APPROPRIATION AND SUBVERSION

Precommunist Literacy, Communist Party Saturation, and Postcommunist Democratic Outcomes

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SUPPLEMENTARY MATERIAL

The data employed for the analysis and replication materials are available from the authors.

SUPPLEMENTARY APPENDIX (FOR PUBLICATION ONLINE)

Appendix S1: Matching imperial *gubernii* and communist and post-communist Russia's regions

There were forty-six *gubernii* in tsarist Russia, the territories of which now form part of the Russian Federation. After the Bolshevik Revolution, many *gubernii* were split into several regions. To ensure inter-temporal observational equivalence, if a *guberniya* had been divided into several entities in the post-communist period, the latter were assigned the values of the original *guberniya*. Scholars who have sought to match imperial with communist and post-communist data estimating the percentage share of imperial regions included in post-communist administrative territories found the differences to be modest for most regions. The largest differences were in Western Siberia and Ukraine (not part of our study). We address the Siberian data issue by tracing which *gubernii* had been split into multiple regions. On recent attempts to match regional imperial and communist population statistics, see (Kumo, Morinaga et al. 2007). See also (Leasure and Lewis 1966)

Appendix S2: Sensitivity analysis

The results of mediation analysis are sensitive to the sequential ignorability assumption. To ascertain the extent to which our estimations would be affected by violations of this assumption, we run sensitivity analysis for all of the specifications. Below we report two sets of indicators. First, we report a series of graphs, showing how the estimation of the indirect effect would change conditional on the *rho* − a parameter measuring the correlation of error terms in the equations employed to perform the analysis. Second, we report the value of *rho* for which the indirect effect would become equal to zero. If *rho* were close to zero, the results would not be very trustworthy: it would mean that if there was an omitted confounding variable, which exhibited even a very low level of correlation with the outcome and the mediator variables, the mediation effect would actually be zero. In our case, we observe that for almost all of the specifications, most of the possible *rho* values (this indicator, as any correlation coefficient, varies between minus one and one) yield a significant and negative indirect effect of pre-communist literacy on post-communist democracy through party saturation. The *rho*, for which the indirect effect is equal to zero, mostly varies between -0.5 and -0.3. It means that one would require omitted confounding variables with relatively high effects on both the mediator and the outcome to render the mediation effect equal to zero: this is unlikely given the large number of covariates we employed in different specifications to check the validity of our results (see also Backer 2015 for a similar discussion of sensitivity analysis). Therefore, we can be confident of the validity of our appropriation and subversion hypothesized mechanism under a broad set of assumptions. For comparative purposes, note that for the baseline specification, the correlation coefficient of the estimated residuals is 0.016; this value should not be interpreted as a valid statistical test though, since the sequential ignorability assumption is not testable.
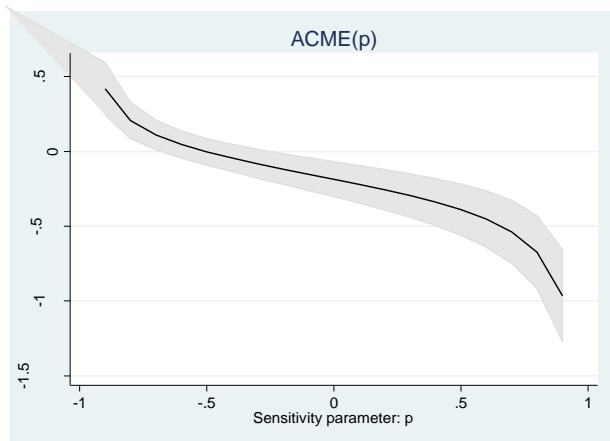
S2.1: Sensitivity analysis for baseline regressions and robustness checks: effects of rho on the predicted mediator effect
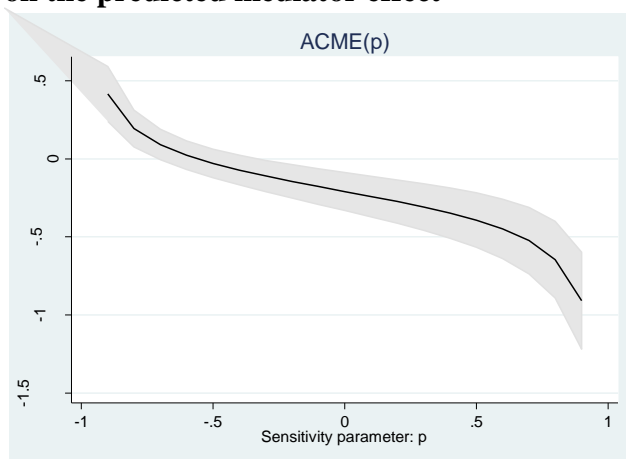
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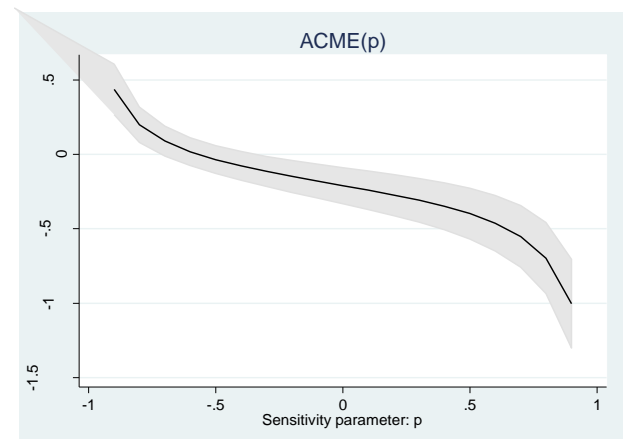
Drop education from the set of control variables

Drop income from the set of control variables
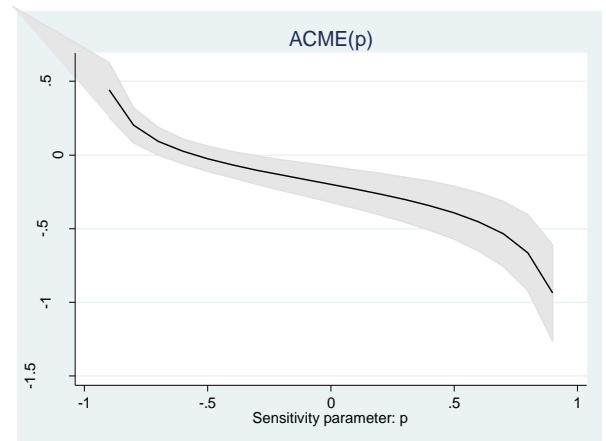
Employ monthly salary (1975) as a proxy for Soviet-period income
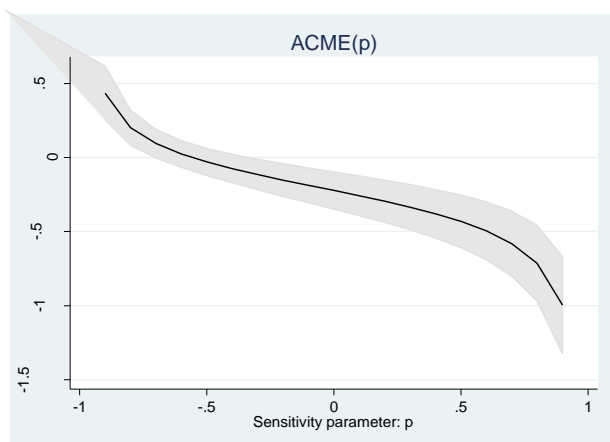
Employ income per capita (1985) as a proxy for Soviet-period income
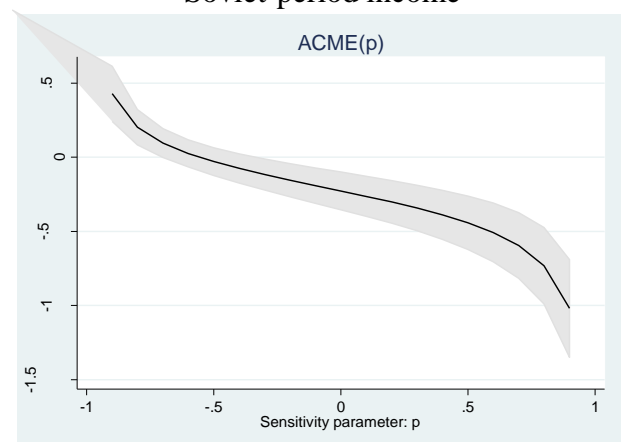
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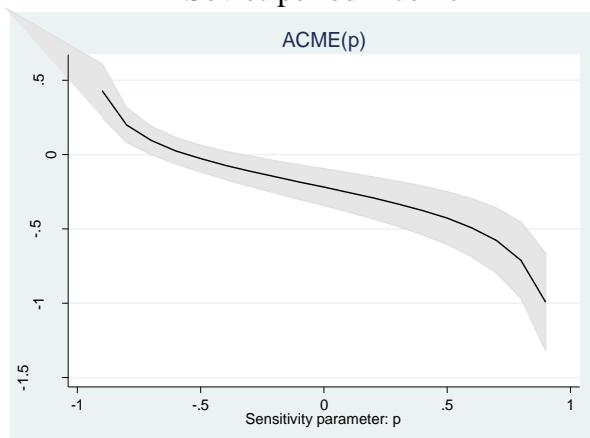
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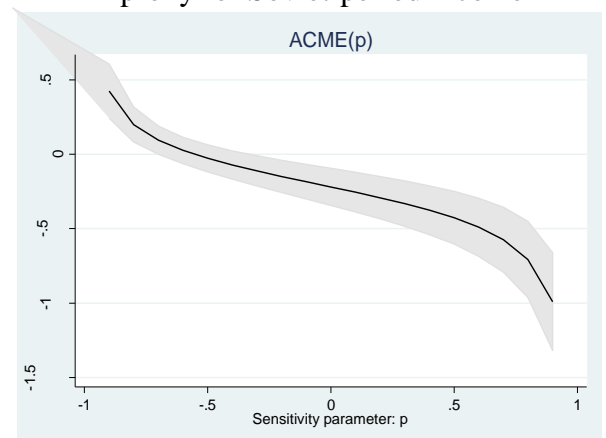
Employ retail trade as a proxy for Soviet-period income
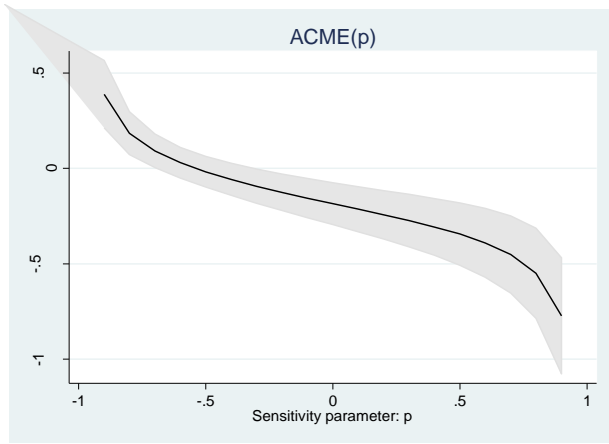
Control for Soviet-period ethnic structure
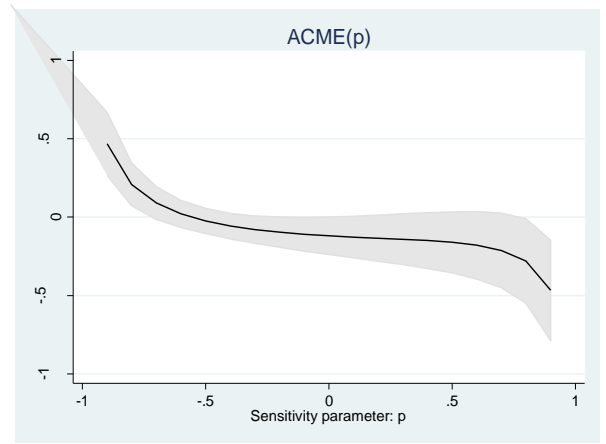
Control for Tsarist social structure
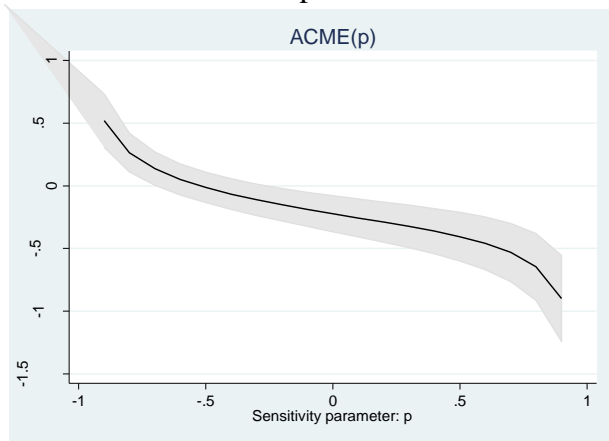
Control for Soviet-period population density
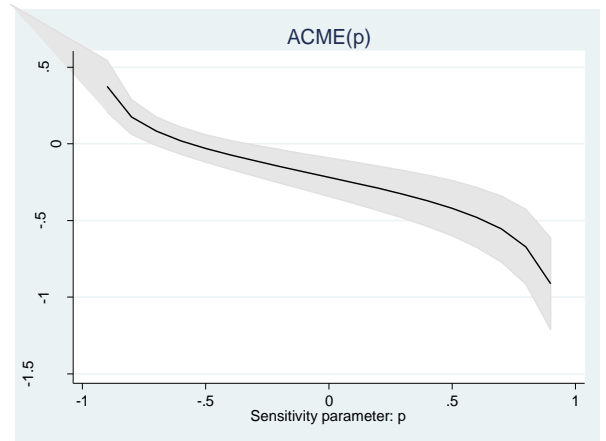
Control for Soviet industrial structure
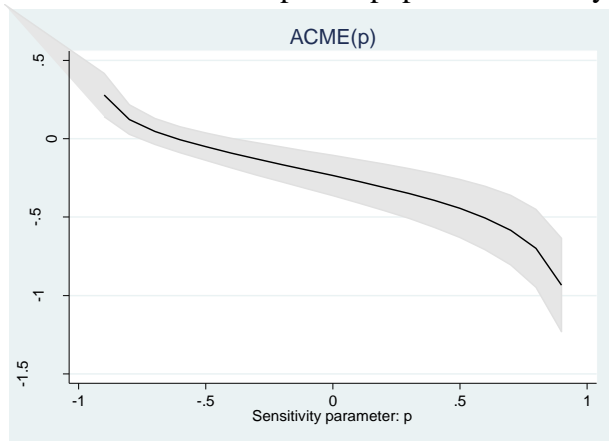
Employ democracy index 1991-2001
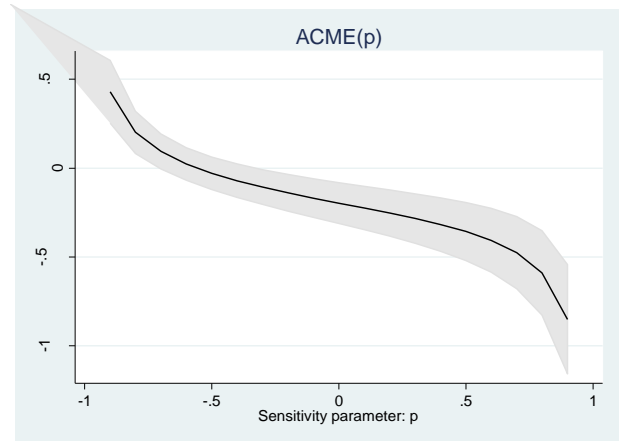
Control for urbanization 2000-2004
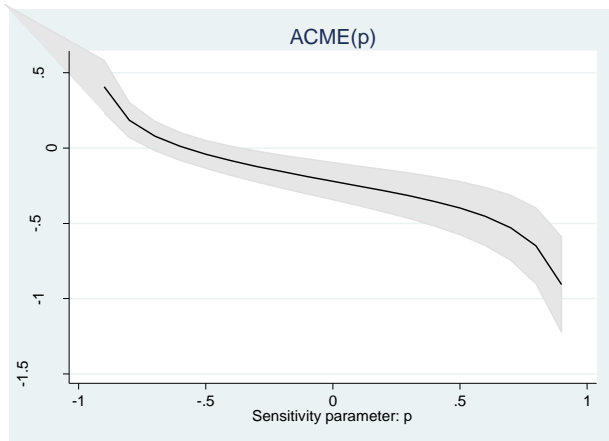
Control for oil and gas extraction per unit of regional GDP in 2000-2004
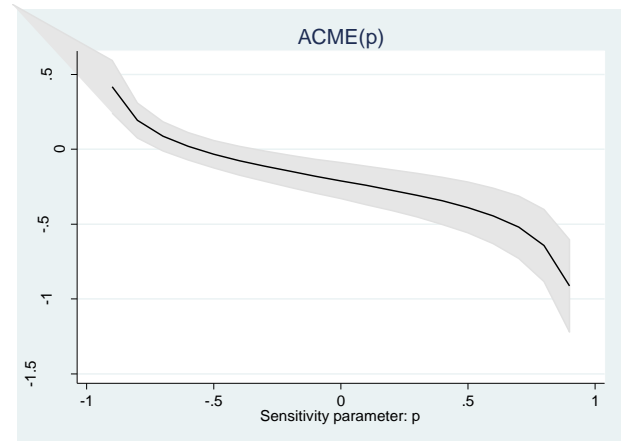
Control for the legacy of repression against ethnic groups by employing the measure of population share of these groups instead of employing a regional dummy
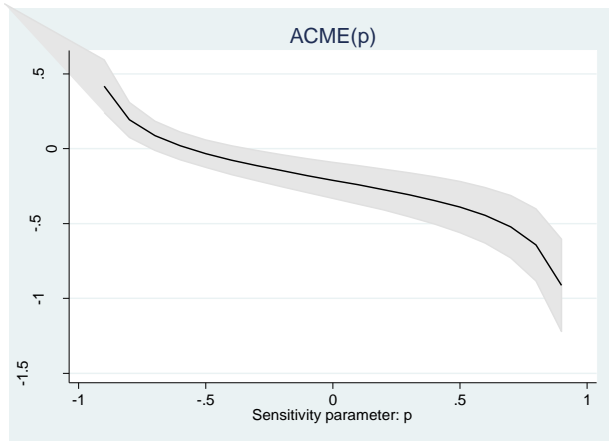
Control for the legacy of repression against ethnic groups by employing the measure of population share of these groups, as well as the share of Jewish population
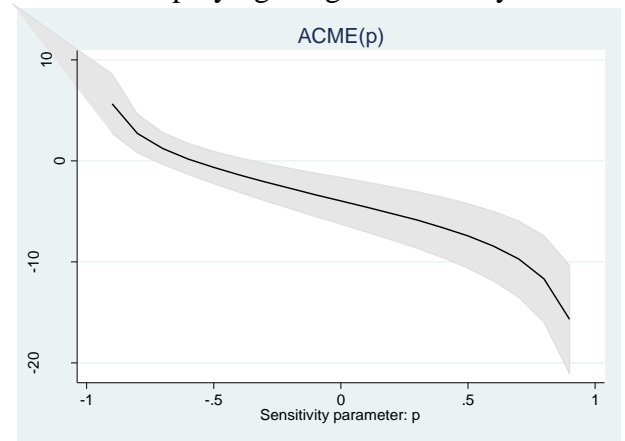
Binary treatment
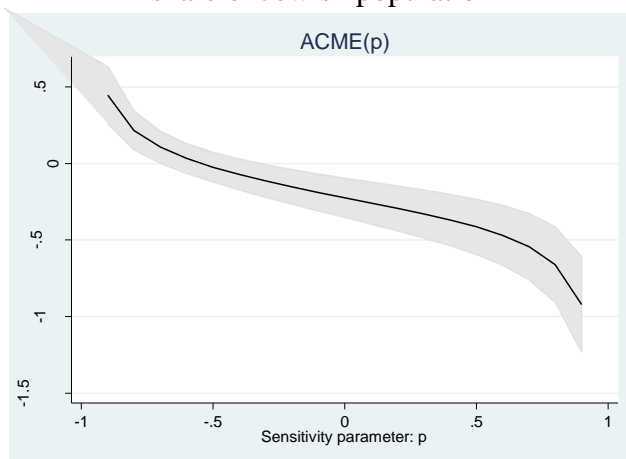
Control for the legacy of repression against ethnic groups by employing a dummy for regions from which particular ethnic groups had been deported irrespective of whether these groups returned to their regions of origin or not

S2.2: Sensitivity analysis for baseline regressions and robustness checks: effects of rho on the predicted mediator effect: the value of rho at which the mediator effect is equal to zero

| Specification	rho, at which ACME = 0
Baseline specification	-0.347
Robustness checks	
Drop 2002 education from the set of control variables	-0.348
Drop 2000-2004 income from the set of control variables	-0.333
Employ monthly salary (1975) as a proxy for Soviet-period income	-0.379
Employ income per capita (1985) as a proxy for Soviet-period income	-0.391
Employ housing construction per capita as a proxy for Soviet-period income	-0.384
Employ doctors per capita as a proxy for Soviet-period income	-0.399
Employ retail trade as a proxy for Soviet-period income	-0.392
Control for Soviet-period ethnic structure	-0.335
Control for tsarist social structure	-0.273
Control for Soviet population density	-0.296
Control for Soviet industrial structure	-0.317
Employ democracy index, 1991-2001	-0.369
Control for oil and gas extraction per unit of regional GDP in 2000-2004	-0.370
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups instead of employing a regional dummy	-0.331
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups, as well as the share of Jewish population	-0.332
Control for the legacy of repression against particular ethnic groups by employing a dummy for regions from which these ethnic groups had been deported irrespective of whether these groups returned to their regions of origin or not	-0.327
Control for urbanization 2000-2004	-0.344
Binary treatment	-0.288

Appendix S3: Components of the democracy index

- Autonomy of municipalities from the regional government;
- Civil society (strength of non-governmental organizations, opportunities for social activism, direct democracy);
- Corruption (in particular, political corruption, e.g., vote-buying);
- Economic liberalization (use of economic tools by the incumbent to control the region);
- Elites (pluralism of elites; mechanisms of power transfer);
- Free, fair, and competitive elections;
- Independent media;
- Regional political openness (political transparency and ease of access for actors from outside the region);
- Political pluralism (presence of stable key parties in the regional legislature);
- Regional political organization (balance of power and independence of the executive, legislative and judicial branches of power, protection of civil rights, electoral manipulations, manipulations of appointments).

Appendix S4: Summary statistics

Variable	Units	No.obs.	Mean	St.dev.	Min.	Max.
Coal output (1975)	millions of tons	79	4.82	16.83	0.00	137.00
Democracy (1991-2001)	NA	79	27.95	6.23	14.00	45.00
Democracy (2000-2004)	NA	79	29.01	6.28	17.00	45.00
Democracy (McMann)	NA	57	3.77	32.56	-79.00	94.00
Distance to Helsinki	thousands of km	77	2.36	1.82	0.32	7.16
Distance to Moscow (alternative)	thousands of km	79	1.79	1.88	0.00	6.78
Distance to Moscow (Rosstat)	thousands of km	79	2.37	2.75	0.00	11.88
Doctors per capita (1976)	per 10,000 people	73	32.92	10.75	20.90	88.30
Dummy Islamic region	NA	79	0.09	0.29	0.00	1.00
Dummy repressed peoples (baseline regression)	NA	79	0.05	0.22	0.00	1.00
Dummy repressed peoples (including regions to which repressed groups did not return)	NA	79	0.18	0.38	0.00	1.00
Dummy republic (2000s)	NA	79	0.25	0.44	0.00	1.00
Dummy Soviet borders	NA	73	0.18	0.39	0.00	1.00
Education (1979)	%	79	6.16	2.35	4.30	19.70
Education (2002)	%	79	17.20	3.61	11.20	35.97
Fiscal transfers (2000-2004)	%	79	27.38	18.52	1.11	79.06
Housing construction (1976)	sq. meters per capita	73	0.43	0.08	0.29	0.72
Income per capita (1985)	RUR	79	2.15	17.85	0.08	158.80
Income per capita (2000-2004)	thousands RUR	79	3.48	1.95	1.13	14.81
Infant mortality (1970s)	NA	79	23.89	4.93	14.80	42.10
Literacy (1890s)	%	77	20.00	9.78	4.10	62.60
Log oil and gas (2000-2004)	Log (1+ coal equivalent)	79	0.65	1.26	0.00	6.93
Monthly salary (1975)	RUR	79	156.08	53.19	107.00	400.00
Number of civic protests (2007-2012)	NA	77	8.74	12.39	0.00	69.00
Number of economic protests (2007-2012)	NA	77	7.43	8.47	0.00	45.00
Number of political protests (2007-2012)	NA	77	14.05	14.43	0.00	74.00
Number of social protests (2007-2012)	NA	77	8.39	11.89	0.00	69.00

Openness to foreign trade	%	79	1.43	1.37	0.09	10.95
Outsiders (1890s)	%	77	8.39	3.88	1.40	18.00
Party saturation (1970s)	%	79	8.35	1.58	5.98	15.43
Peasants (1890s)	%	77	76.53	21.41	7.70	97.20
Petty bourgeoisie (*meshchane*) (1890s)	%	77	6.98	4.19	1.30	22.10
Population (1977)	thousands of people	73	1857.38	1378.13	258.00	7819.00
Population (2000-2004)	thousands of people	79	1820.56	1619.62	53.60	10313.80
Population density (1977)	people per sq. km	71	31.59	38.61	0.30	300.80
Presidential visits (2000-2004)	NA	79	1.75	3.59	0.00	25.00
Retail trade (1976)	thousands RUR per capita	73	0.89	0.22	0.48	1.87
Share of bureaucrats in the regional population	%	79	10.42	5.20	2.88	39.77
Share of bureaucrats with long tenure	%	79	0.40	0.06	0.27	0.57
Share of ethnic Russians (1979)	%	79	78.83	20.71	11.64	98.08
Share of ethnic Russians (2002)	%	79	76.89	23.81	1.19	96.56
Share of formerly repressed peoples	between 0 and 1	79	0.02	0.09	0.00	0.65
Share of formerly repressed peoples and Jewish people	between 0 and 1	79	0.03	0.09	0.00	0.65
Share of Muslims in the regional population (2012)	%	77	5.23	13.36	0.00	83.00
Share of state-owned enterprises (2000-2004)	%	79	15.96	6.26	2.25	38.88
Steel output (1975)	thousands tons	79	1010.65	3403.23	0.00	24777.00
Social well-being (2007)	NA	79	43.44	18.23	1.00	100.00
Territory (2000s)	millions sq. km	79	0.22	0.47	0.00	3.10
Urbanization (1977)	%	73	65.27	13.40	39.00	100.00
Urbanization (2000-2004)	%	79	69.07	12.87	26.06	100.00

Note: oil and gas extraction recomputed in coal equivalent as extraction of oil in the region, millions of tons, * 1.4 plus extraction of gas in the region, billions of cubic meters * 1.2

Distribution of key variables

Below we report the kernel density estimators for all of the three key variables employed in our analysis. The democracy index does not appear to have pronounced outliers: it is hardly surprising, since it had been constructed specifically for Russia's regions. We find that on both the literacy and CPSU membership measures however there are a number of outliers. The range of literacy in imperial Russia's *gubernii* is between 4.1 percent and 62.6 percent, but there are only four regions with literacy exceeding 40 percent. These outlier regions are Moscow, St. Petersburg, and regions in the vicinity of the two metropolises. The regional party membership share as a proportion of adult population varies between 5.98 percent and 15.43 percent. Again, there is only one region in which party saturation exceeds 12 percent: the City of Moscow; in five regions it is higher than 11 percent: Kaliningrad, Tver, Kamchatka, St. Petersburg and Leningradskaya Oblast. The presence of outliers has to be taken into account in our econometric models. In what follows, we therefore perform a number of specific tests dealing with the potential influence of outliers on our findings.
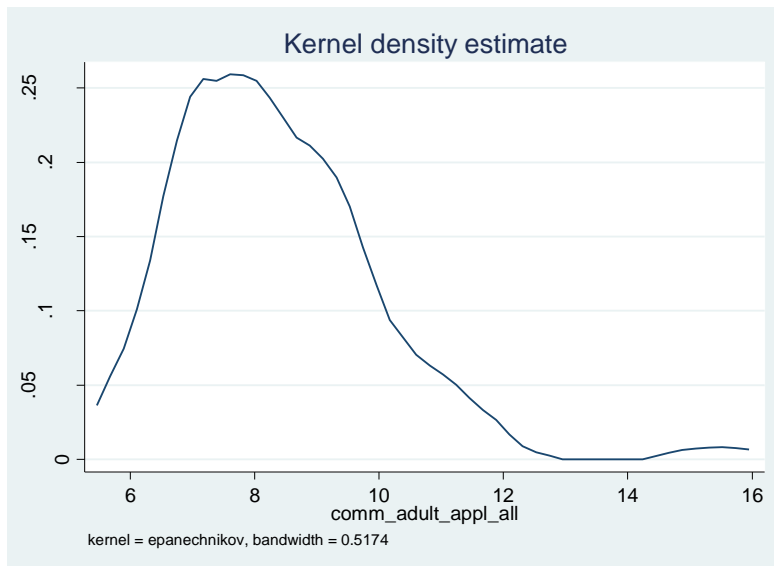
Party saturation
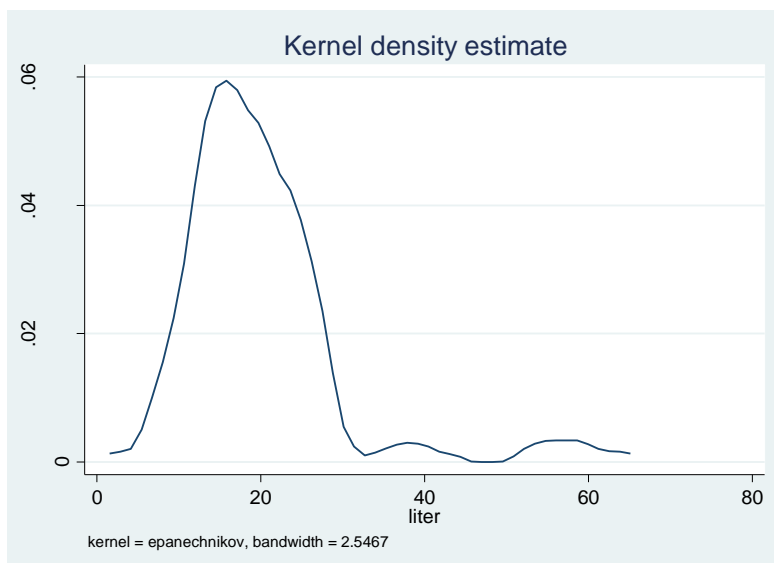
Literacy
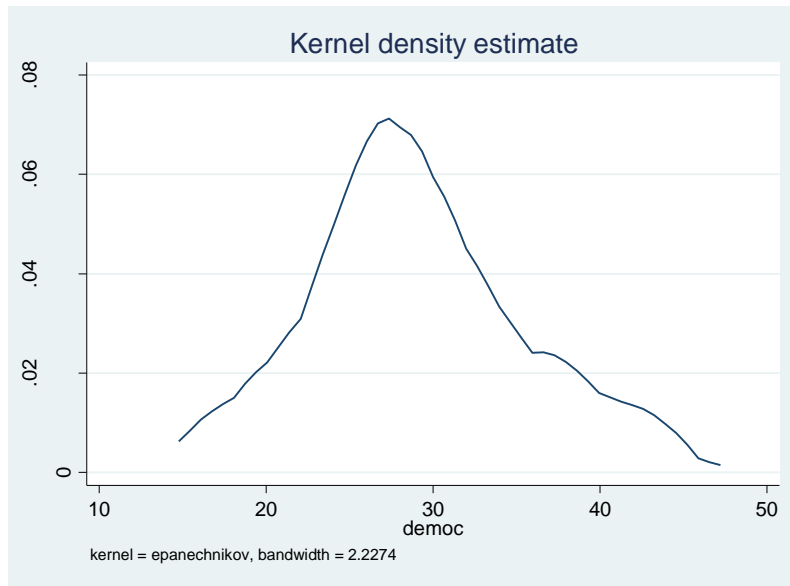
Democracy

Appendix S5: Robustness checks

<u>Description of robustness checks</u>

Stage 1
- We replace distance to Moscow with the variable of distance to Helsinki, capital of the closest established West European democracy. Prior research has found that geographic proximity to Western Europe might influence the democratic development of Russia's regions. Regions located in greater proximity to the West might receive more EU aid aimed at democracy promotion; there may be also other diffusion processes at work facilitating "linkages" between Western regions and their democratic counterparts in the West (Lankina and Getachew 2006; Lankina and Getachew 2008; Levitsky and Way 2006). We also run a regression controlling for both distance to Moscow and to Helsinki. Distances to Moscow and to Helsinki are highly correlated though (correlation coefficient of 0.969). For distance to Moscow we use two proxies: one extracted from the official Rosstat publications and one from standard Internet mapping sources; both are highly correlated and yield similar results.
- It is possible that both pre-Soviet and Soviet modernization and contemporary democracy are influenced by the significance that the federal center attaches to a particular region. To capture this otherwise unobserved characteristic we count how often the region had been visited by the President in 2000-2004 (according to the official website of the Russian President) and add this variable to the set of controls. We also replicate the above regressions excluding Krasnodar Krai (the region is known to be a favored holiday destination for Russia's presidents) and St. Petersburg, which are visited particularly often by national leaders.
- Some scholars have posited links between economic statism and democratization (Fish 2005). We capture the potential economic statism effect by employing the measure of the share of state-owned enterprises in the total number of enterprises in the region and add this control to the set of covariates.
- Considering the hypothesized links between religion and democracy; the potential effects of belonging to faith organizations on CPSU membership; and possible links between religion and literacy in the tsarist period (Lankina 2012), we control for (1) the variable (dummy) for regions with traditionally large Muslim populations; (2) and the variable of share of Muslims in the regional population (based on a 2012 survey by FOM – one of Russia's most prominent centers for the study of public opinion).
- Dependence on federal funding and availability of fiscal transfers might have a bearing on sub-national democracy (Gervasoni 2010). We therefore also control for federal fiscal transfers as measured by their share in total regional expenditures.
- Urbanization has been employed as an alternative proxy for modernization. We therefore control for regional urbanization levels (employing Rosstat data).
- Since one of the components of the Russian regional democracy index is municipal autonomy, which could be influenced by regional size and population, we include measures of territory in kilometers and population as additional control variables.
- Openness to foreign trade might co-vary with democratization, though the direction of the relationship is uncertain (Milner and Mukherjee 2010). We therefore employ a measure of the share of foreign trade in regional GDP in our additional specifications.
- Education in 2002 might be correlated with tsarist-era education. To ensure that multicollinearity is not an issue, we experimented with excluding the 2002 education measure from our regressions.

- Because of spatial continuity in modernization patterns, the 2000-2004 income variable might co-vary with tsarist-era education, as well as with CPSU membership saturation. We therefore experimented with excluding the 2000-2004 income variable.
- Considering that the dependent variable can be interpreted as an ordered one, we re-estimated our baseline regression using ordered logit.
- We employ alternative proxies for CPSU membership saturation: (a) the measure of the share of CPSU members in the total population of a region instead of party share in the adult population; (b) a dummy variable for regions with above-average CPSU membership saturation; (c) a dummy variable for regions with CPSU membership saturation above the median.
- We also employ alternative proxies for pre-communist literacy: (a) a dummy variable for regions with above-average levels of pre-communist literacy; (b) and a dummy variable for regions with pre-communist literacy above the median level.
- Alternative proxies of democracy to those of the Carnegie index are also employed: 1) the expert opinion survey democracy measures reported in McMann (McMann 2006); 2) measures obtained by subtracting from the baseline Carnegie index the sub-components measuring economic liberalization and corruption, which may be beyond the scope of the concept of democracy; 3) measures obtained by subtracting from the baseline Carnegie index the sub-indicator of municipal autonomy, which is particularly relevant for democracy at the sub-national level; 4) the democracy measure employed by Reuter and Buckley (2014), in which only six sub-components of the Carnegie index are retained.
- We employ different samples: 1) a reduced sample obtained after excluding all of the ethnically-defined regions with republic status, which during the Soviet period had the status of autonomous okrugs and therefore were part of higher-level regions (thus, we had no data on the size of the party organization in these regions and had to assume that the share of CPSU members in their population was the same as that in their parent regions); 2) a sample obtained after excluding St. Petersburg City and Leningradskaya oblast, which during the Soviet period formed part of a single region (in the main regressions, we assumed that both regions had the same CPSU saturation levels; another rationale for experimenting with excluding St. Petersburg is that the region had been an outlier in terms of literacy during the tsarist period); 3) a sample obtained by dropping the City of Moscow, which had a very high number of party members and which is also an outlier in terms of high literacy levels during the Tsarist period.
- Use robust regression estimator (rreg command in Stata) to reduce the impact of outliers on our estimations.
- Instead of taking logs of oil and gas output in the region, we employ the ratio of the value of oil and gas output in the region to the regional gross domestic product. The indicator is computed as follows: we multiply the total extraction of oil by the average export price of oil in USD and the total extraction of gas by the average export price of gas in USD. This value (in millions of USD) is divided by regional gross domestic product (in thousands of USD). The data on oil and gas extraction and GDP are from Rosstat; the data on export prices are from the Central Bank of Russia. Export prices for oil are reported in barrel and oil extraction in tons; to recompute tons into barrels we employ BP conversion tables.

Stage 2

- Instead of the two baseline proxies of well-being employed in the paper—monthly salary in 1975 and infant mortality—we employ alternative proxies: housing construction per capita in 1976; number of medical doctors per capita in 1976; and total retail trade in 1976. All of these measures capture regional quality of life (access to social services may

be even more important than monetary income in the Soviet Union, where most benefits were allocated through direct redistribution and not through trade). We also employ the measure of average income per capita in 1985.

- We experimented with adding variables that would allow us to control for the effects of pre-communist social structure in the *gubernii*. In particular, we employ the measures of regional population share of those listed in the 1897 Fist Imperial Census as peasants; those listed as petty bourgeoisie/ town dwellers (*meshchane)*; and those in the category of "outsiders," that is, migrants residing outside of the region in which they had been born. Historians have suggested that these imperial census categories are an imperfect representation of imperial Russia's rapidly changing and fluid society at the turn of the century (Balzer 1996; Fitzpatrick 1993; Haimson 1988). Nevertheless, absent more accurate data, we include these admittedly imperfect measures because, as we discuss in the qualitative analysis part of the paper, pre-Revolutionary social origins may have influenced the likelihood and patterns of Communist Party recruitment in the period immediately after the Bolshevik Revolution. This effect could have persisted over the communist decades.
- Pre-communist literacy levels were higher in areas with high population density. At the same time, CPSU membership could be also affected by the density variable due to the imperatives of having separate party organizations in municipalities. We therefore control for population density (number of people per square kilometer of regional territory) as of January 1, 1978 (Moscow and Leningrad were excluded due to lack of data).
- Since the dependent variable of this regression is bound from above and from below (100% and 0%, respectively), which could create problems when estimating OLS, we use a log-odds transformation of the dependent variable.
- We experimented with employing different transformations of the CPSU saturation variable and literacy variable (as in tests for Stage 1); if the dependent variable becomes binary, we use both logit and OLS to estimate our regressions.
- We also employ different samples: (a) Drop the City of Moscow with very high CPSU membership saturation; drop tsarist literacy given that Moscow had been an outlier in terms of high literacy levels during the tsarist period; (b) Drop St. Petersburg and Leningradskaya oblast, which during the Soviet period formed part of a single region (in the full sample, we assumed that both regions had the same levels of CPSU member saturation); furthermore, St. Petersburg is an outlier in terms of imperial-era literacy.
- Hypothetically, we may observe a curvilinear effect of pre-communist literacy on CPSU membership (for a discussion of the presence of such a curvilinear effect under Brazil's authoritarian regime, see (Geddes and Zaller 1989). For instance, it is possible that both those highly educated (because they may be politically more discerning or otherwise disagree with the communist doctrine on ideological grounds), and those least educated (because illiteracy may have limited exposure to communist print media featuring propaganda), members of the past order might have been less amenable to cooptation by the new regime. We estimate specification (1) adding the squared share of literates term.
- Soviet rules for admission into the party varied for those employed in different branches of the economy and, among those engaged in manual occupations, were particularly favorable for industrial workers. Precise regional data on employment by industry during the Soviet period is not available. We replicate our regressions controlling for extraction of coal and steel production in 1975, thereby capturing the effect of traditional "heavy industries."
- We use the robust regression estimator, as in the Stage 1.
- We employ an alternative approach to compute the variable proxying for the legacy of repression against ethnic groups in particular regions. To begin with, our objective is to

ascertain the share of regional populations (in the 1970s) belonging to ethnic groups that had suffered deportations and possibly career constraints. If the region had a high share of these groups prior to deportation, but these groups did not return to their native regions after Stalin's death and partial rehabilitation, the fact of repressions should not affect party membership. The original dummy variable that we employed was constructed according to these criteria; but it took only those regions into account, to which the repressed groups returned and which received the status of an ethnic autonomy. In some cases, the return of repressed groups was not followed by the granting of autonomy status; the repressed groups may have also failed to return to their native lands. As part of our robustness checks, we devise a proxy to deal with this problem. Specifically, we employ the 1979 census data to compute for each region the share of populations belonging to repressed groups, namely the Koreans, Germans, Finns, Greeks, Kalmyks, Karachaevs, Chechens, Ingush, Balkars, Crimean Tatars, and Meskhetian Turks. This measure is then employed in lieu of the dummy variable for regions that had suffered repressions against particular ethnic groups. A similar measure is also devised for Jewish populations, considering the known semi-official practice of anti-Semitism in the Soviet Union. Note that the results employing these measures should be interpreted with caution considering that members of the repressed and discriminated groups may have sought to conceal their ethnic origins.

- We also introduce a dummy variable for regions in which the repressed groups had been residing originally rather than regions to which they were resettled. In this case our objective is different: we seek to find out whether the *interruption* of population continuity between pre-communist and communist periods had an impact on regional party saturation. In some regions the repressed groups, which failed to return to their native lands, represented a large fraction of pre-communist literates. One example of such a group, as discussed in the paper, is the Volga Germans; generally, many ethnic Germans failed to return to the Volga regions after deportations to Central Asia. In the Saratov and Volgograd *oblasti*, which cover the former territories of the Volga German Republic, in 2002 ethnic Germans comprised only 0.45% and 0.63% of the population, respectively. (These low numbers are likely to be a reflection of recent emigration to Germany, among other factors). We create a dummy variable that takes the value of one for regions in which historically the following groups resided: Ingermanland Finns, Volga Germans, Koreans, Pontian Greeks, Kalmyks, Karachaevs, Chechens, Ingush and Balkars (the other repressed groups resided originally outside of the RSFSR territories included in our analysis), and zero otherwise. We obtain a list of fourteen regions: Ingushetia, Kabardino-Balkaria, Kalmykia, Karelia, Karachaevo-Cherkessia, Khabarovsk *krai*, Primorsky *krai*, Leningradskaya *oblast*, St. Petersburg, Krasnodar *krai*, Saratov *oblast*, Volgograd *oblast*, Stavropol *krai* and Pskov *oblast*. We then employ this dummy variable instead of the original measure capturing regions which had been populated by repressed peoples and which were later allowed to return.

Stage 3

- We replicate most of the robustness checks described above.
- We also run a specification with binary treatment: our measure of literacy share is replaced with a dummy variable with the value of 1 if literacy is above the mean in the sample and 0 otherwise.
- We re-estimate all regressions employing the Imai et al. code in R, to demonstrate that the use of statistical software (R or Stata) has no impact on our results.

Results

S5.1: Summary of additional robustness checks, Stage 1 (only beta coefficients and standard errors of key covariates are reported)

Check	Effect of literacy	Effect of CPSU membership
Control for distance to Helsinki	0.253*** (0.065)	-2.631*** (0.685)
Control for distance to Helsinki, drop distance to Moscow	0.294*** (0.068)	-2.488*** (0.688)
Use alternative proxy of distance to Moscow	0.308*** (0.070)	-2.472*** (0.696)
Control for distance to Helsinki, use alternative proxy of distance to Moscow	0.221*** (0.075)	-2.333*** (0.706)
Control for the national regime's perception of significance of a particular region	0.314*** (0.076)	-2.455*** (0.731)
Control for the national regime's perception of significance of a particular region, drop Krasnodar (Sochi) and St. Petersburg	0.221*** (0.075)	-2.334*** (0.706)
Control for the impact of economic statism	0.253*** (0.071)	-1.995*** (0.624)
Control for Muslim populations (dummy)	0.311*** (0.067)	-2.347*** (0.694)
Control for Muslim populations (share of Muslims)	0.324*** (0.072)	-2.479*** (0.686)
Control for federal fiscal transfers	0.278*** (0.071)	-2.155*** (0.638)
Control for regional size and population	0.331*** (0.070)	-2.114*** (0.695)
Control for trade openness	0.322*** (0.085)	-2.507*** (0.737)
Control for urbanization	0.247*** (0.072)	-2.253*** (0.614)
Exclude the 2002 education control variable	0.324*** (0.062)	-2.388*** (0.681)
Exclude the 2000-2004 income control variable	0.315*** (0.076)	-2.155*** (0.644)
Ordered logit	0.100*** (0.030)	-0.660** (0.319)
Employ a different proxy of party saturation (binary variable based on mean CPSU membership)	0.225*** (0.067)	-4.205*** (1.695)
Employ a different proxy of saturation (binary variable based on median CPSU membership)	0.224*** (0.064)	-4.242*** (1.551)
Employ a different proxy for literacy (binary variable based on mean literacy)	5.383*** (1.315)	-2.485*** (0.706)
Employ a different measure of literacy (binary variable based on median literacy)	6.354*** (1.224)	-2.533*** (0.617)
Employ an alternative measure of democracy (McMann index)	1.824*** (0.432)	-11.318*** (4.069)

Employ an alternative measure of democracy (exclude economic liberalization and corruption from the index)	0.239*** (0.059)	-1.998*** (0.629)
Employ an alternative measure of democracy (exclude municipal autonomy from the index)	0.289*** (0.063)	-2.243*** (0.624)
Employ an alternative measure of democracy (from the index, as in Reuter and Buckley 2014)	0.189*** (0.045)	-1.520*** (0.498)
Employ a different sample (exclude regions that formed part of larger administrative regions in the Soviet period)	0.336*** (0.069)	-2.478*** (0.659)
Employ a different sample (exclude St. Petersburg and Leningradskaya oblast)	0.302*** (0.087)	-2.427*** (0.692)
Employ a different sample (exclude the City of Moscow)	0.288*** (0.070)	-2.191*** (0.698)
Control for oil and gas extraction per unit of regional GDP	0.311*** (0.069)	-2.593*** (0.671)
Robust regressions	0.311*** (0.094)	-2.287*** (0.643)

S5.2: Summary of additional robustness checks, Stage 2 (only beta coefficients and standard errors of key covariates are reported)

Check	Effect of literacy
Control for well-being employing alternative measures (housing construction)	0.091*** (0.019)
Control for well-being employing alternative measures (doctors per capita)	0.088*** (0.019)
Control for well-being employing alternative measures (retail trade)	0.088*** (0.018)
Control for well-being employing alternative measures (1985 income per capita)	0.090*** (0.019)
Control for Tsarist social structure	0.048* (0.026)
Control for population density	0.102*** (0.023)
Log-odds transformation	0.011*** (0.002)
Employ a different proxy of party saturation (binary variable based on mean CPSU membership), OLS	0.027*** (0.007)
Employ a different proxy of party saturation (binary variable based on mean CPSU membership), logit	0.465*** (0.109)
Employ a different proxy of party saturation (binary variable based on median CPSU membership), OLS	0.025*** (0.006)
Employ a different proxy of party saturation (binary variable based on median CPSU membership), logit	0.483*** (0.120)
Employ a different proxy of literacy (binary variable based on mean literacy)	1.587*** (0.333)
Employ a different proxy of literacy (binary variable based on median literacy)	1.348*** (0.400)
Employ a different sample (exclude St. Petersburg and Leningradskaya oblast)	0.085*** (0.028)
Employ different sample (exclude the City of Moscow)	0.084*** (0.014)
Curvilinear effect (reported the effect of linear and of squared terms sequentially). Note: maximum of the parabola is achieved at the level of literacy equal to 98.5%, which is above the literacy level of any region in our sample. Hence, for the actually observed values of literacy, the effect of literacy on CPSU membership is positive and significant	0.197*** (0.064) -0.002* (0.001)
Control for Soviet industrial structure	0.088*** (0.020)
Control for the legacy of repression against ethnic groups by employing the measure of population share of these groups instead of employing a regional dummy	0.085*** (0.019)
Control for the legacy of repression against ethnic groups by employing the measure of population share of these groups, as well as share of Jewish population	0.085*** (0.019)
Control for the legacy of repression against ethnic groups by employing a dummy for regions from which particular ethnic groups had been deported irrespective of whether these groups returned to their regions of origin or not	0.090*** (0.017)
Robust regressions	0.084*** (0.018)

S5.3: Summary of additional robustness checks on Stage 3

Specification	Effect	Mean	95% confidence interval	
Drop education 2002 from the set of control variables	ACME	-0.222	-0.414	-0.068
	Direct effect	0.336	0.221	0.450
	Total effect	0.113	0.000	0.201
Drop income 2000-2004 from the set of control variables	ACME	-0.196	-0.369	-0.055
	Direct effect	0.342	0.198	0.486
	Total effect	0.147	0.054	0.239
Employ monthly salary (1975) as a proxy for Soviet-period income	ACME	-0.202	-0.352	-0.083
	Direct effect	0.336	0.200	0.468
	Total effect	0.134	-0.017	0.285
Employ income per capita (1985) as a proxy for Soviet-period income	ACME	-0.224	-0.385	-0.095
	Direct effect	0.336	0.200	0.468
	Total effect	0.112	-0.049	0.265
Employ housing construction per capita as a proxy for Soviet-period income	ACME	-0.228	-0.394	-0.096
	Direct effect	0.336	0.200	0.468
	Total effect	0.108	-0.055	0.263
Employ doctors per capita as a proxy for Soviet-period income	ACME	-0.221	-0.380	-0.093
	Direct effect	0.336	0.200	0.468
	Total effect	0.115	-0.046	0.268
Employ retail trade as a proxy for Soviet-period income	ACME	-0.221	-0.378	-0.094
	Direct effect	0.336	0.200	0.468
	Total effect	0.115	-0.045	0.266
Control for Soviet-period ethnic structure	ACME	-0.190	-0.368	-0.060
	Direct effect	0.336	0.200	0.468
	Total effect	0.146	0.054	0.226

Control for Tsarist social structure	ACME	-0.117	-0.278	0.004
	Direct effect	0.336	0.200	0.468
	Total effect	0.220	0.048	0.398
Control for Soviet population density	ACME	-0.230	-0.452	-0.066
	Direct effect	0.324	0.173	0.470
	Total effect	0.094	-0.030	0.199
Control for Soviet industrial structure	ACME	-0.215	-0.380	-0.093
	Direct effect	0.336	0.200	0.468
	Total effect	0.121	-0.044	0.272
Employ democracy index 1991-2001	ACME	-0.233	-0.401	-0.107
	Direct effect	0.395	0.234	0.552
	Total effect	0.162	-0.018	0.329
Control for oil and gas extraction per unit of regional GDP in 2000-2004	ACME	-0.221	-0.379	-0.097
	Direct effect	0.337	0.204	0.467
	Total effect	0.116	-0.042	0.272
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups instead of employing a regional dummy	ACME	-0.212	-0.368	-0.088
	Direct effect	0.336	0.200	0.468
	Total effect	0.124	-0.033	0.277
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups, as well as share of Jewish population	ACME	-0.212	-0.368	-0.088
	Direct effect	0.336	0.200	0.468
	Total effect	0.124	-0.033	0.276
Control for urbanization in 2000-2004	ACME	-0.201	-0.353	-0.092
	Direct effect	0.258	0.119	0.409
	Total effect	0.057	-0.119	0.221
Binary treatment	ACME	-3.982	-6.919	-1.603
	Direct effect	5.539	2.951	8.054

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	Total effect	1.557	-1.596	4.493
Control for the legacy of repression against particular ethnic groups by employing a dummy for regions from which particular ethnic groups had been deported irrespective of whether these groups returned to their regions of origin or not	ACME	-0.226	-0.381	-0.100
	Direct effect	0.336	0.200	0.468
	Total effect	0.111	-0.047	0.259

Note: see Table 3

S5.4: Mediation analysis employing the Imai et al. code in R (for baseline regressions and robustness checks)

Specification	Effect	Mean	95% confidence interval		p-value
Baseline specification	ACME	-0.207	-0.346	-0.091	0.00
	Direct effect	0.338	0.171	0.500	0.00
	Total effect	0.131	-0.038	0.301	0.12
Robustness checks					
Drop education 2002 from the set of control variables	ACME	-0.211	-0.343	-0.099	0.00
	Direct effect	0.334	0.180	0.485	0.00
	Total effect	0.123	-0.043	0.279	0.14
Drop income 2000-2004 from the set of control variables	ACME	-0.187	-0.320	-0.074	0.00
	Direct effect	0.340	0.167	0.514	0.00
	Total effect	0.153	-0.016	0.319	0.08
Employ monthly salary (1975) as a proxy for Soviet-period income	ACME	-0.201	-0.341	-0.093	0.00
	Direct effect	0.337	0.161	0.503	0.00
	Total effect	0.137	-0.028	0.305	0.12
Employ income per capita (1985) as a proxy for Soviet-period income	ACME	-0.223	-0.363	-0.109	0.00
	Direct effect	0.339	0.173	0.512	0.00
	Total effect	0.116	-0.060	0.286	0.20
Employ housing construction per capita as a proxy for Soviet-period income	ACME	-0.229	-0.391	-0.103	0.00
	Direct effect	0.333	0.159	0.503	0.00
	Total effect	0.104	-0.071	0.275	0.24
Employ doctors per capita as a proxy for Soviet-period income	ACME	-0.216	-0.356	-0.094	0.00
	Direct effect	0.335	0.170	0.505	0.00
	Total effect	0.119	-0.056	0.289	0.19
Employ retail trade as a proxy for Soviet-period income	ACME	-0.218	-0.364	-0.101	0.00
	Direct effect	0.334	0.154	0.508	0.00
	Total effect	0.116	-0.079	0.287	0.20
Control for Soviet-period ethnic structure	ACME	-0.183	-0.308	-0.080	0.00
	Direct effect	0.333	0.157	0.502	0.00
	Total effect	0.150	-0.013	0.314	0.09
Control for tsarist social structure	ACME	-0.119	-0.256	-0.004	0.00
	Direct effect	0.339	0.172	0.514	0.05

	Total effect	0.220	0.031	0.425	0.02
Control for Soviet population density	ACME	-0.221	-0.387	-0.088	0.00
	Direct effect	0.322	0.133	0.508	0.00
	Total effect	0.101	-0.083	0.280	0.27
Control for Soviet industrial structure	ACME	-0.222	-0.365	-0.102	0.00
	Direct effect	0.343	0.165	0.515	0.00
	Total effect	0.122	-0.058	0.292	0.20
Employ democracy index 1991-2001	ACME	-0.224	-0.375	-0.105	0.00
	Direct effect	0.399	0.226	0.565	0.00
	Total effect	0.175	0.012	0.345	0.04
Control for oil and gas extraction per unit of regional GDP in 2000-2004	ACME	-0.221	-0.359	-0.105	0.00
	Direct effect	0.393	0.227	0.562	0.00
	Total effect	0.173	0.006	0.344	0.04
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups instead of employing a regional dummy	ACME	-0.212	-0.348	-0.094	0.00
	Direct effect	0.334	0.158	0.500	0.00
	Total effect	0.123	-0.058	0.286	0.17
Control for the legacy of repression against particular ethnic groups by employing the measure of population share of these groups, as well as share of Jewish population	ACME	-0.208	-0.340	-0.091	0.00
	Direct effect	0.335	0.166	0.505	0.00
	Total effect	0.127	-0.042	0.301	0.16
Control for urbanization 2000-2004	ACME	-0.197	-0.355	-0.075	0.00
	Direct effect	0.259	0.041	0.409	0.02
	Total effect	0.062	-0.191	0.218	0.55
Binary treatment	ACME	-3.980	-6.870	-1.750	0.00
	Direct effect	5.550	2.770	8.220	0.00
	Total effect	1.580	-1.470	4.700	0.29
Control for the legacy of repression against particular ethnic groups by employing a dummy for regions from which the ethnic groups had been deported irrespective of whether these groups returned to their regions of origin or not	ACME	-0.226	-0.379	-0.101	0.00
	Direct effect	0.337	0.161	0.517	0.00
	Total effect	0.111	-0.066	0.283	0.22

Note: see Table 3

Appendix S6: Impact of outliers on the results of the estimation

The distribution of both literacy and party saturation is characterized by a number of outliers (see Appendix S4). We address this issue in the following ways. Already in the robustness checks for stages 1 and 2 of our analysis we re-ran our regressions employing the so-called robust regression estimator in Stata, which is meant to be less sensitive to outliers (Appendix S5). In what follows we also perform a number of further tests:

- Remove the first and the last 5-percentiles of the distribution of the literacy and of the party saturation indicators from the sample;
- Remove 5 percent observations with the highest value of literacy and of party saturation (we pay particular attention to high values because this is where most outliers appear to be concentrated);
- Remove observations with very high literacy and party saturation values based on a visual inspection of the distribution of the key variables.

None of these tests change our results in a substantial way.

S6.1: Changes in the results of Stage 1 after removing outliers

Check	Effect of literacy	Effect of party saturation
Exclude 5% and 95% percentiles of party saturation	0.236** (0.110)	-2.146** (0.824)
Exclude 5% and 95% percentiles of literacy	0.485** (0.192)	-2.554*** (0.805)
Exclude 95% percentile of party saturation	0.311*** (0.109)	-2.463*** (0.742)
Exclude 95% percentile of literacy	0.331** (0.131)	-2.294*** (0.747)
Exclude regions with party saturation exceeding 9%	0.468*** (0.149)	-3.621*** (0.926)
Exclude regions with literacy exceeding 35%	0.401*** (0.144)	-2.441*** (0.756)

S6.2: Changes in the results of Stage 2 after removing outliers

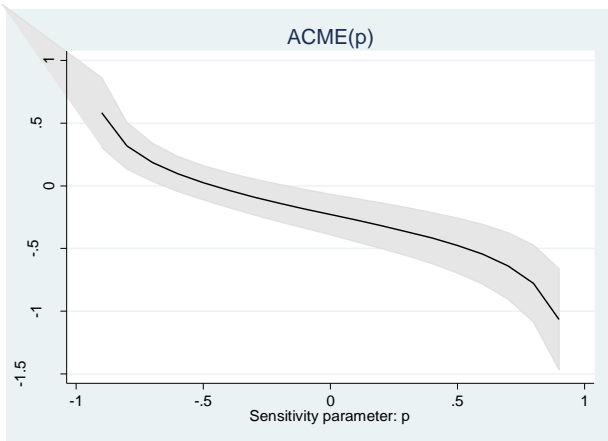| Check	Effect of literacy
Exclude 5% and 95% percentiles of party saturation	0.114*** (0.021)
Exclude 5% and 95% percentiles of literacy	0.123*** (0.040)
Exclude 95% percentile of party saturation	0.112*** (0.022)
Exclude 95% percentile of literacy	0.105*** (0.026)
Exclude regions with party saturation exceeding 9%	0.053** (0.023)
Exclude regions with literacy exceeding 35%	0.121*** (0.027)

S6.3: Changes in the results of Stage 3 after removing outliers

| Specification	Effect	Mean	95% confidence interval	
Exclude 5% and 95% percentiles of party saturation	ACME	-0.230	-0.444	-0.060
	Direct effect	0.258	0.039	0.471
	Total effect	0.028	-0.197	0.241
Exclude 5% and 95% percentiles of literacy	ACME	-0.332	-0.650	-0.097
	Direct effect	0.444	0.082	0.796
	Total effect	0.112	-0.234	0.490
Exclude 95% percentile of party saturation	ACME	-0.256	-0.458	-0.097
	Direct effect	0.336	0.123	0.543
	Total effect	0.080	-0.143	0.305
Exclude 95% percentile of literacy	ACME	-0.266	-0.504	-0.089
	Direct effect	0.363	0.102	0.616
	Total effect	0.097	-0.153	0.364
Exclude regions with party saturation exceeding 9%	ACME	-0.252	-0.516	-0.035
	Direct effect	0.510	0.214	0.797
	Total effect	0.258	-0.088	0.637
Exclude regions with literacy exceeding 35%	ACME	-0.323	-0.595	-0.121
	Direct effect	0.451	0.184	0.710
	Total effect	0.128	-0.135	0.409

Note: see Table 3

S6.4: Sensitivity analysis

| Specification	rho, at which ACME = 0
Exclude 5% and 95% percentiles of party saturation	-0.223
Exclude 5% and 95% percentiles of literacy	-0.248
Exclude 95% percentile of party saturation	-0.289
Exclude 95% percentile of literacy	-0.289
Exclude regions with party saturation exceeding 9%	-0.425
Exclude regions with literacy exceeding 35%	-0.304

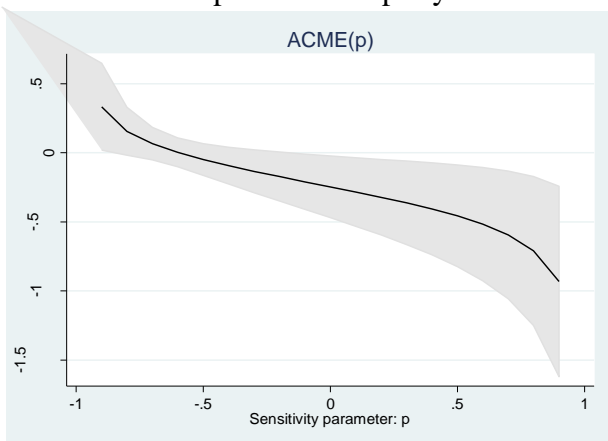Exclude 5% and 95% percentiles of party saturation
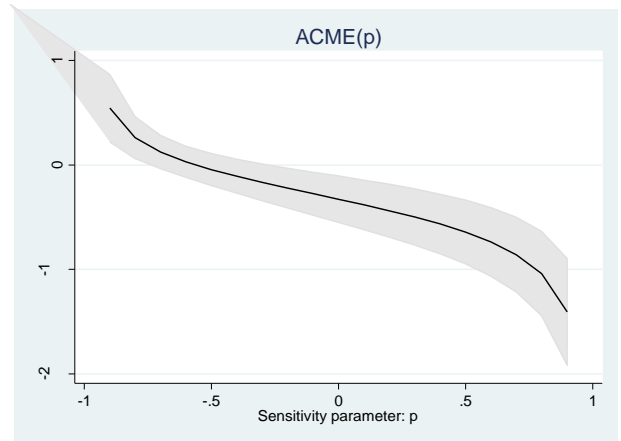
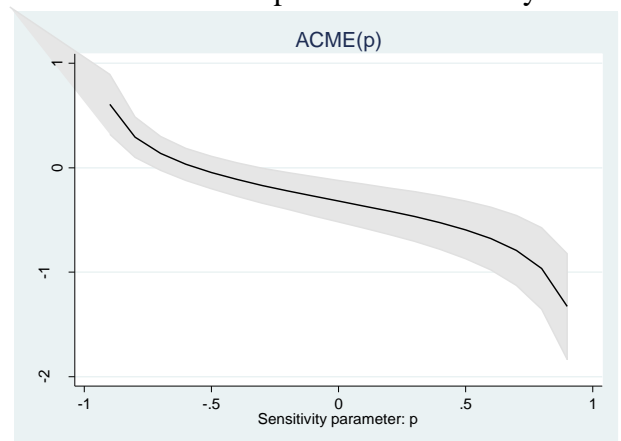Exclude 5% and 95% percentiles of literacy
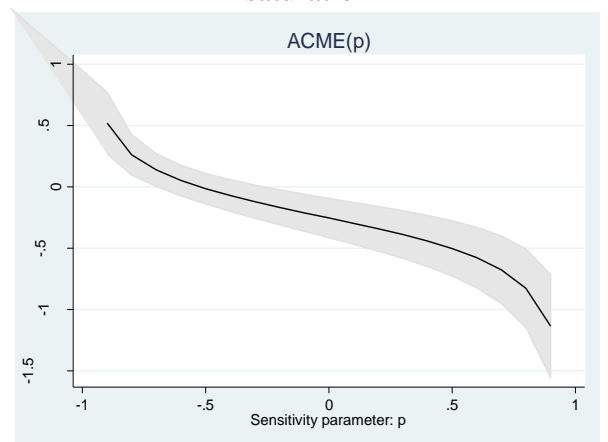
Exclude 95% percentile of party saturation
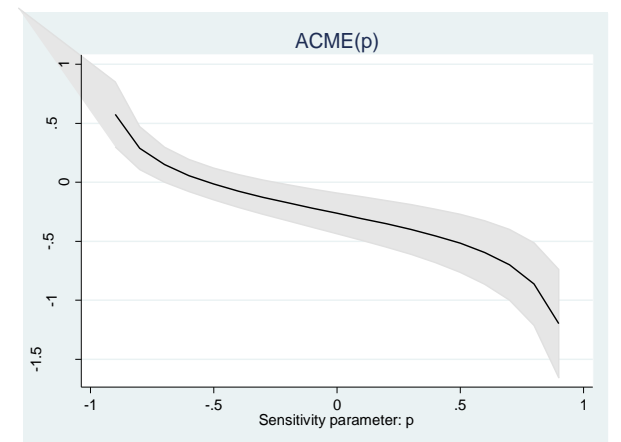
Exclude 95% percentile of literacy

Exclude regions with party saturation exceeding 9%

Exclude regions with literacy exceeding 35%

Appendix S7: Effects for individual sub-components of the democracy index

We here replicate our estimations in which we employed the composite democracy index, for individual sub-components of this index. Table S7.1 replicates the Table 1 of the main part of the paper for each of these sub-components. The general results do not change, regardless of which of the dimensions we employ. The regressions suggest that party saturation has a negative effect on all of the dimensions of the index, with the exception of electoral freedoms. At the same time, we find that regions with comparatively higher levels of pre-communist literacy have higher democracy scores irrespective of which sub-indicator of the index is employed, with the exception of the municipal autonomy and composition of elites sub-components of the democracy index.

Table S7.2 estimates the mediation analysis model for each of the sub-components. The results are not substantively different. With the exception of the elections sub-component, the indirect effect is always significantly different from zero and negative; with the exception of the municipal autonomy and composition of regional elites sub-components of the democracy index, the direct effect is significantly different from zero and positive. The total effect is insignificant at the 5 percent level, except for elections, where it is significant and positive (the effect is also marginally significant and positive for economic liberalization). This is hardly surprising: for this variable the CPSU legacy appears to have no effect; this is important in terms of identifying the mechanisms of the persistence of the party saturation legacy. Overall, again, the positive direct effect of literacy on democracy is offset by the negative indirect effect of party saturation. The magnitude of the direct and indirect effects is of course smaller than for the aggregate index, since the index itself varies on a smaller scale (from 1 to 5). Specifically, we find a direct effect in the magnitude of $0.02 - 0.04$ and an indirect effect of minus $0.01 - 0.03$, depending on the specification.

S7.1: The effect of communist and pre-communist legacies on various aspects of democracy, 2000-2004, OLS

Dimension	Share of CPSU members		Literacy	
	beta	s.e.	beta	s.e.
Openness	-0.264**	(0.100)	0.038***	(0.010)
Elections	-0.137	(0.100)	0.028***	(0.011)
Pluralism	-0.254***	(0.088)	0.025***	(0.009)
Media	-0.359***	(0.102)	0.038***	(0.009)
Economic liberalization	-0.229***	(0.079)	0.039***	(0.010)
Civil society	-0.282***	(0.105)	0.036***	(0.011)
Political organization	-0.294***	(0.081)	0.031**	(0.012)
Elites	-0.224***	(0.081)	0.023	(0.014)
Corruption	-0.200**	(0.084)	0.030**	(0.012)
Municipal autonomy	-0.185**	(0.088)	0.019	(0.012)

Note: See Table 1. All other covariates of specification (1), Table 1, included in the regressions.

S7.2: Mediation analysis for various dimensions of democracy

| Dimension	Effect	Mean	95% confidence interval	
Openness	ACME	-0.023	-0.043	-0.007
	Direct effect	0.042	0.023	0.061
	Total effect	0.019	-0.002	0.039
Elections	ACME	-0.011	-0.030	0.003
	Direct effect	0.035	0.016	0.054
	Total effect	0.024	0.004	0.043
Pluralism	ACME	-0.024	-0.042	-0.010
	Direct effect	0.027	0.011	0.043
	Total effect	0.003	-0.016	0.023
Media	ACME	-0.031	-0.054	-0.014
	Direct effect	0.039	0.021	0.056
	Total effect	0.008	-0.015	0.029
Economic liberalization	ACME	-0.024	-0.042	-0.009
	Direct effect	0.042	0.024	0.058
	Total effect	0.018	0.000	0.036
Civil society	ACME	-0.028	-0.051	-0.010
	Direct effect	0.038	0.016	0.059
	Total effect	0.010	-0.013	0.032
Political organization	ACME	-0.026	-0.045	-0.012
	Direct effect	0.031	0.008	0.054
	Total effect	0.005	-0.015	0.028
Elites	ACME	-0.021	-0.041	-0.007
	Direct effect	0.027	-0.002	0.055
	Total effect	0.006	-0.025	0.038
Corruption	ACME	-0.018	-0.034	-0.005
	Direct effect	0.031	0.008	0.052
	Total effect	0.013	-0.004	0.032
Municipal autonomy	ACME	-0.016	-0.033	-0.002
	Direct effect	0.022	-0.001	0.045
	Total effect	0.006	-0.013	0.027

S7.3: Robustness checks: Estimation of S7.2 employing the R code devised by Imai et al.

| Dimension	Effect	Mean	95% confidence interval		p-value
Openness	ACME	-0.023	-0.041	-0.008	0.00
	Direct effect	0.042	0.018	0.065	0.00
	Total effect	0.019	-0.004	0.042	0.10
Elections	ACME	-0.011	-0.028	0.003	0.12
	Direct effect	0.033	0.009	0.061	0.01
	Total effect	0.022	-0.001	0.047	0.07
Pluralism	ACME	-0.021	-0.038	-0.007	0.00
	Direct effect	0.029	0.005	0.052	0.01
	Total effect	0.008	-0.015	0.031	0.50
Media	ACME	-0.031	-0.050	-0.014	0.00
	Direct effect	0.041	0.017	0.064	0.00
	Total effect	0.010	-0.016	0.034	0.39
Economic liberalization	ACME	-0.018	-0.036	-0.005	0.00
	Direct effect	0.042	0.019	0.067	0.00
	Total effect	0.024	0.001	0.046	0.04
Civil society	ACME	-0.024	-0.042	-0.009	0.00
	Direct effect	0.038	0.014	0.061	0.00
	Total effect	0.014	-0.010	0.036	0.24
Political organization	ACME	-0.027	-0.045	-0.013	0.00
	Direct effect	0.032	0.014	0.051	0.00
	Total effect	0.005	-0.014	0.026	0.60
Elites	ACME	-0.200	-0.039	-0.005	0.01
	Direct effect	0.027	0.000	0.052	0.05
	Total effect	0.007	-0.018	0.031	0.56
Corruption	ACME	-0.018	-0.034	-0.005	0.01
	Direct effect	0.030	0.009	0.053	0.01
	Total effect	0.012	-0.011	0.033	0.27
Municipal autonomy	ACME	-0.016	-0.035	-0.003	0.02
	Direct effect	0.021	-0.003	0.047	0.10
	Total effect	0.005	-0.018	0.028	0.69

S7.4: Sensitivity analysis
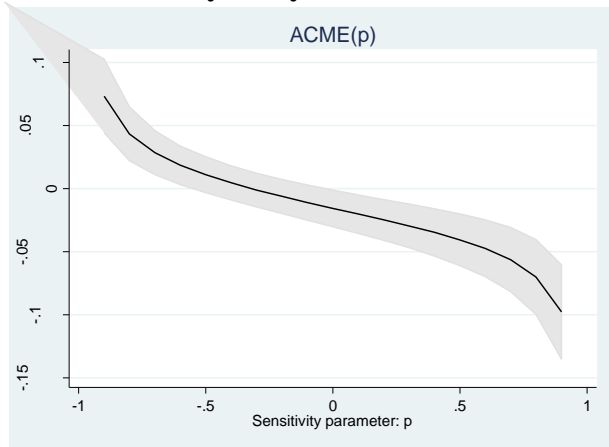
Dimension of democracy: Municipal autonomy
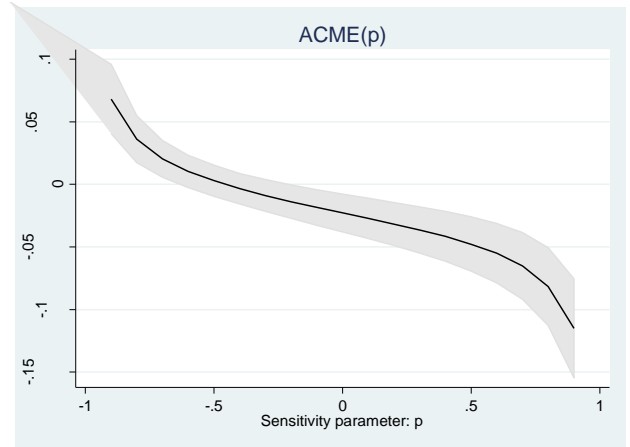
Dimension of democracy: Openness
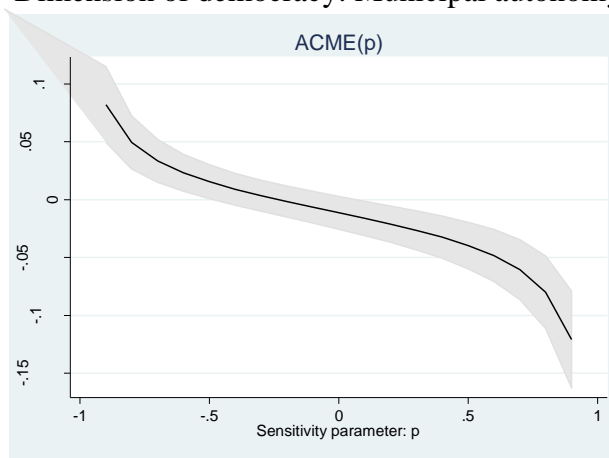
Dimension of democracy: Elections
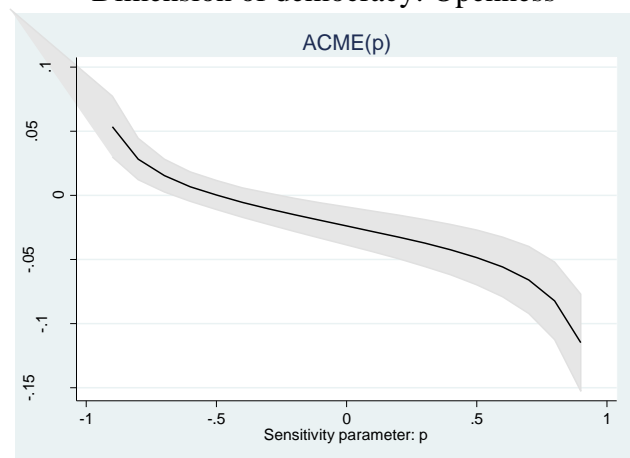
Dimension of democracy: Pluralism
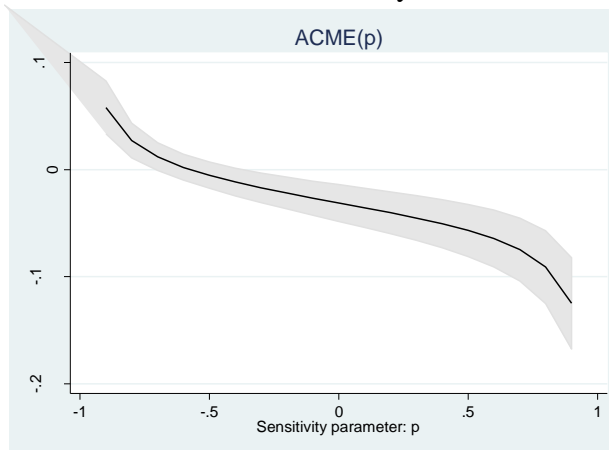
Dimension of democracy: Media

Dimension of democracy: Economic liberalization

Dimension of democracy: Civil society

Dimension of democracy: Political organization
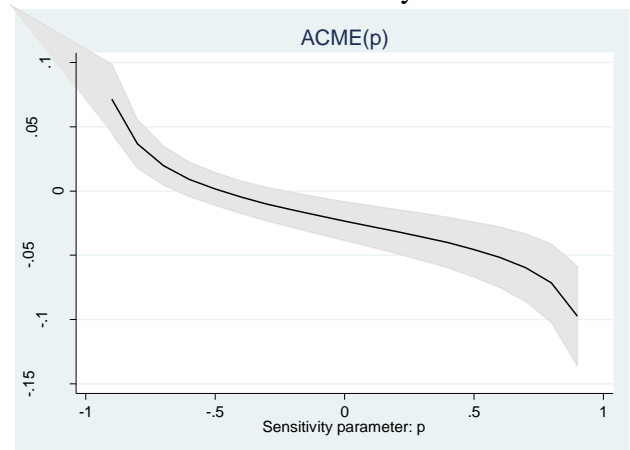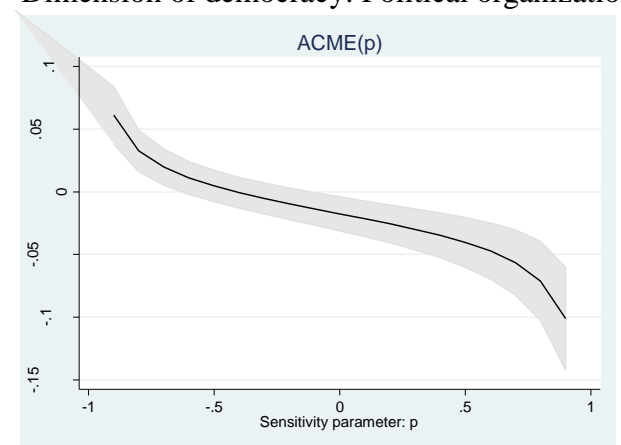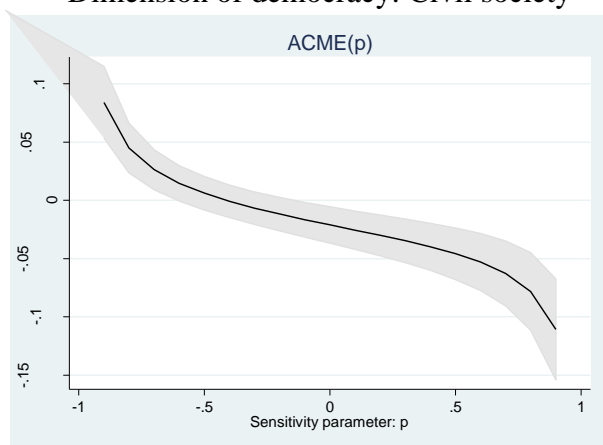

Dimension of democracy: Elites

Dimension of democracy: Corruption
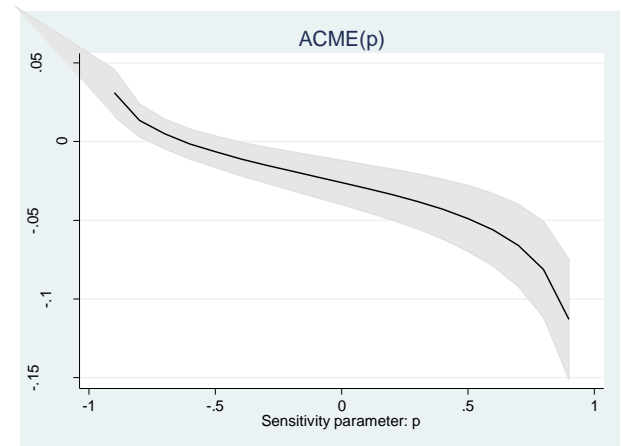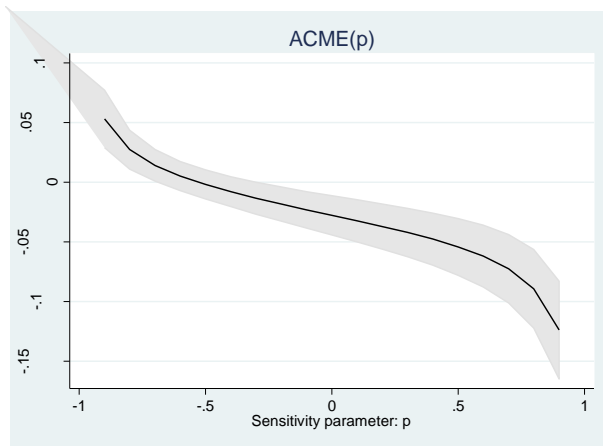
Dimension	rho, at which ACME = 0
Openness	-0.290
Elections	-0.187
Pluralism	-0.272
Media	-0.386
Economic liberalization	-0.302
Civil society	-0.346
Political organization	-0.515
Elites	-0.261
Corruption	-0.370
Municipal autonomy	-0.151

Appendix S8: Visual representation of the co-variance between party saturation and pre-communist literacy

The following two graphs visually illustrate the presence of a strong link between CPSU membership levels and pre-communist literacy. The first graph represents a scatterplot of all regions for these two variables. Vertical and horizontal lines separate the image into four areas based on the means of CPSU membership and pre-communist literacy, respectively. The correlation between the two variables is very strong and only a few regions belong to the categories of "high CPSU membership – low literacy" and "high literacy – low CPSU membership." Considering that the figure is influenced by a few outliers (which, as our analysis in S6 shows, do not change our results), we also create another figure, excluding the outliers. It is evident that most of the observations are located close to the regression line. Pre-communist literacy thus remains a good predictor of regional party saturation levels.
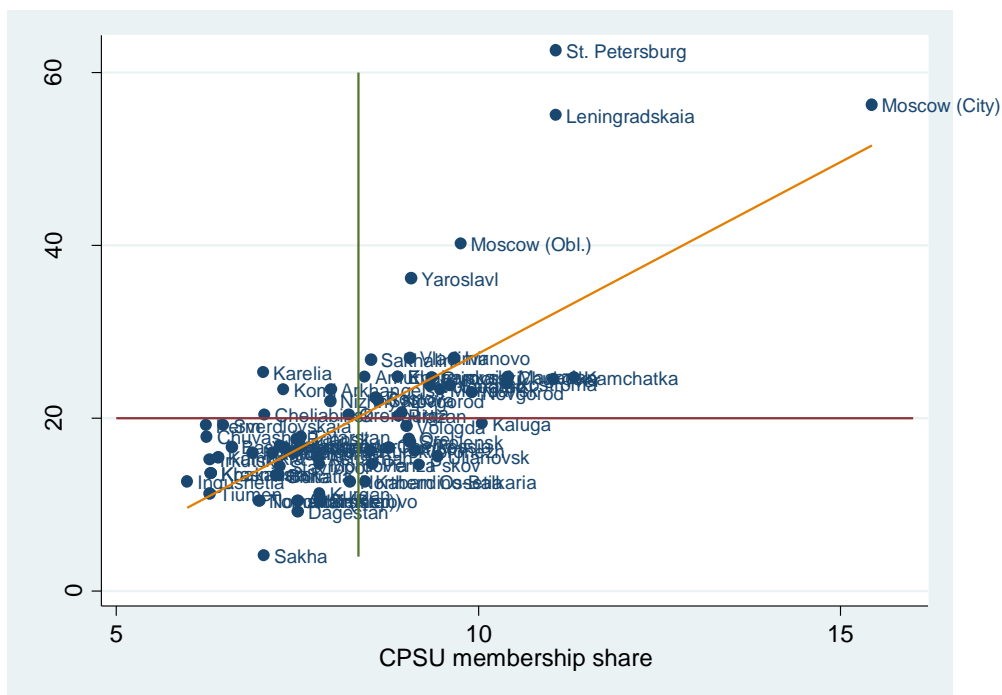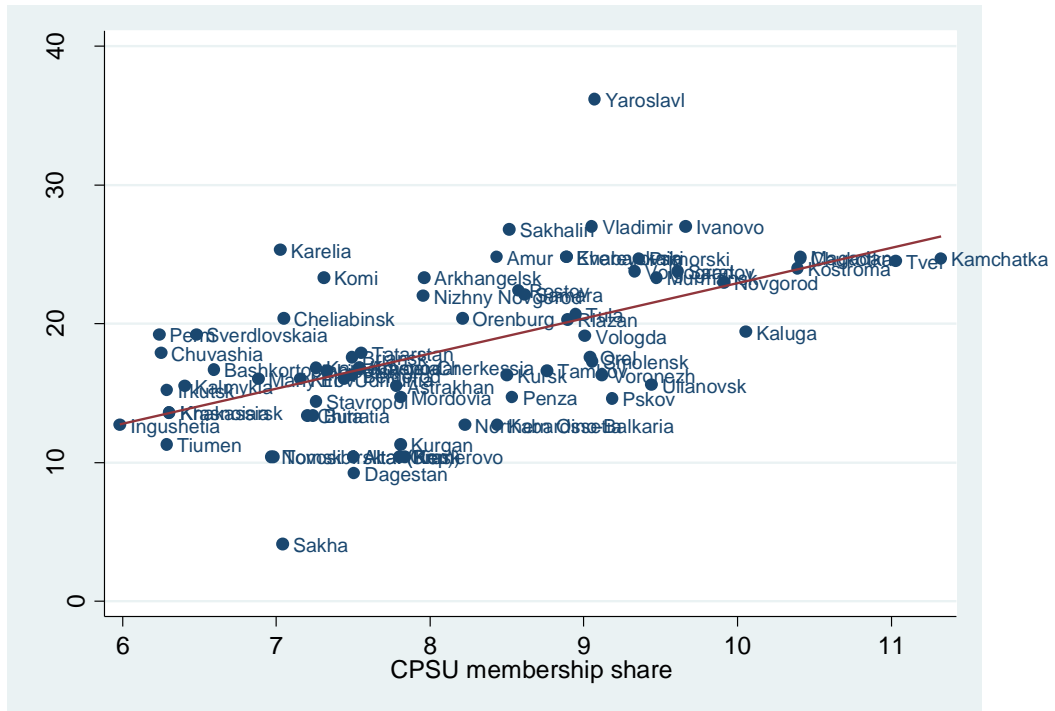
Appendix S9: Factors altering the effect of literacy on levels of party saturation

In what follows, we investigate which factors account for the "under-performance" or "over-performance" of regions with respect to party saturation considering their imperial-era literacy levels. We employ two procedures for these purposes. We begin by devising two dummy variables. The first takes the value of one for Type 3 outlier regions. The second is equal to one for Type 4 outliers. We then regress these variables on a set of potentially relevant covariates. Specifically, we regress the outlier variables on the following communist-era variables: (a) population density and population size; (b) production of coal and steel; (c) dummy for regions located on the borders of the USSR; (d) share of ethnic Russians; and (e) infant mortality as a proxy for quality of life. The regressions are estimated using logit because the dependent variable is binary.

We find that the likelihood of becoming a Type 3 region is significantly higher if the level of steel production in a region is high. An illustrative example of a region with historically well-developed mining industry is Chelyabinsk, which had been the industrial powerhouse of the Urals well before the Bolshevik Revolution. In fact, most of the region's towns originated as early as the 17th century and were linked to the development of iron and steel mining in the Urals Mountains (McFaul and Petrov 1998). Generally, throughout the USSR, Rigby (1968) found that regions specialising on mining and metallurgy tended to have relatively low party saturation levels despite being highly urbanized. These patterns help nuance our understanding of the links between indicators that conventionally capture modernization processes, and party recruitment.[1] For instance, Ukraine's Kharkov and Dnepropetrovsk regions had been more party saturated than the heavily mining Donbass (Donetsk and Lugansk oblasts) even though the former had far larger rural populations than the latter. Employment as a mining worker is associated with hardship and occupational hazards. Party membership among miners would not have been regarded as a means for career progression in the same way that would have been the case for occupations requiring more advanced skills and having greater social prestige. At the same time, quality of life factors whereby centres of mining were perceived as less-desirable places to live, would account for lower numbers of cadre who would want to be parachuted into these regions from outside (Rigby 1968).[2]

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[1] Thus, in Soviet Ukraine, regions that historically developed as centres of commerce, culture, or leisure like Crimea and Odessa also had disproportionately high concentrations of party members. In fact Crimea was found to be Ukraine's most party saturated province (Rigby 1968).

[2] Another potentially significant factor accounting for low levels of party saturation is the presence of high-tech industries, as well as of closed cities (which often went together). The Chelyabinsk region had several such "numbered" cities with no names: Chelyabinsk-65, Chelyabinsk-70, etc. For understandable reasons, data on the precise share of scientists employed in these closed cities are not available, so we cannot conclusively ascertain the significance of this variable for all regions. However, we find interesting parallels between Chelyabinsk and another Type 3 (high literacy, low party saturation) region, namely Nizhniy Novgorod (Nizhegorodskaya *oblast*). Like Chelyabinsk, the Type 3 Nizhegorodskaya *oblast* had been a hub of industrial development and trade already in the 19th century. During the Soviet period, the Nizhny Novgorod city emerged as the USSR's leading centre of science and high the development of technologies. At the same time, the city of Sarov, which became the closed city of Arzamas-16, turned into the USSR's "capital of nuclear research" (McFaul and Petrov 1998, Vol. 2, 696). By the mid-1990s, science and science-related spheres, along with culture and the arts, constituted the second largest sources of regional employment after industry. Party membership statistics by research discipline indicate that hard sciences and engineering had been among the least party saturated areas of research. For instance, while in 1947, 17 percent of engineering professors were CPSU members, 58 professors in the social sciences and philosophy possessed CPSU membership cards (Rigby 1968, 445). Derluguian (2005, 110) notes that "hard" sciences represented "the main breeding ground for liberal dissidents, . . . especially the advanced fields of nuclear research and space exploration. During the 1950s and 1970s, these scholarly communities [along with other professions like linguists] enjoyed privileged funding, exceptionally high public acclaim, and relatively unrestricted intellectual exchanges with their Western colleagues." The pursuit of such

We also find that the likelihood of becoming a Type 4 region is significantly higher for regions with high population density. Furthermore, regions with a high share of ethnic Russians in their population also had a significantly higher likelihood of being a Type 4 region (conversely, regions with non-Russian minority groups were less likely to have high levels of party saturation). The results with regard to population density partially corroborate the patterns that Rigby (1968) uncovered in analyzing regional variations in party recruitment in the USSR. For instance, he found that in rural areas, party organizations tended to be linked to village soviets—that is, to territorial administrative centers—rather than to production units like the *Kolkhozy* (collective farms). Accordingly, we may infer from these patterns that sparsely populated regions with correspondingly low densities of administrative centres would feature comparatively low levels of party saturation (Rigby 1968, 292). The reverse would be true for densely populated regions with many towns that would each have a party administrative body attached to it. The result for regions with minority ethnic groups likewise corroborate the patterns suggested in Rigby's (1968) USSR-wide analysis of party recruitment, namely that party recruitment levels often tended to be lower in the "ethnic" republics and autonomies due to issues of self-selection or discrimination against particular groups (though some "ethnic" groups—notably Georgians and Armenians—did feature high party membership levels (Rigby 1968, 378)). These general patterns would also explain why the few "ethnic" regions that featured comparatively high literacy in the imperial period—Karelia and Komi—ended up among the Type 3 regions (high literacy-low saturation).

"obscure interests… beyond the focus of official Marxist-Leninist ideology… helped to foster cohesive communities with a sense of professional dignity and kinship with the intellectual community outside the USSR. It is no small matter that such disciplines normally required a familiarity with esoteric concepts and at least a basic knowledge of foreign languages, which tended to deter administrative careerists" (Derluguian 2005, 110-111). Some self-selection is thus likely to have been at work in that the dissident minded often chose technical professions unburdened with ideological dogma. Rigby (1968, 446) also speculates that "… a more permissive attitude" might have been at work towards "first rate scholars, allowing them to avoid the burdens and distractions of party membership which are pressed more insistently on their humbler colleagues[?]."

S9.1: Factors predicting whether a region would become a Type 3 or Type 4 region (logit estimates)

	Type 3 region	Type 4 region
Population	0.0001	-0.001**
	(0.000)	(0.001)
Population density	-0.024	0.019*
	(0.028)	(0.011)
External border of the USSR	0.094	
	(1.278)	
Infant mortality	-0.003	0.039
	(0.095)	(0.084)
Share of ethnic Russians	-0.015	0.044**
	(0.026)	(0.020)
Steel production	0.0002**	-0.0002
	(0.0001)	(0.0003)
Coal production	-0.014	-0.231
	(0.023)	(0.207)
Constant	-1.079	-4.426
	(4.912)	(2.874)
Observations	69	58
Pseudo R-squared	0.141	0.223

Note: robust standard errors applied. Soviet-era variables applied. The number of observations is lower than in Table 2 since some observations are excluded as completely determined.

Next, we run our baseline regression with party saturation levels as the dependent variable and literacy as the right-hand variable, but introduce interaction terms between literacy and the key variables described above. We find the following interaction terms to be significant: (a) steel production (it is negative, again, showing that regions with a large steel industry had lower CPSU membership for a given literacy level); (b) the share of ethnic Russians (it is positive, suggesting that in the "ethnic" regions comparable levels of literacy resulted in lower CPSU saturation levels); (c) two of the four indicators of repressed ethnic groups: share of repressed ethnic groups in the current regional population; and regions (dummy variable) that suffered repressions (irrespective of whether the peoples subjected to repressions subsequently resettled again in the region or not). The result for the first indicator of repression suggests that if the share of repressed groups in a region had been larger, the Soviet government showed less interest in coopting the educated strata of these groups, or that these educated strata were more reluctant to accept the offer of cooptation. The result with regard to the second indicator of repression suggests that in some cases the repressed ethnic groups may have represented a large proportion of literates before the Revolution, but that repression made the link between literacy and party saturation weaker. An example of an ethnic group with high literacy levels, as discussed in SA S5, is the Volga Germans. The Volga Germans had been deported to Central Asia, but many of the deportees remained in Central Asia as late as the 1990s and then emigrated to Germany as part of the country's program to repatriate ethnic Germans to their historical homeland.

S9.2: Interaction terms between literacy and other variables

Steel production	-0.0005*
	(0.0003)
Coal production	0.002
	(0.003)
External border of the USSR	0.003
	(0.031)
Population density	0.009
	(0.013)
Infant mortality	0.002
	(0.005)
Share of ethnic Russians	0.002*
	(0.001)
Population	0.000007
	(0.00001)
Dummy repressed ethnic groups (baseline specification)	-0.479
	(0.304)
Share of repressed ethnic groups in the regional population	-0.852*
	(0.467)
Share of repressed ethnic groups and Jewish people in the regional population	-0.620
	(0.598)
Dummy for regions, from which particular ethnic groups had been deported, irrespective of whether these groups returned to their regions of origin or not	-0.063**
	(0.028)

Note: the regressions are estimated using all control variables listed in Table 2, model (1). Furthermore, we add to regressions the baseline terms required to obtain the interaction terms: for example, in the model estimating the impact of the interaction term between literacy and population density, we add population density to the set of covariates as well. In case of coal and steel production, we employ all of the control variables listed in Table 2, model (1) and simultaneously add the following variables: (a) coal production; (b) steel production; (c) interaction term between coal production and literacy; (d) interaction term between steel production and literacy.

Appendix S10: Moderating effect of CPSU saturation

The findings presented in the main body of the paper appear to confirm—both conceptually and empirically—that mediation analysis is appropriate for the purposes of this study: the potential mediator is strongly correlated with the predictor, and the effect of the predictor on the outcome variable is significant and robust. Nevertheless, we also perform moderation analysis directly, employing the interaction terms. The rationale for employing the moderation analysis is as follows. In addition to observations "on the line" of the regression of party saturation on literacy, there is also a small number of regions located "off the line," that is, regions in which levels of party saturation do not co-vary with literacy. Our theory suggests that the number of these regions should be very small (these are anomalous cases as discussed in Appendix S9). Our empirical observations confirm that in this small group of regions, as compared to the rest of the sample, a different mechanism may be at work linking pre-communist education and post-communist democracy.

The moderation analysis would allow us to ascertain how "over-performance" or "under-performance" in party saturation levels affected the way pre-communist literacy influenced post-communist democratic governance. It is possible to conjecture that in regions where party saturation turned out to be lower than what we would expect given past literacy levels, the legacy of pre-communist education would have persisted to a greater extent and the "appropriation-and-subversion" mechanism would not have been in evidence; thus, in these regions, we would expect the positive impact of pre-communist literacy on post-communist democratization to be stronger. On the other hand, if the magnitude of party saturation were substantially higher than what we would expect given past literacy levels, we may conjecture that the positive effect of pre-communist education would be constrained to a particularly large extent. This is because, hypothetically, the educated strata under such a scenario would experience particularly strong pressures (stemming from high levels of party saturation) to adjust their behaviors to conform to the new environment. This line of argumentation suggests a possible moderation effect of party saturation on the impact of pre-communist literacy on post-communist democratization. This effect should be present only in regions with strong deviation of the CPSU membership share from what we would expect given levels of pre-communist literacy. We conjecture that while for the majority of the regions "on the regression line" (of the regression of CPSU membership on pre-communist literacy) we have to model the effect as a mediating one, for a small number of regions "off the regression line" we could possibly expect a moderating effect.

Some preliminary observations can be derived from Figure 2 of the main part of the paper already. As noted earlier, the Type 1 and Type 2 regions perform as predicted in terms of correspondence between literacy levels and CPSU member saturation. We observe that regions with high literacy and high levels of party saturation have a slightly higher level of democracy than regions with low literacy and low levels of party saturation, but the difference is very small. The Type 3 and 4 regions are more interesting from the point of view of possible moderation effects. Type 3 includes regions with below the expected levels of party saturation considering their pre-communist literacy levels. This very small group of regions features the highest democracy achievers. Interestingly, on average, the literacy level in these regions is actually lower than in Type 1 regions. Nevertheless, considering the lower-than-expected levels of party saturation, the values on the democracy score are substantially higher than in regions with higher literacy and higher levels of party saturation. The Type 4 group of regions encompasses regions with higher-than-expected party membership levels considering

their imperial literacy levels. The democracy scores of these regions are slightly lower than those of regions with low pre-communist literacy and low levels of party saturation.

We test for the moderation effect explicitly. We run our baseline regression, but add an interaction term between the variables of pre-communist literacy and CPSU membership. As expected, the interaction term as such is insignificant; this is not surprising, considering that both the baseline variables are highly correlated (the correlation is an empirical confirmation of the mediation model that we chose on theoretical grounds). Thus, the first impression appears to be that there is no evidence of moderation. In the next step, however, we concentrate on the "off-the-line observations," for which it would be interesting to ascertain the presence of a moderating effect. For this purpose we first regress the CPSU membership variable on the pre-communist literacy variable, as well as on controls from specification 1 of Table 2 of the main part of the paper and compute the absolute value of residuals. We then regress the democracy score on literacy, CPSU membership, and the interaction term between these variables, as well as on other controls, while employing only the observations for which the absolute value of residuals from the regression of CPSU membership on literacy is sufficiently large—that is, the observations are sufficiently far away from the regression line of CPSU membership and pre-communist literacy. As a threshold we employ one standard deviation of the absolute value of residuals. Note that we retain a sufficiently large number of observations for which pre-communist literacy is a good predictor of CPSU membership, but if we drop more observations, running an econometric model becomes impossible. We observe that the results in these regressions change dramatically. The interaction term is now significant and negative, suggesting that the positive effect of pre-communist literacy diminishes if party saturation levels go up.

Summing up, if we look at regions in which party saturation deviated from expected values—that is, *a-typical* regions, located at a substantial distance from the regression line, in addition to the observed appropriation and subversion mediation effect discussed above, we also find evidence of a moderating effect: CPSU saturation reduces the positive effect that pre-communist literacy otherwise appears to have on post-communist regional democratic governance. This observation should be treated as a secondary result, in addition to the paper's main finding—in most regions pre-communist literacy had a strong effect on party saturation levels.

S10.1: Regression estimations (dependent variable is democracy; we employ the Carnegie democracy index, 2000-2004)

	(1)	(2)
Share of CPSU members, 1970s	-1.434	-1.044
	(0.890)	(0.979)
Literacy, 1897	0.771**	1.002**
	(0.306)	(0.391)
Share of CPSU members * Literacy	-0.049	-0.076*
	(0.030)	(0.040)
Education, 2002	0.260	0.474*
	(0.222)	(0.266)
Income, 2000-2004	1.115**	1.246*
	(0.531)	(0.710)
Share of ethnic Russians, 2002	0.119**	0.176***
	(0.056)	(0.060)
Dummy republic	-0.423	0.623
	(2.674)	(3.288)
Distance from Moscow	-0.368	-0.331
	(0.223)	(0.300)
Log oil and gas extraction, 2000-2004 (measured in coal equivalent)	0.187	-0.323
	(0.548)	(0.811)
Constant	17.397*	5.989
	(10.123)	(11.563)
Observations	77	49
R-squared	0.476	0.561
Regions with high correlation between literacy and CPSU membership excluded	No	Yes

Note: see Table 1

Appendix S11: Additional data on social and educational backgrounds of party recruits, 1920s-1930s

S11.1: Class Composition and Occupation of Party Membership, 1922-1932

Date	Class composition (%)			Current occupation (%)		
Jan. 1	Workers	Peasants	White-collar workers	Workers	Individual and collective farmers	White-collar workers and others
1922	44.4	26.7	28.9			
1923	44.9	25.7	29.4			
1924	44.0	28.8	27.2	18.8		
1925	56.7	26.5	16.8	41.3	9.5	49.2
1926	56.8	25.9	17.3	42.0	13.4	44.6
1927	55.1	27.3	17.6	39.4	13.7	46.9
1928	56.8	22.9	20.3	40.8	12.3	46.9
1929	61.4	21.7	16.9	44.0	13.0	43.0
1930	64.3	20.2	14.5	46.3	12.0	41.7
1931				44.1	16.3	39.5
1932	65.2	26.9	7.9	43.8	18.5	37.6

Note: This table illustrates the over-representation of white-collar workers by current occupation among party members. As discussed in the paper, class composition masks the upward mobility of workers and peasants who had already occupied white collar positions before the 1917 Revolution even though they continued to be listed as "workers" and "peasants" in Soviet records.
Source: Rigby 1968, 116.

S11.2: Class Composition of Postpurge recruits, Compared with 1929 recruits

	1929 enrollment (% of all enrollments)	Enrollments Nov. 1936-March 1939 (% of all enrollments)
Workers	81.2	41.0
Peasants	17.1	15.2
Intelligentsia and white-collar workers	1.7	43.8

Note: These figures refer only to those enrolled in the particular year listed in the column. They do not refer to overall share of the various categories in the party (as listed in S11.1). Rigby notes that the 1929 enrolment was when "the proletarian bias was at its height."
Source: Rigby, 1968, 223.

S11.3: Pre-war Employment of 14,821 Leading Provincial Communists in 1921 (%)

	Gubernia officials	Uezd officials	Reserve	Total
1. Agriculture (a) Self-employed, farm laborers, petty functionaries	7.6	19.6	14.4	16.3
(b) Administrative and office staff	1.0	0.6	0.6	0.7
2. Plants and factories (a) Workers and petty functionaries	19.4	18.6	20.8	19.0
(b) Administrative and office staff	5.3	3.7	2.7	3.9
3. Transport (a) Workers and petty functionaries	3.7	3.0	4.7	3.4
(b) Administrative and office staff	1.6	0.9	1.8	1.2
4. Artisans (a) Owners of workshops	1.6	1.7	1.5	1.6
(b) Hired workers	5.3	5.8	6.6	5.9
5. Trade (a) Administrative and office staff	2.5	2.3	2.6	2.4
(b) Petty functionaries	2.7	2.8	3.2	2.9
6. State, public and private institutions (a) Senior staff	20.3	17.5	14.9	17.7
(b) Petty functionaries	4.0	3.4	3.2	3.5
7. Free professions	3.7	1.9	1.6	2.2
8. Others	5.0	4.4	4.8	4.6
9. Dependents	15.2	12.4	15.5	13.5
10. No data	1.1	1.4	1.1	1.4

Note: This table illustrates the high representation of white collar employees and in particular of senior staff previously employed in tsarist public and private institutions among professional backgrounds of party officials. Note that at the Guberniya level there is a greater tendency for a higher representation of those who occupied higher-status professions during the imperial period as compared to the Uezd level. As discussed in the paper, many individuals engaged in white collar occupations before the Revolution (such as petty functionaries) would have featured as "peasants" (a reference to their *estate* rather than occupation) in Bolshevik records.
Source: Rigby 1990, 35.

Appendix S12: The effects of purges on continuity in the reproduction of party cadre

In Table 2, in S5 and in S9, we presented results of statistical analysis of the effects of Stalin-era repressions against particular ethnic groups on party saturation levels. In this section, we provide a discussion of how the purges may have affected the continuity in the reproduction of imperial legacies, specifically, in the recruitment of the better-educated strata with human capital advantages acquired during the tsarist period. Before we present the relevant data on the effects of repressions on the party, we ought to provide some general discussion as to recent research into repressions generally and specifically on the regional aspect of purges. The purges represent a vast topic and we do not purport to do full justice to it here. Although volumes have been written on the purges, no systematic account exists on their effects—numbers arrested and shot, numbers exiled, numbers of those released from labour camps and returning to their home regions, etc.—across the regions in Russia, though the Russian NGO Memorial is engaged in an effort to collect such regional data. Rigby (1968) provides some evidence of the implications of repressions for regional party cadre, but the regional data are for select regions only. Furthermore, his account had been written before the NKVD archives were opened in the 1990s and scholars gained access to the full horrors of Stalinism. The published accounts that do consider the latest archival revelations are however (unlike Rigby's account) concerned with national-level statistics on repressions, and, at best, on those for the republics that used to be part of the USSR (Conquest 2008; Ellman 2002; Rosefielde 1997). Thus, systematic statistics for RSFSR regions are lacking. The authors of this paper have been involved in an historical project (with other colleagues) one of the ambitions of which is to map data on repressions, but the work has not been carried out so far. Furthermore, the statistics on people who perished in the purges should not obscure the potential effects of purges on the values and behaviours of those who survived. The record of repressions is bound to have affected levels of citizen trust *across the regions* (given the known record of denunciations under Stalin's rule). Thus, the physical extinction of many people is only part of the story; the values (and human capital, if we focus on the issue of trust) of those who survived are also relevant for our historical analysis. While we do not seek to minimise the horrific impact of repressions on the social fabric of Russia's regions, two observations, based on earlier and more recent historical analyses of repressions are in order. First, social science accounts more transparent about the demographic realities of the Soviet state than accounts targeting the general reader indicate that however ghastly, "repression *mortality* (excluding famine, war and disease mortality, and repression survivors) was only a modest part of the demographic history of the USSR" (emphasis original) (Ellman 2002, 1164). This observation relates to the point made above about the suffering that all Soviet people endured in the course of Stalin's rule, even though there are likely to be variations in how some regions were affected by the repressions. The statistics on purges that we present below provide some perspective on the numbers of those repressed in proportion to the general population. Second, what became evident in particular after the NKVD archives were opened was the indiscriminatory nature of purges. Although there were several waves of purges targeting particular individuals (and party cadre of particular ranks), we now know from the archives and family records of ordinary people that pretty much everyone—including innocent school-age children—was vulnerable to arrest, exile, and execution (Conquest 2008; Figes 2007). Thus, while some regions may have been affected more than others (for instance, St. Petersburg and Moscow would have been particularly affected by the Great Purge targeting senior party cadre and Old Bolsheviks), the repressions are likely to have affected citizens in all regions. Our analysis of repressed groups presented in S5 covers the regions in which virtually the entire populations suffered, so we are able, to some extent,

to address the question of how the variations in regional intensity of repressions might affect our results.

We now proceed to discuss how the purges affected the party in particular, and specifically, to what extent they may have put a break on the reproduction and recruitment of individuals with human capital advantages acquired during the imperial order. The word "purge" (*chistka*) has come to refer to the full spectrum of Stalinist repression—from expulsions from the party, scrutiny of party cards, and suspension of party "candidate" status, most of which occurred in 1933-1936—to the orgy of arrests, incarceration, and executions in 1937-1938 that are referred to as the Great Purge. While some purges targeted the "class alien" elements in particular (Rigby 1968, 204), we now know that the purges affected all social strata—from peasant and worker "provocateurs" (Rigby 1968, 210) to the ostensible anti-regime plotters among the educated Old Bolsheviks (Conquest 2008). The purges, particularly the 1937-1938 Great Terror, which targeted the Old Bolsheviks, put a significant break on the continuity in the membership of senior party cadre. This is evidenced by the stark change in the corps of delegates to the March 1939 Party Congress (Conquest 2008, 438). The purges of the rank-and-file appear to have affected membership continuity to a lesser extent. Rigby provides some statistics on regional purges, though, as noted above, his account had been written before the NKVD archives were opened. Many of those purged in 1934-1936 were arguably subsequently reinstated into the party—this record of reinstatement of many formerly expelled members is actually in line with accounts of repressions that emerged after the Soviet archives were opened in the 1990s. Kirov, a "typical region," provides an illustrative example of the effects of the 1935 purge on party membership. Out of 2,350 full members and 2,533 candidates, 107 "expulsions" were reported—approximately 2 percent of membership—when party cards were exchanged (Rigby 1968, 209). The Great Purge had the most horrific toll on the general citizenry and the party. An estimated 950,000-1.2 million (Ellman 2002) Soviet citizens—out of the USSR's population of roughly 160 million in 1937 (Rosefielde 1997)—had been shot or perished in the labor camps in 1937-1938. The party lost some 100,000 members (Rigby 1968, 212) to expulsions, arrests, and executions in this last purge. To put these figures into perspective, note that the total number of full party members in 1937 was 1,453,828 (Fainsod 1970; Rigby 1968)).

A new—and energetic—recruitment drive commenced at the height of the Great Purge, in June 1937, with over 400,000 recruits added to the party's ranks by the end of 1938. A record number of 1,100,000 recruits were added to the party in 1939, with regional party officials even accused of "indiscriminate chasing after numbers," by 1940 "admit[ting] almost all who applied" (Rigby 1968, 220). And it is among these recruits, described as "The Best People" that Rigby observes "a complete break with [the] proletarian bias" that the Bolsheviks sought to maintain during the earlier waves of party recruitment (Rigby 1968, 221). In Chelyabinsk, for instance, workers constituted under 20 percent of new party recruits in 1939-1941, and peasants under 10 percent, while the intelligentsia and white collar workers—over 70 percent (Rigby 1968, 225). In the Leningrad party organization in 1937, "some 40 percent of the new candidates and 50 of those who became full members were scientists, teachers, engineers and technicians, doctors, students and office workers" (Rigby 1968, 222). Note that these statistics come from Soviet-era records and it is unlikely that these records would have inflated the numbers of "non-proletarian" cadre.

What do these statistics tell us about the reproduction of cadre with human capital advantages acquired during the imperial era or with family backgrounds that would have provided the necessary cultural capital to acquire the relevant credentials? Despite the known "young"

demographic characteristic of the above new recruits (Fainsod 1970), we may assume that "scientists" would have been born some years before the Bolshevik Revolution and would have acquired at least part of their education in the imperial period. In fact, this observation would likely apply to all of the above categories except for students, who would have been twenty years old or younger in 1937 if they had been born after 1917. A large share of entrants into higher educational institutions in the 1920s in fact came from educated family backgrounds. As Fitzpatrick notes, throughout the 1920s, the pre-Revolutionary "old" intelligentsia continued to staunchly—and successfully—fight to preserve its gatekeeping authority in admissions to prestigious educational establishments. Specifically, it resisted the Bolsheviks' attempts to "dilute" the standards of higher education via affirmative action policies favoring those with proletarian or peasant origins. In the 1920s, it also secured preferential treatment—reserved quota of places and exemption from fees—(Fitzpatrick 1979) in university admissions for its offspring. Our discussion in the main body of the paper also illustrates how the so-called "new soviet-trained" (as distinct from "old") intelligentsia also tended to come from strata already upwardly mobile under the old order even if they continued to be listed in early Bolshevik records according to estate origin (such as "peasants" who were actually teachers or office workers); had been trained in imperial institutions of higher learning; and had already occupied white-collar positions under the old regime. Both the "old" and "new" intelligentsia tended to colonise higher educational establishments in the 1920s and 1930s despite the Bolsheviks' attempts to encourage farm and factory workers to pursue advanced education. As Lane writes, in 1923-1924, "the 'working-intelligentsia' and their children accounted for more than half of all students at university (50.5 percent)," while in 1927 "forty-five percent of all students were [still] of non-manual status" (Lane 1973, 246). Further analysis is required to more conclusively establish patterns of inter-generational reproduction of educational advantage—and likelihood of party entry—among those with better-educated ancestry, despite Stalinist purges. Nevertheless, these statistics—and of course our own systematic analysis of the link between imperial literacy and democracy; and between imperial literacy and party saturation—serve to debunk the soviet propaganda—picked up by some western scholars—about how the USSR built a new society and created a "new" (Fainsod 1970) intelligentsia virtually from scratch (including through purges of the social un-desirables from the party).

Appendix S13: Large-N evidence of legacy persistence

Bureaucracy

To explore the bureaucratic channel of persistence of legacies of party saturation in post-communist Russia, we focus on two characteristics of bureaucracies in Russia's regions in the early 2000s: their size (measured as number of civil servants per capita); and the average tenure of regional officials. Data for both of the indicators are obtained from official Russian statistical compilations, which refer to all civil servants as bureaucrats; these data do not include employees of state-owned enterprises and public sector employees like teachers or doctors, as well as military and security servicemen.

The size of the bureaucracy is relevant for regional governance because it has implications for regional executive power consolidation. For example, civil servants in regional bodies may be relied upon to perform anti-corruption checks on private companies; to organize and to supervise the process of electoral falsifications; and to ensure control over the wider citizenry. If the bureaucracy is small, the capacity of the regional governor to exercise these tasks may be limited, and hence his/ her ability to consolidate power is more modest. Bureaucratic tenure may be relevant for understanding patterns of regional governance for two reasons. First, longer tenure typically increases the extent to which regional civil servants would have been socialized in public sector institutions and would have internalized the relevant norms of bureaucratic behavior. Second, longer tenure indicates that civil servants may have commenced their service or spent a large portion of their careers in the Soviet era. Soviet bureaucracy was generally known for its compliance with political leadership directives (on Russian bureaucracies, see (Ryavec 2003). Summing up, bureaucracies with on average longer tenure may be more likely to exhibit greater levels of compliance with the demands of regional governors; in turn, larger bureaucracies may have greater capacity to execute the will of regional leaders. Both of these characteristics of regional bureaucracies may have detrimental effects on regional democracy.

We test how the legacies of pre-communist literacy and party saturation have affected the composition of regional bureaucracies in Russia in the 2000s. For this purpose, we regress the size of bureaucracy per capita of the regional population, as well as the share of bureaucrats with sufficiently long tenure (in excess of ten years) on the pre-communist literacy variable and on the party saturation variable. We also employ several control variables. Specifically, we control for education levels in the regions, which could affect the demand for public administration careers; and regional income levels; we also include a dummy variable for ethnic republics considering that this variable may have a bearing on how public offices are filled. The results are reported below. On the one hand, we observe a strong and significant effect of CPSU saturation legacy: regions with larger party saturation levels continue to maintain larger bureaucracies and tend to have a higher share of civil servants with longer tenure. On the other hand, we see that pre-Communist literacy has no impact on the composition of bureaucracy.

Next, we estimate the impact of bureaucracy on post-communist regional democratic development. For this purpose, we use specification (1) of Table 1 and control, in addition to the literacy and party saturation variables, for the tenure and size of bureaucracy variables. Tenure has, as expected, a significant and negative effect. If we drop the variables of party saturation and pre-communist literacy, this negative effect persists. For the size of bureaucracy, the effects are weaker. If we merely regress the level of democracy on the

regional share of bureaucracy variable, we find no effect. However, in contrast to the tenure variable, the distribution of the size of bureaucracy is characterized by a few outliers. Only four regions have bureaucracies exceeding 17 percent of the population: two of them (Magadan and Chukotka) are located in the Far East and have very small populations. When we drop the four outliers, we find a negative effect of the size of bureaucracy on democracy, but only if we do not control for the CPSU membership and literacy variables.

Finally, we seek to understand the role of bureaucracy in the persistence of the party saturation legacy. For this purpose, we again employ mediation analysis: we employ democracy as the outcome, CPSU membership as the predictor, and bureaucracy characteristics as mediator variables. We employ specifications from the tables below, but do not control for pre-communist literacy. The exercise we perform here is similar to that in the main part of the paper. In the main body of the paper, we decomposed the effect of pre-communist literacy on democracy into a direct effect and an indirect effect (which goes through party saturation). Now we decompose the effect of party saturation (which, as shown above, is negative), into a direct effect and an indirect effect (going through the mechanism of bureaucratic structure). In this case, we expect both the direct and indirect effects to be negative.

For tenure, one can see that the indirect effect is significant and negative; the direct effect is negative as well, but not significant. Bureaucratic tenure accounts for 39 percent of the total negative effect of the party saturation legacy on democracy. For the size of bureaucracy variable, the indirect effect is negative, but not significantly different from zero; this effect accounts only for 13 percent of the total negative influence of the CPSU legacy on democracy (if outliers are excluded).

Summing up, the composition of regional bureaucracy appears to be an important channel of persistence of the party saturation legacy. In particular, the length of tenure of regional officials appears to account for the observed effects. There are several reasons why past party membership could affect the composition of regional bureaucracies. First, at the beginning of the transition, already the low-level managerial positions in regional bureaucracies had been occupied by party members. It is possible that in regions with large numbers of CPSU members, Soviet-era officials preferred recruiting other fellow party members to new positions (because of shared values and modes of governance, for instance). Therefore, old patterns of Soviet bureaucratic behavior would have a high chance of being reproduced over time. In regions with few party members, new recruits to bureaucracy would have likely lacked a record of past CPSU affiliation, and therefore old behavioral patterns would have had a lower chance of persistence. Second, in high party-saturated regions, political leaders may find it easier to fill bureaucratic positions with individuals willing to comply with the demands of regional leaders. Again, if regional party saturation had been low, finding such compliant individuals and filling bureaucratic positions with them would have been more challenging. Third, a large share of CPSU members in the population may have increased general levels of popular acceptance for the perpetuation of Soviet-era bureaucracy in power (and the informal practices that come with it and that citizens would have been accustomed to as a way of getting things done).

S13.1: The effect of pre-communist literacy and party saturation on features of regional bureaucracy, OLS

Dep. var.	(1) Share of bureaucrats in regional population, 2000-2004	(2) Share of bureaucrats with tenure exceeding 10 years, 2002	(3) Share of bureaucrats in regional population, 2000-2004	(4) Share of bureaucrats with tenure exceeding 10 years, 2002
Party saturation, 1970s	1.607**	2.252***		
	(0.617)	(0.522)		
Literacy, 1897	-0.094	-0.121	0.034	0.001
	(0.060)	(0.086)	(0.046)	(0.001)
Education, 2002	-0.831***	-0.325*	-0.718**	-0.002
	(0.288)	(0.186)	(0.274)	(0.002)
Income, 2000-2004	1.142	-1.708***	1.271*	-0.015***
	(0.696)	(0.361)	(0.744)	(0.004)
Dummy republic	2.340*	-1.021	0.874	-0.031*
	(1.197)	(1.670)	(1.144)	(0.016)
Constant	8.598*	35.646***	17.363***	0.479***
	(5.132)	(4.230)	(3.296)	(0.036)
Observations	77	77	77	77
R-squared	0.302	0.369	0.208	0.248

Note: see Table 1

S13.2: The effect of regional bureaucracy on democracy, 2000-2004, OLS

|	(1)	(2)	(3)	(4)	(5)	(6)
Party saturation, 1970s	-2.016***		-2.444***		-2.440***	
	(0.662)		(0.703)		(0.695)	
Literacy, 1897	0.266***		0.309***		0.319***	
	(0.070)		(0.071)		(0.071)	
Share of bureaucrats in regional population, 2000-2004			0.012	-0.112	-0.254	-0.547*
			(0.167)	(0.167)	(0.348)	(0.305)
Share of bureaucrats with tenure exceeding 10 years, 2002	-21.410*	-38.484***				
	(12.618)	(13.703)				
Education, 2002	0.054	0.096	0.139	0.152	-0.019	0.006
	(0.217)	(0.243)	(0.231)	(0.272)	(0.229)	(0.290)
Income, 2000-2004	0.579	0.201	0.746*	0.547	1.020**	0.723
	(0.415)	(0.472)	(0.439)	(0.609)	(0.499)	(0.705)
Share of ethnic Russians, 2002	0.152**	0.202***	0.124**	0.150***	0.102*	0.142**
	(0.064)	(0.063)	(0.056)	(0.052)	(0.060)	(0.055)
Dummy republic	0.355	2.894	-0.639	1.644	-1.471	1.502
	(2.996)	(3.054)	(2.810)	(2.901)	(3.108)	(3.223)
Distance from Moscow	-0.427*	-0.561**	-0.273	-0.216	-0.149	-0.016
	(0.238)	(0.251)	(0.240)	(0.216)	(0.271)	(0.237)
Log oil and gas extraction, 2000-2004 (measured in coal equivalent)	0.149	0.459	0.36	0.904	0.212	0.809
	(0.533)	(0.538)	(0.538)	(0.555)	(0.563)	(0.579)
Constant	35.189***	26.814***	29.001***	13.652*	34.780***	19.855**
	(8.588)	(8.351)	(8.406)	(7.573)	(8.842)	(8.440)
Observations	77	79	77	79	73	75
R-squared	0.481	0.414	0.459	0.337	0.48	0.352
Outliers excluded	No	No	No	No	Yes	Yes

S13.3: Mediation analysis (democracy = outcome; CPSU membership = predictor; bureaucracy = mediator)

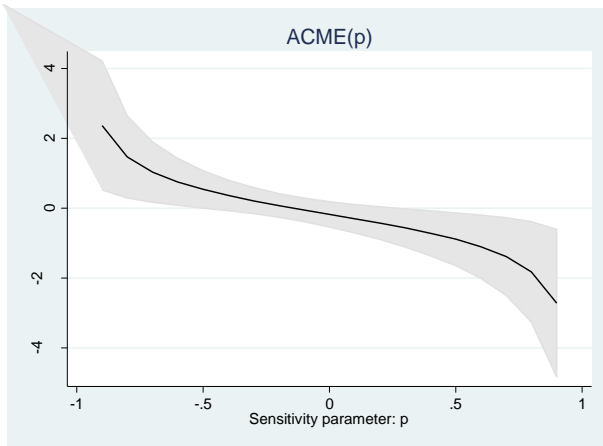| Characteristics of bureaucracy	Effect	Mean	95% confidence interval	
Tenure	ACME	-0.520	-1.127	-0.096
	Direct effect	-0.802	-1.906	0.271
	Total effect	-1.322	-2.448	-0.145
Size (full sample)	ACME	-0.023	-0.523	0.415
	Direct effect	-1.124	-2.419	0.135
	Total effect	-1.147	-2.486	0.150
Size (outliers excluded)	ACME	-0.171	-0.635	0.132
	Direct effect	-1.022	-2.332	0.252
	Total effect	-1.193	-2.458	0.110

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S13.4: Sensitivity analysis
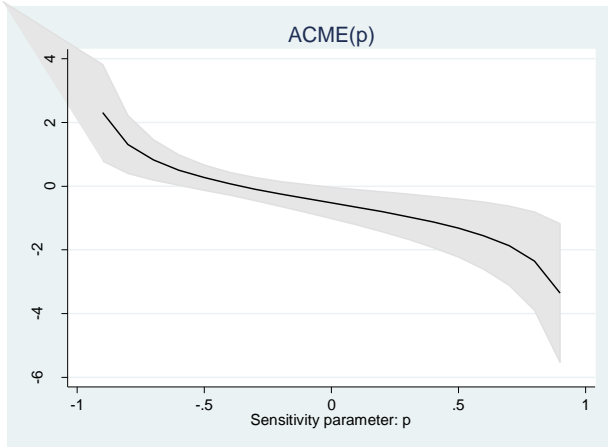
Tenure
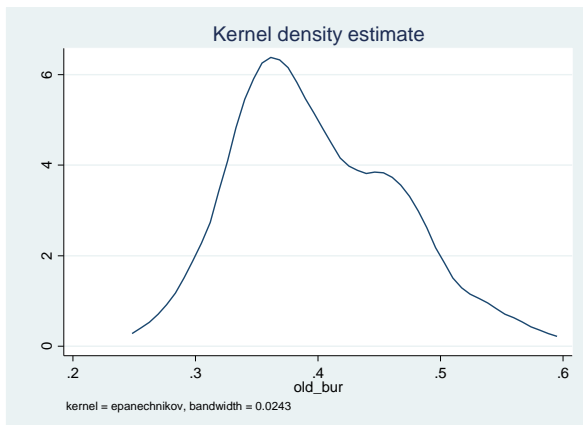rho at which ACME = 0 is minus 0.264
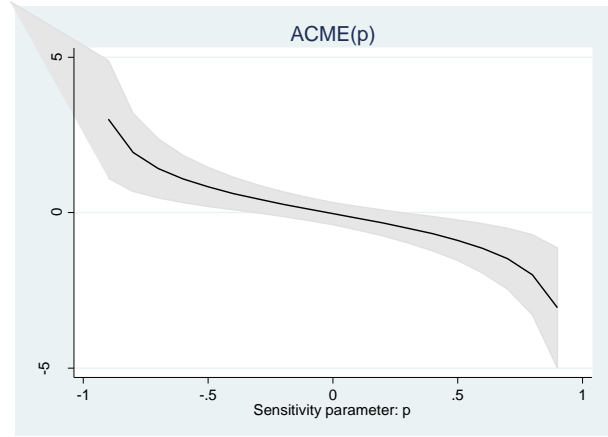
Size
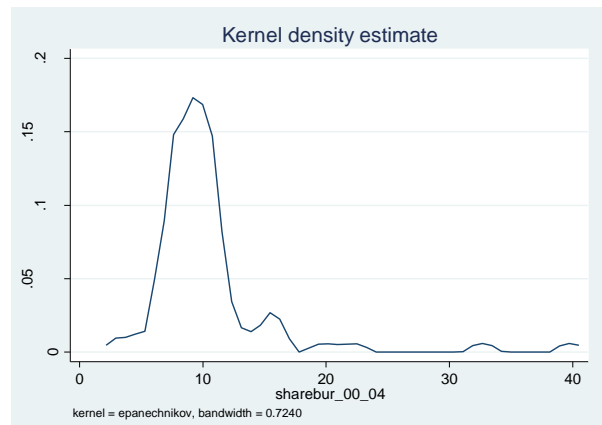rho at which ACME = 0 is minus 0.016

Size (excluding outliers)
rho at which ACME = 0 is minus 0.097

S13.5: Distribution of key characteristics of regional bureaucracies in Russia's regions

Kernel density estimate, density of the share of bureaucrats with tenure exceeding 10 years

Kernel density estimate, size of bureaucracy

Electoral behavior

Another possible channel of legacy persistence could be associated with voting behavior and thus with mass attitudes rather than with elite values and conduct. To provide some suggestive evidence in this respect, we analyze the votes obtained by key parties during two electoral campaigns—the State Duma elections of 1999 and 2003 (the closest ones to the period of our investigation). For 1999, we examine the shares of votes obtained in each region by the Communist Party of the Russian Federation (CPRF); by Unity, the party supporting Vladimir Putin; and by Fatherland–All Russia, the coalition of leading Russian governors supporting the former Prime Minister Yevgeny Primakov. For 2003, we again analyze the results obtained by CPRF and United Russia, the newly formed "party of power" supporting Putin, which came into existence as a result of the merger of Unity and Fatherland–All Russia. We correlated the shares of votes for these parties with the variable of CPSU saturation in the 1970s and with the pre-Soviet literacy variable. The results reported below are unambiguous: we do not observe a significant correlation between CPSU saturation and regional voting. These results imply that the electoral channel is unlikely to explain the persistence of party saturation legacies.

Interestingly, we find significant evidence of the effect of pre-communist literacy on electoral behavior. First, in regions with higher share of literates in the late 19th century, the share of votes for CPRF is consistently lower than in the low-literacy regions. Second, for 2003, we observe a negative correlation between the share of votes obtained by the pro-Kremlin United Russia party and pre-Soviet literacy. The latter trend persists in subsequent electoral campaigns: in the 2011 Duma elections, for example, there is also evidence of a negative and significant correlation between the vote share for the United Russia party and pre-communist literacy. These results imply that the legacy of pre-Communist education counteracts both the support for the party of power (or, possibly, the extent of electoral manipulations in its favor) and the support for conservative communist forces. Both effects are consistent with higher democracy scores in regions with higher pre-communist literacy. These results provide some suggestive evidence to the effect that the electoral channel might at least partially drive the persistence of the democratic legacy effects of imperial-era literacy. For instance, we may conjecture that political attitudes and voting preferences that are more discerning and more critical of the powers-that-be and that would have characterized comparatively better-educated citizens of the imperial era *un-coopted by the party*, might be transmitted through the family; these values may be also reinforced by the higher preference for advanced education among the (particularly those *un-coopted into the party*) descendants of the imperial-era's better-educated strata, as discussed in the main body of the paper. We acknowledge that further research is required to more conclusively ascertain the validity of this proposition.

S13.6: Correlations between electoral outcomes, CPSU saturation and literacy

Party and election year	Correlation with party saturation	Correlation with literacy
Communist Party of the Russian Federation, 2003	-0.146	-0.282**
United Russia, 2003	-0.131	-0.196*
Communist Party of the Russian Federation, 1999	-0.184	-0.396***
Unity, 1999	0.042	-0.118
Fatherland–All Russia (OVR), 1999	-0.014	0.074

Note: *** significant at 1% level; ** 5%; * 10%

Societal channel

To test for the societal effects of party saturation that we also conjectured in the main body of the paper (in addition to the bureaucracy/ elite channels discussed in the paper and tested above), we perform tests ascertaining the links between party saturation and oppositional societal protest activism—that is, activism unrelated to Soviet-style routinized forms of participation organized by the regional regimes. As a straightforward test of the impact of CPSU legacies on compliant political behavior, we could try to ascertain whether *ceteris paribus*, public protests are less frequent in regions which had large CPSU membership in the past. The test would also help us ascertain whether in regions with higher party saturation, the compliance-fostering norms of party members would have higher chances of being accepted by the wider citizenry (horizontal norm transmission) and survive over generations (vertical norm transmission). For this test, we employ an original author-constructed dataset with protest event count data in Russia's regions covering the years 2007-2012. The dataset contains information on political, economic, social and civic protests. A detailed description of the protest dataset is provided at the end of this section. The information on how the various protests were coded into political, economic, social and civic is provided in S13.9.

We regress the aggregate number of protests for all years on the variable of share of CPSU members in Russia's regions in the 1970s, as well as on three other relevant covariates. Specifically, we control for urbanization (averaged for 2007-2012) because urban populations may be more likely to get involved in protests due to stronger preferences for political freedoms, economic well-being etc., and may possess a greater volume of mobilizational resources and capacity; ethnic republic status employing a dummy variable (because of the known low levels of protest in the ethnic republics); we also employ a proxy for citizen perception of economic well-being. Data for the latter variable is obtained from Georating, a large-scale public opinion survey regularly carried out by FOM (Public Opinion Foundation, a reputable Russian polling agency), which has a major advantage of being based on representative population samples in each region. The FOM well-being perception index is based on weighted responses to three questions as part of a survey administered in 2007: (a) how happy people are with the overall situation in the region and whether they think that the situation is improving or deteriorating; (b) how happy citizens are with their material well-being and whether they perceive it as improving or deteriorating; and (c) whether people are generally satisfied with their lives. The index takes the values of between 0 and 100, with 100 signifying the most positive responses. We employ this index because human behavior is more likely to be driven by subjective perceptions rather than objective income proxies (for instance, because income distribution; expectations regarding possible income levels; and non-pecuniary and even non-material benefits may matter as well). Regressions are estimated using OLS. We exclude the cities of Moscow City and St. Petersburg from the sample: these regions recorded very large numbers of protests (only slightly fewer than the number of protests in all the other regions taken together), and these protests are often unrelated to regional issues, but are driven by national-level concerns (in addition, participants in these protests are more likely to come from other regions to take part in national protests).

The results of the analysis are presented below in S13.7. The results demonstrate that in regions with high levels of party saturation in the 1970s the number of political protests is significantly lower. The number of economic protests is also significantly lower. For other types of protests we find no significant effects. If we control for pre-communist literacy, the effect for economic protests remains robust, while the effect for political protests retains its sign, but is not significant (in this specification there is a significant and negative effect of the

CPSU legacy on the number of civic protests). Imperial-era literacy has no significant effect on protest activity. This result suggests that higher levels of education in the imperial period may not necessarily result in higher levels of citizen civic and protest activism after seventy years of communism. The result for the imperial literacy variable suggests that future research going beyond the scope of this paper should consider alternative channels of transmission of the imperial literacy effects on democracy. The analysis of regional electoral preferences presented above suggests that the electoral channel might go some way towards illuminating why imperial literacy is associated with post-communist democratic outcomes in Russia's regions.

S13.7: Effects of legacies on the number of protests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. var.	Political protests	Economic protests	Social protests	Civic protests	Political protests	Economic protests	Social protests	Civic protests
Party saturation, 1976	-1.770*	-1.051*	-0.277	-0.542	-1.859	-1.373*	-1.346	-2.037*
	(1.007)	(0.605)	(1.106)	(1.188)	(1.305)	(0.755)	(0.892)	(1.195)
Literacy, 1987					-0.095	0.026	0.093	0.274
					(0.223)	(0.098)	(0.283)	(0.407)
Subjective well-being	-0.09	-0.146*	-0.044	-0.013	-0.095	-0.149*	-0.043	-0.011
	(0.087)	(0.074)	(0.067)	(0.067)	(0.089)	(0.076)	(0.069)	(0.067)
Dummy republic	-8.437**	-6.237***	-4.378*	-5.934*	-8.420**	-6.325***	-5.155**	-6.875**
	(3.777)	(1.979)	(2.570)	(3.168)	(3.802)	(1.981)	(2.475)	(3.228)
Urbanization, 2007-2012	0.241	0.194**	0.211	0.152	0.248	0.183**	0.18	0.092
	(0.156)	(0.083)	(0.131)	(0.161)	(0.155)	(0.083)	(0.128)	(0.163)
Constant	18.153	10.663	-0.82	4.891	20.326	13.658*	8.215	15.957
	(12.943)	(7.157)	(13.050)	(16.730)	(13.452)	(7.473)	(9.955)	(14.676)
Observations	77	77	77	77	75	75	75	75
R-squared	0.113	0.22	0.087	0.08	0.112	0.22	0.086	0.094

Note: robust standard errors in parentheses. Estimation using OLS

Considering that our dependent variable is the number of protests in a given region, estimating the regressions employing OLS may be problematic. We therefore perform two additional tests. First, we run Tobit regressions to account for the fact that in some regions no protests occurred. Our results are confirmed (S13.8).

Second, to take into account both the lack of protests in some regions and the fact that our dependent variable is a count variable, we run zero-inflated negative binomial regressions. For three of our four protest types (political, economic and civic) the Vuong test is significant, confirming that the zero-inflated negative binomial estimator is preferable over the negative binomial estimator (the values of the test statistic are 1.81; 1.38; and 1.38 respectively); and the LR test aimed at ascertaining the suitability of the zero-inflated negative binomial over the zero-inflated Poisson model is significant (implying that the zero-inflated negative binomial estimator is more appropriate; the test statistics are 473.14; 183.28; and 449.37 respectively). For social protests the zero-inflated negative binomial estimator does not converge, and we therefore employ the zero-inflated Poisson model as the second-best option; the significance of the Vuong test (2.62) again confirms that the zero-inflated model should be employed instead of the simple Poisson model.

Both the zero-inflated negative binomial and the zero-inflated Poisson models imply that two equations ought to be estimated. The first equation (we use probit) estimates the impact of the covariates on the likelihood that *no protests* took place in a given region (*inflation stage*).

Thus, if a covariate has a *positive sign* at this stage, it means that this variable makes the absence of protests in the region more likely. The second equation estimates how many protests in the region should happen given that some protests in the region happen at all. Here, if a covariate has a *negative sign,* it means that if this variable goes up, the number of protests (conditional on protests happening at all) goes down. We include CPSU membership in both the equations, which allows us to estimate these effects.

The results (S13.8) indicate an even stronger impact of the party saturation variable than those obtained earlier. We find that for all types of protests, higher levels of CPSU saturation increase the likelihood of protests not happening at all. In the regions where protests do happen, the number of recorded protest acts does not depend on CPSU membership. These results provide some suggestive evidence to the effect that high levels of regional party saturation might discourage all regional protest activity; they do not however indicate that the intensity of protest activity (as measured by number of protests events) is affected in regions where protests do take place.

S13.8: Effects of legacies on the number of protests (alternative estimators)

Dep. var.	Effect of party saturation (Tobit)	Effect of party saturation (zero-inflated negative binomial / Poisson, inflation stage)	Effect of party saturation (zero-inflated negative binomial / Poisson, negative binomial / Poisson stage)
Political protests	-2.230** (1.114)	174.532*** (3.344)	-0.090 (0.082)
Economic protests	-1.223* (0.642)	6.517*** (0.119)	-0.091 (0.063)
Social protests	-0.890 (1.262)	0.340** (0.154)	0.057 (0.101)
Civic protests	-0.775 (1.280)	6.618*** (0.115)	-0.014 (0.113)

Note: The other covariates are the same as those in specifications employed to obtain the OLS estimates (we do not control for literacy). In the zero-inflated negative binomial and zero inflated Poisson regressions, the covariates of the inflation stage and of the negative binomial / Poisson stages are the same. Robust standard errors are applied.

Description of protest data

Our dataset, assembled from the liberal *namarsh.ru* website sponsored by the opposition politician Garry Kasparov, covers protests ranging from small-scale acts and large-scale demonstrations featuring tens of thousands of protesters. It ranges from localised political protests, such as demands to remove corrupt local officials, to protests converging on national capitals and targeting national authorities. A wide range of protest issues feature in the dataset. For instance, in addition to political protests, many protests are motivated by socio-economic grievances like frustration over wage arrears. A large number of regional protests are concerned with cultural issues, as would be the case when rallies challenge the demolition of historic buildings. Note that we exclude rallies that are organized by the regime or its supporters, as would be the case with rallies organized by the United Russia (UR) party or pro-government youth movements, such as the notorious pro-Kremlin group *Nashi*.

We acknowledge that the namarsh.ru, as a liberal-leaning website, may over-report certain types of protests—for instance, those organized by liberal-leaning groups at the expense of protests organized by the Communist party or other left-leaning parties and groups. Indeed, Robertson and Reuter, who compiled Russian regional protest data based on protest reporting by the Communist Party of the Russian Federation (CPRF), suggest that the data only partially correlate with protests reported by the more liberal political sources (Robertson and Reuter 2013). While we acknowledge the limitations of the data, we also note that our data dovetail with public opinion polls about citizens' intentions to participate in protest rallies and also overall levels of citizen activism in the various regions (Petrov 2005). As a further check on the reliability of our data, we cross-validated our namarsh.ru data with Graeme Robertson's regional protest data, which are based on reports from the left-leaning source Institute of Collective Action (IKD) for the period January 2007-March 2012. The number of protests reported in Robertson's dataset is roughly similar to ours, comprising 5540 protest events across 74 regions. Regional (log) protest counts across the two datasets over the period March 2007-March 2012 are correlated with a correlation coefficient of 77 percent. The table below outlines the criteria for coding our protests into the categories of political, civic, social, and economic. In the dataset that we employ, the number of protests in individual regions varies between zero and seventy-four (political protests); zero and forty-five (economic protests); and zero and sixty-nine (both social and civic protests).

S13.9: Criteria for coding of protests

Category of protest	Criteria for coding
Political	Anti-government protests. Protests may include other issues, but criticism of regime/ government policy/ politics or demands for the protection of political rights form the crux of the event. These protests are often organised by the political opposition, though they are not exclusive to one particular party or civic movement; include events like the March of the Millions, a mass civic march organised by the political opposition, and Strategiya-31 civic meetings organised in support of the right to peaceful assembly. Anti-government protests organized by nationalist activists (excluding those sponsored by the government) were also coded as political protests; protests challenging electoral fraud, notably protests that occurred between December 2011 and May 2012, as well as protests against local and regional instances of electoral fraud; protests featuring calls for resignation of elected or appointed officials at all levels of government (regional and local politicians and other public officials); protests against political repression, such as rallies calling for the release of political prisoners; and protests organized by the group Memorial commemorating past victims of political repression; protests in support of political activists; against police abuse and repression of political activists; protests against aspects of Russia's foreign policy (excluding those organised by pro-regime groups), such as those against Russia's cooperation with Japan over the Kuril Islands, or rallies showing solidarity with political events abroad, for instance support for anti-regime protesters elsewhere.
Civic	Within this category, we distinguish between *legal, environmental, and cultural* protests: *Legal*—protests against lawlessness and unpopular legislation, its implementation (labor, criminal and administrative codes); protests against acts perceived to be illegal and involving state bodies or private companies (forced eviction, illegal construction); *Environmental*—protests against waste dumping, destruction of forests, parks and protected woodlands; protests calling for the protection of nature reserves and parks; *Cultural*—protests challenging the destruction of monuments and of historically significant buildings; against change in city or area names.
Social	Social—protests by socially vulnerable groups like pensioners, victims of the Chernobyl' nuclear reactor accident, students, disabled people, people on state welfare.
Economic	Economic—protests challenging government economic policies; rallies challenging wage arrears; wage- and worker rights-related labor strikes.

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