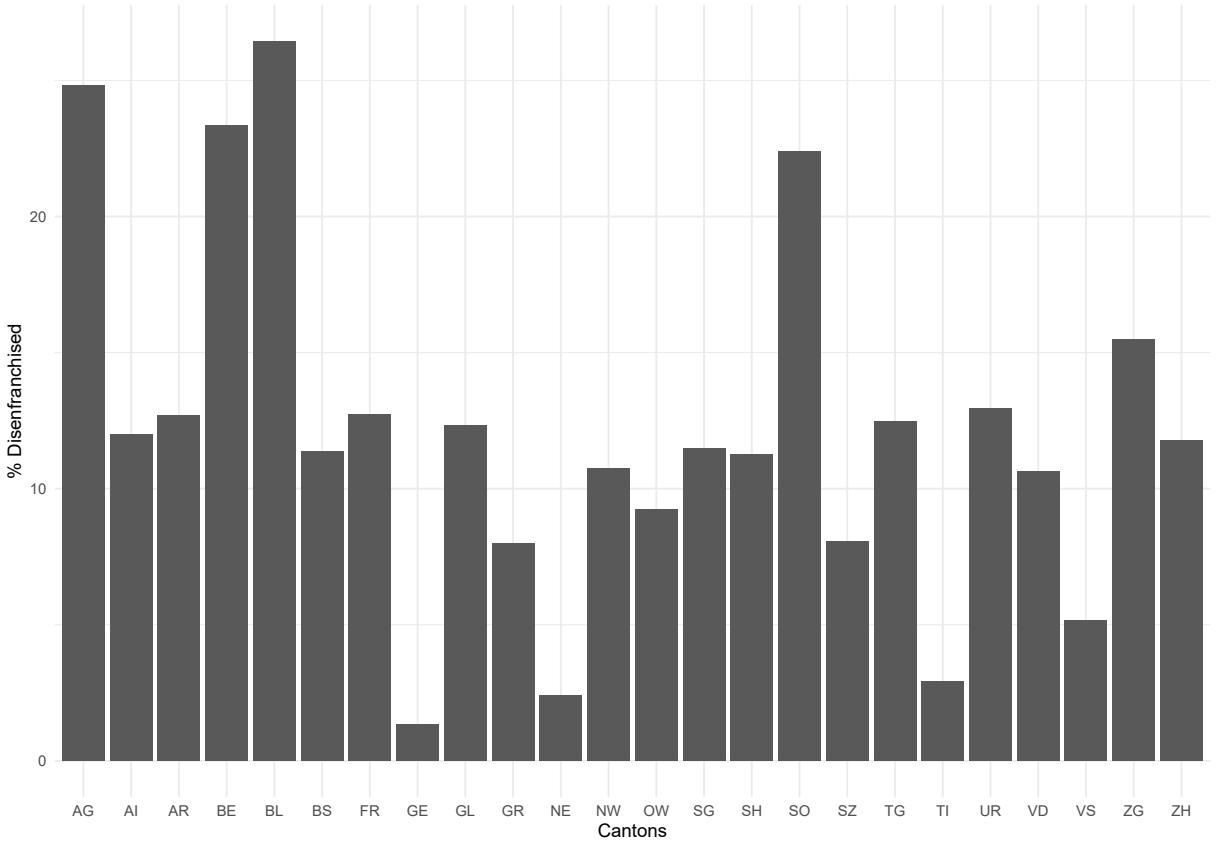


Figure A3: Share of Disenfranchised Voters per Canton

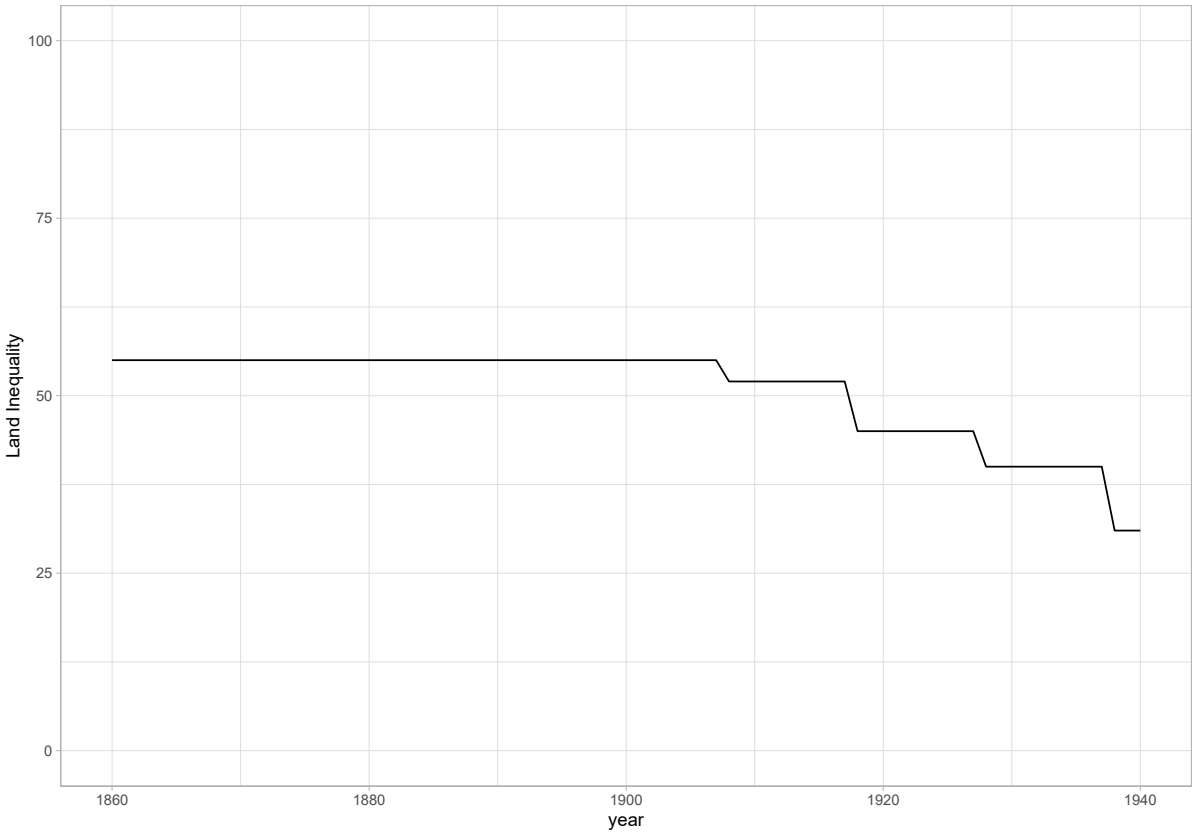


Figure A4: Landholding Inequality (100-Family Farm, data from Vanhanen (2003))

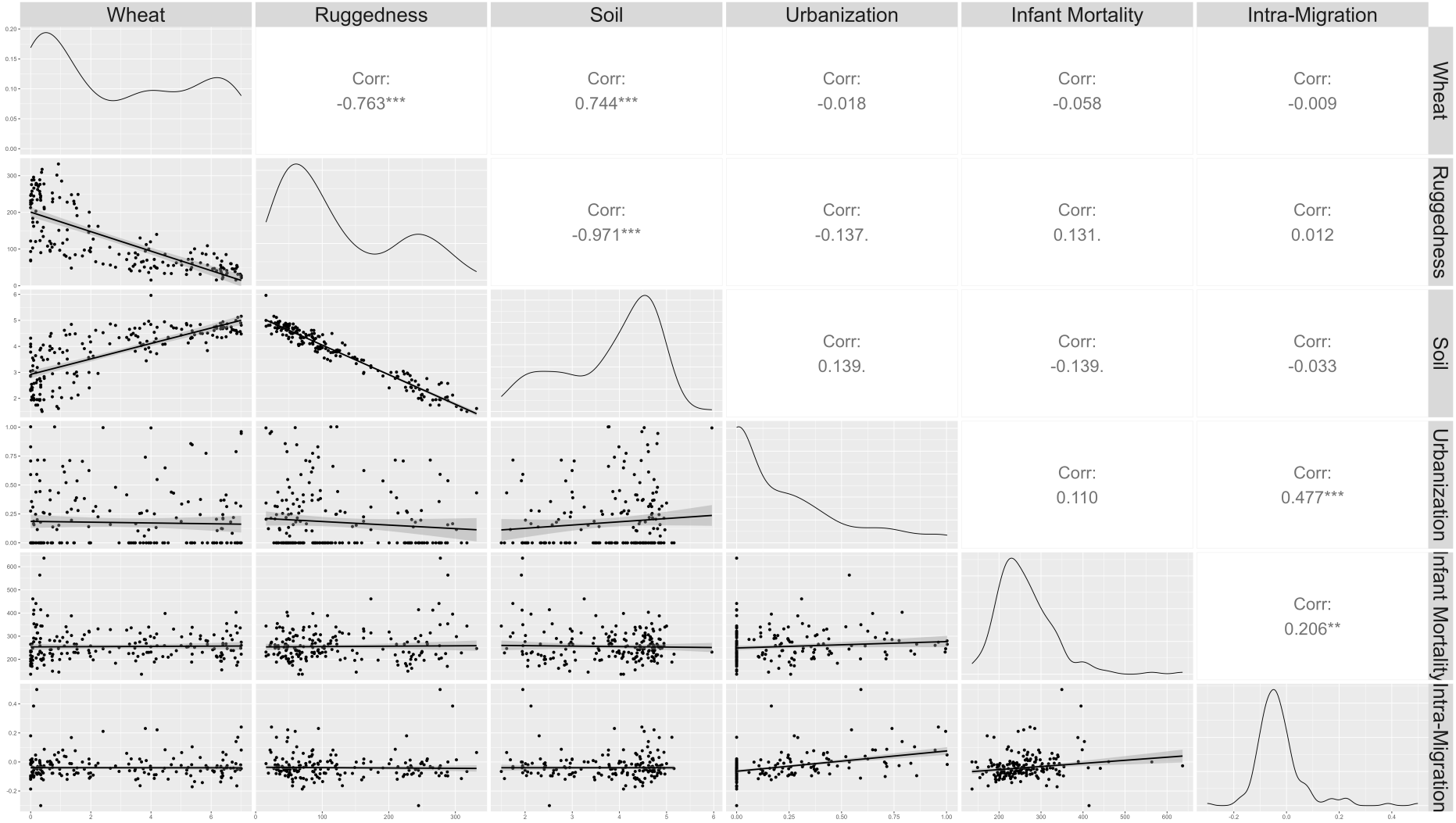


Figure A5: Correlation Matrix of Instruments and Economic Development

	OLS		IV Soil		IV Wheat		IV Ruggedness	
	OLS	OLS	2. Stage	2. Stage	2. Stage	2. Stage	2. Stage	2. Stage
Landholding Inequality	−1.98	−1.11	−3.68	−16.64	−83.85	60.74	−17.98	−16.44
	(2.38)	(1.95)	(13.44)	(14.93)	(156.66)	(293.41)	(15.99)	(14.92)
Landholding Inequality Squared	0.90	0.67	1.71	14.16	71.16	−53.82	14.27	13.92
	(2.09)	(1.73)	(11.80)	(13.12)	(136.20)	(256.94)	(14.01)	(13.08)
Urbanization		0.10*		0.06		0.25		0.06
		(0.05)		(0.07)		(0.77)		(0.07)
Share Disenfranchised		0.07		0.51		−1.65		0.51
		(0.21)		(0.54)		(8.20)		(0.53)
ln Population		0.02		0.02		−0.03		0.02
		(0.02)		(0.03)		(0.19)		(0.03)
Catholic District		−0.22***		−0.21***		−0.24		−0.21***
		(0.03)		(0.03)		(0.16)		(0.03)
German District		−0.01		−0.08		0.26		−0.08
		(0.03)		(0.08)		(1.29)		(0.08)
Spatial Lag		2.27***		1.77***		3.77		1.74**
		(0.35)		(0.52)		(8.20)		(0.53)
Vote FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	708	660	708	660	708	660	708	660
R^2	0.13	0.44	0.07	0.29	−5.13	−1.67	−0.14	0.29
Adj. R^2	0.13	0.43	0.06	0.28	−5.17	−1.72	−0.14	0.28
F statistic	21.53	45.61	28.69	36.87	3.41	9.58	23.75	36.73
F p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Num. groups: vote	4	4	4	4	4	4	4	4

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$

Table A4: Landholding Inequality and Support for Suffrage Extension: Non-linear Specifications

	Model 1
Spatial Lag	1.09
	(0.71)
Landholding Inequality	0.18
	(0.11)
Urbanization	0.16***
	(0.03)
Infant Mortality Rate	0.00
	(0.00)
ln Population	0.01
	(0.01)
Catholic District	0.01
	(0.01)
German District	0.01
	(0.01)
Intercept	−0.30†
	(0.17)
R^2	0.29
Adj. R^2	0.25
Num. obs.	170

Heteroscedasticity-robust standard errors in parenthesis. $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A5: Determinants of Net Migration between Districts

	Vote I 1866	Vote II 1866	Vote 1875	Vote 1877
Spatial Lag	2.15***	2.52***	1.23**	1.39*
	(0.41)	(0.57)	(0.43)	(0.56)
Education Spending	−0.00	−0.00	0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Poorly Trained Teachers	−0.01	−0.12	0.12†	0.16*
	(0.10)	(0.09)	(0.06)	(0.06)
Weak Educational Performance	−0.24**	−0.22*	−0.39***	−0.35***
	(0.09)	(0.11)	(0.06)	(0.05)
Voter Density	0.05	0.08**	0.00	−0.02
	(0.03)	(0.03)	(0.02)	(0.02)
Associations	0.06	0.06	0.02	0.02
	(0.05)	(0.05)	(0.04)	(0.03)
Excluded	−0.19	−1.01**	0.54*	0.59**
	(0.33)	(0.34)	(0.22)	(0.19)
Non-Cantonal	0.10	−0.25	0.20	0.26
	(0.37)	(0.31)	(0.20)	(0.19)
Poverty	−0.00†	−0.00**	−0.00**	−0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Intercept	0.11	−0.09	0.81**	0.70**
	(0.32)	(0.39)	(0.29)	(0.26)
R^2	0.43	0.44	0.50	0.52
Adj. R^2	0.40	0.41	0.47	0.49
Num. obs.	152	152	165	165

Heteroscedasticity-robust standard errors in parenthesis. $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A6: Proximate Determinants of Support for Suffrage Extension

	OLS		IV Soil				IV Wheat				IV Ruggedness			
	OLS	OLS	1. Stage	1. Stage	2. Stage	2. Stage	1. Stage	1. Stage	2. Stage	2. Stage	1. Stage	1. Stage	2. Stage	2. Stage
Nutrient Storage Capacity			−0.06***	−0.06***										
			(0.00)	(0.01)										
Climate Suitability Wheat							−0.02***	−0.01***						
							(0.00)	(0.00)						
Ruggedness											0.01***	0.01***		
											(0.00)	(0.00)		
Landholding Inequality	−0.98***	−0.37*			−1.74***	−0.61*			−2.17***	−0.77*			−1.75***	−0.62**
	(0.19)	(0.16)			(0.27)	(0.24)			(0.39)	(0.36)			(0.27)	(0.24)
Urbanization		0.10*		0.01		0.10*		−0.02		0.10†		0.01		0.10*
		(0.05)		(0.02)		(0.05)		(0.02)		(0.05)		(0.02)		(0.05)
Share Disenfranchised		0.05		0.28***		0.07		0.12		0.07		0.23**		0.07
		(0.21)		(0.07)		(0.21)		(0.08)		(0.21)		(0.07)		(0.21)
ln Population		0.02		−0.00		0.01		−0.01		0.01		−0.00		0.01
		(0.02)		(0.01)		(0.02)		(0.01)		(0.02)		(0.01)		(0.02)
Catholic District		−0.22***		−0.01		−0.22***		0.00		−0.21***		−0.01		−0.22***
		(0.03)		(0.01)		(0.03)		(0.01)		(0.03)		(0.01)		(0.03)
German District		−0.00		−0.01		−0.01		−0.00		−0.01		−0.01		−0.01
		(0.03)		(0.01)		(0.03)		(0.01)		(0.03)		(0.01)		(0.03)
Spatial Lag		2.28***		1.24***		2.14***		1.99***		2.04***		1.31***		2.13***
		(0.35)		(0.29)		(0.35)		(0.32)		(0.38)		(0.28)		(0.35)
Intercept			0.76***	0.09			0.59***	−0.41†			0.46***	−0.24		
			(0.02)	(0.20)			(0.01)	(0.22)			(0.01)	(0.19)		
Vote FEs	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Num. obs.	708	660	732	712	708	660	732	712	708	660	732	712	708	660
R^2	0.13	0.44	0.49	0.61	0.08	0.43	0.24	0.45	−0.01	0.42	0.49	0.61	0.07	0.43
Adj. R^2	0.13	0.43	0.49	0.60	0.07	0.42	0.24	0.45	−0.01	0.41	0.49	0.61	0.07	0.42
F statistic	26.81	50.19	711.27	156.34	36.14	50.29	228.43	82.94	25.96	48.82	707.60	156.64	35.97	50.26
F p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Num. groups: vote	4	4			4	4			4	4			4	4

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$

Table A7: Landholding Inequality and Support for Suffrage Extension (Disenfranchised as Control)

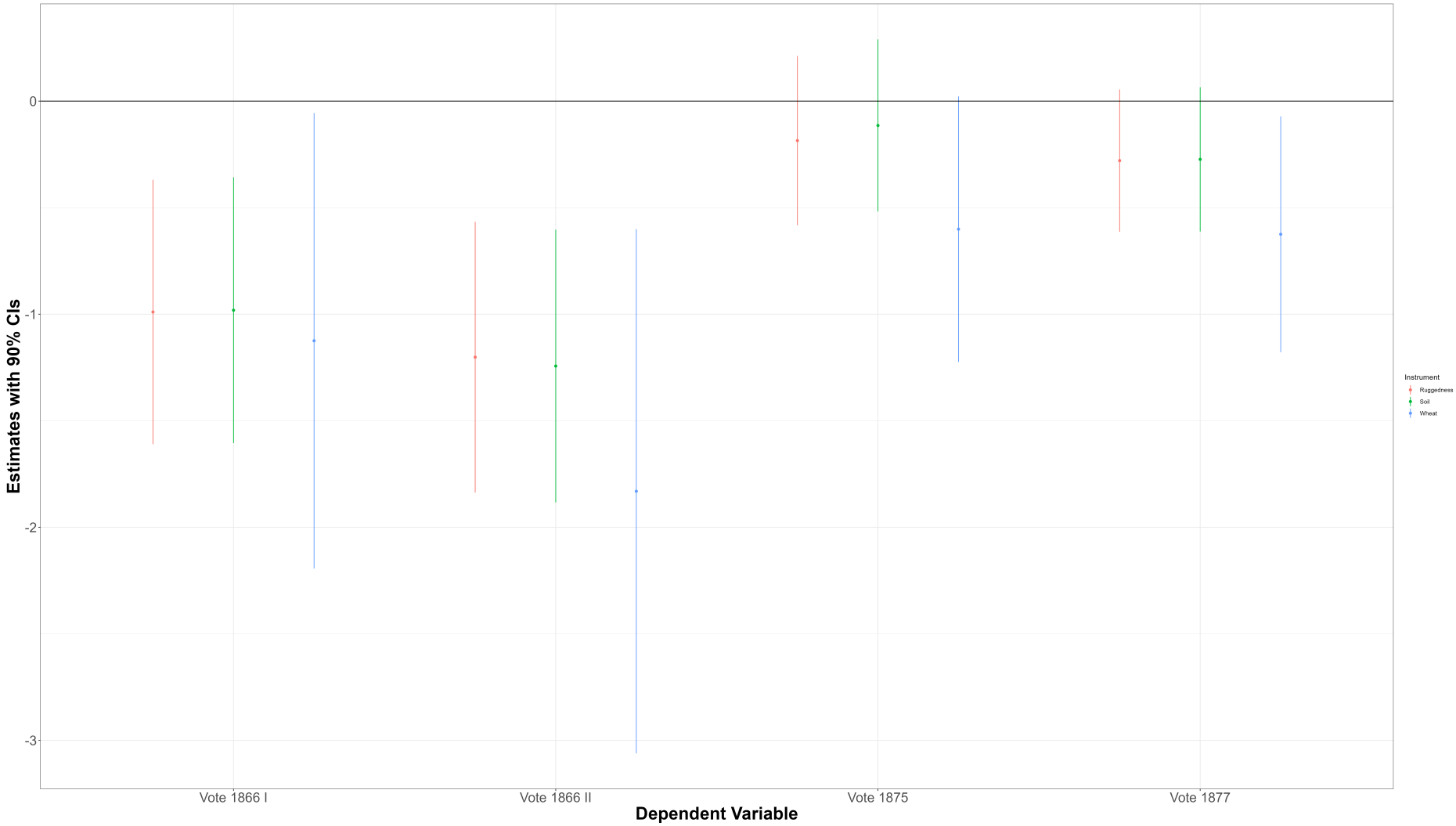


Figure A6: IV Estimates for the Individual Votes

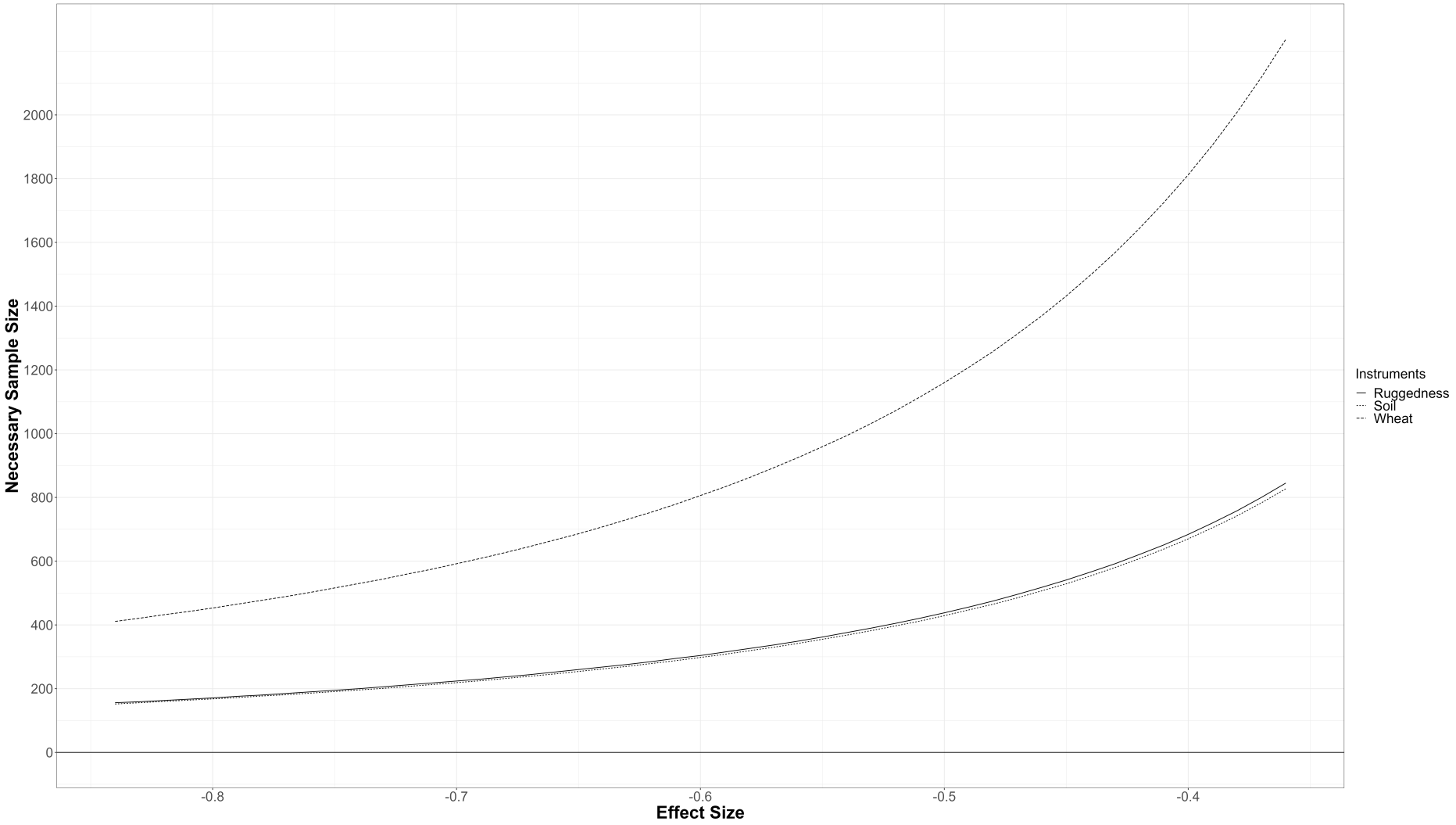


Figure A7: Power Analysis: Sample Size Calculations

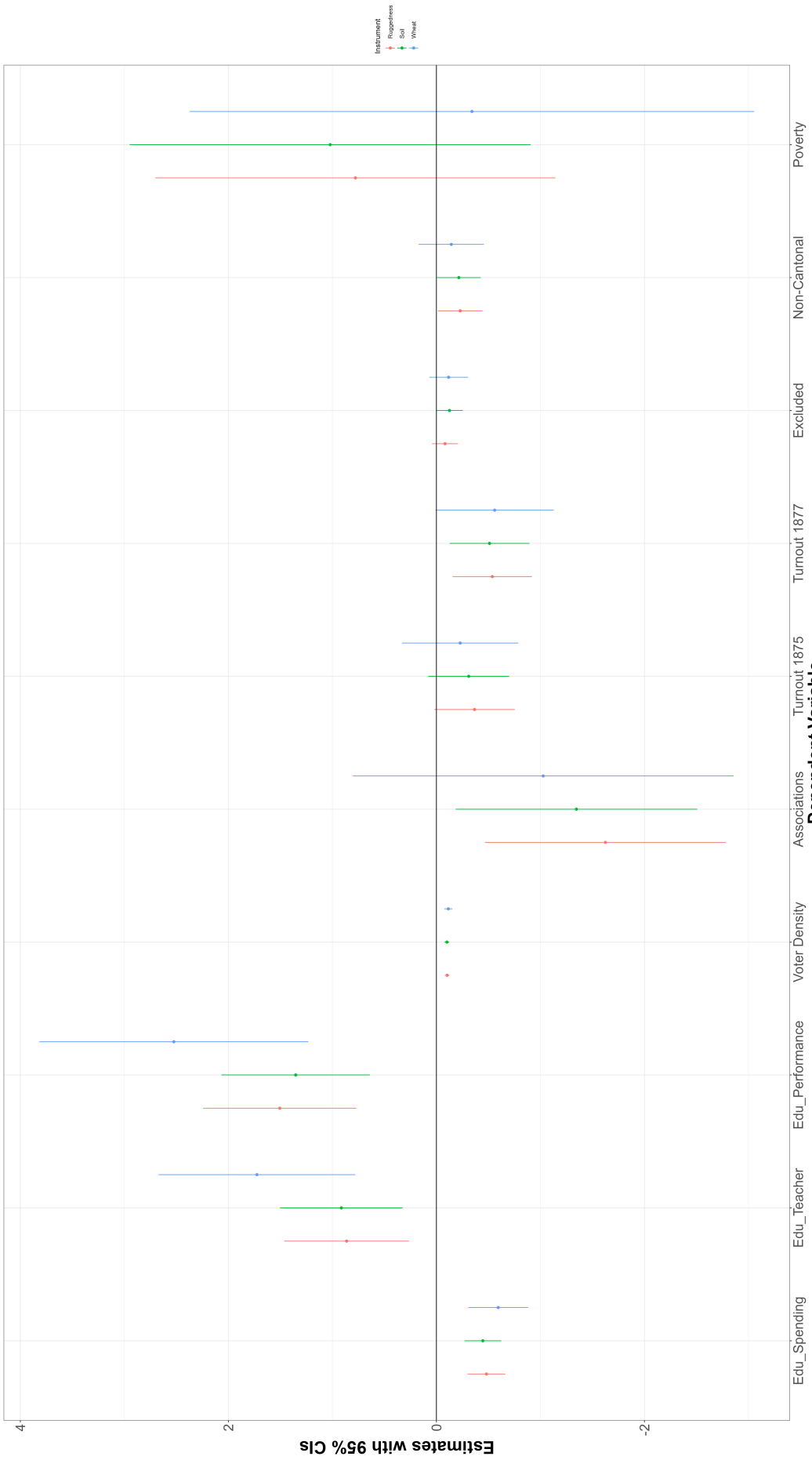


Figure A8: IV Estimates for the Mechanisms

Qualitative Evidence: The Exercise of Social Control in Alpine Regions

In this section, we offer additional qualitative evidence to further substantiate the social control mechanism. The historical literature on the social and political conditions in regions characterized by high levels of landholding inequality offers rich depictions of social hierarchies where patterns of social control could develop and persist (e.g., Arnold, 1994; Kälin, 1991, 1999; Locher, 1996; Mattioli, 1999; Zurfluh, 1994). Throughout the 19th century, Switzerland featured massive regional disparities regarding industrialization. Whereas the larger cities in the midlands turned into industrial and commercial centers, the alpine region retained its agricultural focus and increasingly turned into a capital-poor peripheral region. In the words of Mattioli (1999, 25), in this period, people living in the alpine region still lived to the rhythm of church bells and not to the time stamp clocks of the modern factory age.

Switzerland's alpine region featured a particularly strong continuance of old elite families from the "Ancien Régime" (i.e., the period before the creation of modern Switzerland). These families of magistrates managed to maintain their economic and political influence throughout the 19th century (Tanner, 1995, 566). Since their position at the top of social hierarchies was not legally protected, old elites drew on a special style of rule and various strategies to maintain their political power in a direct democratic system (Kälin, 1999, 110-116).

Using the canton of Uri as an example, Arnold (1994, 131) describes the elite's relationship to the citizens as patriarchal and authoritarian. He argues that the small group of local magistrates did not use violence to enforce the desired behavior. Rather, they disciplined citizens by drawing on economic and symbolic resources, constantly conjuring tradition and relying on the church's moral doctrines. Hence, numerous interwoven factors helped these old elites to preserve their position of power and control citizens' political behavior. These factors align with Lukes' (1974)

three forms of power.

First, the elite's economic position and the residents' resulting dependency on the elite was a central factor in protecting local hierarchies. In these little industrialized areas, wealth was largely identical with land ownership. Local elites used their financial resources mainly to purchase agricultural estates, which farmers could subsequently lease. Alternatively, in the absence of banks, elites offered loans to small farmers at high interest rates and insured by mortgages (Mathieu and Stauffacher, 1986, 324-326; Schürmann 1974, 263-264; Walter 1983, 75-84). With elites owning most of the land and dominating the mortgage lending market (and no independent credit and loan system outside large urban centers), most of the local population were in a state of economic dependency. Moreover, with the need for credit high and the capital market inaccessible, citizens had to accept excessively high interest rates, creating a vicious circle. Citizens' indebtedness and the annual interest payments became a constant source of loyalty towards the local elites (Arnold 1994, 135-142; Kälin 1999, 113; Pfister, 1992, 42-44).

In addition to owning most of the land and being the only source of credit, elites also controlled access to work material, services, and central infrastructure. For example, consider the production and sale of cheese. Small farmers, especially in more remote mountainous areas, were primarily engaged in herding and animal stock. For these farmers, the production and sale of cheese was a key source of revenue (Jung, 2020, 482-485; Bergier, 1990, 97-103). However, in order to produce cheese, farmers needed access to central infrastructure, most notably a cheese dairy. In this period, the relevant infrastructure needed to process milk and produce cheese had to be provided locally (due to the lack of long-distance transportation possibilities), but access could be limited. If farmers could not sell their milk to the local cheese maker, the milk lost any economic value, because farmers did not have the possibility to bring their milk to another cheese maker. Hence, access to local production infrastructure was essential for these farmers' economic survival. Put differently, whoever controlled

the cheese production infrastructure also controlled the farmers that were dependent on it.[14]

Second, only the wealthy elite was able to occupy political offices and thereby control political agenda setting. The reason is that financial compensation for public officials was low, while sustaining political support among the elite was costly. Therefore, the local political elite was often hardly distinguishable from the local economic elite (Kälin, 1999, 113). In annual rituals, the elite's supremacy was democratically legitimated at the "Landsgemeinde", an old direct democratic tradition in which all citizens eligible to vote gathered in open-air assemblies to elect public officials and vote on cantonal political issues. Elites often tried to inhibit free discussions in direct democratic assemblies. In Appenzell, for example, the process to file petitions was very difficult for citizens. The issues to be decided on at the assemblies were restricted to the most essentials and often citizens' political participation was limited to the election of public officials (Schläpfer, 1948, 18-19, 25-26). In general, the rich elite had little interest in changing the existing conditions and their policies were aimed at maintaining the present order and juridical status (Schürmann, 1974, 299). Traditional patterns of social control also prevented the creation of organized groups advocating political change. As shown above, there were fewer civil society organizations and meetings in areas characterized by high levels of landholding inequality (see Table 2 in the main text).

Controlling citizens' behavior at such assemblies was straightforward though, since votes and elections were conducted by show of hands. Consequently, subservience and indifference were common political attitudes among voters. Ironically, although local elites were firmly in charge, citizens' experience of participating in the "Landsgemeinde" was essential for their continued adherence to the existing order (Arnold, 1994, 129, 141-142). In line with this observation, support for suffrage extension in

[14]For this reason, dairy cooperatives became increasingly popular at the turn of the century, because they allowed individual farmers to exercise some degree of control over their cheese production process.

the four direct democratic votes examined above was in fact *lower* in cantons with a "Landsgemeinde" in this period (Appenzell Ausserrhoden, Appenzell Innerrhoden, Glarus, Nidwalden, Obwalden, and Uri) than in cantons without such assemblies.

This paradoxical situation attracted the attention of contemporary observers. In a letter, the Bernese patrician Vinzenz Bernhard von Tscharner describes his impressions of a "Landsgemeinde" in Glarus: "I felt that this Landsgemeinde of which they are so proud is only a game of liberty, and, at bottom, a scheme to amuse people and to distract them from affairs of government for the rest of the year. They have a council of a hundred members which decides on war or peace, interprets the laws, and exercises a very aristocratic authority" (Stoye, 1954, 27). These ritualistic events reaffirmed traditional rules and conventional standards, and thus cemented the local elite's "paternalistic-authoritarian style of rule" (Tanner, 1995, 566), despite taking place in a seemingly democratic context.

Third, elites made use of different ways to exercise ideological power over the masses. For instance, local religious authorities played an important role in sustaining the elite's control over citizens' behavior. In the minds of the governed, the political leaders' supremacy in political, economic, and social aspects of life had to appear natural and willed by God. This idea obliged citizens to absolute obedience. The priests preached this obedience towards secular and spiritual authorities not only in church, but also in schools and at direct democratic assemblies (Locher 1996, 86-87; Arnold 1994, 129-131). The citizens assemblies in particular were filled with religious symbolism (Brändle, 2011, 437). The sermon held in the beginning of a "Landsgemeinde" justified the need for political authorities and urged the electorate to keep calm and respect the existing political order. An uprising against the ruling elite was perceived as a violation of the divine order. Moreover, many priests were part of the upper classes (often younger sons who did not inherit the parents' estate) and their interests therefore aligned with those of the elites (Stauffacher, 1989, 148-153).

In some instances the clergy could even influence vote outcomes directly. As reported from mid-19th century Valais, many citizens were illiterate and turned to local priests to help, which allowed the clergy to convince voters to change their opinion (Imhasly, 1992, 326-327). The political authorities, however, also controlled the activities of the clergy. Undesirable behavior was punished with withdrawal of benefits and privileges. It was furthermore the priests' duty to inform the community in church about the mandates and regulations decided by the ruling authorities (Schürmann 1974, 25; Wild 1940, 142-165).

Religiously substantiated patron-client relationships in addition helped the wealthy elite maintain their loyal entourage. High-ranking personalities figured as godparents for common citizens. Godparenthood was a social investment and implied periodical gifts and protection for the godchild. In return, political support and allegiance was expected from the godchildren and their families. In some places, rich couples took over dozens of sponsorships (Mathieu and Stauffacher, 1986, 332-333; Pfister, 1992, 56-57; Zurfluh, 1994, 204-205; Guzzi-Heeb, 2009). Small communities, geographically enclosed areas, and low population density further contributed to the local elite's retention of power in these alpine regions (Altermatt 1989, 239-246; Arnold 1994, 131; Bossard-Borner 2008, 591-594; see also Table 2 in the main text).

Controlling citizens' education was another channel elites used to steer the masses' thinking in desirable directions. For example, low investments in public education cemented the intellectual inferiority of non-elite citizens in alpine regions. As mentioned, from 1875 onward, all military conscripts had to pass a nation-wide exam. Conscripts from alpine cantons such as Uri, Schwyz, Nidwalden, Valais, Fribourg, the Ticino, and Appenzell Innerrhoden consistently formed the bottom of the national ranking (Zimmer, 2003, 182). More generally, as shown above, regions characterized by high levels of landholding inequality performed systematically worse in educational attainment (see Table 2 in the main text).

For instance, in early 19th century Appenzell Innerrhoden, elites and the clergy

showed little interest in funding the school system. In a parish report, councilman Kurat Weishaupt denoted a hard-working people as useful to church and state, even when it was not able to write and read. Furthermore, he saw limited education as a tool to keep the farmers in check (Schürmann, 1974, 267). An anecdote illustrates the local elite's attitude towards education. When a nun was found to be secretly teaching children, local authorities demanded that the matron imprison her. Since by educating children a large number of young Appenzell citizens would grow up to be smarter than others, Republican equality was seen in danger (Signer, 1940).

Similarly, conservative politicians in Luzern opposed additional education spending. Philipp Anton von Segesser, who was also the leader of the Catholic Conservative faction in the federal parliament, argued that schools were to focus on the basics such as reading, writing, and calculating, while other subjects such as singing, drawing, physical education "or other such things, which take away time without offering anything relevant" were to be abolished (cited in Bossard-Borner, 2008, 608-609). He also advocated the closing of teacher training colleges. Instead, teacher trainers were to travel from school to school, training teachers on site (Bossard-Borner, 2008, 613).

A contemporary witness' description of these vertical ties and dependencies vividly encapsulates the elite's system of controlling citizens' behavior. In a 1879 article published in "Zwing-Uri", Anton Müller tells the story of how wealthy landowners are taking advantage of poor farmers. Even if the landowners exploit poor farmers, they are not allowed to voice their dissatisfaction. The landowners depend, in turn, on the councilmen of the municipality. However, to stay in power, the councilmen have to be on good terms with the local priests. The priests lecture the people on the virtues and merits of the councilmen. In turn, the councilmen encourage the local people to pay obedience to the priests (Arnold, 1994, 134).

In short, in areas with high landholding inequality, local elites had plenty of means to exercise social control. Debt as a source of loyalty and dependence, low levels of education, religious practices, the suppression of opposition groups, and, ironically,

participation in direct democratic assemblies were some of the elements used to secure traditional forms of authority and maintain economic and political inequalities.

Depopulation of Alpine Regions

This section provides evidence on the large domestic migration movements that characterized Switzerland in the 19th century. In particular, it demonstrates that Switzerland experienced the relocation of citizens from rural Alpine regions of the country to the industrial centers in the urban areas of the country. Moreover, it shows that motives for domestic migration were typically economic.

With industrialization proceeding apace in the second half of the 19th century, Switzerland increasingly became a country of banks, trade, and industry. However, as established in the previous section, with regard to industrial development, Switzerland featured immense regional discrepancies (Bergier, 1990, 257). While in urban regions of the midlands the modern factory age had begun, rural areas remained capital-poor and economically underdeveloped. Rural regions were marked by agrarian rather than industrial mass poverty. Being at the mercy of nature, floods, droughts, or one poor harvest had the potential of destroying the existence of whole communities. Accordingly, the life of the rural population was shaped by conditions of economic scarcity and social uncertainty (Mattioli, 1999, 25-26; Jung, 2020, 212, 231). In line with this reasoning, in rural regions up to 10% of the population had to be supported through public funding. In comparison, only 3 to 4% of the population in the comparatively urban canton of Zurich were dependent on state support (Bergier, 1990, 257).

These harsh living conditions forced a great share of the landed population, especially in the more Alpine regions of Switzerland, to leave their home and to migrate to the more industrialized areas to earn their living as employed factory workers. In this way, the alpine population became a reservoir of labor resources to the industrialized

midlands. As a result of this rural exodus, the cities with their agglomerations grew at the expense of rural and alpine regions (e.g., Altermatt, 1989, 149-150; Braun, 1965, 34; Kreis, 1986, 130-132). Although the number of people living in alpine cantons nearly doubled between 1850 and 1970, their share of the entire Swiss population decreased from 14.2% to 10.3% in this time period (Hagmann & Menthonnex, 1979, 217). An example is the alpine canton of Glarus, where the four parishes Elm, Mollis, Ennenda, and Schwanden counted 7704 inhabitants in 1798. In the first half of the 18th century, 366 citizens emigrated to another canton in Switzerland or to another country. In the second half of the 18th century 850 citizens left the canton and, finally, in the first half of the 19th century 2589 citizens left the canton of Glarus (Head, 1979, 186).

Table A5 documents this development. It shows that urbanization is positively associated with net migration inflows. Put differently, rural areas were suffering from depopulation – independent of the level of landholding inequality (see Table A5). Moreover, the mass emigration of primarily rural residents to overseas in the 19th century is a further indicator of poor living conditions and lack of perspectives in rural regions (e.g., Ritzmann-Blickenstorfer, 1997; Anderegg, 1980; Jung, 2020, 193-265; Kreis, 1986, 171-179; Bergier, 1990, 55-57).

Driven by hunger, not only adults, but also young children had to leave their families to hire themselves out as cheap workforce in other regions or the near abroad (e.g., Jung, 2020, 210-215; Bickel, 1947, 165). The precarious conditions in rural areas were discussed by the local press. For example, an article in a Zurich-based newspaper in 1878 describes how five starving and begging children aged seven to twelve from a rural region in Eastern Switzerland traveled through the country to find work across the German border. Just like hundreds of other young children from poor municipalities they traveled to so-called "children's markets" in the hope to be hired by a wealthier farmer (Neue Zürcher Zeitung, April 3, 1878). Another newspaper reports that the number of students in a school was reduced by more than half due to the

emigration (Täglicher Anzeiger für Thun und das Berner Oberland, April 19, 1878).

Once migrated, the economic situation of the formerly landed citizens often remained equally precarious. Consider the situation of Catholic immigrants to Zurich, Switzerland's economic center. Zurich is a historically Protestant canton that openly discriminated Swiss citizens of Catholic faith (until 1963). Yet, Zurich's strong economic performance nevertheless made numerous Catholic Swiss migrate to Zurich in search for employment. However, most of these immigrants were unable to escape poverty. Altermatt (1989, 183-184) shows that a majority of the Catholic immigrants worked as unskilled workers, day laborers, or servants in factories and in households. Unfortunately, there are no exact figures available for the economic situation of these new immigrants before 1900. However, tax data shows that as late as 1934, a Catholic in Zurich on average owned assets worth only 4700 Swiss Francs. This is not even one third of what a Protestant owned on average, which were assets worth 14350 Swiss Francs (Altermatt, 1989, 184). Moreover, many of the newly migrated factory workers did not take roots in their new home towns, but led an unsteady and precarious life, moving from one industrial site to the other (Braun, 1965, 38-39). In short, the domestic migrants remained highly mobile and belonged to occupational groups of the lower social stratum. Because of their mobility, they were therefore the very part of the population excluded from political rights (Gruner, 1978, 117-121).

Rural depopulation explains why the share of non-cantonal and disenfranchised citizens cannot account for the relationship between landholding inequality and opposition suffrage extension. Rural areas, including areas with high levels of landholding inequality, were typically suffering from depopulation. As a result, the shares of disenfranchised and non-cantonal citizens were comparatively low. Yet, domestic migrants rarely escaped poverty, which explains why there is no relationship between poverty and opposition to suffrage extension, either. In fact, long-term residents in urban and industrialized areas would have had reason to resist suffrage extension because domestic migration resulted in wage competition and caused local poverty

levels to soar. In contrast, given their higher propensity to migrate, rural voters in Alpine regions had incentives to support suffrage extension because they were at a higher risk of disenfranchisement themselves. If citizens moved from their canton of origin to another one, they were likely to lose their right to vote - depending on the specific rules in their new host canton. Even if rural voters themselves had little intention to move to another canton in the near future, they were certainly more likely to know or be related to citizens that had migrated and - as a result - lost their right to vote.

References

Altermatt, U. (1989). *Katholizismus und Moderne: Zur Sozial- und Mentalitätsgeschichte der Schweizer Katholiken im 19. u. 20. Jahrhundert*. Benziger.

Anderegg, K. (1980). Oberwalliser Emigration nach Übersee im dritten Viertel des 19. Jahrhunderts. *Schweizerisches Archiv für Volkskunde*, *76*(1-2), 175–196.

Arnold, P. (1994). *Almosen und Allmenden: Verarmung und Rückständigkeit in der Urner Markgenossenschaft 1798-1848*. Chronos.

Bergier, J.-F. (1990). *Wirtschaftsgeschichte der Schweiz: Von den Anfängen bis zur Gegenwart*. Benziger.

Bickel, W. (1947). *Bevölkerungsgeschichte und Bevölkerungspolitik der Schweiz seit dem Ausgang des Mittelalters*. Büchergilde Gutenberg.

Bossard-Borner, H. (2008). *Im Spannungsfeld von Politik und Religion. Der Kanton Luzern von 1831-1875*. Schwabe & Co.

Brändle, F. (2011). Die gottgewollte Demokratie: Sakrale Politik in den katholischen Landsgemeindeorten 1500-1798. *Schweizerische Zeitschrift für Religions und Kulturgeschichte*, *105*, 435–472.

Braun, R. (1965). *Sozialer und Kultureller Wandel in einem ländlichen Industriegebiet (Zürcher Oberland) unter Einwirkung des Maschinen- und Fabrikwesens im 19. und 20. Jahrhundert*. Eugen Rentsch.

Bundesrat. (1885). Bericht des Bundesrathes an die Bundesversammlung über die Ausführung der Motion von Herrn Nationalrath Morel und Mitunterzeichnern, betreffend eine Statistik der in eidgenössischen Angelegenheiten nicht stimmfähigen Schweizerbürger. *Bundesblatt*, *2*(13), 81–87.

Eidgenössisches Justiz- und Polizeidepartement, Bundesamt für Raumplanung, Eidgenössisches Volkswirtschaftsdepartement, Bundesamt für Landwirtschaft, Eidgenössisches Departement des Innern, & Bundesamt für Forstwesen. (1980). *Bodeneignungskarte der Schweiz*. Eidgenössische Drucksachen- und Materialzentrale.

Federal Office of Topography. (2020). *The digital height model of Switzerland with a 200m grid*. data.geo.admin.ch/ch.swisstopo.digitales-hoehenmodell_25/data.zip

Gruner, E. (1978). *Die Wahlen in den schweizerischen Nationalrat, 1848-1919. Wahlrecht, Wahlsystem, Wahlbeteiligung, Verhalten von Wählern und Parteien, Wahlthemen und Wahlkämpfe. Band 1*. Francke.

Guzzi-Heeb, S. (2009). Kinship, ritual kinship and political milieus in an alpine Valley in 19th century. *The History of the Family*, *14*(1), 107–123.

Hagmann, H.-M., & Menthonnex, J. (1979). Éléments de démographie alpine: Le cas de la Suisse, 1850-1970. *Schweizerische Zeitschrift Für Geschichte*, *29*(1), 216–231.

Head, A.-L. (1979). Quelques remarques sur l'émigration des régions préalpines: Le cas glaronnais - une première approche. *Schweizerische Zeitschrift Für Geschichte*, *29*(1), 181–193.

Imhasly, M. F. (1992). *Katholische Pfarrer in der Alpenregion um 1850: Ein Beitrag zur Kulturgeschichte des katholischen Pfarrers im Oberwallis*. Editions Universitaires.

Jeanneret, F., & Vautier, P. (1977). *Klimaeignungskarten für die Landwirtschaft der Schweiz*. Eidgenössische Drucksachen- und Materialzentrale.

Jung, J. (2020). *Das Laboratorium des Fortschritts: Die Schweiz im 19. Jahrhundert*. NZZ Libro.

Kälin, U. (1991). *Die Urner Magistraten-Familien Herrschaft, ökonomische Lage und Lebensstil einer ländlichen Oberschicht, 1700-1850*. Chronos.

Kälin, U. (1999). Magistraten, Aristokraten und Bürger - Eliten im Wandel. In A. Binnenkade & A. Mattioli (Eds.), *Die Innerschweiz im frühen Bundesstaat (1848-1874). Gesellschaftliche Annäherungen* (pp. 109–123). Chronos.

Kinkelin, H. (1875). *Statistik des Unterrichtswesens in der Schweiz im Jahre 1871. Zweiter Theil. Statistik der Primarschulen und Ergänzungen zum ersten Theil*. H. Georg's Verlag.

Kreis, G. (1986). *Der Weg zur Gegenwart: Die Schweiz im neunzehnten Jahrhundert*. Birkhäuser.

Locher, B. (1996). *Der Staatsproporz im Kanton Wallis 1848-1988*. Universitätsverlag Freiburg.

Lukes, S. (1974). *Power. A Radical View*. Macmillan.

Mathieu, J., Stauffacher, H., & Mattmüller, M. (1986). Alpine Gemeindedemokratie oder aristokratische Herrschaft? Eine Gegenüberstellung zweier Schweizerischer Regionen im Ancien Régime. *Wirtschaft und Gesellschaft in Berggebieten: Referate, gehalten am Kolloquium zur Geschichte der europäischen Berggebiete* (pp. 320–360). Schwabe.

Mattioli, A. (1999). Die Schweiz im frühen Bundesstaat - neue Sichtweisen auf eine wenig bekannte Gesellschaft. In A. Binnenkade & A. Mattioli (Eds.), *Die Innerschweiz im frühen Bundesstaat (1848-1874). Gesellschaftliche Annäherungen* (pp. 11–30). Chronos.

Pfister, U. (1992). Politischer Klientelismus in der frühzeitlichen Schweiz. *Schweizerische Zeitschrift für Geschichte*, *42*(1), 28–68.

Riley, S., DeGloria, S., & Elliot, R. (1999). A Terrain Ruggedness Index That Quantifies Topographic Heterogeneity. *Intermountain Journal of Sciences*, *5*(1-4), 23–27.

Ritzmann-Blickenstorfer, H. (Ed.). (1996). *Historische Statistik der Schweiz*. Chronos.

Ritzmann-Blickenstorfer, H. (1997). *Alternative Neue Welt: Die Ursachen der schweizerischen Überseeauswanderung im 19. und frühen 20. Jahrhundert*. Chronos.

Schläpfer, W. (1948). Demokratie und Aristokratie in der Appenzellergeschichte des 17. und 18. Jahrhunderts. *Appenzellische Jahrbücher*, *76*, 3–26.

Schürmann, M. (1974). *Bevölkerung, Wirtschaft und Gesellschaft in Appenzell Innerrhoden im 18. und frühen 19. Jahrhundert*. Universität Basel.

Signer, J. (1940). Chronik der Appenzell I. Rh. Liegenschaften. *Appenzellische Geschichtsblätter*, *2*(2).

Statistisches Bureau des eidgenössischen Departement des Innern. (1876). *Rekruten-Prüfung im Jahr 1875*. Orell Füssli.

Statistisches Bureau des eidgenössischen Departement des Innern. (1881). *Die Bewegung der Bevölkerung in der Schweiz im Jahre 1879*. Orell Füssli.

Statistisches Bureau des eidgenössischen Departement des Innern. (1910). *Ergebnisse der Eidgenössischen Betriebszählung vom 9. August 1905. Band 2. Die Betriebe der Urproduktion*. Kommissionsverlag A. Francke.

Statistisches Bureau des eidgenössischen Departements des Innern. (1872). *Eidgenössische Volkszählung 1870*. Orell Füssli.

Stauffacher, H. R. (1989). *Herrschaft und Landsgemeinde. Die Machtelite in Evangelisch-Glarus vor und nach der Helvetischen Revolution*. Tschudi.

Stoye, E. (1954). *Vincent Bernard de Tscharner: A study of Swiss culture in the eighteenth century*. Universität Fribourg.

Tanner, A. (1995). *Arbeitsame Patrioten - wohlanständige Damen: Bürgertum und Bürgerlichkeit in der Schweiz 1830-1914*. Orell Füssli.

Vanhanen, T. (2003). *Democratization and Power Resources 1850-2000 [dataset]*. Finnish Social Science Data Archive.

von Hippel, P., Hunter, D., & Drown, M. (2017). Better Estimates from Binned Income Data: Interpolated CDFs and Mean-Matching. *Sociological Science*, *4*, 641–655.

Walter, F. (1983). *Les campagnes fribourgeoises à l'âge des révolutions (1798-1856): Aspects économiques et sociaux*. Editions universitaires.

Wild, A. (1940). *Das Kollaturrecht des Grossen Rates von Appenzell I.-Rh.* Universität Freiburg.

Zimmer, O. (2003). *A Contested Nation: History, Memory and Nationalism in Switzerland, 1761-1891*. Cambridge University Press.

Zurfluh, A. (1994). *Uri, Modell einer traditionellen Welt? Eine ethno-geschichtliche Studie über die Urner Mentalität; 17.-20. Jahrhundert*. Thesis.