

Collective Action and Representation in Autocracies: Evidence from Russia's Great Reforms

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This version: October 10, 2016

Abstract

We explore the relationship between capacity for collective action and representation in autocracies with data from Imperial Russia. Our primary empirical exercise relates peasant representation in new institutions of local self-government to the frequency of peasant unrest in the decade prior to reform. To correct for measurement error in the unrest data and other sources of endogeneity, we exploit idiosyncratic variation in two determinants of peasant unrest: the historical incidence of serfdom and religious polarization. We find that peasants were granted less representation in districts with more frequent unrest in preceding years—a relationship consistent with the Acemoglu-Robinson model of political transitions and inconsistent with numerous other theories of institutional change. At the same time, we observe patterns of redistribution in subsequent years that are inconsistent with the commitment mechanism central to the Acemoglu-Robinson model. Building on these results, we discuss possible directions for future theoretical work.

When do autocratic elites transfer power to excluded groups? Numerous theories of regime change and liberalization suggest that representation is granted in response to fear of social unrest. Yet among such theories, there is disagreement as to whether the ability to produce such unrest—the disenfranchised group’s capacity for collective action—is more or less likely to produce institutional change.

The predominant view in the literature, expressed in numerous contributions that we discuss below, is that regime change and liberalization are more likely when excluded groups find it easier to overcome their collective-action problems. Intuitively, autocratic elites are vulnerable to social disturbances, so frequent unrest that poses a threat to regime stability should encourage institutional change. Yet in a series of influential contributions, Acemoglu and Robinson (2000, 2001, 2006) argue precisely the opposite. In their theory, representation (democratization) is a commitment mechanism that is exploited only when the elite is otherwise unable to credibly commit to future redistribution—that is, when the majority poses an infrequent threat of unrest. In the Acemoglu-Robinson model, collective action and representation are substitutes rather than complements.

Existing empirical work on regime change does little to adjudicate this debate. To the extent that such work examines the relationship between unrest and representation, it typically focuses on whether democratization and other forms of regime change are more likely during periods of popular mobilization (Przeworski, 2009; Aidt and Jensen, 2010; Aidt and Franck, 2015; Aidt and Leon, 2016) or in the presence of adverse economic shocks (Brückner and Ciccone, 2011).¹ Yet if liberalization is more likely during such periods, so are redistribution, repression, and various other regime responses. The pertinent question is whether, *at such moments*, representation is more or less likely to be granted when an excluded group poses a more constant threat of unrest.² Answering this question requires that we have data on unrest not just when, but before institutional change occurs.

In this paper, we exploit unique data and a novel empirical setting to explore the relationship between capacity for collective action and representation in autocracies. We focus on Russia during the period of the Great Reforms under Tsar Alexander II—an era in which the autocratic state emancipated the serfs and devolved substantial authority to previously excluded actors.³ Key among these reforms was the creation (over most of European Russia) in 1864 of the *zemstvo*, an institution of local self-government with the authority to assess taxes and allocate revenues to local public goods, including healthcare and education. This authority was exercised by an elected assembly, with statutory allotments of seats for the gentry, urban property owners, and peasantry that varied greatly across 365 districts in which *zemstva* [pl.] were established. Nafziger (2011) demonstrates that these seat allotments were consequential for policy, with more spending on public goods and more taxation

¹Although economic shocks may heighten distributive conflict, thus promoting unrest, many regime transitions are driven by non-distributive concerns (Haggard and Kaufman, 2012). The research design that we describe below considers unrest motivated by a variety of grievances. For related work on the effect of reform on rebellion, rather than vice versa, see Alston, Libecap, and Mueller (1999); Albertus (2015); and Finkel, Gehlbach, and Olsen (2015).

²Expressed in terms of a Markov game like the Acemoglu-Robinson model, the question is whether, conditional on being in the state where the excluded group poses a credible threat of unrest, representation is more or less likely to be granted when being in that state is more likely.

³Dennison (2011) documents the institutional context prior to reform; Buggle and Nafziger (2016) and Markevich and Zhuravskaya (2016) provide econometric estimates of the economic effects of emancipation.

of the nobility where peasants had greater representation.

Our primary empirical exercise relates peasant representation in the district *zemstvo* assemblies to the frequency of peasant unrest from 1851 to 1863, which we assume to be correlated with perceptions of potential unrest at the time of reform—either because of persistence in underlying conditions or because previous conflict itself creates enduring capacity for collective action (Bellows and Miguel, 2009; Blattman, 2009; Daly, 2012; Jha and Wilkinson, 2012; Finkel, 2015). To correct for measurement error in the unrest data and support a causal interpretation of our results, we employ an instrumental-variables strategy that exploits two important determinants of unrest in the pre-reform period: the historical incidence of serfdom (controlling for distance from Moscow, soil fertility, and the relative size of the rural/peasant population, among other variables) and religious polarization.

Consistent with the Acemoglu-Robinson model of political transitions, and inconsistent with numerous other theories of regime change and liberalization, we find that peasants received less representation in *zemstvo* assemblies in districts that experienced more frequent peasant unrest in the years preceding 1864. Employing each instrumental variable in turn, we obtain generally similar results across a range of specifications, notwithstanding the fact that the two instruments capture largely distinct variation in peasant unrest.

Although these findings lend support to the Acemoglu-Robinson model, they do not speak directly to the commitment mechanism central to that theory. To explore causal mechanisms, we exploit a previously unrecognized empirical implication of the Acemoglu-Robinson framework: capacity for collective action should have a stronger, more positive impact on redistribution where representative institutions have not been granted. To test this prediction, we utilize new data on the expansion of rural Russian schooling—an important mode of redistribution—in the mid-19th century. We find that the relationship between redistribution and unrest is in fact more *negative* in non-*zemstvo* districts—that is, those in which representative institutions do not serve as a commitment to future redistribution.

Our results suggest a puzzle. On the one hand, we find an impact of capacity for collective action on representation in autocracies that is consistent with the Acemoglu-Robinson model and inconsistent with many others. On the other, we observe a relationship between capacity for collective action and subsequent redistribution that is inconsistent with the commitment mechanism central to that model. Taken in total, our results are thus inconsistent with any existing model, suggesting the need for further theoretical work. We discuss possible directions for such work in the conclusion.

1 Theoretical perspectives

The empirical exercise in this paper is motivated by a substantial theoretical literature on the relationship between collective action and representation in autocracies. Our general approach is to lean on this work to the extent possible, resorting to post-hoc explanations only to the degree that we observe empirical patterns inconsistent with extant theory.

Beginning with the seminal work of Lipset (1959), theories of regime change and political liberalization have emphasized a number of variables, including economic development, economic inequality, elite divisions, pacts, and popular mobilization. With respect to the last of these variables—the focus of this paper—there is debate about the importance and even direction of any effect. On the one hand, social unrest may be epiphenomenal to other events driving transition. As Geddes (1999) writes with respect to regime change in Latin America,

“Popular mobilizations took place in many countries, but they usually occurred relatively late in the process, when democratization was well underway and the risks of opposition had diminished” (p. 120). Similarly, Kotkin (2009) argues that elite attitudes rather than popular mobilization were the key reason for the collapse of communism in Eastern Europe in 1989.

On the other hand, the ability of political actors to exploit economic and other shocks may depend on their capacity for collective action, which elites in turn may anticipate. Among theories that suggest a causal effect of collective action on representation, most conclude that democratization or liberalization is more likely to occur when excluded groups find it comparatively easy to overcome their collective-action problems.⁴ Collier (1999), for example, suggests that labor unions, with their inherent capacity for mobilization, play a critical role in the “destabilization and extrication” of nondemocratic regimes. Boix (2003), in turn, argues that greater mobilization among the poor or disadvantaged increases the likelihood of establishing a democratic state, though only when economic inequality is relatively low. Gandhi and Przeworski (2006) and Gehlbach and Keefer (2011) both predict that co-optation (through the creation of legislatures and ruling parties, respectively) is more likely when the ability to suppress popular uprisings is small. Bueno de Mesquita (2010) suggests that unrest fosters regime change by signaling widespread dissatisfaction with the incumbent regime. Besley et al. (2014) argue that political leaders with less “resilience,” which may be determined by the mobilizational capacity of excluded groups, are more likely to create institutionalized checks on the power of the executive branch.

A notable exception to this general consensus is the model of political transitions by Acemoglu and Robinson (2000, 2001, 2006). In their theory, representation (democratization) serves as a commitment mechanism for autocratic elites who are otherwise unable to commit to future redistribution, which is the case when the poor only occasionally pose a threat of unrest. Figure 1, which is adapted from Gehlbach (2013, p. 203), illustrates the logic of the commitment mechanism. In any period in a nondemocracy, the poor pose a credible threat of revolution with probability q . In such periods, the elite can attempt to forestall revolution by redistributing to the poor. This will only be successful, however, when the poor anticipate being in the same state in future periods with sufficiently high probability—that is, when q is high. In contrast, when q is low, then promises of future redistribution are not credible, as with high probability the poor will not pose a credible threat of revolution in subsequent periods. It is in such cases that the elite may democratize as a way of committing to future redistribution.

Acemoglu and Robinson (2000, p. 1185) illustrate the commitment mechanism with the following example: “At first sight, one might expect franchise extension in Germany [where unions and the socialist movement posed a nearly constant threat of unrest] rather than in Britain and France. Our model, in contrast, predicts that the German elite should have had more flexibility in dealing with social unrest by promising future redistribution, which was the pattern in practice.” In the appendix, we show that this logic extends to a setting in which

⁴Such theories are related to, but mostly distinct from, those that trace the stability and efficacy of already-established democracies to collective action, including Almond and Verba (1989), Putnam (1993), and Weingast (1997). Another strand of the literature ties liberalization to factors other than collective action among excluded groups, including a desire to undermine special interests (Lizzeri and Persico, 2004) or to mobilize war effort across the population (Ticchi and Vindigni, 2008).

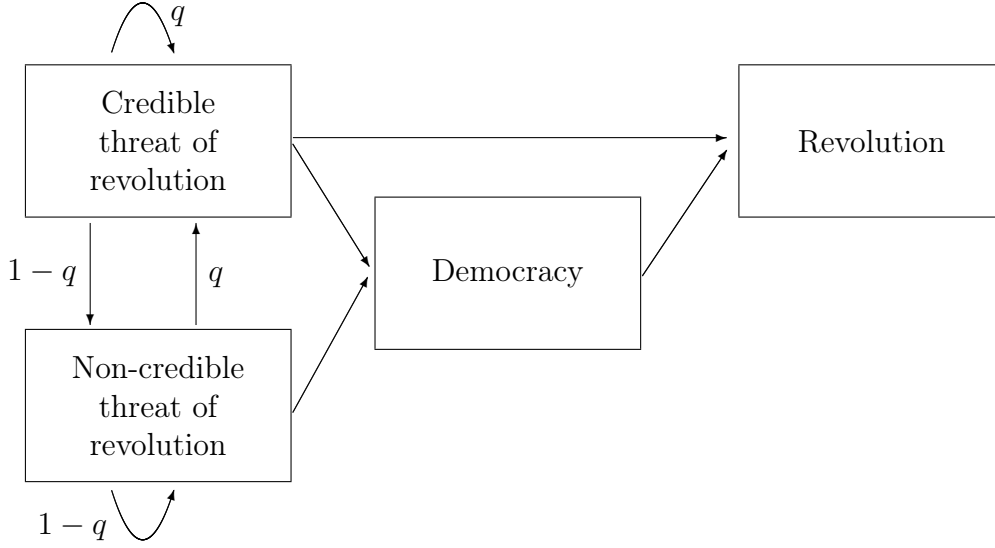


Figure 1: The commitment mechanism in the Acemoglu-Robinson model of political transitions. In any period in a nondemocracy, the poor pose a credible threat of revolution with probability q . Expectations of future redistribution are lower, and the value of democratization as a commitment mechanism correspondingly higher, when q is small.

any level of representation (as opposed to democratization/not) can be chosen: the more frequently an excluded majority poses a credible threat of unrest, the less representation the elite provides to the majority. We view this as the key empirical prediction of the Acemoglu-Robinson model—a prediction that has yet to be tested against other theoretical perspectives.

2 The *zemstvo* reform

Our empirical analysis is grounded in the historical context of mid-nineteenth century Imperial Russia. The period from 1850 to 1870 saw dramatic changes in the institutional structure of rural Russia as serfdom came to an end through a complicated set of reforms. In this section, we first describe the pertinent features of serfdom, the emancipation reforms, and their immediate impact on peasant unrest. We then delve into the origins and structure of the *zemstvo*'s system of representation.

2.1 Serfdom, emancipation, and peasant unrest

Russian serfdom was shaped by two interacting factors—the rulers' need to maintain a large number of noble servitors, necessary for state building and territorial expansion, and the land/labor ratio (Domar, 1970). Noble service was compensated by land grants, but the availability of vast unsettled territories coupled with peasants' freedom of movement threatened to put the servitors' economic well-being at risk. To overcome this problem, the state gradually introduced ever-increasing restrictions on the mobility of peasants. By the

mid-17th century, this led to the formalization of serfdom as a set of legal restrictions on the rights and freedoms of peasants residing on private estates.

Critically, serfs were but one part of the Russian peasantry. A slightly smaller group was the state peasants, who lived on state-owned land, and who, by the mid-nineteenth century, could own property, were obligated only for rental payments to the state, and possessed more labor autonomy and social mobility than did serfs. While there were some differences in the geographic distribution of these two largest peasant groups, many provinces and districts had mixed populations. In addition, there was a relatively small population of court peasants, who lived on the lands owned by the royal family, and various other, less numerous peasant groups.⁵

During serfdom, the Imperial government often confronted spasms of peasant violence, ranging from brutal murders of individual landowners to large-scale peasant uprisings, the most notable of which was the Pugachev Rebellion of 1773–75. Such unrest frequently necessitated military intervention, the cost of which was largely borne by the state rather than affected landowners. While serfdom and the hierarchical social-estate system laid the groundwork for these disturbances, other factors were also important. Religion played a key role in the functioning of the Imperial state, with the regime coopting Orthodox and non-Orthodox authorities to maintain social order. This strategy was most effective where there was a single large religious group, as religious leaders, laws, and customs were organically incorporated into the state apparatus. In contrast, where faiths intermingled, religions had to compete for their position in the state apparatus, leading to episodic conflict (Crews, 2003; Engelstein, 2000).

The Tsar's fear of a backlash from the nobility prevented meaningful movement toward the elimination of serfdom, but this position could no longer be maintained in the wake of Russia's defeat in the Crimean War (1853–56), which exposed Russia's institutional backwardness. The war itself led to an increase in peasant unrest (Finkel, Gehlbach, and Olsen, 2015). Although serfdom remained profitable for many landowners (Domar and Machina, 1984), fear of peasant rebellion encouraged Tsar Alexander II, who came to power during the war, to declare in 1856 that it was better to end serfdom "from above" than to wait for it to happen "from below."

The Emancipation Manifesto and accompanying statutes of 1861 gave former serfs immediate legal freedom but in both design and implementation fell far short of meeting their expectations with regard to land ownership. The reform's content was a compromise between different factions of the elite over how much land, if any, should be awarded to the peasants (Khristoforov, 2011, p. 9). The actual process of determining peasant land rights was substantially delegated to the local nobility, who unsurprisingly took advantage of the opportunity to ensure that peasants were left with as little good land as possible.⁶ This

⁵On the populations of these types of peasants and the differences among them, see Kabuzan (2002) and Nafziger (2014). Broader reforms were enacted for the court and state peasants between the 1820s and 1840s. These recognized the communal organization of their villages and aimed to improve economic conditions for non-serf peasants. However, there is little evidence that such measures generated significant differences in the *de facto* institutional practices of village communes among different peasant groups. See Deal (1981), Druzhinin (1946 and 1958), and Moon (1999, pp. 107-108).

⁶For further details of this process, see Gerschenkron (1965), Moon (2001), Nafziger (2014), and Zaionchkovskii (1968).

resulted in renewed unrest across the Russian Empire: Finkel, Gehlbach, and Olsen (2015) document a sharp increase in disturbances among former serf peasants after 1861, versus a much smaller, statistically insignificant decrease among the non-serf peasant population. It was precisely in this period that a relatively small number of bureaucrats in St. Petersburg were occupied with drafting another reform, that of a new unit of rural self-government, the *zemstvo*. The timing was not coincidental. “The fundamental and decisive factor driving the [zemstvo] reform was the revolutionary situation in the country” (Garmiza, 1957, p. 42).

2.2 The zemstvo

In early 1864, Tsar Alexander II issued the *Statutes on Provincial and District Zemstvo Institutions*. This act established a new institution of local self-government—the *zemstvo*—in 34 of the 50 provinces of European Russia at both the provincial (*guberniia*) and district (*uezd*) levels (see Figure 2).⁷ For various reasons, the 1864 law did not establish the *zemstvo* in more peripheral regions, some of which were frequent sites of peasant unrest, as we discuss below.

The founding statutes called on the *zemstva* to undertake programs to support “the local economic and welfare needs of each province,” and some fiscal authority was granted to enable such efforts. Annual assemblies were to approve spending and revenue policies under simple majority voting, to then be enacted by executive councils responsible for day-to-day operations. Among other stated goals, it was explicitly hoped that these new bodies would provide an outlet for defusing potential unrest (Starr, 1972).

By 1889, the Russian State Council asserted that “there can be little doubt that the calling of locally elected people to lead local matters has significantly improved provincial life and led to the wide satisfaction of the demands of the local population” (quoted in Zakharova, 1968, p. 142). Recent empirical research supports this assertion. Exploiting district-level data, Nafziger (2011) documents a substantial increase in the provision of publicly provided local goods and services in *zemstvo* regions. Strikingly, this improvement was most pronounced in districts where peasants had greater representation in the *zemstvo* assemblies, notwithstanding the fact that peasants rarely held a majority of seats, as noted below. This likely reflected the greater ease of creating majority coalitions with progressive members of the nobility in such districts.

Under the 1864 law, between 10 and 100 assemblymen were to be elected for three-year terms in balloting by three curiae of voters in each district: rural private-property owners (land-owning nobility), urban property owners, and peasant communes, which had gained formal status as parties to the emancipation reforms. Critically for our purposes, the statutes fixed the number of assembly seats from each curia in each district, with substantial variation across European Russia based on districts’ “local and historical circumstances” (Komissia o gubernskikh i uyezdneykh uchrezhdeniakh, 1890, p. 7). Under the 1864 law, the first curia (rural property owners) held 47.0 percent of all seats, versus 12.5 percent for the second curia (urban property owners) and 40.5 percent for the third curia (peasant communities).⁸

⁷The original statutes established *zemstva* in 33 provinces and the Don Cossack region, but the institution never opened in Orenburg and was eliminated in the Don in 1882. *Zemstva* were quickly established in most of Bessarabia (1869) and in Ufa (1875).

⁸Authors’ calculations using data from *Polnoe sobranie zakonov Rossiiskoi imperii*, Series II, vol. 39, Issue 3 [Appendices], and Series III, vol. 10; Khoziaistvennyi departament (1878–1890); and Obchinnikov

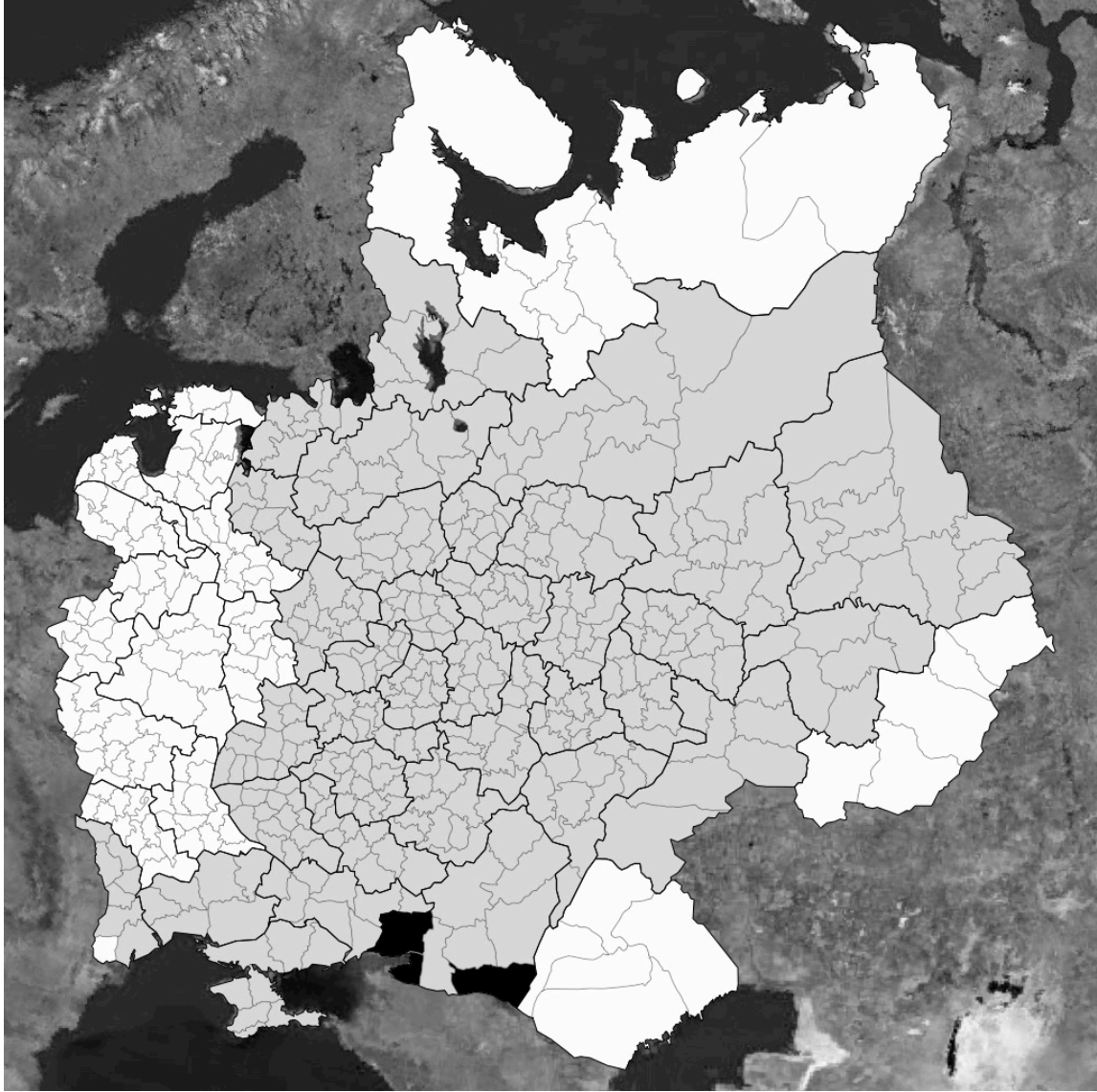


Figure 2: The geography of the *zemstvo* as defined by the 1864 law. Dark lines indicate provincial boundaries. Three districts in black not in sample due to administrative reorganizations.

When combined, the first and second curiae formed an overall statute majority in 323 of 365 districts in our sample. In contrast, the third curia held a plurality in 78 districts and an absolute majority in only eight (see Figure 3). To understand the process by which these allocations were set and the possible role of peasant unrest in their formulation, it is important to reconstruct the specific historical context that generated the original 1864 statutes.

(1872).

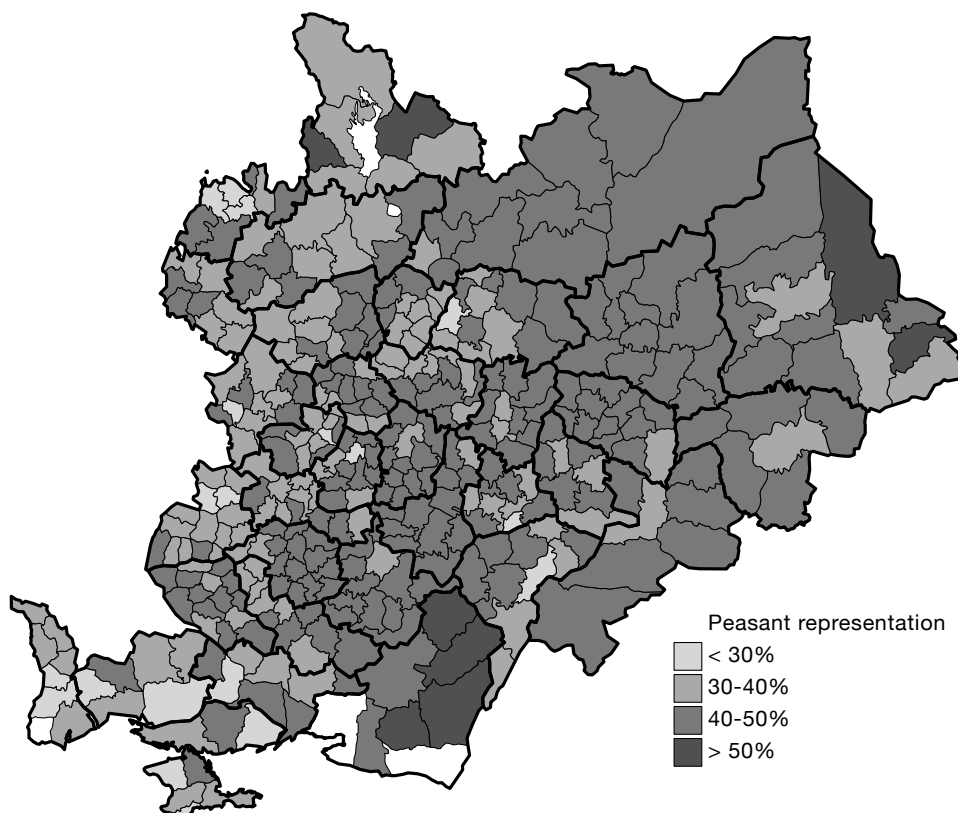


Figure 3: Share of *zemstvo* assembly seats statutorily assigned to third (peasant) curia c. 1875. Dark lines indicate provincial boundaries.

2.2.1 The roots of the *zemstvo* electoral system

The *zemstvo* was rooted in earlier initiatives to provide local public goods and services, but the structure of the institution was embedded in the emancipation context. Alexander II's call for ending serfdom necessitated a reconsideration of how the countryside was to be governed, local taxes collected, and public goods provided (Komissia o gubernskikh i uyezdnnykh uchrezhdeniakh, 1890, p. 2). In March 1859, the Tsar appointed a special commission to formulate legislation regarding local police matters, for settling disputes between landlords and former serfs, and to decide other aspects of local administration. This commission was led by the relatively liberal Deputy Minister of the Interior Nikolai Miliutin and included representatives from various ministries, with advice from outside and locally knowledgeable experts. In April 1860, the commission proposed that local public goods and services should be provided by new "economic structures," based on "elective principles" (Malloy, 1969, p. 90). However, the details of these new bodies remained largely unspecified until after Emancipation, during the period of peasant disturbances described above.

In April 1861, Alexander II reacted to noble fears amidst rural unrest by relieving Miliutin of his duties and replacing him as chairman of the commission with the conservative new Minister of the Interior, Petr Valuev (Garmiza, 1957, p. 154). From mid-1861 until mid-1863, the Valuev-led commission worked to define the parameters of the *zemstvo*'s electoral

structure. As such, the specifics of the *zemstvo* reform were prepared exclusively in St. Petersburg and *not* by the provincial committees of nobility or other local bodies (ibid., ch. 2).⁹

Within the commission and related committees, a bureaucratic struggle emerged between those who wanted to maintain a class-based system of local governance with the nobility firmly in control, and those who argued for a broader system of representation that would provide at least some equality of political voice.¹⁰ This theoretical debate boiled down to the formulation of general rules that assigned one assembly seat to each curia per a set amount of property *or* number of peasants in each district. The commission's initial proposal to the State Council in late Spring 1863 suggested a property basis for determining the number of seats in the first and third curiae and a population basis for the second (urban) curia. Following this, a special committee of the State Council debated the *zemstvo* reform proposal over eight sessions in July. These sessions proceeded step-by-step through the suggested statutes, modifying some and rejecting others. Unfortunately, the details of these revisions and discussions have not been preserved in the archives (Garmiza 1957, pp. 230–231). Following these sessions, the Polish Rebellion and other issues garnered the attention of central policy makers, with the full State Council finally considering the plan in December 1863.

V. V. Garmiza, the leading Soviet historian of the the *zemstvo* reform, writes that “[i]n an environment of peasant unrest... the administration had a basic fear of the numerical dominance of the peasantry in the *zemstvo* assemblies” (1957, p. 177). According to Garmiza's account (ibid., pp. 232–237), the three December sessions of the State Council led to substantive changes in the electoral statutes of the working version of the *zemstvo* law. “Revolutionary conditions,” both in Poland and the Russian countryside, encouraged the Council to set the norm for both the first and third curiae at one assemblyman per 3000 “average” allotments of land in their respective categories, while crediting all estate land to the nobility (i.e., the first curia) until the formal land transfer associated with emancipation was settled. In this way, the property-based rules and the delineation of the qualifying property generated a leading role for the local land-owning gentry in the new *zemstvo* assemblies.

Notwithstanding these general criteria, it appears that the State Council may have intervened to adjust district-level seat allotments on the margin, either directly or by systematically setting the amounts of land in the different categories to generate specific seat numbers once the rules and land-allotment norms were applied.¹¹ In this manner, the final allocation

⁹During the period 1861–1863, provincial committees of the nobility responded to a call from Alexander II to consider and comment on local conditions and proposed features of the *zemstvo*. Accounts of commission deliberations clearly demonstrate that these notes had little direct impact (Komissia o gubernskikh i uyezdnnykh uchrezhdeniakh, 1890), although they likely communicated specifics about local conditions, including unrest, to central policymakers.

¹⁰Even relatively liberal voices were concerned about providing too much representation to largely illiterate and politically inexperienced peasants (Garmiza, 1957, pp. 48–49). Notably, we find no evidence in the historical record that such sentiment was directed at serfs in particular: the peasantry, which also included state and court peasants, was seen by the government as a monolithic group with similar attributes and desires (Komissia o gubernskikh i uyezdnnykh uchrezhdeniakh, 1890, p. 12).

¹¹In Nafziger (2011), almost two-thirds of the variation in the 1864 law's third-curia assembly shares remains unexplained in regressions that included 1st-curia property requirements from an earlier proposed version of the law, other land-ownership variables, numerous other controls, and provincial fixed effects.

of seats across curiae likely took knowledge of various local conditions into account.

In making these decisions, the St. Petersburg bureaucrats formulating the *zemstvo* reform had access to a wide range of expert commentary, alternative statute proposals, and information from local officials, individual nobles, and noble assemblies. The close connections between the larger peasant reform and deliberations over the *zemstvo* law gave the commission data on the distribution of serfs and nobles and rough estimates of the mean size of landholdings among different groups of property owners. In addition, it is likely that the commission and the State Council were able to access police reports on unrest in the countryside (provincial governors and most of the law-enforcement apparatus were subordinated to Valuev’s Interior Ministry)—probably with a lag, but certainly covering the period up to early 1863. These elements of the policymakers’ “information set” allowed them to consider a variety of factors, including the history of peasant unrest, in generating the general rules and deviations therefrom governing the allocation of assembly seats among the three electoral curiae.

3 Empirical strategy and data

We are interested in estimating the following model:

$$\rho_i = \theta + q_i\zeta + \mathbf{Z}_i\boldsymbol{\mu} + \epsilon_i, \quad (1)$$

where ρ_i is our measure of political liberalization: *Peasant representation* in the *zemstvo* assembly in district i , defined as percentage of seats allocated to the third (peasant) curia in the 1864 statutes. The variable q_i is the *Frequency of potential unrest* in district i , that is, the frequency with which the peasantry poses a threat to the nobility. (As the notation suggests, this variable is conceptually identical to the frequency q with which the excluded group poses a credible threat of unrest in the Acemoglu-Robinson model and our extension in the appendix.) The associated coefficient ζ is our parameter of interest: the relationship between the capacity for collective action and representation. The variable θ is a constant; \mathbf{Z}_i is a vector of district-level covariates (described below), with parameter vector $\boldsymbol{\mu}$; and ϵ_i is an idiosyncratic error term.

The empirical challenge in estimating Equation 1 is that we do not observe the frequency q_i with which the peasantry in district i poses a threat of unrest to the nobility, but rather the actual *Frequency of unrest* in district i ,

$$\tilde{q}_i = q_i + \eta_i, \quad (2)$$

where η_i is measurement error idiosyncratic to district i . Our measure of \tilde{q}_i uses event-level data from Finkel, Gehlbach, and Olsen (2015), who code a Soviet-era chronicle of peasant disturbances compiled during the Khrushchev Thaw (Okun’ 1962, Okun’ and Sivkov 1963, Ivanov 1964, Zaionchkovskii and Paina 1968). In particular, we define \tilde{q}_i as the proportion of years between 1851 and 1863, inclusive, for which Finkel, Gehlbach, and Olsen record any disturbances:

$$\tilde{q}_i = \frac{1}{T} \sum_{t=1}^T d_{it},$$

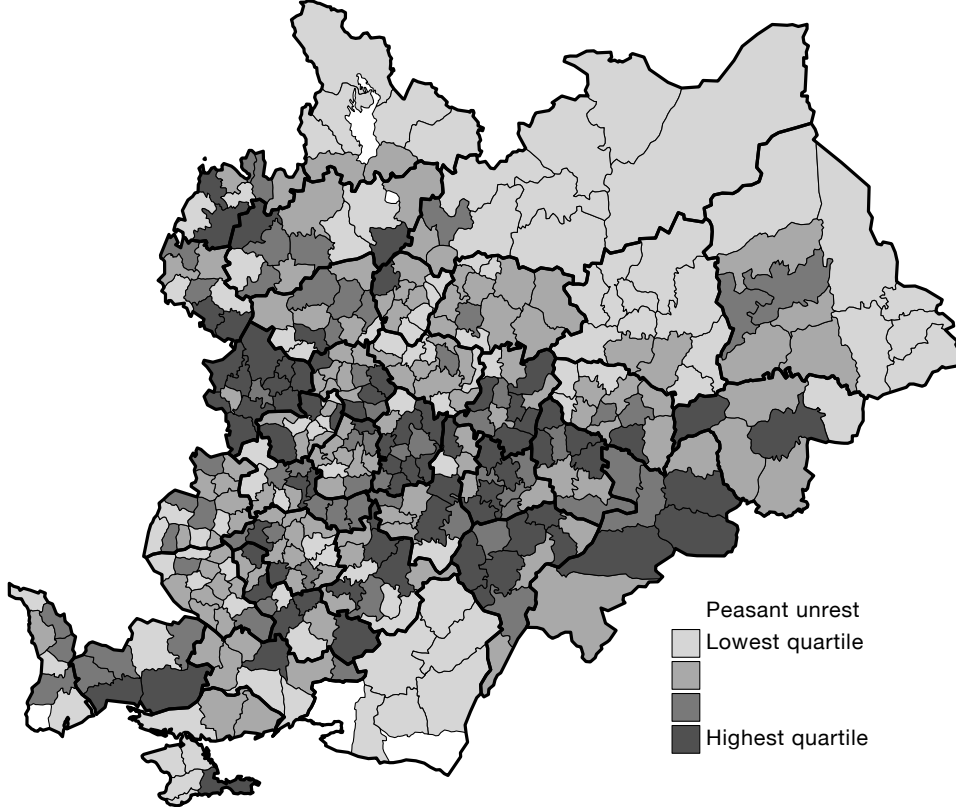


Figure 4: Frequency of peasant unrest, 1851–1863. Dark lines indicate provincial boundaries.

where d_{it} is an indicator that takes a value of 1 if there are any disturbances in district i in year t . Figure 4 maps variation across districts in the frequency of unrest; Table 1 provides summary statistics for this and other variables.

We assume that previous unrest is informative of potential unrest at the time of reform, either because of persistence in underlying conditions or because unrest itself creates capacity for collective action through the acquisition of skills and repertoires (see references above). Nonetheless, at least three considerations imply that $\tilde{q}_i \neq q_i$. First, and most obviously, the chronicles on which the event data are based almost certainly underreport actual disturbances. At the same time, some reported disturbances may pose little real threat to the nobility. The empirical frequency of unrest \tilde{q}_i may therefore be either an underestimate or overestimate of q_i .

Second, the number of years T over which disturbances are aggregated may be either too small or too large. In principle, if q_i is stationary, then \tilde{q}_i will be a better estimate of q_i when T is large, that is, when the time series is long. In practice, observations of unrest closer to the period in which representation is chosen are likely to be more informative (or salient) to policymakers, given that the threat of unrest may change over time. Our choice of $T = 13$, which corresponds to the period from 1851 (the first year examined by Finkel, Gehlbach, and Olsen, 2015) to 1863 (the year before reform), represents a plausible middle ground between these two considerations.

Table 1: Summary statistics

	Obs	Mean	SD	Min	Max
Peasant representation	365	41.150	6.921	15.000	69.048
Frequency of unrest	365	0.296	0.162	0.000	0.846
Frequency of unrest (large events)	365	0.128	0.095	0.000	0.385
Frequency of unrest (TsGAOR)	365	0.121	0.096	0.000	0.385
Frequency of unrest (1851–1860)	365	0.221	0.159	0.000	0.900
Serfdom	365	0.389	0.240	0.000	0.852
Religious polarization	361	0.183	0.249	0.001	0.986
Distance from Moscow	365	0.559	0.312	0.000	1.561
Fertile soil	365	0.499	0.388	0.000	1.000
Urban population (log)	365	8.654	1.401	0.000	13.198
Total population (log)	365	11.650	0.463	9.489	13.305
Provincial capital	365	0.096	0.295	0.000	1.000
Rural schools, 1860 (log)	365	1.224	0.859	0.000	4.205
Orthodox	361	0.930	0.135	0.137	1.000
Change in rural schools, 1860 to 1880 (per capita)	489	0.269	0.187	0.049	1.858
Redistribution ($\alpha = 0.10$)	488	3.145	2.785	0.493	37.144
Redistribution ($\alpha = 0.25$)	488	1.228	1.044	0.197	13.620
Redistribution ($\alpha = 0.50$)	488	0.589	0.467	0.099	5.799

Note: Sources in text.

Third, before establishment of the *zemstva*, landowners may have responded to the threat of unrest by providing local concessions, thus dampening actual disturbances d_{it} . In practice, the incentives for decentralized reform of this sort were limited, given that the local nobility did not fully internalize the cost of unrest, largely because the central state bore the cost of calling out military detachments. Nonetheless, to the extent that any such tendency was greater in regions with a higher baseline threat of unrest, then the variable q_i will be correlated with the measurement error η_i .

As this discussion illustrates, both classical and (potentially) nonclassical measurement error complicate estimation of Equation 1. To address this issue, as well as concerns about simultaneity or omitted-variable bias, we use instrumental variables. We draw upon the historiography of Imperial Russia to select instruments that not only meet the usual criteria (strength and excludability) but also drive variation in unrest in a way that was likely understood by the bureaucrats who set the statutory allocations for *zemstvo* assemblies—an additional consideration that lends support to a causal interpretation of our results.

Our first instrument for \tilde{q}_i is the historical incidence of *Serfdom*, which we define as the proportion of serfs in the district population in 1858 using data from Troinitskii (1861) and Bushen (1863).¹² As discussed above and documented in Finkel, Gehlbach, and Olsen

¹²Troinitskii (1861) provides the number of serfs according to a last tax census taken before Emancipation. We employ Bushen’s (1863) population figures, which are administrative tallies rather than census totals,

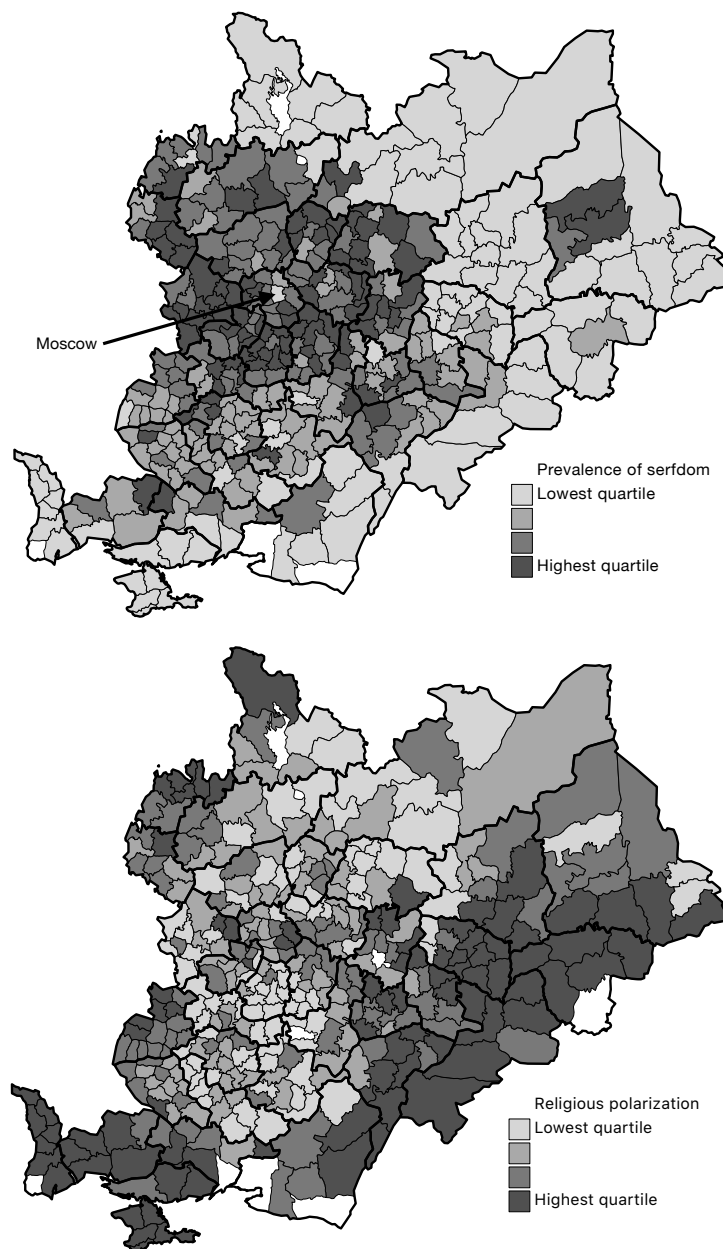


Figure 5: Historical prevalence of serfdom and religious polarization. Dark lines indicate provincial boundaries. The first map illustrates the legacy of territorial expansion of the Muscovite state.

(2015), serfdom was associated with greater incidence of unrest throughout the 1850s and early 1860s, a relationship that seems to have been foremost in the minds of the bureaucrats who set the statutory allocations of seats in district *zemstvo* assemblies.

Geographic variation in serfdom was substantially determined by a district's distance from Moscow (and thus from St. Petersburg, the subsequent imperial capital; see Figure

because aggregates are not available from the tax census at the district level.

5)—the legacy of territorial expansion of the Muscovite state, as military service was rewarded by grants of land to the nobility—and by the suitability of land for agricultural production (Buggle and Nafziger, 2016), each of which might have independently affected peasant representation. To partial out these effects, we condition on *Distance from Moscow* and a measure of *Fertile soil* constructed from GIS-coded data on soil type from the Food and Agriculture Organization (FAO).¹³ We also control for a variety of other district characteristics that are plausibly correlated with both the instrument and peasant representation. As discussed above, representation in the various curiae was determined in part by the property holdings—in the countryside, highly correlated with number of peasants—of urban and rural landholders. Although the formulae that governed these relationships were themselves the outcome of political contestation, we include the logs of *Urban population* and *Total population* (and thus, implicitly, urbanization),¹⁴ from Bushen (1863), to partial out the effect of unrest on representation. Finally, we condition on whether the district hosts a *Provincial capital*, as such cities were more likely to have their own quasi-representative legislative assemblies, perhaps limiting the need for representation of the masses.

After conditioning on these covariates, we are left with that portion of serfdom largely determined by idiosyncratic variation in land grants to the nobility decades or centuries before the *zemstvo* reform of 1864. Our identifying assumption is that such variation is uncorrelated with the error term ϵ_i in Equation 1 and the measurement error η_i in Equation 2. With respect to the latter part of this assumption, below we report results in which we systematically exclude classes of events that, in principle, could have entered the archives with greater or lesser frequency in districts where serfdom was predominant.

As a second instrument for the frequency of unrest, we employ a measure of *Religious polarization*, defined for district i as

$$4 \sum_{r \in R} \pi_{ri}^2 (1 - \pi_{ri}),$$

where r indexes religious affiliations and the set R includes Orthodox, Schismatic (Old Believer), Armenian Gregorian (Armenian Apostolic), Catholic, Protestant, Jewish, Muslim, and Idolator—the eight categories defined in population data published shortly after the *zemstvo* reform (Tsentral’nyi statisticheskii komitet, 1870).¹⁵ A substantial literature ties ethnic and religious polarization to conflict (e.g., Esteban and Ray, 1994, 2008; Montalvo and Reynal-Querol, 2003, 2005; Mitra and Ray, 2014).¹⁶ In our empirical setting, as discussed above, unrest was provoked not only by cultural difference but by the inability of religious authorities to maintain social order as part of the state apparatus in areas with sizable religious minorities. As Figure 5 illustrates, the potential for conflict was generally most

¹³Although the FAO data are from 1990, soil type—as opposed to soil quality, which can be affected by land use—evolves in geologic time, implying essentially no change between the nineteenth and twentieth centuries. Based on a classification by Brady and Weil (2002), we define fertile soil as any of the following types observed in our data: Chernozem, Greyzem, Histosol, Kastanozem, Phaeozem, or Vertisol.

¹⁴Recall that $\alpha \ln a + \beta \ln b = \alpha \ln \frac{a}{b} + (\alpha + \beta) \ln b$. Here, a = urban population and b = total population.

¹⁵The terms of Russian emancipation greatly limited geographic mobility, implying that there would have been little change in the religious composition of local populations between 1864 and 1870.

¹⁶In contrast, Fearon and Laitin (2003) find little relationship between religious *fractionalization* and conflict in cross-country data. In practice, polarization and fractionalization are highly correlated when there are at most two sizable groups, as is true for most districts in our sample.

pronounced in outlying regions, where non-Orthodox religious groups were concentrated—a pattern that was well understood by imperial authorities.

As with serfdom, the excludability of religious polarization relies on controlling for the various district characteristics discussed above; distance to Moscow is particularly important, given the historical settlement patterns of various religious groups. After controlling for these covariates, the pairwise correlation between serfdom and religious polarization is -0.09. Thus, the two instruments pick up largely distinct variation in our measure of peasant unrest, so that the estimates from our two (sets of) instrumental-variables regressions represent different local average treatment effects.

4 Results

Before presenting our estimation results, we examine the decision to grant representative institutions to various regions in European Russia. With one exception—Ismail’skii district in Bessarabia—such selection occurred at the provincial rather than district level, for reasons discussed earlier. A Heckman-type strategy to correct for potential selection bias is therefore equivalent to a regression with provincial fixed effects (Semykina and Wooldridge, 2010), results for which we present below. Nonetheless, it is instructive to examine the district-level relationship between capacity for collective action and whether a *zemstvo* was created. Conditioning on the various covariates discussed above, we find that *zemstva* are less likely to be created in districts with more unrest—significantly so when instrumenting on serfdom or religious polarization.¹⁷

We proceed to examine the relationship between collective action and peasant representation among those districts that did receive *zemstva*. Column 1 of Table 2 presents results from a “naive” OLS regression (i.e., ignoring the sources of potential measurement error discussed above) of peasant representation in the district *zemstvo* assemblies on the observed frequency of peasant unrest from 1851 to 1863 and covariates. Consistent with a commitment theory of institutional change (and with the results reported in the previous paragraph), and inconsistent with many other theories of collective action and liberalization, we find a negative relationship between peasant unrest and the statutory allocation of district *zemstvo* assembly seats to peasant communities in 1864. The point estimate implies a decrease in peasant representation of approximately 0.69 percentage points for every one-standard-deviation increase in the frequency of peasant unrest.

¹⁷The estimated coefficient (standard error) on unrest from the three linear-probability regressions is -0.148 (0.111), -2.705 (0.579), and -4.853 (1.097), respectively.

Table 2: Peasant representation and unrest: OLS and IV (serfdom)

	(1) OLS	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) Spatial IV	(8) IV
Frequency of unrest	-4.249** (1.830)	-42.454*** (8.338)				-51.033*** (12.904)	-31.548*** (6.721)	-46.307*** (9.275)
Frequency of unrest (large events)			-63.766*** (12.284)					
Frequency of unrest (TsGAOR)				-61.130*** (11.793)				
Frequency of unrest (1851-60)					-63.257*** (17.014)			
Distance from Moscow	0.379 (1.288)	-7.212*** (2.199)	-4.326** (1.863)	-4.168** (1.731)	-10.247*** (3.558)	-4.953 (5.477)	-5.149** (2.549)	-7.252*** (2.276)
Fertile soil	1.127 (0.811)	3.974*** (1.296)	3.656*** (1.173)	2.993*** (1.099)	3.971** (1.845)	4.918* (2.678)	2.561 (1.606)	4.246*** (1.371)
Urban population (log)	-2.605*** (0.439)	-1.883*** (0.572)	-2.204*** (0.523)	-2.332*** (0.564)	-1.902*** (0.603)	-3.479*** (1.081)	-1.904*** (0.491)	-1.811*** (0.584)
Total population (log)	5.224*** (1.092)	8.208*** (1.222)	6.563*** (1.154)	6.421*** (1.122)	8.640*** (1.518)	9.157*** (2.380)	6.371*** (1.315)	9.117*** (1.401)
Provincial capital	-3.345*** (1.281)	-5.198*** (1.657)	-2.167 (1.482)	-2.678* (1.604)	-5.218** (2.086)	-2.151 (2.004)	-4.580*** (1.386)	-5.510*** (1.729)
Rural schools, 1860 (log)								-1.229** (0.608)
First-stage F -stat		51.018	63.199	59.039	18.422	25.726		45.199
Spatial-disturbance parameter (ρ)							0.033 (0.009)	

Notes: The dependent variable is percentage of seats statutorily allocated to peasant communities in the district *zemstvo* assembly. The pre-reform proportion of serfs in the district population is used as an instrument in the models in Columns 2-8. The model in Column 6 includes provincial fixed effects. Column 7 is an IV model with spatial autoregressive disturbances, implemented using `spivreg` in Stata, that uses an inverse-distance spatial weighting matrix. The sample in all regressions is 365 districts in European Russia. Heteroskedasticity-robust standard errors for all specifications (including Column 7) in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

We now turn to our instrumental-variables results. In Column 2, we instrument frequency of unrest with the prevalence of serfdom in 1858. The estimated effect of unrest is substantially larger than that in Column 1, which is consistent with attenuation bias resulting from measurement error and also potentially related to the fact that the IV estimates represent *local* average treatment effects.¹⁸ The first-stage F -stat is quite large, reflecting the strong correlation between the instrument and the potentially endogenous variable: a one-standard-deviation increase in the historical incidence of serfdom is associated with a very precisely estimated 0.4-standard-deviation increase in unrest frequency.

The historical experience of a few informative cases helps to illustrate our argument. (We present a logic for selection of these cases in the appendix.) In the Solikamskii district of Perm’ province, where most peasants were concentrated on a small number of large estates, the authorities went out of their way to ensure the nobility’s domination in the *zemstvo*, to the point of granting the land-owning gentry more seats than there were eligible nobles in the district (Larionova 2013). On the other hand, in the Iadrinskii and Koz’modem’ianskii districts of Kazan’ province (contemporary Chuvashia), where the number of eligible nobles was similarly small, the authorities allowed the peasants to dominate the local *zemstvo*. The difference in outcomes is plausibly driven by different histories of peasant unrest. Solikamskii and neighboring Permskii district had a history of large-scale peasant mobilization—conditioning on covariates, these are the most turbulent districts in our sample. In contrast, authorities in Chuvashia did not perceive peasant unrest as a threat, viewing the few disturbances that did take place as a result of “misunderstandings . . . [and] not political resistance” (Ialtaev 2012, 44).

Returning to our statistical estimates, error in measuring the underlying frequency of potential unrest may be driven in part by the inclusion of less consequential disturbances in the unrest data. To check for this possibility, we recalculate the frequency of unrest using only events that span multiple villages or districts.¹⁹ Column 3 reports results from this exercise, which in standardized terms are similar to those from the baseline IV model in Column 2 (a one-standard-deviation increase in unrest is associated with a 6.9-percentage-point decrease in peasant representation in Column 2, versus 6.1 percentage points in Column 3).

As discussed above, a key identifying assumption is that measurement error in the unrest variable is uncorrelated with the instrument, after conditioning on covariates. This assumption would be violated if the presence of “peace arbitrators” assigned to facilitate post-Emancipation settlements between landowners and former serfs (Easley 2008) resulted in more reporting of unrest in formerly serf areas. We check for this possibility in various ways. First, as shown in Column 4, we restrict attention to events drawn from the archive TsGAOR, which primarily includes reports of the tsarist secret police and excludes reports of provincial governors, through which accounts of unrest by peace arbitrators would likely have passed.²⁰ Second, as shown in Column 5, we restrict attention to disturbances during

¹⁸The presence of covariates (with non-zero effect) and the possibility of non-classical as well as classical measurement error imply that there is no simple derivation of the degree of measurement error consistent with the difference between OLS and IV estimates; see, e.g., Pischke (2007).

¹⁹In a different context, Dafoe and Lyall (2015) and Weidmann (2016) suggest that larger events may be subject to less measurement error.

²⁰In the appendix, we report results from an even more stringent definition of unrest, in which we restrict attention to events in TsGAOR that are “large,” as defined above. We also demonstrate robustness to

the pre-Emancipation period. Our finding of a large, negative effect of unrest on peasant representation is robust to these manipulations.

The results reported above assume that there is no unobserved spatial dependence among districts. The regressions in Columns 6 and 7 relax this assumption. In Column 6, we include province fixed effects; the estimated effect on peasant representation of capacity for collective action is slightly larger than that in the baseline model of Column 2. In Column 7, in contrast, we estimate an instrumental-variables model with spatial autoregressive disturbances (implemented with the `spivreg` command in Stata) using an inverse-distance spatial weighting matrix. The point estimate of the coefficient on the frequency of unrest is somewhat smaller than when we assume spatial independence, but it is still substantively large and statistically significant. As shown in the appendix, we obtain almost identical results if we instead employ a contiguity matrix that assigns a value of 1 to immediate neighbors (only). Similarly, as reported in the appendix, the estimated effect of unrest is almost identical to that in Column 2 when we condition on latitude, longitude, and their squares.

With respect to covariates, distance from Moscow is negatively correlated with peasant representation in all IV specifications, potentially reflecting fear of unrest close to the imperial center (Campante and Do 2009). The positive conditional correlation of soil fertility with representation—significant in most specifications—may represent the differential impact of (unobserved) distributions of land ownership or estate practices on the electoral property formulae. The negative estimated effect of urban population (and thus, urbanization, given the log transformation of the population variables) is consistent with the formulaic allocation of seats to the second curia. (As shown in the appendix, our results are very similar if we exclude Moscow and St. Petersburg, by far the two most urban and populous districts, from the sample.) The negative estimated coefficient on our dummy for “provincial capital” can be explained similarly.

Finally, we re-examine the excludability of serfdom as an instrument. As previously discussed, even relatively liberal administrators felt that peasant illiteracy and political inexperience necessitated overrepresentation by the nobility in *zemstvo* assemblies. To the extent that such fears were directed at former serfs, as opposed to state and court peasants, this would suggest an impact of serfdom on representation other than through unrest. Although there is no evidence of such sentiment in the historical record of which we are aware, we can proxy for (potentially observable) skills useful for governance with the number of *Rural schools* circa 1860.²¹ There were indeed fewer rural schools per capita in districts where serfdom was prevalent, but as shown in Column 8, the estimated effect of unrest on representation is very similar when conditioning on the (log of) rural schools (+1). We explore the relationship between capacity for collective action and subsequent spending on rural education further below.²²

estimating the effect of the “intensity” rather than frequency of unrest, that is, the total number of events (per-capita) from 1851 to 1863.

²¹The data source on which we draw (Fal’bork and Chanoluskii, eds., 1900–1905) was published much later, but the data were likely available at the time of reform within the Ministry of Internal Affairs or the Ministry of Popular Enlightenment. Observe that most rural school construction, although realized after local institutions of serfdom were established, would have predated or occurred simultaneously with the unrest that we measure from 1851 to 1863.

²²The exclusion restriction could also be violated if the tendency of land allotments to be smaller in areas where serfdom was predominant had a direct impact on the formulae governing seat allotments. In fact, the

Table 3 presents results of regressions that employ our second instrument, religious polarization. Looking across the columns of the table, we see a consistently negative estimated effect of frequency of unrest on peasant representation. Although the standard errors are substantially larger than for the corresponding regression in Table 2, reflecting the generally weaker correlation between unrest and religious polarization (as reflected in first-stage F -statistics, especially for the specification with provincial fixed effects), the estimated magnitude is typically similar to that when serfdom is instead used as an instrument.²³

As reported in the appendix, the results in Table 3 are robust to the numerous changes in sample and specification discussed above with respect to Table 2. We undertake an additional check that relates to the excludability of religious polarization as an instrument. In principle, the religious (and thus ethnic) composition of the local population could affect representation in the district *zemstvo* assemblies directly—for example, if there were a greater willingness to grant peasant representation when the local population was predominantly Orthodox. (Although there is evidence that the state worked equally with all religious groups [Crews 2003], Orthodoxy was one of the three elements of the “official nationality” promulgated under Alexander II’s father, Tsar Nicholas I—the other two being autocracy and nationality [*narodnost*’]; see, e.g., Riasanovsky, 1959, p. 78.) If this were the case, such an effect would run through the *share* of the local population that was Orthodox, which is related to but distinct from our measure of religious polarization.²⁴ In Column 7 of Table 3, we include the share of the local population that is Orthodox.²⁵ Although the high correlation between this variable and religious polarization ($r = -0.87$) results in a substantial loss of instrument strength, the point estimate on frequency of unrest is qualitatively similar to (in fact, larger than) that in the baseline model.

correlation between serfdom and the size of land allotments is substantially driven by variables on which we condition. Nonetheless, we can check for this possibility by conditioning on the Emancipation land norms, which reflect regional variation in land allotments as perceived by contemporary policymakers prior to the *zemstvo* reform. The appendix shows that the estimated effect of unrest on peasant representation is robust to conditioning on the “high” allotment norm—the maximum amount of land per adult male to which the peasants were entitled as part of the Emancipation reform; results are very similar if we instead use the “low” allotment norm—the bare minimum that landowners were required to transfer to former serfs.

²³As a reflection of this similarity, we cannot reject the joint null hypothesis that serfdom and religious polarization are valid when the two instruments are used simultaneously. For our baseline specification (with two instruments), the Hansen J -statistic is 0.160 ($p = 0.689$).

²⁴Recall that for two groups, polarization takes the maximum value when the groups are the same size and declines symmetrically as one group or the other becomes larger.

²⁵Results are similar if we include the share of the largest non-Orthodox group.

Table 3: Peasant representation and unrest: IV (religious polarization)

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) Spatial IV	(7) IV
Frequency of unrest	-32.770* (17.183)				-62.959 (44.527)	-21.244 (13.516)	-48.475 (34.513)
Frequency of unrest (large events)		-62.904* (35.642)					
Frequency of unrest (TsGAOR)			-66.968* (38.696)				
Frequency of unrest (1861-63)				-50.424 (31.841)			
Distance from Moscow	-5.401 (3.697)	-4.474 (3.514)	-4.752 (3.714)	-7.991 (5.990)	-8.061 (12.221)	-3.053 (3.546)	-9.389 (8.226)
Fertile soil	3.101* (1.783)	3.422* (2.011)	3.032 (1.857)	3.140 (2.252)	5.344 (3.713)	1.413 (2.147)	4.289 (3.021)
Urban population (log)	-2.086*** (0.549)	-2.234*** (0.530)	-2.317*** (0.575)	-2.090*** (0.601)	-3.661** (1.440)	-2.092*** (0.452)	-1.802** (0.789)
Total population (log)	7.597*** (1.759)	6.694*** (1.524)	6.744*** (1.560)	8.024*** (2.203)	10.490** (4.491)	5.794*** (1.711)	8.926*** (2.905)
Provincial capital	-4.689*** (1.626)	-2.115 (1.599)	-2.618 (1.706)	-4.722** (1.942)	-2.103 (2.455)	-4.101*** (1.373)	-5.529** (2.341)
Orthodox							-4.091 (7.165)
First-stage F -stat	14.083	6.934	5.789	5.688	2.688		6.574
Spatial-disturbance parameter (ρ)						0.035 (0.011)	

Notes: The dependent variable is percentage of seats statutorily allocated to peasant communities in the district *zemstvo* assembly. Religious polarization is used as an instrument in all models. The model in Column 5 includes provincial fixed effects. Column 6 is an IV model with spatial autoregressive disturbances, implemented using **spivreg** in Stata, that uses an inverse-distance spatial weighting matrix. The sample in all regressions is 361 districts in European Russia. Heteroskedasticity-robust standard errors for all specifications (including Column 6) in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

5 Unrest and redistribution

The finding that peasant representation in district *zemstvo* assemblies is negatively associated with capacity for collective action among the peasantry is consistent with the Acemoglu-Robinson model of political transitions and inconsistent with numerous other models. Yet our results could also be consistent with unmodeled rationales for not providing representation to groups with capacity for collective action. To examine this possibility, we explore a previously unrecognized implication of the commitment mechanism in the Acemoglu-Robinson model that does not obviously follow from other theories.

Holding representation constant, we expect more redistribution to excluded groups that have greater capacity for collective action—this is the logic of buying off those who threaten rebellion. At the same time, less representation is provided to groups that have greater capacity for collective action, thus reducing their ability to bargain for redistribution. Conditional on some representation having been granted, these two effects offset each other—precisely so, if we assume no deadweight loss from taxation. In contrast, when no representation has been granted, only the first effect operates. If representation serves as a commitment device, we should therefore observe a stronger, more positive relationship between redistribution and capacity for collective action when *no* representation has been granted. We formalize this intuition in the appendix, using the extension to the Acemoglu-Robinson model discussed above.

To test this prediction, we examine the relationship between capacity for collective action and redistribution in districts with and without *zemstva*. In doing so, we exploit data on the number of rural schools created during the 1860s and 1870s (see below), following the *zemstvo* reform. This variable captures accumulated local education spending by various authorities over an extended period of time, during years when peasant unrest was a greater or lesser threat. This is more suitable for a test of the commitment mechanism than would be expenditures (which are not available for most years) at a particular point in time.

Spending on rural schools in late Imperial Russia was clearly redistributive (Nafziger, 2012). Nonetheless, there were other major categories of redistributive spending during this period—especially healthcare—which complicates our ability to infer redistribution from one of its components. In particular, the incentive to spend on education versus other priorities likely depended on the outstanding need for such spending—less incentive to build schools where they existed prior to reform, more where alternative needs were already satisfied.

To address this issue, consider the following simple model. Assume that the total budget available for spending on redistributive goods is x . We are interested in inferring x from observed data on education spending s and the initial stock of school spending \bar{s} . (In our empirical exercise, s , \bar{s} , and thus x are denominated in rural schools per capita.) Any portion of x not devoted to s is devoted to an alternative use (e.g., healthcare), where the unobserved initial stock of spending on that use is u . We assume that the division of x into education and other spending is governed by a social-welfare function that takes the Cobb-Douglas form:

$$(s + \bar{s})^\alpha (x - s + u)^{1-\alpha},$$

where α is the preference weight placed on education versus other uses. Subjecting this function to a log transformation and maximizing the resulting expression with respect to s

gives the first-order condition

$$\frac{\alpha}{s^* + \bar{s}} - \frac{1 - \alpha}{x - s^* + u} = 0,$$

where s^* is the optimal level of education spending. We can use this expression to back out x as

$$x = \left(\frac{1 - \alpha}{\alpha} \right) (s^* + \bar{s}) + s^* - u. \quad (3)$$

Total spending on redistributive goods is thus a function of observed post-reform education spending s^* and the initial stock of education spending \bar{s} , an unobserved preference parameter α , and an idiosyncratic component u .

To operationalize this expression, we define \bar{s} as the number of rural schools in 1860, the first year prior to the *zemstvo* reform for which this variable is available (compiled from information reported in Fal'bork and Charnoluskii, eds. [1900-1905]), and s^* as the change in number of rural schools from 1860 to 1880, using the previous variable and a count of the number of rural schools in 1880 (Tsentrāl'nyi statisticheskii komitet, 1884).²⁶ We normalize both variables by the size of the rural population in 1883 (in 1000s), the closest available year to 1880.²⁷ As we do not observe α , we check the robustness of our results to a range of assumptions about the value of this parameter. Realized education spending comprised 16 percent of all *zemstvo* expenditures in 1883, and approximately 39 percent of the total of education and medical expenditures. As such, we report results for $\alpha = 0.10, 0.25$, and 0.50 . (Observe that the idiosyncratic component u in Equation 3 is absorbed by the error term in any regression with x as the dependent variable.)

We thus proceed to estimate the relationship between redistribution and capacity for collective action in districts with and without *zemstva*, where as before we calculate frequency of unrest using data from 1851 to 1863. The first two columns of Table 4 employ a “naive” proxy for redistribution: change in the number of rural schools from 1860 to 1880, normalized by rural population in 1883. In the second column, we instrument frequency of unrest and its interaction with non-*zemstvo* status with our measure of serfdom and its interaction with the same dummy variable.²⁸ As discussed above, the commitment mechanism central to the Acemoglu-Robinson model suggests a stronger, more positive effect of capacity for collective action on redistribution in non-*zemstvo* regions. Estimating the relationship between these variables by both ordinary and two-stage least squares, we find precisely the opposite relationship.

The next three columns of Table 4 present results for a specification analogous to that in Column 2 but with redistribution defined using our Cobb-Douglas approach. Regardless of the assumed value of α , capacity for collective action is more negatively associated with redistribution in non-*zemstvo* regions: precisely the opposite of what we would expect if representation were chosen optimally as a commitment device. Finally, although the first stage is weaker and second-stage estimates correspondingly less precise, we obtain similar

²⁶For additional information on these data sources, see Nafziger (2012).

²⁷These population figures are reported in Tsentrāl'nyi statisticheskii komitet (1886). Note that our regressions control for the initial (1860) population.

²⁸That is, we do not run the “forbidden” regression in which instrumented unrest is interacted with non-*zemstvo* status.

qualitative results when using religious polarization and its interaction with the non-*zemstvo* indicator as instruments.

As shown in the appendix, these results are robust to excluding all districts in Orenburg, Astrakhan, and Arkhangel'sk, plus Ismail'skii district in Bessarabia, thus leaving the contiguous districts in right-bank Ukraine, Belorussia, and the Baltics in the non-*zemstvo* set. Our results are also similar if we split the sample rather than assume an effect of covariates that is constant across *zemstvo* and no-*zemstvo* regions.

Taken together, our findings are not explained by existing models. Consistent with the Acemoglu-Robinson model of political transitions, we find that less representation is granted when the excluded group has greater capacity for collective action. But a further implication of that model—that we should find a stronger, more positive effect of capacity for collective action on redistribution in districts where no representation is granted—finds no support. We are left to infer the presence of some theoretical mechanism not reflected in existing models of liberalization and regime change.

Table 4: Unrest and redistribution

	(1) OLS	(2) IV	(3) IV ($\alpha = 0.10$)	(4) IV ($\alpha = 0.25$)	(5) IV ($\alpha = 0.50$)	(6) IV ($\alpha = 0.10$)	(7) IV ($\alpha = 0.25$)	(8) IV ($\alpha = 0.50$)
Frequency of unrest	-0.040 (0.052)	-0.213 (0.174)	-4.911** (2.322)	-1.779** (0.882)	-0.735* (0.404)	7.769 (5.472)	2.947 (2.114)	1.340 (0.999)
Frequency of unrest × No zemstvo	-0.472*** (0.151)	-0.708** (0.356)	-18.484*** (6.219)	-6.634*** (2.289)	-2.683*** (0.986)	-10.693 (15.595)	-3.884 (5.740)	-1.615 (2.465)
No zemstvo	0.199*** (0.056)	0.265** (0.105)	6.250*** (1.838)	2.260*** (0.676)	0.930*** (0.291)	3.742 (4.125)	1.367 (1.517)	0.575 (0.650)
Distance from Moscow	-0.002 (0.031)	-0.049 (0.045)	-1.108* (0.657)	-0.402 (0.246)	-0.166 (0.110)	1.911* (1.024)	0.719* (0.399)	0.321* (0.191)
Fertile soil	-0.021 (0.022)	-0.016 (0.024)	-0.329 (0.355)	-0.120 (0.133)	-0.051 (0.059)	-0.762 (0.553)	-0.285 (0.213)	-0.126 (0.100)
Urban population (log)	0.011** (0.005)	0.015*** (0.005)	0.216*** (0.070)	0.082*** (0.026)	0.037*** (0.012)	-0.034 (0.108)	-0.011 (0.041)	-0.003 (0.019)
Total population (log)	-0.034 (0.028)	-0.007 (0.032)	0.580 (0.457)	0.188 (0.171)	0.058 (0.077)	-1.052 (0.719)	-0.412 (0.271)	-0.198 (0.122)
Provincial capital	0.041 (0.031)	0.029 (0.030)	-0.089 (0.394)	-0.011 (0.149)	0.016 (0.068)	0.760* (0.410)	0.301* (0.161)	0.149* (0.078)
Constant	0.566* (0.315)	0.299 (0.349)	-3.685 (4.986)	-1.029 (1.870)	-0.144 (0.841)	12.190 (8.017)	4.793 (3.004)	2.327* (1.339)
First-stage F -stat		26.209	26.209	26.209	26.209	6.457	6.457	6.457
Observations	489	488	488	488	488	476	476	476
of which <i>zemstvo</i>	365	365	365	365	365	361	361	361

Notes: The dependent variable in Columns 1 and 2 is change in number of rural schools from 1860 to 1880, normalized by rural population in 1883. The dependent variable in Columns 3–8 is redistribution, defined in the text for the corresponding value of α . The pre-reform proportion of serfs in the district population and its interaction with an indicator for no *zemstvo* are used as instruments in the models in Columns 2–5. Religious polarization and its interaction with an indicator for no *zemstvo* are used as instruments in the models in Columns 6–8. Frequency of unrest is calculated using data from 1851–63 (i.e., before creation of the *zemstvo*). Heteroskedasticity-robust standard errors for all specifications in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

6 Conclusions

We examine the statutory assignment of seat shares in institutions of local self-government created in Russia during the period of the Great Reforms under Tsar Alexander II. We find that political representation was less likely to be granted to peasants who posed a more persistent threat of unrest. Our instrumental-variable estimates, which correct for measurement error in the unrest data, suggest a causal interpretation: capacity for collective action induced by idiosyncratic variation in the historical prevalence of serfdom and religious polarization decreased peasant representation.

Among various theoretical models of institutional change, these results are most consistent with the Acemoglu-Robinson model of political transitions (Acemoglu and Robinson 2000, 2001, 2006), which predicts that representation is less likely to be granted when elites are otherwise able to commit to future redistribution—that is, when excluded groups pose a persistent threat of unrest. Yet our subsequent analysis of post-reform redistribution finds a relationship with unrest that is inconsistent with this commitment mechanism.

What might account for the negative effect of unrest on redistribution that we observe in our data, if not a greater ability to commit to groups that pose a more frequent threat of rebellion? One possibility is a **simple punishment** story: peasants who pose a more frequent threat of unrest are punished with less representation. This is a tempting explanation—one that at an abstract level is plausibly supported by the theory of reputations and repeated games. But it is worth emphasizing that the “punishment” imposed by imperial authorities was particularly grim—the allocation of seats did not change after 1864 until 1890, at which point peasants received *fewer* seats. Moreover, it is not obvious why imperial authorities would create institutions of self-government to begin with if they were strategically building or sustaining a reputation for toughness.

More plausible, in our view, is that Russian officials provided little representation to peasants with a history of rebellion in the interests of **demobilization**. In the typical model of regime change or liberalization, reform serves to discourage rebellion. In the Russian context, in contrast, reformers may have feared that providing representation to rebelling peasants would simply fan the flames—say, because peasants now had access to the machinery of the state.²⁹ Such fears would have been informed by recent experience, as emancipation of the serfs in 1861 led to increased unrest across the Russian countryside (Finkel, Gehlbach, and Olsen 2015). Consistent with this perspective, Starr (1972) writes that Russian Interior Minister Petr Valuev reacted to unrest in the early 1860s by seeking “to bar ‘communists and men of low morality’ from the *zemstvos*” (p. 247).

Finally, and not mutually inconsistently, the allocation of seats may have been driven by concerns about **moral hazard**. Much of the cost of putting down rebellion in the Russian countryside was borne not by landowners but by the central state. Providing more representation to local elites in districts with a history of unrest may have been a way of incentivizing those elites to keep rebellion under control.

Fully exploring these alternative theoretical mechanisms—their internal consistency and their application to other empirical contexts—is a task for future research.

²⁹Formally, we can think of the probability that the out-group overcomes its collective-action problem in period $t + 1$ as an increasing function of the share of the pie they receive in period t .

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Appendix A: A generalization of the Acemoglu-Robinson model

In this section, we present a simple adaptation of the Acemoglu-Robinson model of political transitions that allows for a continuous institutional choice by the elite, as in the empirical setting that we study. As we show, the key empirical implication of the model is qualitatively similar to that of the Acemoglu-Robinson model: the elite liberalizes less when the excluded group more frequently poses a threat of unrest.

Environment

The model is a Markov game in which in each period the political regime is either unliberalized (U) or liberalized (L). There is an elite (E) and an initially excluded majority (M), which we treat as unitary actors. In an unliberalized regime, the elite has full control rights over policy. In a liberalized regime, control rights are divided between the elite and majority according to a process described below.

At issue is the distribution of income between the elite and majority. For reasons of parsimony, we abstract from the initial distribution of income, focusing instead on a simple divide-the-pie environment (as in Gehlbach 2013, Section 8.4.1). In particular, in any period t , whoever has control rights over policy names a division x_t of an infinitely divisible resource of size one, where x_t is the portion of the resource received by the majority; the remainder $1 - x_t$ is received by the elite. We assume that the majority and elite receive payoffs from this distribution equal to x_t and $1 - x_t$, respectively. In what follows, we suppress the subscript t for notational simplicity.

Regardless of whether the political regime is liberalized, in any period the majority decides whether to revolt after observing the policy choice x . The payoff from revolution is given by the random variable $\mu \in \{\kappa, 1\}$, which is realized prior to choice of policy x and observed by both elite and majority. We assume $\kappa \in (0, 1)$, with $\Pr(\mu = \kappa) = q$. If the majority revolts, the state immediately transitions to the absorbing state (R, μ) . In this state, in any period the majority receives payoff $1 - \mu$, whereas the elite receives payoff 0. Thus, revolution is attractive to the majority only if $\mu = \kappa$.

Up to this point, the game is essentially identical to the basic Acemoglu-Robinson model but for the stylization of the economic environment. In a departure from the Acemoglu-Robinson framework, we assume that the elite can liberalize by adopting any level of majority representation $\rho \in (0, 1)$. The variable ρ determines who has control rights over policy in a liberalized regime. In particular, in any period, after realization of μ , the random variable $\alpha \in (e, m)$ is realized, where $\Pr(\alpha = m) = \rho$. If $\alpha = e$, the elite chooses policy in the current period, whereas if $\alpha = m$ the majority does.

To summarize, the state space in a liberalized regime is

$$\{(L, \kappa, m), (L, \kappa, e), (L, 1, m), (L, 1, e)\},$$

whereas that in an unliberalized regime is $\{(U, \kappa), (U, 1)\}$. In a liberalized regime, following realization of the random variables μ and α , whoever has control rights over policy (elite or majority, depending on α) names a distribution x , following which the majority decides whether to revolt. In an unliberalized regime, following realization of the random variable μ , the elite decides to liberalize or not. If the elite chooses not to liberalize, it subsequently names a distribution x , following which the majority decides whether to revolt. In contrast,

if the elite chooses to liberalize, the random variable α is realized, following which the game proceeds as in any period in which the regime is liberalized. In particular, the value of the random variable μ “inherited” from the unliberalized regime persists until the start of the next period.

Players discount payoffs by the common discount factor δ .

Equilibrium

We solve for a Markov-perfect equilibrium, where players’ strategies are conditioned only on the current state. We begin by analyzing behavior in the unliberalized regime, given that the elite chooses not to liberalize. Writing down the Bellman equation for the majority for each of the two possible states gives

$$\begin{aligned} V_M(U, \kappa) &= \hat{x} + \delta [qV_M(U, \kappa) + (1 - q)V_M(U, 1)] \\ V_M(U, 1) &= 0 + \delta [qV_M(U, \kappa) + (1 - q)V_M(U, 1)], \end{aligned}$$

where \hat{x} is the division x named by the elite whenever the state is (U, κ) . The second equation exploits the assumption that revolution is unattractive when $\mu = 1$. Solving for the value to the majority when the state is (U, κ) gives

$$V_M(U, \kappa) = \hat{x} \left(\frac{1 - \delta(1 - q)}{1 - \delta} \right).$$

The elite are able to prevent revolution without liberalization when the value to the poor from revolting is less than that from not revolting when the state is (U, κ) , given that the elite provide the maximum possible division $\hat{x} = 1$ in that state:

$$\frac{1 - \kappa}{1 - \delta} \leq 1 \left(\frac{1 - \delta(1 - q)}{1 - \delta} \right).$$

Simplifying gives $\kappa \geq \delta(1 - q)$.

When $\kappa < \delta(1 - q)$, the elite must liberalize to avoid revolution. To solve for the optimal representation for the majority ρ from the perspective of the elite, we must first derive the value to the majority in the states (L, κ, e) and (L, κ, m) , which are the two states in a liberalized regime in which the majority might be tempted to revolt. (In particular, the state will transition to one of these two states immediately following liberalization.) We begin by writing down the Bellman equation for the majority in each of the four possible states in a liberalized regime:

$$\begin{aligned} V_M(L, \kappa, m) &= 1 + \delta V \\ V_M(L, \kappa, e) &= \tilde{x} + \delta V \\ V_M(L, 1, m) &= 1 + \delta V \\ V_M(L, 1, e) &= 0 + \delta V \end{aligned}$$

where \tilde{x} is the transfer chosen by the elite when it has control rights over policy and the majority poses a credible threat of unrest, and V is the continuation value common to the four states:

$$V = q\rho V_M(L, \kappa, m) + q(1 - \rho)V_M(L, \kappa, e) + (1 - q)\rho V_M(L, 1, m) + (1 - q)(1 - \rho)V_M(L, 1, e).$$

Solving for $V_M(L, m, \kappa)$ from this system of equations gives

$$V_M(L, m, \kappa) = 1 + \frac{\delta}{1 - \delta} [\rho + (1 - \rho) q \tilde{x}].$$

Intuitively, the majority receives the entire resource in the current period and in any future period in which it has control rights over policy, whereas the majority receives \tilde{x} in any future period in which $\alpha = e$ and $\mu = \kappa$. Similarly,

$$V_M(L, e, \kappa) = \tilde{x} + \frac{\delta}{1 - \delta} [\rho + (1 - \rho) q \tilde{x}].$$

Using the latter equation, we can solve for the optimal division \tilde{x} from the perspective of the elite that leaves the majority no worse off than revolting, given representation ρ :

$$\tilde{x} + \frac{\delta}{1 - \delta} [\rho + (1 - \rho) q \tilde{x}] \geq \frac{1 - \kappa}{1 - \delta}, \quad (\text{A1})$$

which implies

$$\tilde{x}(\rho) = \max \left[\frac{1 - \kappa - \delta \rho}{1 - \delta + \delta q (1 - \rho)}, 0 \right] \quad (\text{A2})$$

for $\rho \geq \frac{\delta(1-q)-\kappa}{\delta(1-q)}$. When $\rho = \frac{\delta(1-q)-\kappa}{\delta(1-q)}$, $\tilde{x} = 1$, so that the majority receives the entire resource whenever $\mu = \kappa$. In contrast, when $\rho > \frac{\delta(1-q)-\kappa}{\delta(1-q)}$, the majority receives a smaller share of the pie when the elite has control rights over policy and $\mu = k$ than it does when the majority has control rights over policy. Observe that if $\rho < \frac{\delta(1-q)-\kappa}{\delta(1-q)}$, Condition A1 cannot be satisfied.

In choosing the optimal level of liberalization, the elite thus face a tradeoff: higher representation implies that the elite makes smaller concessions when they choose policy in a liberalized regime, at the cost of being in that position less often. The following lemma establishes that the latter consideration always trumps the former, that is, that the elite optimally chooses the minimum representation that ensures that the majority does not revolt in a liberalized regime.

Lemma 1. *Assume $\kappa < \delta(1 - q)$, so that liberalization is necessary to avoid revolution. The optimal choice of representation by the elite is*

$$\rho = \frac{\delta(1 - q) - \kappa}{\delta(1 - q)}.$$

Proof. Define $V_e(L, \kappa)$ as the value to the elite of liberalization when $\mu = \kappa$, prior to realization of the random variable α , that is, before determination of who has control rights over policy in the period of liberalization. Standard manipulation of Bellman equations gives

$$V_e(L, \kappa) = (1 - \rho)(1 - \tilde{x}(\rho)) + \frac{\delta}{1 - \delta} [q(1 - \rho)(1 - \tilde{x}(\rho)) + (1 - q)(1 - \rho) \cdot 1],$$

where $\tilde{x}(\rho)$ is given by Equation A2. The elite receives $1 - \tilde{x}(\rho)$ whenever $\mu = \kappa$ and it has control rights over policy, which happens in the current period with probability $1 - \rho$ and in future periods with probability $q(1 - \rho)$, whereas it receives the entire resource whenever

$\mu = 1$ and it has control rights over policy, which happens in future periods with probability $(1 - q)(1 - \rho)$. Simplifying gives

$$V_e(L, \kappa) = (1 - \rho) [(1 - \tilde{x}(\rho))(1 - \delta(1 - q)) + \delta(1 - q)].$$

Differentiating with respect to ρ gives

$$\frac{\partial V_e(L, \kappa)}{\partial \rho} = -[(1 - \tilde{x}(\rho))(1 - \delta(1 - q)) + \delta(1 - q)] - (1 - \rho)(1 - \delta(1 - q)) \frac{\partial \tilde{x}(\rho)}{\partial \rho}. \quad (\text{A3})$$

To establish the statement, we show that this expression is negative for all $\rho \geq \frac{\delta(1-q)-\kappa}{\delta(1-q)}$.

Consider first all $\rho \geq \frac{\delta(1-q)-\kappa}{\delta(1-q)}$ such that $\rho < \frac{1-\kappa}{\delta}$, which implies $\tilde{x}(\rho) > 0$. We show that $\frac{\partial V_e(L, \kappa)}{\partial \rho} < 0$ in two steps. First, we observe that $\frac{\partial V_e(L, \kappa)}{\partial \rho}$ is monotonically decreasing in ρ :

$$\begin{aligned} \frac{\partial^2 V_e(L, \kappa)}{\partial \rho^2} &= 2(1 - \delta(1 - q)) \frac{\partial \tilde{x}(\rho)}{\partial \rho} - (1 - \rho)(1 - \delta(1 - q)) \frac{\partial^2 \tilde{x}(\rho)}{\partial \rho^2} \\ &= -2(1 - \delta(1 - q)) \frac{\delta[(1 - \delta)(1 - q) + q\kappa]}{[1 - \delta + \delta q(1 - \rho)]^2} \\ &\quad + 2\delta q(1 - \rho)(1 - \delta(1 - q)) \frac{\delta[(1 - \delta)(1 - q) + q\kappa]}{[1 - \delta + \delta q(1 - \rho)]^3}, \end{aligned}$$

which is easily verified to be less than zero. Second, we show that Equation A3 is negative when evaluated at $\rho = \frac{\delta(1-q)-\kappa}{\delta(1-q)}$. Recalling that $\tilde{x}(\rho) = 1$ when $\rho = \frac{\delta(1-q)-\kappa}{\delta(1-q)}$, we can rewrite Equation A3 as

$$-\delta(1 - q) + \frac{\kappa}{\delta(1 - q)}(1 - \delta(1 - q)) \frac{\delta[(1 - \delta)(1 - q) + q\kappa]}{\left[1 - \delta + \delta q \left(\frac{\kappa}{\delta(1 - q)}\right)\right]^2},$$

which is less than zero if $\kappa < \delta(1 - q)$, which is a premise of the statement.

Now consider all $\rho \geq \frac{\delta(1-q)-\kappa}{\delta(1-q)}$ such that $\rho \geq \frac{1-\kappa}{\delta}$, which implies $\tilde{x}(\rho) = 0$ and thus $\frac{\partial \tilde{x}(\rho)}{\partial \rho} = 0$. Equation A3 reduces to

$$\frac{\partial V_e(L, \kappa)}{\partial \rho} = -[(1 - \delta(1 - q)) + \delta(1 - q)] = -1 < 0.$$

□

□

The following proposition is an immediate implication of the preceding discussion.

Proposition 1. *The equilibrium representation granted by the elite to the majority is*

$$\rho^* = \max \left[0, \frac{\delta(1 - q) - \kappa}{\delta(1 - q)} \right].$$

The question the model addresses is how majority representation depends on q , which is the probability in any period that the majority poses a credible threat of unrest. Evaluating ρ^* for $\kappa < \delta(1 - q)$ and differentiating by q gives

$$\frac{\partial \rho^*(\kappa < \delta(1 - q))}{\partial q} = -\frac{\delta \kappa}{[\delta(1 - q)^2]} < 0.$$

Thus, not only is liberalization of any sort less likely when the majority poses a frequent threat of unrest, as in the Acemoglu-Robinson model, but the degree of liberalization is negatively related to the same variable.

Appendix B: Equilibrium redistribution

How does equilibrium policy depend on q , which measures the frequency with which the majority poses a threat of unrest? We use the generalization of the Acemoglu-Robinson model presented in Appendix A. Let $\bar{x}(R)$ denote expected policy in regime $R \in \{L, U\}$. In a liberalized regime,

$$\bar{x}(L) = \rho(q) + q[1 - \rho(q)]\tilde{x}(\rho(q)) + (1 - q)[1 - \rho(q)] \cdot 0, \quad (\text{A4})$$

where we make explicit the dependence of ρ on q . The majority receives the entire resource when it has control rights over policy, which occurs with probability $\rho(q)$, whereas it receives $\tilde{x}(\rho(q))$ when the elite has control rights over policy but the majority poses a threat of unrest, which occurs with probability $q[1 - \rho(q)]$. As shown above, $\tilde{x}(\rho(q)) = 1$ in equilibrium, so Equation A4 reduces to

$$\bar{x}(L) = \rho(q) + q[1 - \rho(q)].$$

Plugging in for the equilibrium level of representation in a liberalized regime from Proposition 1 gives

$$\bar{x}(L) = 1 - \frac{\kappa}{\delta}.$$

In equilibrium, policy in a liberalized regime is unrelated to the frequency q with which the majority poses a threat of unrest. Intuitively, any increase in bargaining power that the majority has by virtue of its capacity for collective action is exactly offset by reduced formal representation granted by the elite.

In contrast, expected policy in an unliberalized regime is

$$\bar{x}(U) = q\hat{x}(q) + (1 - q) \cdot 0. \quad (\text{A5})$$

The majority receives a positive share of the resource only in periods in which they pose a threat of unrest; such periods occur with probability q . To derive an explicit expression for $\bar{x}(U)$, we must solve for $\hat{x}(q)$, the equilibrium transfer to the majority in an unliberalized regime, that is, when $\kappa \geq \delta(1 - q)$. This value is given by

$$\hat{x}(q) \left(\frac{1 - \delta(1 - q)}{1 - \delta} \right) = \frac{1 - \kappa}{1 - \delta},$$

which says that the elite provides the majority the transfer that leaves the majority just indifferent between revolting and not. Solving for $\hat{x}(q)$ gives

$$\hat{x}(q) = \frac{1 - \kappa}{1 - \delta(1 - q)}.$$

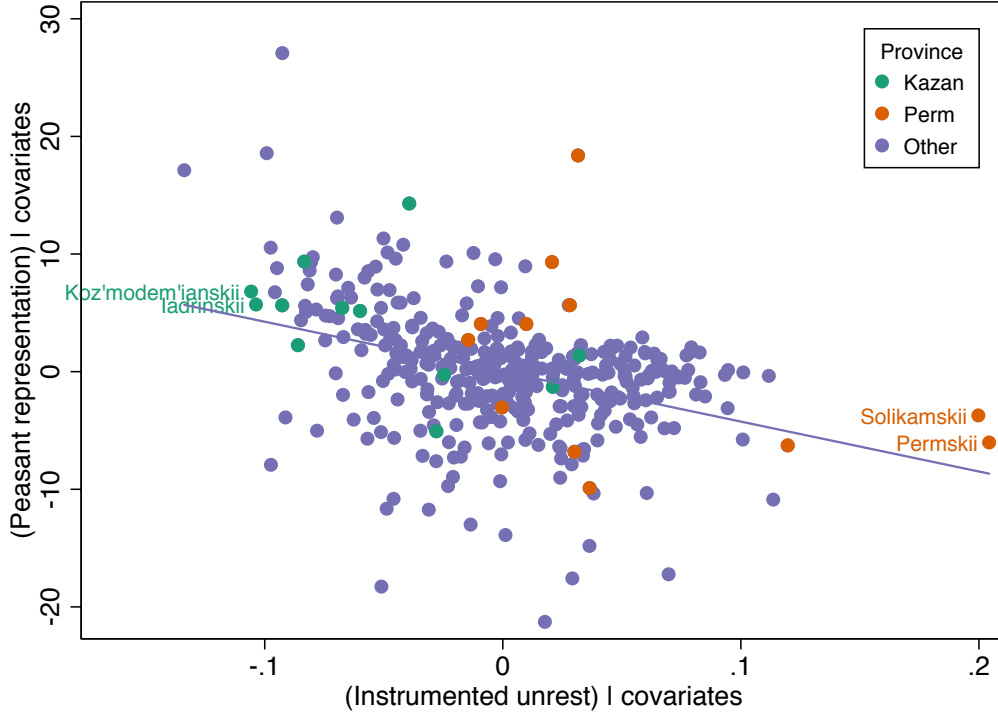


Figure A1: Cases are selected for close examination from an added-variable plot corresponding to Column 2 in Table 2. (Colorblind-safe figure.)

Substituting this expression into Equation A5 gives

$$\bar{x}(U) = \frac{q(1 - \kappa)}{1 - \delta(1 - q)},$$

which is increasing in q . Thus, in an unliberalized regime, the majority receives a larger share of the resource in expectation when it more frequently poses a threat of unrest to the elite.

Appendix C: Case selection

In the text, we discuss the historical experience of a handful of districts in our sample. Rather than cherry-picking cases for examination, we systematically select districts that satisfy various criteria. In doing so, we draw upon a recent literature that provides various recommendations for case selection following statistical analysis (e.g., Lieberman, 2005; Gerring, 2007; Seawright and Gerring, 2008; Fearon and Laitin, 2010; Dunning, 2012, ch. 7; Seawright, 2016). We follow three principles discussed in this literature. First, because we are interested in identifying causal mechanisms that drive a robust empirical relationship, we choose cases that are “on the regression line.” Second, because we want to be able to observe these mechanisms at work, we select cases that take “extreme” values on the determinant of interest—in this case, unrest. Third, we focus on variation that is not explained by covariates of limited theoretical interest.

Figure A1 illustrates our approach. Using our baseline model with *serfdom* as instrument (Column 2 in Table 2), we derive an added-variable (adjusted partial residual) plot from the second stage of our instrumental-variables regression. This plot illustrates the relationship between (instrumented) unrest and peasant representation in district *zemstvo* assemblies after partialing out the effect of covariates, thus satisfying our third criterion. We then select the two cases with lowest and highest unrest, respectively, that are not outliers in the “residual” regression. As depicted, these are Koz’modem’ianskii and Iadrinskii districts in Kazan province and Solikamskii and Permskii districts in Perm province.³⁰

In drawing on the historical record of these cases, it is important to ensure that peasant representation is not driven by idiosyncratic factors. In principle, for example, greater representation may have been provided to peasants in predominantly Muslim Kazan than in Orthodox Perm. Contra this hypothesis, the added-variable plot is nearly identical if we condition on share of the population that is Orthodox, and in any event Koz’modem’ianskii and Iadrinskii districts (located in contemporary Chuvashia) are overwhelmingly Orthodox. More generally, given that the four cases happens to fall in two provinces, it may be that there is something distinctive about Kazan and Perm. As Figure A1 illustrates, however, there is substantial variation within each province in both (residualized) unrest and peasant representation, and the within-province correlation between these two variables for Kazan ($r = -0.48$) and Perm ($r = -0.41$) is quite similar to that for the sample as a whole ($r = -0.39$).

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Appendix D: Additional tables

³⁰The only observation with a more extreme value of unrest is Moscow, in the far northwest corner of the plot. As discussed above, the negative relationship between unrest and representation is robust to dropping Moscow and St. Petersburg districts from the sample.

Table A1: Peasant representation and unrest: IV (serfdom), first-stage results

	(2)	(3)	(4)	(5)	(6)	(8)
Serfdom	0.278*** (0.039)	0.185*** (0.023)	0.193*** (0.025)	0.186*** (0.043)	0.221*** (0.044)	0.261*** (0.039)
Distance from Moscow	-0.058* (0.030)	0.007 (0.019)	0.010 (0.020)	-0.087*** (0.032)	-0.144** (0.068)	-0.055* (0.030)
Fertile soil	0.067*** (0.019)	0.039*** (0.012)	0.030** (0.012)	0.045** (0.020)	0.038 (0.040)	0.067*** (0.019)
Urban population (log)	0.019*** (0.005)	0.007*** (0.002)	0.006* (0.003)	0.012*** (0.004)	-0.011 (0.010)	0.019*** (0.005)
Total population (log)	0.086*** (0.016)	0.032*** (0.009)	0.031*** (0.010)	0.065*** (0.015)	0.099*** (0.018)	0.095*** (0.017)
Provincial capital	-0.032 (0.026)	0.026* (0.015)	0.019 (0.016)	-0.022 (0.027)	0.013 (0.031)	-0.035 (0.026)
Rural schools, 1860 (log)						-0.019** (0.009)
R-squared	0.303	0.245	0.232	0.190	0.534	0.312

Notes: Column numbers refer to the corresponding column in Table 2. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

Table A2: Peasant representation and unrest: IV (serfdom), additional results

	(1) IV	(2) IV	(3) Spatial IV	(4) IV	(5) IV	(6) IV
Frequency of unrest			-30.283*** (6.832)	-41.744*** (8.660)	-39.806*** (7.955)	-45.956*** (9.916)
Frequency of unrest (large TsGAOR only)	-117.056*** (28.728)					
Intensity of unrest		-0.138*** (0.025)				
Distance from Moscow	-3.491 (2.146)	-5.534*** (1.832)	-4.367* (2.436)	-2.664 (5.244)	-6.470*** (2.122)	-8.463*** (2.610)
Fertile soil	3.982** (1.558)	1.704 (1.038)	2.899** (1.384)	6.266*** (1.771)	4.130*** (1.256)	5.623*** (1.700)
Urban population (log)	-2.360*** (0.599)	-2.273*** (0.511)	-2.287*** (0.535)	-1.656*** (0.502)	-2.010*** (0.589)	-4.940*** (0.617)
Total population (log)	5.726*** (1.270)	2.407* (1.243)	7.271*** (1.335)	6.659*** (1.330)	7.545*** (1.184)	11.471*** (1.562)
Provincial capital	-1.849 (1.896)	-5.053*** (1.375)	-4.502*** (1.432)	-4.959*** (1.536)	-5.442*** (1.611)	-0.260 (1.724)
Emancipation land norm						0.287 (0.466)
First-stage F -stat	27.353	51.439		43.615	48.976	34.274
Spatial-disturbance parameter (ρ)			0.059 (0.014)			

Notes: The dependent variable is percentage of seats statutorily allocated to peasant communities in the district *zemstvo* assembly. The pre-reform proportion of serfs in the district population is used as an instrument in all models. Column 3 is an IV model with spatial autoregressive disturbances, implemented using `spivreg` in Stata, that uses a queen contiguity spatial weighting matrix. The model in Column 4 includes latitude, longitude, and their squares. The sample is 365 districts in European Russia in all regressions but Column 5, which excludes Moscow and St. Petersburg districts, and Column 6, which is 336 districts. Heteroskedasticity-robust standard errors for all specifications (including Column 3) in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

Table A3: Peasant representation and unrest: IV (religious polarization), first-stage results

	(1)	(2)	(3)	(4)	(5)	(7)
Religious polarization	0.120*** (0.032)	0.062*** (0.024)	0.059** (0.024)	0.078** (0.033)	0.066 (0.040)	0.131** (0.051)
Distance from Moscow	-0.243*** (0.027)	-0.112*** (0.018)	-0.109*** (0.017)	-0.209*** (0.026)	-0.266*** (0.068)	-0.242*** (0.028)
Fertile soil	0.079*** (0.021)	0.046*** (0.013)	0.038*** (0.013)	0.052** (0.021)	0.045 (0.043)	0.079*** (0.021)
Urban population (log)	0.019*** (0.005)	0.007** (0.003)	0.006* (0.003)	0.012** (0.005)	-0.016 (0.011)	0.019*** (0.006)
Total population (log)	0.071*** (0.016)	0.022** (0.009)	0.022** (0.011)	0.054*** (0.015)	0.088*** (0.020)	0.069*** (0.017)
Provincial capital	-0.052* (0.029)	0.014 (0.018)	0.005 (0.018)	-0.035 (0.029)	0.010 (0.032)	-0.052* (0.029)
Orthodox						0.025 (0.065)
R-squared	0.234	0.149	0.120	0.154	0.502	0.234

Notes: Column numbers refer to the corresponding column in Table 3. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

Table A4: Peasant representation and unrest: IV (religious polarization), additional results

	(1) IV	(2) IV	(3) Spatial IV	(4) IV	(5) IV
Frequency of unrest			-17.001* (10.177)	-35.453* (18.281)	-34.415** (17.226)
Frequency of unrest (large TsGAOR only)	-106.172 (67.619)				
Intensity of unrest		-0.104* (0.053)			
Distance from Moscow	-3.147 (3.232)	-3.998 (2.992)	-1.952 (2.846)	-2.451 (5.063)	-5.494 (3.755)
Fertile soil	3.458 (2.224)	1.344 (1.046)	1.828 (1.501)	5.923*** (1.885)	3.596** (1.776)
Urban population (log)	-2.418*** (0.573)	-2.391*** (0.468)	-2.467*** (0.452)	-1.780*** (0.496)	-2.131*** (0.578)
Total population (log)	5.825*** (1.380)	3.151** (1.375)	6.491*** (1.619)	6.482*** (1.552)	7.239*** (1.795)
Provincial capital	-1.909 (1.956)	-4.559*** (1.454)	-3.918*** (1.230)	-4.738*** (1.490)	-5.150*** (1.625)
First-stage F -stat	5.435	16.659		10.801	14.291
Spatial-disturbance parameter (ρ)			0.072 (0.017)		

Notes: The dependent variable is percentage of seats statutorily allocated to peasant communities in the district *zemstvo* assembly. Religious polarization is used as an instrument in all models. Column 3 is an IV model with spatial autoregressive disturbances, implemented using **spivreg** in Stata, that uses a queen contiguity spatial weighting matrix. The model in Column 4 includes latitude, longitude, and their squares. The sample in all regressions but Column 5, which excludes Moscow and St. Petersburg districts, is 361 districts in European Russia. Heteroskedasticity-robust standard errors for all specifications (including Column 3) in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.

Table A5: Unrest and redistribution, additional results

	(1) OLS	(2) IV	(3) IV ($\alpha = 0.10$)	(4) IV ($\alpha = 0.25$)	(5) IV ($\alpha = 0.50$)	(6) IV ($\alpha = 0.10$)	(7) IV ($\alpha = 0.25$)	(8) IV ($\alpha = 0.50$)
Frequency of unrest	0.014 (0.053)	-0.060 (0.174)	-1.729 (2.320)	-0.616 (0.882)	-0.245 (0.406)	5.466 (4.414)	2.093 (1.732)	0.968 (0.840)
Frequency of unrest × No zemstvo	-0.748*** (0.186)	-1.871*** (0.602)	-41.308*** (11.636)	-15.017*** (4.243)	-6.253*** (1.789)	-28.965 (19.816)	-10.798 (7.184)	-4.742 (2.991)
No zemstvo	0.294*** (0.067)	0.604*** (0.173)	12.891*** (3.348)	4.700*** (1.220)	1.969*** (0.513)	9.467* (5.730)	3.531* (2.074)	1.552* (0.861)
Distance from Moscow	0.045 (0.033)	0.017 (0.046)	0.219 (0.686)	0.084 (0.257)	0.039 (0.115)	2.106** (0.967)	0.792** (0.379)	0.354* (0.183)
Fertile soil	-0.028 (0.022)	-0.034 (0.028)	-0.659 (0.482)	-0.243 (0.178)	-0.104 (0.077)	-1.039* (0.538)	-0.392* (0.206)	-0.176* (0.096)
Urban population (log)	0.008* (0.005)	0.008 (0.005)	0.086 (0.082)	0.034 (0.031)	0.017 (0.013)	-0.012 (0.088)	-0.002 (0.034)	0.001 (0.016)
Total population (log)	-0.069** (0.029)	-0.037 (0.030)	0.069 (0.427)	-0.001 (0.160)	-0.025 (0.072)	-1.107* (0.617)	-0.433* (0.233)	-0.208** (0.106)
Provincial capital	0.067** (0.031)	0.057* (0.030)	0.330 (0.488)	0.148 (0.179)	0.087 (0.078)	0.854** (0.352)	0.341** (0.137)	0.170*** (0.066)
Constant	0.961*** (0.322)	0.618* (0.336)	1.838 (4.865)	1.025 (1.821)	0.754 (0.815)	13.347** (6.562)	5.232** (2.461)	2.526** (1.102)
First-stage F -stat		20.283	20.283	20.283	20.283	8.025	8.025	8.025
Observations	472	471	471	471	471	459	459	459
of which <i>zemstvo</i>	365	365	365	365	365	361	361	361

Notes: The sample excludes Orenburg, Astrakhan, and Arkhangel'sk, plus Ismail'skii district in Bessarabia, leaving the contiguous districts in right-bank Ukraine, Belorussia, and the Baltics in the “no *zemstvo*” set. The dependent variable in Columns 1 and 2 is change in number of rural schools from 1860 to 1880, normalized by rural population in 1883. The dependent variable in Columns 3–8 is redistribution, defined in the text for the corresponding value of α . The pre-reform proportion of serfs in the district population and its interaction with an indicator for no *zemstvo* are used as instruments in the models in Columns 2–5. Religious polarization and its interaction with an indicator for no *zemstvo* are used as instruments in the models in Columns 6–8. Frequency of unrest is calculated using data from 1851–63 (i.e., before creation of the *zemstvo*). Heteroskedasticity-robust standard errors for all specifications in parentheses. Significance levels: *** = 0.01, ** = 0.05, * = 0.10.