—Essays in Political Economy— Historical Natural Experiments and Economic Development

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To my family: past, present, and future. Kin and chosen.

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1

Introduction

...the voice of freedom sounded for just a few hours,
yet it is good to know that it sounded at all.
–Gavriil Stepanovich Batenkov[1]

The past decade has seen a global decline in political freedom. While established democracies face internal threats, countries once thought to be transitioning to liberal democracy increasingly lean toward authoritarianism. Another aspect of this global trend is that authoritarian regimes are increasingly cooperating and promoting autocratic alternatives. In their last report, Freedom House (2022) take stock of this decline of democratic values over the past years. In 2022, more than one-third of the global population resides in countries considered 'Not Free'–an all-time high since 1997–while only one-fifth live in 'Free Countries.' The global freedom index has declined for 60 countries over the past 16 years. At the same time, only 25 countries improved. A side-effect of this autocratic backsliding is that political violence and its repression are increasing, making the study of repression ever more relevant. This dissertation empirically investigates three cases of governmental repression vis-à-vis its people and highlights how these episodes have had

[1]Batenkov was a member of the democratic wing of the Northern Society, a secret political organization that sought the development of a constitutional monarchy and the separation of political powers into legislative, executive and judicial. He participated in the planning and staging of the first albeit failed political revolution 1825 in the Russian Empire. Following 20 years in solitary confinement he was forced to live in exile until 1856. He was a gifted poet and critic, and continued to write about various topics during exile.

unintended consequences on the lives of citizens and on politics long after the repression ended.

I study repression from the perspective of an empirical economist. Applied economists typically employ complex data and statistical methods to study their research questions in a causal framework. In an ideal world, researchers can design randomized experiments to study their intervention of interest and draw causal inferences. In the case of political violence, such experiments are typically unethical, infeasible, and undesirable. A remedy developed over the past decades is to find natural experiments based on real-world events triggered by a change in policies or the occurrence of some unrelated event. If chosen carefully, natural experiments resemble their clinical counterpart, considered the 'gold standard' in causal inference, and allow us to recover the causal effect of interest as if the intervention were randomly assigned.[2]

Historical Natural Experiments

My dissertation focuses on critical junctures in history that shaped the socio-economic development and political economy of Russia and Kenya. Learning from past experiences during those junctures can inform contemporary developments (Abramitzky, 2015). The quantitative social sciences have increasingly embraced historical cases as sources of exogenous variation. Historical natural experiments offer a unique perspective on studying political economy and development. First, by exploiting plausibly exogenous variation, historical cases lend themselves to the causal inference framework of economics. Certain historical junctures shock the status quo in unexpected and often unintended ways. Second, learning from historical events also means that a rich body of historical research is available. The consequences of contemporary shocks are often not well understood until considerable time has passed. Historical accounts and analyses, however, lay a foundation for the narratives surrounding a particular event and are at the core of economic history. Third, while studying contemporary issues is often urgently needed to inform policy, natural experiments in history offer the unique possibility of understanding the long-run impact of an intervention or policy in the past that relates to these issues.

Cantoni and Yuchtman (2021) develop three motives behind the study of historical natural experiments. First, such experiments may be analyzed to understand a particular historical event or process. Such studies will zoom into a specific episode and assess its effects related to the time and place in which it exerted its impact. Second, a researcher in this sub-field with a particular theory or empirical question in mind may seek to explore historical shocks to document how they led to the necessary variation to test their hypotheses. Third, natural historical experiments may lend themselves for the study of contemporary outcomes, thereby, trying to identify the causal implications of

[2]One half of the 2021 Nobel Prize for Economics had been awarded to Joshua Angrist and Guido Imbens, who have promoted the use of natural experiments in the social sciences.

past junctures. All three motivations have in common that they rely on the breadth and wealth of historians' works on the chosen events and subjects to allow the core of such works–the exogeneity assumptions–to be informed by the historical narratives as well as the supporting (often archival) data. Usually, a contemporary research paper in economics that uses a natural historical experiment will have elements of all three aspects, but tilt its focus toward one of them. This dissertation follows this tradition in that it focuses on the exploration of how historical events can inform contemporary outcomes, while also introducing the interested reader to the historical context and where possible augmenting its scope by documenting the direct consequences of a change in status quo.

In my dissertation, I use state-of-the-art micro-econometric techniques with a spatial dimension to produce evidence on how repression affects state capacity, ethnic politics, and liberal values over the long run. Each of the following three chapters zooms into one historical shock that started a cascade of developments which affected the presence of the state, the civic fabric, and political participation of communities in unintended ways. While studying specific events within single countries or regions comes at the expense of broader external validity, such a focus lends itself to a more granular picture and deep understanding of what may have affected the outcomes. What is more, such cases rich in historical evidence and based at the local level lend themselves to an often straightforward path to causal inference. They also yield an appreciation of context as I document in my dissertation how different settings of revolts can affect various aspects of socio-economic behavior and development.

Outline of the Chapters

The first essay, entitled 'State Capacity, National Economic Policies and Local Development: The Russian State in the Southern Urals,' analyzes how state capacity shapes the local impact of national policies by exploiting a quasi-natural experiment in the regional expansion of the state. Some countries with strong state capacity can be conducive to economic development when they guard the rule of law and create institutions and policies conducive to economic and human development (e.g., Besley and Persson, 2011), and enable a cooperative bureaucracy, aiming to provide public goods effectively (e.g., Becker et al., 2016; Dell et al., 2018; Besley, 2020). Others, however, may abuse their power and turn against large factions of their people. They may increase taxes to sponsor armies to wage war abroad, or repress internal opposition (North and Thomas, 1973; Tilly, 1992; Gennaioli and Voth, 2015; Becker et al., 2020). 18th century Russia offers a unique historical setting to study how state capacity affects local development. As the empire was undergoing rapid transformation, protection of property and person remained largely inadequate. The main burden rested on the backs of peasants and serfs who were tied to their landowner, were barred from political participation, and had to carry most of the indirect tax burdens. This climate laid fertile grounds for Yemelyan Pugachev's rebellion

in the Southern Urals between 1773 and 1775. At first, not taken seriously, it took one and a half years to contain the revolt, which eventually was crushed by the Tsarina's forces. As a response the Russian Empire under Catherine II bolstered its presence in the contested territories by increasing its security forces and levying taxes more efficiently after the uprising ended.

As a consequence, the boundary of the largest peasant rebellion in 18th century Russia has created a local discontinuity in the level of state capacity. Exploiting this sudden increase of state presence outside the political center of St. Petersburg then allows us to causally identify the effect of state capacity on local development. We provide confidence in our research design by documenting smooth variance of pre-rebellion and geographic characteristics at the boundary threshold, aside from the treatment itself. This allows us to view locations outside the rebellion area as an appropriate counterfactual to those inside of it. We collect original data from historical maps, censuses and surveys, and augment these data by contemporary survey outcomes at the individual and household level, to explore whether the increased state presence lasted and to what extent it impacted contemporary outcomes of development.

The central insight derived from our empirical analysis is that increased state capacity had limited effects on economic growth. However, when the central government targeted specific development objectives, e.g., to build schools or foster industrialization, their national policies benefited areas which already had strong state capacity. More specifically, we show that public security and infrastructure, i.e., public goods provided by the state by its very nature, persist to this day. However, the presence of the state did not have a different affect on the development of local human capital until Alexander II implemented his educational reforms from the 1860s onward, as can be seen in a higher number of schools and pupils in areas previously affected by the revolt. For the interwar period, we document that the pre-existing local state capacity shaped Soviet economic policies. This period illustrates a negative impact of state capacity, in which the state's repression was exerted at higher levels where it was more present. Namely, when they implemented policies of forced collectivization, areas with higher levels of pre-existing state capacity showed higher numbers of collective farms and Gulag camps. Finally, the limitation of state capacity in its impact on local development is illustrated in that it was not able to prevent the present decline in industrial employment. It has also not been conducive to the development of a more market-oriented economy as we document a lower likelihood of being employed in the service sector and households living within the area of higher state capacity are less educated and poorer then their counterfactuals. As the area had developed a strong labor-intensive industrial sector during the inter-war period, it came with lower incentives for higher education needed for the transition to modern profitable skill-intensive occupations.

The second essay, entitled 'Liberal Values and Civic Engagement: Evidence from a

Failed Revolution,' investigates whether the promotion of liberal ideology can have a lasting impact on contemporary civic behavior. The diffusion of norms and values through migrants can have large impacts on a hosting community's attitudes and behavior. Miho et al. (2019) document how the forced displacement of individuals to Siberia and Central Asia during WWII led to an influx of gender norms affecting the native population. Toews and Vezina (2020) shed a light on how higher shares in educated elites in Gulags left such regions richer and more educated today. Turning to the United States of America, Giuliano and Tabellini (2020) show how European immigrants were able to transmit their ideologies to their adopted country. The spread of ideologies, conservative or liberal in nature, can shape a host of outcomes relevant to the political participation of citizens, a cornerstone of modern democracies. In this study, I turn again to the Russian Empire to explore the random allocation of an educated elite to the Russian Empire's hinterland in response to a failed uprising as a quasi-natural historical experiment. Just 50 years following Pugachev's revolt, a group of young noblemen and army officers mounted a serious threat to the throne, when they renounced their loyalty to the Tsar in December 1825 with the purpose of overthrowing the crown. Having served during the French Invasion of 1812 and through their campaign against the French army under Napoleon, they returned equipped with Western liberal ideas to which they were exposed during their military campaigns. Upon their return they sought to bring their motherland up to speed with Western ideals. The revolt ultimately failed and its insurgents were convicted to death, or imprisonment, hard labor and eventually settlement in exile. While the uprising did not hinder the appointment of Nicholas I, it unintentionally led an educated elite promoting liberal values to the countryside, far away from the political centers of the time and to communities of rural character. The Decembrists, as the convicts were coined due to the month of the uprising, ended up living in exile until their amnesty in 1856, and it was there where they shared their ideas with the native population.

The randomness of the exile settlements of the Decembrists offers a setting in which the promotion of liberal values and attitudes and their relation to political participation of individuals can be studied. I extract the exile locations of the failed Decembrist insurgents from their biographies as listed in the largest Russian language biographical dictionary, and categorize them by type of punishment. As prisons and labor camps as well as locations where they were stationed to fulfill civil duties or military service cannot be viewed as random placements, I limit my sample to strictly exile-to-settlement locations. In my empirical strategy, I use these locations to identify areas that historically hosted promoters of liberal values and match them with the household locations of three rounds of the contemporary survey 'Life in Transition.' I then assign each survey respondent to a Decembrist treatment, if they live within a 10 km radius of at least one exile location.

The results show that individuals that live within 10 km proximity of at least one Decembrists exile location, are more likely to participate in informal and formal political

activities, such as demonstrations, strikes, and petitions. They are also more likely to seek out information about their country and the world as their consumption of news sources follows a more regular basis than their counterparts. In addition, I document that the inclination toward liberal values persist to this day in that individuals that live in an area that once hosted a Decembrist are more likely to consider free and fair elections, an independent press, and freedom of speech as more important than the average. In addition, they trust their local governments more than other people but do not show particular levels of trust in the national government or the presidency. The differences in civic engagement appears to be rooted in higher levels of liberal values and attitudes as well as trust in the local government. They do not perceive their economic and political situation differently than others and are also not differently engaged in communal organizations compared to individuals that were not directly exposed. It appears that the transmission of liberal values gave political participation a cause rather than changing the social behavior through community organization.

The third essay, entitled 'Independence Movements and Ethnic Politics: The Mau Mau Origins of Ethnic Voting and Distrust in Kenya,' examines the link between the violent repression of independence movements and contemporary ethnic politics and social cohesion using the case of British detention camps in colonial Kenya. Many developing countries today are ethnically divided. Such divisions can be (ab)used by politicians relying on within-group cohesion. In some cases, ethnic identities can have a remarkable impact on political outcomes and thereby lead to electoral decisions made based on a political candidate's ethnic background as opposed to merit. This in turn affects the quality of work of those in power and holding an office. On the African continent, the foundations of such tensions can often be found in pre-colonial institutions imposed by European colonizers who left their imprint of "divide and rule" governance (Ali et al., 2018; Michalopoulos and Papaioannou, 2013a; Gennaioli and Rainer, 2007). The path to independence in European colonies was often marked by civil movements demanding freedom from the colonizers. The instrumentalization of ethnicity in the colonial repression of such independence movements set the stage for ethnic politics to this day. We aim to document how contemporary ethnic politics can be attributed to the road to independence. Kenya illustrates an important case in point. During the dawn of colonial rule in Kenya, the British Empire was confronted with a violent uprising to which it responded by incarcerating a significant share of the native population from 1952 to 1959. As British settlers occupied the country's most fertile arable land, continuously increased their share, leaving the native population confined to reserves or squat on white farms, a large faction of disgruntled farmers, former soldiers, and radical politicians rose to action to fight for independence, by attacking white settlers and natives that remained loyal to the colonizers. The nationalist movement was soon met at a disproportional level. The British colonizers set up a ruthless detention camp system, incarcerating anyone they

deemed related to the revolt. This led to the interrogation and conviction of the vast majority of the three Kenyan tribes Kikuyu, Meru, and Embu.

We exploit geographic and individual characteristics in a triple-difference estimation design to identify the affected individuals and households. More specifically, a respondent will be considered affected by the events if the location is within proximity to a camp site, has been alive at the time the nationalist movement started, and identifies with one of the three incarcerated ethnic groups. Using a rich body of newly digitized and localized census and survey data, and combining it with archival information on the detention camp locations, we first examine whether the exposure to such camps affected ethnic allegiances in national elections as well as levels of generalized trust and civic engagement. Second, we document the direct effect of exposure to the detention camp system in terms of contemporary wealth, employment, and education.

Our results show that exposure to a detention camp increases ethnic voting in the contested 2007 presidential election. We also find that exposed individuals are more likely to engage in voluntary community organizations. The indiscriminate nature of the colonial repression also eroded the levels of contemporary trust in most people. We document long-term deterioration in wealth, health and education, and find that such individuals have poorer labor market outcomes as they are less likely to work, and more likely to seek employment. While we support the established notion that traumatic experiences of political violence may increase local cooperation, the Kenyan case offers an insight into how such cohesion may feed into pro-ethnic behavior, which can in turn challenge contemporary politics in terms of voting preferences. It also shows how such events must not always be accompanied by increased trust, as we document low levels of trust towards others in the larger society.

Summary

The three chapters offer three different cases of how political repression may affect contemporary outcomes of development and political participation. The empirical strategies employed are informed by the historical narratives and carefully designed accordingly to allow for causal inference. My co-authors and I georeferenced, geocoded, and digitized archival data and augmented the resulting data sets with contemporary surveys and censuses. The global threat of increased repression makes the analyses thereof relevant for today. From the first chapter, we learned that state repression of a popular uprising may lead to a locally bolstered presence of the state. This was documented through persisting public infrastructure and public security. Such a bolstered state is not necessarily conducive to development. Instead, it may affect the effectiveness of top-down policies at the local level. We show that human capital was fostered once an education reform was imposed. The other side of the coin, however, means that policies of state repression such as when the Soviet state forcefully collectivized farms and created a vast system of

Gulags, will be larger where the state is already more present. From the second chapter, we learn that repression in the form of banishment to exiles as a response to insurgents of a failed revolution, can facilitate the proliferation of values and attitudes. These liberal values and attitudes come in tandem with an increased level of civic engagement. From the third chapter fwe learn that a particularly indiscriminate nature of repression in which people from the same ethnic group are turned against each other, can erode levels of trust. However, it can reinforce ethnic cohesion in the form of voting along ethnic lines, i.e., against merit, which has negative implications for the development of accountability in politics.

This chapter is co-authored with Raphaël Franck

2

State Capacity, National Economic Policies and Local Development: The Russian State in the Southern Urals

2.1 Introduction

Countries with strong state capacity successfully enforce a monopoly on violence and efficiently levy taxes (e.g., Acemoglu and Johnson, 2005; Bardhan, 2016). Such state capacity can promote economic development by enforcing the rule of law as well as supporting institutions and policies that are conducive to industrial development, technology adoption, and human capital formation (e.g., Besley and Persson, 2011). It may also enable the development of an honest and efficient bureaucracy, a culture of cooperation, and improve the provision of public goods (e.g., Becker et al., 2016; Dell et al., 2018; Besley, 2020).

Yet, many strong states do not necessarily provide benefits to the majority of the population but instead serve the interests of members from a narrow elite. They levy taxes and armies to wage war abroad and occasionally repress internal opposition (North and Thomas, 1973; Tilly, 1992; Gennaioli and Voth, 2015). In the 20th century, the USSR was one of the most significant examples of this phenomenon (e.g., Harrison, 2017).

This study analyzes the impact of state capacity on local economic development in the long run by exploiting a quasi-natural experiment in the regional expansion of the

state. For this purpose, it focuses on the aftermath of Yemelyan Pugachev's rebellion in Russia. A Cossack from the Don region, Pugachev succeeded in controlling an extensive territory in the Southern Urals between 1773 and 1775 with a loose alliance of Cossacks, peasants and religious traditionalists (Dubrovin, 1884; Golubtsov, 1926; Raeff, 1970). After putting down Pugachev's rebellion at a great human cost, Empress Catherine II (r. 1762–1796) sought to prevent another uprising in the Southern Urals by implementing reforms that modern research in political economy would identify as features of strong state capacity. Inside the territory that the rebels had managed to seize, she bolstered the presence of the Russian state by increasing the numbers of military installations and civil administrators to ensure the implementation of her administrative reforms and to efficiently levy taxes (e.g., Alexander, 1966; Avrich, 1972).[1]

The empirical analysis assesses the causal impact of state capacity at the local level by exploiting the regional discontinuity created by the boundary of the rebel-held territory. This approach compares changes in economic outcomes in areas just inside the territory exposed to increased state presence to those that were not, and evaluates its effect at the boundary. In so doing, the empirical analysis can assess two aspects of strong state capacity. First, it can assess whether a change in local state capacity is not only conducive to the development of a state apparatus characterized by a higher number of civil servants, policemen and soldiers as well as by greater fiscal capacity, but also enables a rise in human capital and the development of industrial and service sectors. Second, because the change in state capacity occurred in one country, it can assess the local effects of national top-down policies implemented by the central state. Examples of such policies include the educational programs of Alexander II (r. 1855–1881) in the mid-1860s as well as the Soviet policies of forced collectivization that sought to develop state-owned farms and factories (Gregory, 1994; Davies, 1998).

The paper is thus related to two strands of the economic literature but seeks to provide a different approach. First, it deals with the impact of state capacity on local economic development. Previous studies (e.g., Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013b; Grosfeld and Zhuravskaya, 2015; Acemoglu et al., 2015; Becker et al., 2016; Dell et al., 2018) focused on the impact of two or more historical states within a modern country or of local governments whose differences in administrative capacity can be traced to past events.[2] Instead, this paper analyzes the long-run impact of the increase in the central state's capacity on local economic development within a region that the state already controlled and has ruled uninterruptedly since. By taking

[1] During her reign, Catherine II sought to foster the cultural and economic integration of Russia with Western Europe, following the example of Peter I (r. 1682–1725). However, only her successors in the 19th century promoted nation building, notably by investing in education and usually when their rule was under threat (e.g., Kahan, 1989). On nation-building, see, e.g., Dell and Querubin (2018), Alesina et al. (2020), and Giuliano et al. (2022).

[2] See also Sánchez de la Sierra (2020) and Mayshar et al. (2022) for related studies on the origin of the state.

advantage of the regional discontinuity in state presence induced by the boundary of the rebel-held territory, the identification strategy allows for the area which did not experience the increase in state presence to be a valid counterfactual to the area which had been exposed to the expansion of the state.

Second, it pertains to the growing literature on Russian economic history and the causes of persistent regional disparities within Russia (see, e.g., Zhuravskaya et al., ming, for a recent literature survey). While previous studies have focused on the consequences of serfdom and its abolition (Markevich and Zhuravskaya, 2018; Buggle and Nafziger, 2021), or agricultural and industrial policies in the 19th and 20th centuries (Cheremukhin et al., 2017; Markevich and Nafziger, 2017; Castañeda Dower and Markevich, 2019; Castañeda Dower et al., 2018; Gregg, 2020; Markevich et al., 2020), this study seeks to provide a long-run perspective by assessing how the change in state capacity in Russia differentially impacted local economic development from the late 18th century onward.

The data combine historical maps, official statistics from the Russian Empire and the USSR, present-day satellite images, crowd-sourced infrastructure data, and individual-level surveys. They allow us to document local variations in fiscal capacity, as well as human and industrial development in the long run. They also enable us to establish the random nature of the rebellion boundary with a series of balancing tests on geographic and pre-rebellion characteristics of state presence, population, and economic development.

In a first set of results, we establish the increase in state presence following the revolt within the territory held by the rebels. Our results show that the Russian state's increase of its military and fiscal presence as well as the development of public infrastructure along the border of Pugachev's rebellion had long-lasting effects on local state capacity. By WWI, the fiscal capacity of local governments as well as the number of civilian administrators and police officers were higher inside the rebellion's boundary. For instance, in 1910, the municipal debt of towns in formerly rebel-held areas was seven times higher. The positive effects of increased state capacity as proxied by public infrastructure have persisted to this day in the form of more roads, more railway stops and more school buildings.

In a second set of results, we show that the local change in state capacity had a limited impact on economic growth until the central government targeted specific development objectives. Once the political objectives of the rulers led them to promote, e.g., human capital formation or industrialization, these national policies were not implemented uniformly throughout the country or in disadvantaged regions but in areas with preexisting strong state capacity. Hence, the education policies of Alexander II triggered the opening of one additional primary school in every other town within the rebellion boundary and an increase in primary school enrollment. Similarly, the early Soviet policies that supported small capitalist production units increased the presence of self-employed in-

dividuals within the rebellion boundary. Later on, Stalin's policies of agricultural and industrial collectivization led to the establishment of one additional state-owned farm every 100 km^2 inside the formerly rebel-held area and one additional camp of forced labor every 200 km^2. Nowadays, however, without the appropriate economic policies, we find that historical state capacity in the Southern Urals does not have any significant positive effect on local economic conditions. It has been unable to prevent the industrial decline of the region and the associated fall in human capital that have become commonplace in areas that experienced industrialization in the 19th and early 20th centuries (Nissanov, 2017; Franck and Galor, 2021).

Our results are not driven by alternative explanations such as changes in population size, ethnic composition, and migration. Moreover, as the boundary of Pugachev's rebellion neither overlaps with the internal and external administrative boundaries of the Russian Empire nor with the boundary of previous rebellions, our main results cannot be explained by prior historical or administrative features of the region. In addition, we show that our main outcomes are not confounded by a potential catch-up effect that regions may experience in the wake of an economic response of the state to war and destruction (for a survey, see Rohner and Thoenig, 2021). Finally, our results are robust to accounting for spatial autocorrelation and using alternative estimation methods.

The remainder of the paper is organized as follows. Section 2.2 provides some historical background. Section 2.3 presents the data and Section 2.4 the empirical method. Section 2.5 analyzes the results, discusses alternative explanations and presents robustness checks. Section 2.6 concludes.

2.2 Historical Background

2.2.1 The Rebellion of Yemelyan Pugachev

In the second half of the 18th century, the Russian Empire was experiencing rapid economic and social transformations fostered by Catherine II who sought to modernize the country (see, e.g., Raeff, 1970; Broadberry and Korchmina, 2021; Kahan, 1985; De Madariaga, 1981). Nevertheless, protection of property and person remained inadequate for the majority of the empire's population who were mainly peasants and serfs tied to the landowners, and who had no option for political participation. For instance, a decree in 1767 prohibited direct petitions to the Tsarina. The general sense of discontent was aggravated by increasing taxes which Catherine II needed to pursue the Empire's territorial expansion and wage war against the Ottoman Empire. Another source of discontent stemmed from the reformation of the Orthodox Church in the 17th century that had created a group of disgruntled religious traditionalists known as the "Old Believers." Finally, frequent crop failures, plagues, and epidemics exacerbated the harsh living

conditions of peasants.

Violence broke out in 1773 in the Southern Urals when a charismatic leader managed to attract a large band of followers. The illiterate Don Cossack Yemelyan Pugachev impersonated the late Emperor Peter III who had been killed a decade earlier under mysterious circumstances.[3] To gather support, Pugachev had one of his literate followers write decrees and manifestos promising to those who would join him "the rivers, seas and all benefits, pay and provisions, powder and lead, rank and honor and [...] liberty forever" (Dubrovin, 1884, p.18) as well as "freedom of peasants from their lords" (Golubtsov, 1926, p.25). He quickly gained support across major sections of society, i.e., soldiers, factory workers and peasants. The resulting revolt lasted a year and a half and covered a large swath of territory within the Southern Urals. Modern assessments of the revolt (Sukharev, 2010; O'Neill, 2016) suggest that Pugachev succeeded in controlling an area of about 850,000 km^2, which is approximately twice the size of California.[4]

The rebels did not have strategic military objectives aside from controlling as much territory as they could (Avrich, 1972). Their tactical movements were characterized by two features. On the one hand, they sought to pillage towns and villages, and punish the gentry. On the other hand, they moved haphazardly to shake off regular imperial detachments (Longworth, 1973). Eventually, the Tsarist army was able to defeat Pugachev's rebels in the course of 1774. Pugachev was then betrayed by other Cossacks in September 1774 and executed on January 21 1775.

2.2.2 The State in the Southern Urals under Catherine II and her Successors

As Pugachev's rebellion had exposed the failures of the local Russian administration, Catherine II implemented policies to ensure that no such large-scale uprising would occur again (Alexander, 1966; Longworth, 1973; LeDonne, 1984). Inspired by Enlightenment ideas and *Cameralist* thinkers who sought to improve administrative practices in the absolutist monarchies of Austria and Germany, she herself drafted a reform of the *Guberniia* (the highest administrative division of the Russian Empire) to standardize their population number, size, and organization. However, she maintained the institution of serfdom which had united many of Pugachev's fighters. In the Appendix, we provide a short discussion of Catherine II's legal and economic reforms at the national level.

In the wake of Pugachev's rebellion, Catherine II also implemented specific policy changes in the Southern Urals, in particular to improve the efficiency and streamline the chain of military commands. She notably moved the capital of the gubernatorate

[3]Several impersonators of Peter III appeared in the Russian Empire after 1762, but Pugachev mounted the most significant challenge to the throne.

[4]The rebels conquered 81 towns and besieged 10 other towns without conquering them. There were 43 major confrontations between rebel and tsarist forces, where the latter won 34 of them.

from Orenburg to Ufa in 1782 so that the governor in Ufa would command the two main regional lines of forts (Orenburg and Trans-Kama). She also sought to erase any memory of Pugachev's rebellion by ordering the fast rebuilding of towns that had been destroyed and by renaming places of significance to the revolt. For instance, she changed the name of Pugachev's birth place from Zimoveyskaya to Potemkinskaya to avoid pilgrimage from former followers.[5] She also renamed the Yaik River into the Ural River and wanted the Yaik Cossacks to be called the Ural Cossacks.

Catherine II's attention to the Southern Urals can also be seen in her choice of governors. They were aristocrats with extensive experience in regional administration and military affairs as they all held the rank of Lieutenant-General before their appointment (LeDonne, 2000): Ivan Iakobi (1782–1783), Akim Apukhtin (1783–1784) and Osip Igelström (1784–1790).[6] Like the governors, most soldiers and civilian administrators assigned to the Southern Urals under Catherine II were not native to the region. This remained true by the turn of the 20th century when civilian administrators still belonged to a restricted group of individuals and few originated from the Southern Urals.[7]

Igelström's six-year stay in Ufa gave him time to implement Catherine II's long-term military policies. In 1786, troops were reorganized into three infantry regimes and six field battalions. It is estimated that there were already 15,520 soldiers in the region in the mid-1780s (LeDonne, 1984). Igelström also increased state presence by bringing the police as well as the Russian judicial and fiscal administrative institutions to the region. Police boards were established in Orenburg and Ufa while several new courts of justice for commoners and state peasants were instituted throughout the province. In 1788, the muftiate was established in Orenburg to operate within the framework of the Russian government. In so doing, Catherine II and Igelström were giving an official status to Islam within the empire while controlling the management of mosques and the composition of the Muslim religious personnel (Yemelianova, 2017). Finally, the fiscal regime was progressively restructured to recognize the land ownership of Russians and of non-Russian groups. It enabled the Russian state to increase fiscal pressures on all segments of the population.[8]

Moreover, following Alexander II's national reforms in the 1860s that abolished serfdom, promoted primary schooling, and established local governments (called zemstvo) to assist the central government in collecting taxes and provide local public goods (especially education and healthcare), the Orthodox Church increased its missionary activities

[5]Grigory Potemkin (1739–1791) was an administrator and army officer who became Catherine II's favorite in the mid-1770s. As military commander, he took part in the fight against Pugachev.

[6]It is worth noting that Ivan Iakobi is regarded as "one of the great administrators of the reign" of Catherine II (LeDonne, 1984, p.278), while Igelström was a prominent member of the ruling elite who came from an important family of the Baltic aristocracy.

[7]Only 5,417 men held one of the four top ranks of the Russian civil service in 1914 (Lieven, 1987).

[8]On the fiscal policies of the imperial regime after Catherine II, see Corcoran (2012), Kotsonis (2014) and Nafziger (2016).

in the Urals with the support of the Russian State.[9] For instance, in the Perm bishopric, the Church established a missionary society in 1873, created in 1888 an office of diocesan missionary which answered to the archbishop and built a new monastery in 1891–1893 that soon hosted 400 monks and novices. The Church also ran schools for boys and girls throughout the region (Dukes, 2015, p.69).

Ultimately, Catherine II's policies of increased state presence and capacity in the Southern Urals, characterized by both increased security and efficient taxation, were successful insofar as no other major uprising took place in the area during her reign. In fact, as we show below in Section 2.5 (and in particular in Appendix Table C.1), there was less unrest in that region during the 19th century. Finally, it is worth noting that neither the main events of the 1905 and 1917 revolutions (Ascher, 1988; Wade, 2005), nor fighting during WWI and WWII (Acemoglu et al., 2011; Winkler, 2015) took place on the boundary of Pugachev's rebellion.

2.2.3 The State in the Southern Urals beyond Regime Changes

The creation of the USSR changed the nature of state intervention in Russia. Until then, the imperial regime had pursued prudent macroeconomic policies that ultimately enabled the convertibility of the Russian currency with gold in 1897 (Markevich and Nafziger, 2017).

The increase in state intervention first began during the 1918–1921 period when the Bolsheviks implemented a policy of War Communism that directed the resources of the economy to win the Russian civil war. In 1921, however, Lenin chose to foster the development of the Soviet economy with a New Economic Policy (NEP) that was characterized (and sometimes criticized) as a retreat towards capitalism. The NEP enabled peasants to sell their products to private individuals or state agencies freely, both locally and nationally. Industrial firms with fewer than 20 employees were denationalized: they were either reverted to their former owners or leased to new industrialists. Furthermore, the wage system was restored, industrial firm owners could hire and fire employees while restrictions preventing workers from switching jobs were lifted (Gregory, 1994; Davies, 1998).

The NEP came to an end in 1928 with Stalin's Great Break and his announcement of a five-year plan that sought to transform agricultural and industrial production in the USSR. Stalin's policies were characterized by the forced collectivization of agriculture in state-owned farms (known as sovkhozes). They contrasted with the agricultural cooperatives (kolkhozes) which had progressively emerged after 1917 by uniting small farms. Kolkhozes were only tolerated by communists who regarded them as an undesirable and

[9] See, e.g., Dixon (2008) on the relationship between the Orthodox Church and the imperial government.

intermediate stage of ideal agricultural collectivization represented by the sovkhozes. After 1928, the few remaining private farms and many, but not all, kolkhozes were turned into sovkhozes by force. Furthermore, Stalin's industrialization policy in the 1930s was characterized by the increased use of forced labor in newly established Gulags,[10] notably but not only in the Southern Urals, where one of the main economic objectives of the local party leaders was the modernization of the metallurgic sector from a wood-based to a coal-based industry (Harris, 1997, 1999; Dukes, 2015).

The rise in public economic intervention was accompanied by a similar rise in the size of the bureaucracy as exemplified by the number of administrative divisions in the Urals that rose from four in 1910 to seven in 1953 (Armstrong, 1972; Rowney, 1989).[11] It is, however, unclear whether individuals from the Southern Urals benefited from the growth of the state apparatus, either in their native region or in the rest of the country.[12] For instance, few, if any, agents of the Naródnyy Komissariát Vnútrennikh Del (NKVD, People's Commissariat for Internal Affairs) operating in the Southern Urals in the 1930s originated from the area (Leibovitch, 2008).[13]

Overall, in light of the historical evidence concerning the growth of the Soviet state and its bureaucracy, it can be conjectured that the increased local state capacity in the Southern Urals triggered by Catherine II would have persisted in the 1920s and 1930s. However, it is likely to have progressively subsided after WWII, as the continued growth of the state in the USSR increased the presence of civil servants as well as of police and military forces throughout the country.

2.3 Data

Our dataset combines four types of data sources: (*i*) historical maps, (*ii*) historical official censuses and household surveys, (*iii*) present-day satellite images and crowd-sourced infrastructure data, and (*iv*) present-day individual-level surveys. We use Geographic Information Systems (GIS) to extract geographic features from satellite images and historical maps at the grid cell level, and to geocode the locations of towns in the surveys and censuses. Descriptive statistics and sources for all variables can be found in Appendix Table B.1.

[10] Camps of forced labor, i.e., Gulags, appeared in the Soviet Union as early as the summer of 1918 (Ivanova, 2000, p.12).

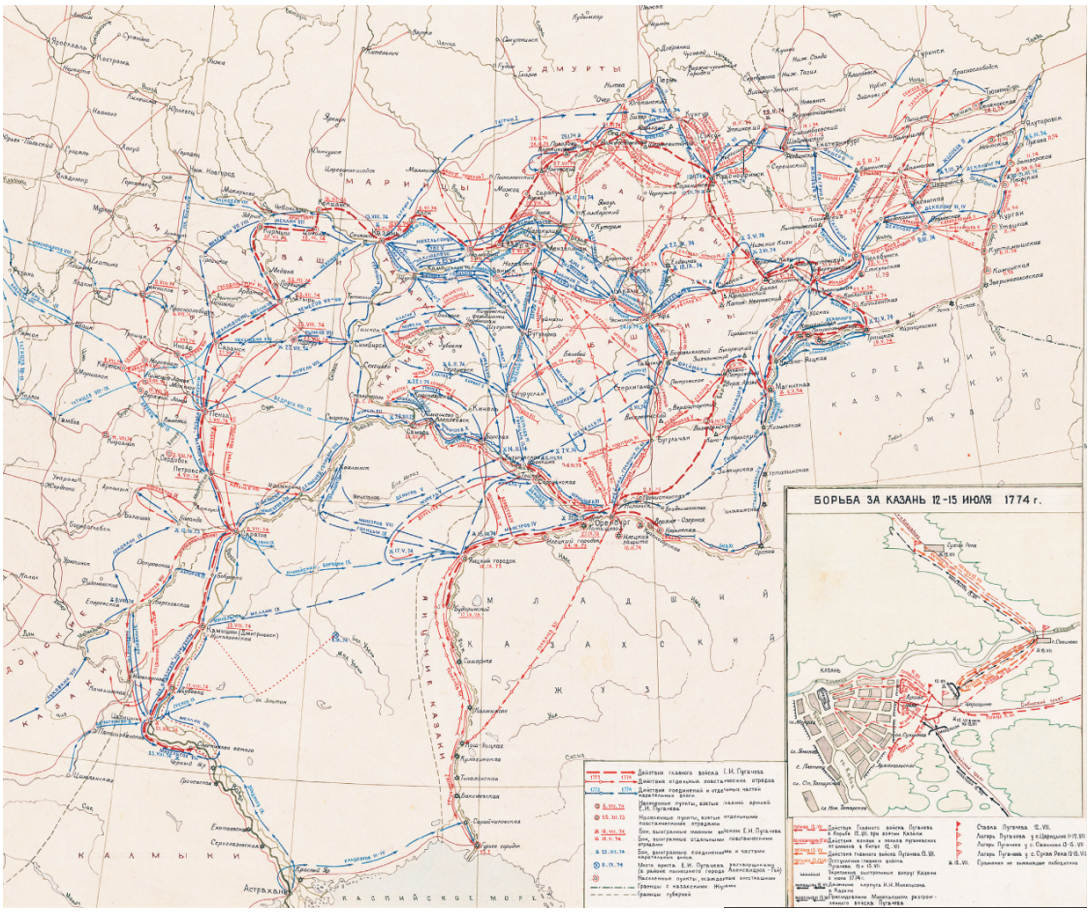
[11] At the national level, the Russian empire had 100 internal administrative divisions in 1910 while the USSR had 166 in 1953 (Stewart, 1968).

[12] If many new individuals entered the civil service at the start of the Soviet regime, there remained mid-level civil servants who had served the Tsarist administration (in particular in the Central Statistical Administration) and who were only purged in the late 1920s (Orlovsky, 1994).

[13] In the mid 1930s, the NKVD was tasked with both public order and secret police activities.

2.3.1 Area and Local Intensity of the Rebellion

Figure 2.1 – Pugachev's Rebellion 1773–1775: Battles, Sieges and Troop Movements



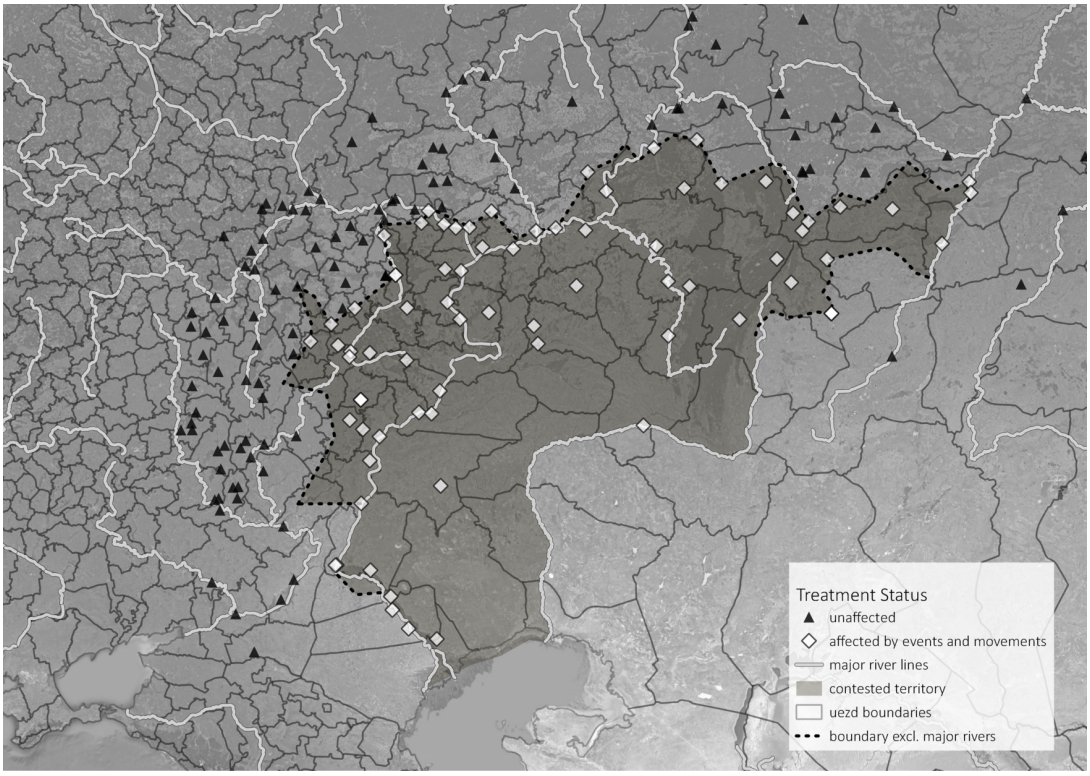
Notes: Figure 2.1 shows the historical map of the rebellion (Sukharev, 2010). Red and blue lines indicate rebel and tsarist troop movements respectively. Red dots indicate the following rebel activities: Rebel casualties (killed in action and prisoners); Rebel towns (towns captured by rebel forces through voluntary alliance, submission or military defeat); Siege locations (towns under siege by rebel forces); Rebel victories; and Rebel movements. Blue dots indicate the following tsarist army activities: Tsarist victories; and Tsarist troop deployments (split into four periods: Sep.–Dec. 1773; Jan–Sep. 1774; May–July 1774; Aug–Sep 1774).

To delineate the area of the rebellion and account for its local intensity, we use two features from the historical map of the rebellion shown in Figure 2.1 (Sukharev, 2010; O'Neill, 2016). On the one hand, we assess the extent of the rebel-held territory by connecting the towns which they controlled, through alliance with local leaders or military victories. On the other hand, we control for the intensity of the rebellion by accounting for the rebel and tsarist troop movements.

Figure 2.2 shows how the data in Figure 2.1 are implemented in the empirical analysis. The dark grey shaded area is the geographic extent of Pugachev's rebellion as defined by a hull around the locations of the revolt. The black dashed line indicates the boundary line in our empirical analysis. It is the border of the grey-shaded area which represents

the rebel-held territory, but it excludes sections that follow major river lines, particularly in the southeast (see Section 2.4.3 below for explanations).

Figure 2.2 – Pugachev's Rebellion 1773–1775: Area of the Revolt



Notes: Figure 2.2 shows how the information provided in Figure 2.1 is used in our study. The dark grey shaded area is the geographic extent of Pugachev's rebellion as defined by a hull around the locations of revolt activities. The black dashed line indicates the boundary line that we employ in our empirical analysis. It follows the contested territory (grey shaded area), but excludes sections that follow major river lines (particularly in the southeast). White diamonds indicate towns that were affected (within the shaded area) both by the rebellion and by the troop movements. Black triangles indicate towns that were not exposed to the rebellion or troop movements. Note that we dropped towns which were too far from the rebellion boundary to focus on its vicinity for illustrative purposes.

2.3.2 Southern Urals

Our empirical strategy is based on the notion that the rebellion boundary within the Southern Urals is random. This implies that geographic features of the region as well as its pre-rebellion economic and institutional characteristics vary smoothly across the two sides of the boundary. We partition the rebellion and control area into grid cells at a resolution of 10 × 10 km and extract the relevant information from satellite images and maps.

Geographic features may impact historical outcomes and contemporary economic development. We therefore test for balance in geographic variables which are usually associated with agricultural and industrial development or lack thereof: elevation and slope (Jarvis

et al., 2008), ruggedness (Nunn and Puga, 2012), precipitation and temperature (Willmott and Matsuura, 2001), wheat suitability (FAO/IIASA, 2011), and caloric suitability (Galor and Özak, 2016).

2.3.3 State Capacity and Economic Development

To assess local variations in state capacity as well as in human and industrial development in the long run, we rely on several datasets. First, we aggregate the information in Pyadyshev's Atlas of the Russian Empire (Piadyshev, 1829) to the town level to assess the presence of the Russian state in the Southern Urals in 1820. These data provide information on public security and infrastructure such as military installations (fortresses, garrisons and military outposts), monasteries (which could also serve as military fortresses (Nossov, 2006)), and the extent of the postal road network.

Second, we use the town censuses of the Russian Empire and of the USSR from 1897, 1910 and 1926 to assess the impact of state capacity on economic development. They provide information on population, public infrastructure, security forces, fiscal capacity, and education. They also give information on industrial production and workers, distinguishing between factories and artisanal workshops where the former were characterized by more modern means of production than the latter. As an additional measure of local fiscal capacity, we use data from Nafziger (2011) on the number of members sitting on the executive councils (upravy) of the local zemstvo governments in 1883. Furthermore, we use data from Charnysh (2022) on famine relief in 1891–1892 to assess the local impact of state capacity in a time of crisis.

Third, to assess human capital formation, health and wealth, we use the General Primary Education survey of the Russian Empire (Falbork and Charnoluskii, 1900) and data from Markevich and Zhuravskaya (2018). The General Primary Education survey provides town-level information on the number of schools between 1860 and 1893, on religious and secular schools as well as on the number of male and female pupils in 1895. Markevich and Zhuravskaya (2018) provide data on the number of army conscripts in the Russian army and their average height in the 19th century.[14] While height is a well-known indicator for the standard of living, the number of conscripts can also be viewed as a measure of wealth since rich people could pay fees to avoid their relatives, their servants or themselves from being drafted in the army.[15]

Fourth, to assess the impact of increased state capacity on the level of crime and unrest, we use data from Castañeda Dower et al. (2018) that distinguish between all unrest and

[14]Selection bias is a possibility when dealing with the height of conscript soldiers, which is not always representative of the height of the general population (Baten, 2000). However, there is no reason to think that this selection bias would be more or less intense inside or outside the rebellion boundary.

[15]In the 1840s and 1850s, landlords would have to pay 485 silver rubles, i.e., about ten times the annual GDP per capita, to prevent their serfs from avoiding the draft (see Markevich and Zhuravskaya, 2018, Appendix p.46).

riots, large unrest and riots spanning several villages or districts, and unrest and riots listed in the Central State Archive of the October Revolution (TsGAOR). We also use data on the causes of death listed in a public health report from the Office of the Chief Medical Inspector in 1910 (Ministerstvo Vnutrennykh Del, Tsentralnyi Statisticheckyi Komitet, 1912).

Fifth, we collect data from the GeoNames and Memorial databases to analyze the relationship between historical state capacity and the forced collectivization of agriculture and industry. While the GeoNames database provides information on the location of sovkhozes and kolkhozes, the Memorial database indicates the location of Gulags and the number of years that they were in operation.

Finally, we use two types of contemporary data. We use OpenStreetMap (OSM) for a range of institutional and infrastructure variables. They include road length as well as the number of railway stops, of police stations and of religious buildings. They also include the shares of land used by military installations, farms, commerce and retail outlets, and by industries and quarries. Moreover, we rely on the Life in Transition Surveys (LiTS) that provide information on individuals currently living in transition countries. By using the geographic information on the location of the survey respondents, we assess whether individuals on either side of the rebellion boundary differ in terms of their income, education, and occupation.

2.4 Empirical Strategy

Our estimation strategy is motivated by the historical narrative where the border of the rebellion territory and the local intensity of the fighting was determined by the rebels' random tactics. This leads us to employ a fuzzy geographic regression discontinuity (GRD) design to estimate the discontinuous change in the central state's presence at the boundary of the rebellion. This approach is vindicated by tests of means showing that areas and nearby towns on opposite sides of the border have similar observable characteristics.

2.4.1 The Boundary of the Rebellion Territory

The boundary of the rebellion territory offers a unique quasi experimental setting for our identification strategy and relies on the historical evidence regarding the rebels' movements. They were not based on any strategic plan but were motivated by immediate tactical considerations. Indeed, the rebels either attacked towns and ambushed regular Tsarist deployments when they could, or avoided confrontation and fled when they were outnumbered. As the rebels traveled by horse, they were able to avoid roads and cut through fields.

The first feature of our identification strategy builds upon the locations of the battles and sieges during the rebellion shown in Figure 2.1. We define the rebellion boundary as the region bound by these locations through a concave hull: areas were exposed to the rebellion if they were just inside this concave hull and were not if they were just outside of it. Such a boundary definition assumes that the whole region within the boundary was equally affected by the rebellion. There is consequently a potential limitation to using the location of battles and sieges as the sole component of our identification strategy as we cannot entirely exclude that Pugachev and his allies considered some locations to be of particular importance.

Therefore, the second feature of our identification strategy uses army and rebel movements to account for the local intensity of the rebellion. We consider areas inside the boundary which experienced such movements to be exposed more intensely to the rebellion and to have attracted Catherine's efforts afterwards. To further relieve endogeneity concerns that intense fighting would be correlated with specific geographic factors, we exclude major towns at the time of the rebellion as well as locations in proximity to rivers as we explain in Section 2.4.3. Figure 2.2 shows the rebellion boundary and distinguishes between locations that were exposed to the rebellion and those that were not. The black dashed line illustrates our boundary of interest, which excludes sections that align with rivers, represented by white lines.

2.4.2 Fuzzy GRD Design

Our preferred empirical specification relies on the battle and siege locations which form the boundary of the rebel-held territory, and on the movements of the rebels and tsarist troops to assess the local intensity of the uprising. As discussed in Section 2.4.1, no observation from the control group is treated since all the affected units lie within the rebellion boundary by construction of the concave hull. However, there might be imperfect compliance as some locations within the rebel-held territory may have been more exposed to the revolt than others and may have consequently attracted more attention from Catherine II afterwards. This is why we implement a fuzzy GRD that overcomes compliance issues of the treated units by accounting for the likelihood that assigned units received the treatment.[16]

The fuzzy GRD design uses an assignment rule where there is a jump in the probability of receiving the treatment at the cutoff. We consider locations within the treated area formed by the boundary to be more exposed to the rebellion if they were in direct proximity to the movements of the Tsarist army or those of the rebels. Thus, the treatment

[16] A sharp GRD assumes perfect compliance, requiring all units assigned to the treatment to take the treatment. Estimates then represent the intention-to-treat effect. In Appendix Tables C.14–C.21, we report sharp GRD results and find, reassuringly, that the coefficients of both sharp and fuzzy estimands are very similar in size and significance levels.

assignment–the geographic boundary of the rebel-held territory–can be viewed as an instrument for the treatment status–the proximity to rebel and Tsarist troop movements. Given the two-dimensional nature of our treatment assignment in latitude and longitude, we follow the standard approach in the literature and specify a one-dimensional running variable by calculating the distance of each observational unit to the boundary of the rebel-held area. We assign negative values to the running variable for units outside (untreated) and positive values for those within (treated) the rebel-held territory and jointly estimate the following specification:

$$Y_i = \alpha + \beta BRT_i + f(d_i) + \epsilon_i \qquad \text{for } |d_i| < h, \tag{2.1}$$

$$BRT_i = \delta + \zeta MOVE_i + g(d_i) + \upsilon_i \qquad \text{for } |d_i| < h, \tag{2.2}$$

where i indexes the unit of observation (individuals, households, towns or grid cells), BRT_i is the boundary of the rebel-held territory that equals 1 when an observation i is located within the formerly rebel-held area and 0 otherwise, d_i represents the distance (in km) to the nearest boundary point of the rebel-held territory and is positive when i is treated (i.e., $BRT_i = 1$) and negative otherwise. $MOVE_i$ represents the rebel and Tsarist troop movements, i.e., the instrument for the treated area within the BRT. $f(\cdot)$ and $g(\cdot)$ are local RD polynomials of the same order, computed using a uniform kernel and optimal bandwidth (Lee and Lemieux, 2010). We use a local linear specification throughout the empirical analysis, such that $f(d_i) = \gamma_1 d_i + \gamma_2(d_i \times BRT_i)$ and $g(d_i) = \gamma_1 d_i + \gamma_2(d_i \times MOVE_i)$. The coefficient β then identifies the local average treatment effect at the cutoff, i.e., $d_i = 0$ within the outcome variable-specific optimal bandwidth h.

A key element for regression discontinuities is the selection of an appropriate bandwidth. A priori, it is not clear how to set the limits for the bandwidth in our geographic and historical context where the observational units can be individuals or households, towns and grid cells. Inference is not valid when the bandwidth is too large but there is under-smoothing and loss of power when the bandwidth is too narrow. To avoid sample selection bias when choosing a bandwidth, we follow a data-driven approach that builds on asymptotic mean-squared-error (MSE) minimization to define an optimal bandwidth as formalized by Imbens and Kalyanaraman (2012), Calonico et al. (2014) and Keele et al. (2017). This approach estimates the asymptotic bias and corrects the standard errors accordingly to allow for a bias-corrected local-linear GRD estimate. Therefore, the bandwidths vary by outcome. In this study, they are on average equal to 79.31 km on each side of the boundary (with a standard deviation of 24.58 km) for the main regression results. The robustness checks in Section 2.5.3 show that these main results are robust to using other specifications and in particular, to fixed bandwidths of 80 km, 100 km and 120 km.

2.4.3 Identifying Assumptions

There are two key identifying assumptions to our identification strategy: (*i*) smooth variation of pre-treatment characteristics aside from the treatment itself, and (*ii*) absence of compound treatments.

Balance

The first identifying assumption requires that pre-treatment characteristics vary smoothly at the boundary threshold, aside from the treatment itself. This assumption ensures that locations outside the rebellion area are an appropriate counterfactual to those inside of it. In Table 2.1, we present a series of balancing tests: Panel (a) tests for geographic factors which may be associated with access to markets (elevation, slope, ruggedness as well as distances to St. Petersburg and Moscow); Panel (b), for measures of agricultural and industrial development (precipitation, temperature, wheat potential, caloric suitability index, factories in 1745 and mines in 1762); Panel (c), for variables related to population (in 1763), the presence of religious institutions (churches and monasteries in 1727) and of the state (civilian administrators and military officers in 1727). Reassuringly, Table 2.1 provides no evidence of differences for these characteristics across the boundary under either a sharp or fuzzy GRD.

Table 2.1 – Balancing Tests

	Panel (a)—Geography									
							Distance to			
	Elevation		Slope		Ruggedness		St. Petersburg		Moscow	
	(1) Sharp	(2) Fuzzy	(3) Sharp	(4) Fuzzy	(5) Sharp	(6) Fuzzy	(7) Sharp	(8) Fuzzy	(9) Sharp	(10) Fuzzy
Rebellion	-11.27	-12.16	-0.0953	-0.104	-2.107	-2.303	11.58	12.29	9.068	9.562
	(8.053)	(8.646)	(0.0652)	(0.0707)	(1.458)	(1.581)	(26.05)	(27.53)	(29.30)	(30.93)
Mean	161.9	161.9	1.271	1.271	32.45	32.45	1573	1573	1089	1089
Std. Dev.	118.7	118.7	1.206	1.206	27.01	27.01	378	378	445.6	445.6
Optimal BW	48.42	48.42	42.64	42.64	42.51	42.51	60.13	60.13	64.53	64.53
Observations	3859	3859	3395	3395	3388	3388	4741	4741	5033	5033

	Panel (b)—Agricultural and Industrial Potential											
	Precipitation		Temperature		Wheat Potential		Caloric Suitability Index		Factories 1745		Mines 1762	
	(1) Sharp	(2) Fuzzy	(3) Sharp	(4) Fuzzy	(5) Sharp	(6) Fuzzy	(7) Sharp	(8) Fuzzy	(9) Sharp	(10) Fuzzy	(11) Sharp	(12) Fuzzy
Rebellion	-0.0185	-0.0202	-0.0810	-0.0880	-52.00	-56.18	11.80	12.81	-0.00178	-0.00188	0.0201	0.0214
	(0.0612)	(0.0655)	(0.202)	(0.217)	(95.64)	(102.3)	(36.40)	(39.41)	(0.0150)	(0.0159)	(0.0188)	(0.0198)
Mean	3.936	3.936	4.302	4.302	3497	3497	1264	1264	0.0286	0.0286	0.0483	0.0483
Std. Dev.	0.870	0.870	2.710	2.710	1330	1330	509	509	0.167	0.167	0.214	0.214
Optimal BW	50.65	50.65	49.31	49.31	52.60	52.60	42.60	42.60	62.88	62.88	60.02	60.02
Observations	4031	4031	3941	3941	4175	4175	3394	3394	4926	4926	4730	4730

	Panel (c)—Population, Church and State									
			Church in 1727				State in 1727			
	Population 1763		Churches		Monasteries		Civil Administrators		Military Officers	
	(1) Sharp	(2) Fuzzy	(3) Sharp	(4) Fuzzy	(5) Sharp	(6) Fuzzy	(7) Sharp	(8) Fuzzy	(9) Sharp	(10) Fuzzy
Rebellion	0.0108	0.0108	-0.0497	-0.0541	-0.0229	-0.0248	-0.0366	-0.0400	0.00751	0.00813
	(0.245)	(0.245)	(0.0320)	(0.0348)	(0.0259)	(0.0279)	(0.0328)	(0.0357)	(0.00992)	(0.0106)
Mean	10.60	10.60	0.0981	0.0981	0.0605	0.0605	0.0919	0.0919	0.0187	0.0187
Std. Dev.	0.417054	0.417054	0.297	0.297	0.238	0.238	0.289	0.289	0.135	0.135
Optimal BW	50	50	36.70	36.70	46.06	46.06	37.50	37.50	53.81	53.81
Observations	33	33	2929	2929	3670	3670	3000	3000	4263	4263

Notes: The table reports balancing tests for three sets of variables related to (a) geography, (b) agricultural and industrial potential, and (c) population, church and state. The unit of observation is the grid-cell, with the exception of *Population 1763* which is at the town level since we rely on Kabuzan (1963) and match the towns to the Uezd level for European Russia as coded in Castañeda Dower et al. (2018). For each outcome, the number of observations varies with the bandwidth. Sharp and fuzzy estimations are reported. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Absence of Compound Treatments

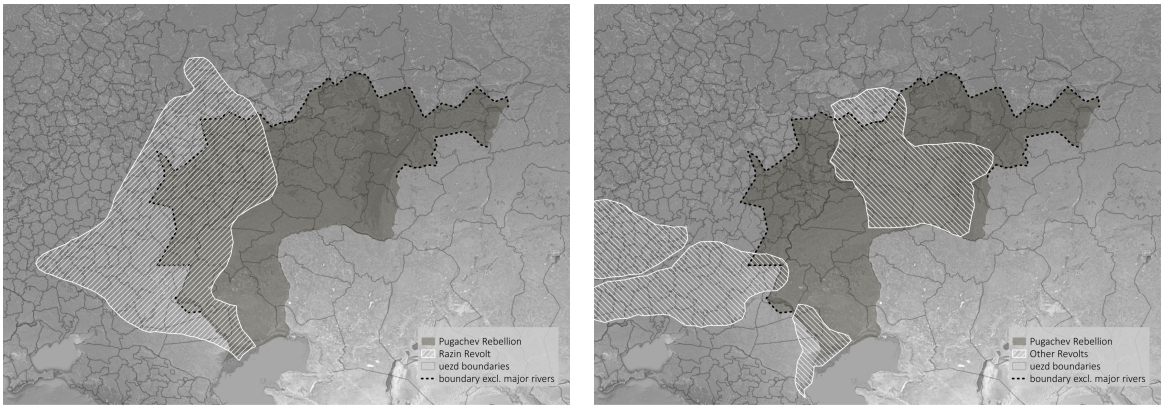
The second assumption behind our identification strategy requires that the study area is not subject to compound treatments so that our treatment is the only one affecting the outcomes of interest. In particular, there may be two types of confounders.

First, compound treatments could arise if the border of the rebel-held territory coincided with the boundaries of other rebellions that happened before Pugachev's revolt or with other political borders such as administrative boundaries. Figure 2.3 maps the boundaries of successive uprisings which took place in the Southern Urals in the late 17th and early 18th centuries: the 1670–1671 peasant uprising led by Stepan Razin, the 1704–1711 Bashkir revolt, the 1705–1708 Streltsy rebellion, the 1707–1708 Bulavin rebellion of the Don Cossacks and the 1708 Ukrainian Cossacks' revolt (Avrich, 1972). Reassuringly, Figure 2.3 shows that the boundary of Pugachev's rebellion does not overlap with the

boundary of any of these rebellions.[17] In addition, Panel (a) of Figure 2.4 shows that the administrative borders of the *uezds* (the second administrative subdivisions of the Russian Empire) do not align with the rebellion boundary.

Figure 2.3 – Late 17th and Early 18th Century Uprisings

(a) 1670–1671 Revolt of Stepan Razin **(b)** 1705–1711 Revolts



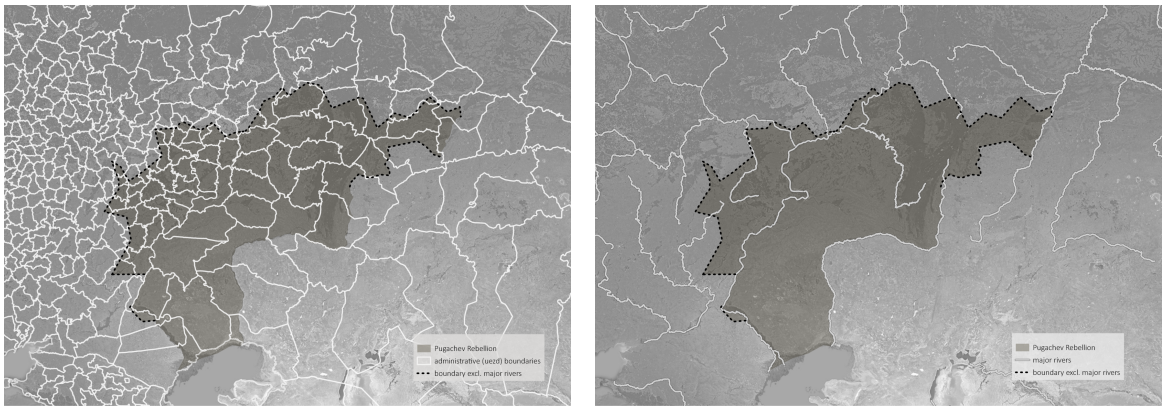
Notes: Figure 2.3 shows that the boundaries of the main revolts in the 17th and 18th centuries as well as borders of administrative units do not coincide with the boundary of Pugachev's rebellion. The black dashed line indicates the boundary of Pugachev's rebellion. The white striped shapes indicate the areas of former peasant uprisings. Panel (a) highlights the area of the 1670–1671 peasant uprising led by Stepan Razin, while Panel (b) highlights the boundary of four additional revolts, from left to right: the 1708 Ukrainian Cossack revolt, the 1707–1708 Don Cossack revolt led by Bulavin, the 1705–1708 Streltsy rebellion, and the 1708–1711 Bashkir rebellion. Second order administrative borders are shown in light grey in both panels.

Second, both rivers and major towns could be confounders. They might have had specific characteristics which are conducive to economic growth in the long run but might also have been of tactical importance to the rebels and the Tsarist troops. Panel (b) of Figure 2.4 shows that the rebellion coincides with a limited number of river lines. Consequently, we exclude boundary sections which follow river lines within a proximity of 5 km from our sample. We also exclude major towns from our analysis which we define as those whose population size prior to the rebellion in 1750 was sufficiently large to be listed in the population atlas of Bairoch et al. (1988). The list of towns included in our main sample, as well as the towns listed in Bairoch et al. (1988) that are excluded, can be found in the Appendix.

[17] While the boundaries of these revolts do not coincide with those of the Pugachev rebellion, they intersect in a limited number of points. Those intersections are, however, not problematic per se as they would equally impact (if at all) both the treated and control areas of Pugachev's rebellion.

Figure 2.4 – Administrative and Natural Boundaries

(a) Administrative Boundaries (Uezds) **(b)** Major River Lines



Notes: Figure 2.4 overlays the rebellion area with administrative unit (uezd) boundaries in Panel (a), and major river lines in Panel (b). Panel (a) shows that the boundary of Pugachev's rebellion does not coincide with the administrative units. Panel (b) shows that some sections of the major rivers coincide with the rebellion boundary and they are consequently excluded from our sample. The black dashed line indicates the effective boundary of Pugachev's rebellion in this study.

2.5 Results

In this section, we establish that the Russian state bolstered its presence at the rebellion boundary by building military installations and public infrastructure such as district postal roads as well as by increasing the number of civil servants and the fiscal capacity of local governments. We then analyze the impact of this increased state capacity on human capital formation as well as on industries and services. Finally, we discuss alternative explanations and present robustness checks.

2.5.1 The Change in State Capacity at the Rebellion Boundary

Under the Russian Empire

Table 2.2 establishes our main results that document the increase in state capacity as a response to the revolt. Figure 2.5 graphs the key significant results using regression discontinuity plots. It analyzes the development of public security, infrastructure, civil administration, and fiscal capacity in the wake of Pugachev's rebellion until WWI.

We find that areas exposed to the rebellion were 34.5% (one standard deviation) more likely to host a military installation (a fortress, garrison or military outpost) in 1820. By 1910, this additional military presence had given way to greater police presence: there were 18.37 additional policemen (0.51 of a standard deviation) inside the rebellion boundary. These areas were also 21.2% more likely to host monasteries in 1910. In other words, every fifth town at the rebellion boundary had a monastery. Conversely, the imperial regime's policies of religious control of the local Muslim population had a

Table 2.2 – Public Security and Public Infrastructure, Civil Administration and Fiscal Capacity in 1820, 1897, and 1910

	Military 1820 (1)	Military 1910 (2)	Police 1910 (3)	Monasteries 1910 (4)	Mosques 1910 (5)	Roads 1820 (6)	Roads 1910 (7)	Civil Admin. 1897 (8)	Executive Council 1883 (9)	Municipal Debt 1910 (10)
Rebellion	0.345***	26.50	18.37**	0.212*	0.348	3.780***	22.58***	159.7**	1.078***	2.127**
	(0.0726)	(114.2)	(7.809)	(0.114)	(0.381)	(1.159)	(6.811)	(67.99)	(0.325)	(0.869)
Mean	0.133	217.4	27.57	0.144	0.281	1.492	37.43	167.9	2.529	1.675
Std. Dev.	0.341	1041	36	0.369	0.760	3.601	32.77	306.2	1.709	2.020
Optimal BW	119.2	51.15	70.85	75.60	122.1	65.44	65.86	66.94	49.52	76.65
Observations	85	56	73	77	102	59	71	58	35	80

Notes: This table reports the estimated impact of Pugachev's rebellion on public infrastructure and public security in 1820 and 1910, on the numbers of executive council members of the local zemstvo governments in 1883 and civilian administrators in 1897, and on municipal debt in 1910 from the baseline specification (fuzzy GRD), using data from Piadyshev's Atlas of the Russian Empire in 1820, from Nafziger (2011) and from the town level censuses of the Russian Empire in 1897 and 1910. Column (1) reports results for military installations in the vicinity of a town (within 25km) in 1820, Column (2) for the military population in 1910, Column (3) for the number of municipal police officers in 1910, Column (4) for the number of male orthodox monasteries in 1910, Column (5) for the number of mosques in 1910, Column (6) for the length of the district postal road network of a town (in km) in 1910, Column (7) for the street network length (in km) in 1910, Column (8) for the male personal nobility who obtained their rank through military or civil service and officials of non aristocratic background in 1897, Column (9) for the number of executive council members of the local zemstvo governments in 1883, and Column (10) for municipal debt (measured in log of rubles) in 1910 averaged over three consecutive years and as reported on January 1 1910. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

positive but insignificant effect on the number of mosques in 1910 within the rebellion boundary. It is likely that by the turn of the 20th century, the imperial regime saw no reason to change the policies toward the local Muslim population that Catherine II and Igelström had devised after Pugachev's rebellion.

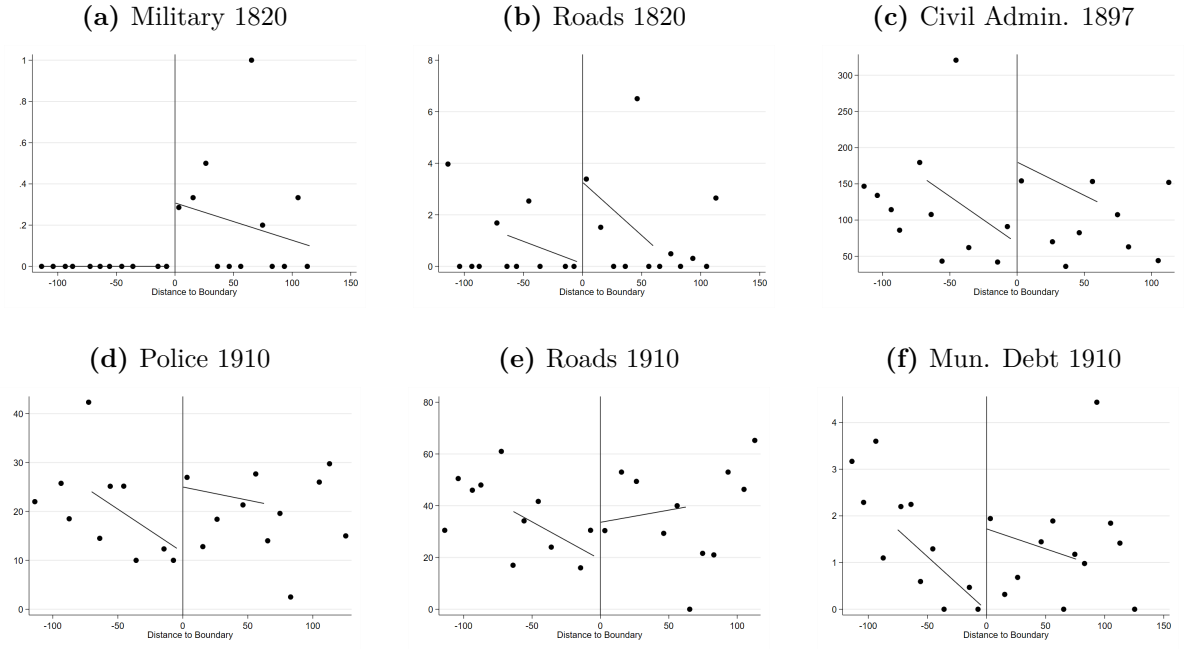
It might be conjectured that this increase in security forces would decrease the level of crime and unrest. Indeed, we find in Appendix Table C.1 that the increased presence of the state had a negative and significant impact on the frequency of unrest and riots in the 19th century. We also find that the effect of state presence on homicides in 1910 is negative but insignificant. In other words, the increase in state capacity might not have lowered non-political violence, but it eventually entailed an increase in police forces that acted as a deterrent against social and political agitation.

Table 2.2 also shows that areas just within the rebellion boundary were likely to benefit from a larger network of roads in 1820 as well as in 1910: the average road network within a town exposed to Pugachev's rebellion was 3.78 km longer in 1820 (1.05 of a standard deviation) and 22.58 km longer in 1910 (0.69 of a standard deviation).[18]

In addition, Table 2.2 establishes that state capacity within the rebellion boundary

[18]Even before Catherine II's accession to the throne, the construction and maintenance of roads had been moved under the jurisdiction of regional civil servants, while local residents were made responsible for its maintenance (e.g., Law N° 5789 § 29 in the Complete Collection of Laws of the Russian Empire (PSZRI) as collected by Speransky, 1830, pp.501–502).

Figure 2.5 – Regression Discontinuity Plots for Main Outcomes



Notes: This figure shows regression discontinuity plots for the key significant outcome variables. Black dots indicate the average value of the specified variable within 10 km distance bins. The Distance to Boundary on the x-axis measures the distance between a town and the closest point to Pugachev's rebellion boundary measured in km. The solid vertical line represents the boundary of the rebellion where the distance is zero. Negative/positive values of Distance to Boundary indicate the distance between Pugachev's rebellion boundary and towns outside/inside the rebellion area.

was not only stronger with respect to the enforcement of the monopoly of violence but also in matters of civilian administration and fiscal capacity. In 1883, a zemstvo within the rebellion boundary had on average one additional member (0.82 of a standard deviation) sitting on its executive council, suggesting that historical state capacity geared the implementation of Alexander II's policy that sought to develop fiscally independent local governments. Moreover, a town within the rebellion boundary hosted on average 159.7 additional civilian administrators (0.52 of a standard deviation) in 1897 while local municipal debt in 1910 was seven times higher ($e^{\beta}1 \approx 7.39$).[19]

Two additional insights regarding the fiscal capacity of the Russian state within the former rebellion boundary can be gained from the results in Appendix Table C.3. Column 1 shows that the rebellion boundary has no significant effect on the amount of direct taxes levied from peasant land between 1888–1890 as a ratio to land at the district level. In other words, the fiscal ability of the state was not significantly different on either side of the rebellion boundary. This suggests that the stronger fiscal capacity within the rebellion boundary which we noted in Table 2.2 likely stemmed from administrative investments in urban areas. Furthermore, the regressions in Columns (2)–(4) provide

[19] Appendix Table C.14 shows that in some of our robustness checks, towns within the rebellion boundary also had a higher level of tax receipts and public spending.

an illustration of the general impact of this greater state capacity, seen in the local response of the Russian state to the 1891–1892 famine. They suggest that in districts within the rebellion boundary, greater state presence–and therefore, a greater number of civil servants–enabled the local population to spend fewer months on relief (Column 2), because the onset of relief began earlier (Column 3) and the state gave more bread (Column 4).

As such, Table 2.2 suggests that the Russian state bolstered its presence in areas just inside the rebellion boundary. It built military outposts to prevent future rebellions and expanded the road network to facilitate army movements. By the turn of the 20th century, this military presence had increased the numbers of police officers and of civilian administrators as well as the fiscal capacity of the local administration.

Beyond Regime Changes

Table 2.3 examines whether the change in state capacity in the formerly rebel-held area under the imperial regime has persisted to this day. It establishes that in 2016, there was no significantly higher military and police presence on either side of the rebellion boundary, most likely as a result of the policies of state surveillance during the Soviet Union. However, Table 2.3 also shows that the impact of increased state presence has persisted in modern forms of public infrastructure. In 2019, tertiary roads were 21.79 km longer (1.06 of a standard deviation) and there were 1.28 additional railway stops (0.84 of a standard deviation).

Table 2.3 – Public Security and Infrastructure in 2016 and 2019

	Police	Military	Public Sector &	Railway	Road Length by Type			Orthodox		
	Stations	Area	Administration	Stop	Primary	Secondary	Tertiary	Monasteries	Churches	Mosques
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rebellion	-2.092	0.004	-0.457*	1.278**	12.15	-0.638	21.79**	-0.019	0.058*	0.160**
	(2.514)	(0.006)	(0.243)	(0.532)	(8.550)	(10.55)	(8.853)	(0.113)	(0.031)	(0.072)
Mean	1.608	0.003	0.150	0.824	15.32	20.31	30.88	0.047	0.047	0.116
Std. Dev.	3.509	0.017	0.358	1.522	19.76	20.18	20.46	0.276	0.240	0.437
Optimal BW	128.9	119.1	129.7	66.30	73.14	76.93	56.41	104.5	39.05	43.57
Observations	191	183	301	126	136	136	112	164	91	94

Notes: This table reports the estimated impact of state capacity on measures of contemporary public security and infrastructure from the baseline specification (fuzzy GRD), using data from LiTS and OSM. Column (1) reports results for the number of police stations in 2019, Column (2) for the share of land used by military installations (in km^2) in 2019, Column (3) for respondents of the LiTS that work in the public sector or the public administration in 2016, Column (4) for the number of railway halts, Columns (5–7) for the primary, secondary and tertiary road network length (in km) in 2019, Columns (8–9) for the number of orthodox monasteries and churches, and Column(10) for the number of mosques. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Moreover, Table 2.3 shows that greater historical state presence within the rebellion territory could still be seen in 2019 in the form of more Orthodox churches and more mosques. While we noted in Table 2.2 that the state-sponsored policies of religious

proselytism led to an increase in the number of Orthodox monasteries in 1910, it is unclear that this present-day result is a direct consequence of greater historical state presence. Such an interpretation could neither account for the destruction of churches and other religious buildings that took place during the Soviet Regime nor for the greater number of mosques (Yemelianova, 2017). However, there is another explanation which could also account for the slightly negative and significant effect at the 10% level of historical state presence on the share of individuals working in the public sector and public administration: the state has encouraged religious groups to provide welfare services which were once under its provision, and in so doing has enabled the construction of churches and mosques.[20] As such, while the literature on the economics of religion has often shown that increased public spending crowds out religious activities (for a survey, see, e.g., Iyer, 2016), the results in Table 2.3 suggest the inverse relationship whereby the decline in local state presence has enabled a revival of religiosity.

2.5.2 Local State Capacity and National Economic Policies

This section examines the impact of state capacity on education provision and human capital formation in the formerly rebel-held area from the imperial regime until present. Furthermore, it explores whether state presence in the aftermath of Pugachev's rebellion has contributed to the growth of industries, services and income in the Southern Urals.

Human Capital Formation

Table 2.4 documents that the increased presence of the state had no effect on the number of school buildings until 1860. However, in the wake of the educational reforms promoted by Alexander II from the 1860s onward, the areas which had experienced the rebellion and consequently more state presence, began to experience a rise in the number of school openings which persisted until the end of the 19th century. Given that the coefficient associated with the impact of state presence on schools in 1891–1893 is 0.78 (0.71 of a standard deviation) and that the average number of schools in our sample is 0.59, our results suggest that Alexander II's education policies led to the opening of one additional school in every other town within the rebellion boundary.

Furthermore, Table 2.5 shows the impact of state presence on the type of schools. While there was no significant difference between the rebel-held and non-rebel held areas in the number of state-funded secular schools in 1895, there were 1.73 additional private Christian Orthodox schools (0.92 of a standard deviation). These Christian Orthodox schools satisfied the demand for education in smaller towns that the state did not cater

[20] For example, in the Urals, the Bolshoi Zlatoust church in Ekaterinburg was destroyed in 1930 but its reconstruction began in 2006 and it was reopened for religious services in 2010. Furthermore, after the fall of the USSR, two large mosques were built in Ufa (Lala Tulpan Mosque and Mosque of the Twenty-Five Prophets) and two large ones were built in Uchaly (Uchaly Nur Mosque and Zaynulla Rasulev Mosque).

Table 2.4 – School Openings in the 19th century

	Until	Between		
	1860	1866–1870	1881–1885	1891–1893
	(1)	(2)	(3)	(4)
Rebellion	-1.061	0.623***	0.975**	0.778*
	(0.688)	(0.173)	(0.460)	(0.446)
Mean	1.081	0.430	0.837	0.585
Std. Dev.	1.093	0.641	1.288	1.089
Optimal BW	52.78	64.06	50.02	66.48
Observations	51	59	50	59

Notes: This table reports the estimated impact of state capacity on the number of school opening in the second half of the 19th century from the baseline specification (fuzzy GRD), using data from the General Primary Education survey at the town level. Column (1) reports results for the number of new schools until 1860, and Columns (2–4) for numbers of schools opening between 1866-1870, 1881-1885, and 1891-1893, respectively. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table 2.5 – School Types and Pupils in 1895 and 1910

	School Types 1895		Pupils 1895		School Types 1910			Pupils 1910	
	State Secular	Christian Orthodox	Female	Male	Coeducational	All Female	All Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rebellion	0.109	1.733*	155.6**	178.8**	2.365***	1.373***	1.185	185.6*	311.7***
	(0.0750)	(0.941)	(68.34)	(89.21)	(0.870)	(0.529)	(1.072)	(97.76)	(120.5)
Mean	0.0741	1.215	177.1	317	2.090	1.946	3.353	303.9	522.1
Std. Dev.	0.290	1.874	167.8	273	3.018	2.190	3.168	328.5	463.9
Optimal BW	64.31	82.72	72.96	80.80	56.01	63.12	64.19	51.64	79.65
Observations	59	69	64	68	62	70	71	57	80

Notes: The table reports the estimated impact of state capacity on the number of pupils in 1895 and 1910 from the baseline specification (fuzzy GRD), using data from the General Primary Education survey and the census from those years. Columns (1) and (2) report results for the number of state secular and christian orthodox schools in 1895, Columns (3) and (4) for the number of female and male pupils in 1895, Columns (5–7) for the number of coeducational, all female, and all male schools in 1910, and Columns (8) and (9) for the number of female and male pupils in 1910. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

to.[21] Moreover, there were significantly more coeducational primary schools and all female primary schools, but no more all male primary schools. There were significantly more female and male primary school pupils in 1895 and 1910. Namely, in 1910, there were 185.6 additional female pupils (0.56 of a standard deviation) and 311.7 additional male pupils (0.67 of a standard deviation) in towns inside the rebellion boundary. Thus, Table 2.5 suggests that state policies fostered primary schooling for girls while parents favored primary schooling for boys.[22]

Additional results in Appendix Table C.2 show that state capacity had limited effects

[21] This interpretation of our results is supported by the robustness checks in Table C.17 showing that there were more state-funded secular schools in the major towns within the former rebel-held areas.

[22] These results should be put in perspective with those from studies on active education policy interventions in currently developing countries that have been shown to benefit girls more than boys (see e.g., Orazem and King, 2008).

on variables related to human capital other than education. Namely, Columns (1) and (2) of Appendix Table C.2 show that the average height of army conscripts was significantly higher within the former rebellion boundary in 1877 but that this effect was not persistent in 1882.[23] In addition, Columns (3) and (4) document that there was no significant difference in the number of army conscripts within the rebellion boundary, suggesting that there was no difference in the number of rich individuals who could avoid being drafted in the army by paying fees.

Table 2.6 – Schools and Post-Secondary Education in 2016 and 2019

	School	Post-Secondary Education		
	Buildings	Respondent	Father	Mother
	(1)	(2)	(3)	(4)
Rebellion	2.431**	-0.691***	-0.311	-0.317
	(1.028)	(0.222)	(0.267)	(0.270)
Mean	1.276	0.697	0.529	0.526
Std. Dev.	2.495	0.460	0.500	0.500
Optimal BW	60.28	103.6	138.6	138.6
Observations	119	301	286	293

Notes: The table reports the estimated impact of state capacity on the number of school buildings in 2019 and the share of respondents with higher education attainment in 2016 from the baseline specification (fuzzy GRD), using data from LITS and OSM. Columns (1) reports results for the number of schools in 2019, Columns (2–4) for share of respondents, their father, and mother with post-secondary education levels in 2016. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Finally, Table 2.6 shows that in 2019, historical state capacity still had an impact as two additional school buildings (one standard deviation) were still located in towns within the rebellion boundary. However, Table 2.6 also shows that individuals living inside the rebellion boundary were 69.1% less likely to have post-secondary education, even though their parents show no significantly different level of post-secondary education compared to those just outside the boundary. To understand the differences between Tables 2.4, 2.5 and 2.6 whereby areas which were more literate in late 19th century Russia lost their advantage in human capital accumulation, we offer an explanation pertaining to the consequences of historical state presence on industrialization during the Russian imperial regime and the USSR.

Industries, Services, and Income

Tables 2.7, 2.8 and 2.9 assess the impact of greater historical state presence on industries and services under the Russian Empire, under the Soviet regime and in present times. Table 2.7 establishes that locations inside the boundary of the rebellion were 27% more

[23] The significant effect in 1877 could be explained by a special effort on the part of the Russian army to find tall soldiers to fight in the 1877–1878 Russo-Turkish war.

likely to host a factory in 1820 (0.85 of a standard deviation), but this significant effect had disappeared by 1910. In addition, these locations did not have significantly higher numbers of artisanal workshops or open-air markets in 1910. Yet, Table 2.7 suggests that in 1910, increased state presence had a limited, but nonetheless positive and significant effect on the development of modern factories. Inside the rebellion area, factories employed more workers and the yearly production value per factory worker was about 1000 rubles higher (0.25 of a standard deviation). However, we find no similar effect on the production value per worker in artisanal workshops.

Table 2.7 – Factories, Workshops, Market Activities in 1820 and 1910

	Factories	Factories	Workshops	Open Markets	Share Workers	Production per Worker	
	1820	1910	1910	1910	1910	Factory 1910	Workshop 1910
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rebellion	0.268***	-2.074	10.21	0.598	0.133**	1.084*	-0.0292
	(0.0922)	(6.337)	(7.052)	(0.658)	(0.0606)	(0.601)	(0.0926)
Mean	0.111	7.246	12.35	2.144	0.0592	1.152	0.227
Std. Dev.	0.315	17.70	40.64	1.831	0.164	4.377	0.553
Optimal BW	61.53	53.02	35.82	80.96	88.58	39.07	50.93
Observations	58	58	46	80	84	47	57

Notes: The table reports the estimated impact of state capacity on factories, workshops and market activities in 1820 and 1910 from the baseline specification (fuzzy GRD), using data from Piadyshev's Atlas of the Russian Empire in 1820 and from the town level census of the Russian Empire in 1910. Column (1) reports results for the presence of at least one factory in the vicinity of a town (within 25km) in 1820, Columns (2–4) for the numbers of factories, workshops, and open markets in 1910, Column (5) for the share of workers in the total population, and Columns (6) and (7) for the production per factory worker and per workshop worker in thousand rubles in 1910. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

In addition, Table 2.8 establishes that the NEP which had begun in 1921 had a larger impact within the former rebel-held area. By 1926, each family household had almost one additional member (2.73 of a standard deviation) who was self-employed while every other household had one additional industry worker (16.2 of a standard deviation). Furthermore, following Stalin's policies of forced collectivization after 1928, there was one additional sovkhoz for every 10 grid cells (i.e., 100 km^2) within the rebellion area (0.21 of a standard deviation). However, historical state capacity had no significant effect on the presence of kolkhozes, which had only been tolerated by the communist leadership as an undesirable state of agricultural collectivization. Moreover, we find that there was one additional Gulag every 200 km^2 within the boundary of the rebellion (0.20 of a standard deviation) and that these operated four additional years on average (0.98 of a standard deviation). As such, Table 2.8 shows that the early economic policies pursued by the USSR shared a common trait with the development of educational structures in Russia under Alexander II: they were neither implemented uniformly across the country nor in the areas which might potentially have needed them the most (or the least) but where

the state, i.e., civil servants and public infrastructure, was already located.[24]

Table 2.8 – Workforce, Collectivization and Forced Labor in the Soviet Union

	Family households 1926		Collectivization		Gulag	
	Self-Employed	Industrial Workers	Sovkhoz	Kolkhoz	Count	Years in Operation
	(1)	(2)	(3)	(4)	(5)	(6)
Rebellion	0.972**	0.613**	0.101***	-0.0375	0.0569**	4.112**
	(0.435)	(0.269)	(0.0360)	(0.0863)	(0.0247)	(1.984)
Mean	1.805	0.290	0.132	0.187	0.0354	3.489
Std. Dev.	0.356	0.379	0.486	0.844	0.280	4.183
Optimal BW	88.46	46.64	44.40	44.89	53.87	27.22
Observations.	29	19	4585	4636	5544	90

Notes: The table reports the estimated impact of state capacity on industrial development, collectivization, and forced labor from the baseline specification (fuzzy GRD), using data from the town level census of the USSR in 1926 as well as the GeoNames and Memorial databases. Columns (1) and (2) report results for the ratios of self-employed individuals and industry workers to family households in 1926, Columns (3) and (4) for the number of sovkhoz and kolkhoz farms, Columns (5) and (6) for the number of Gulags and the number of years each Gulag operated. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table 2.9 – Income, Occupations and Land Use in 2016 and 2019

	Household	Occupation		Land Use		
	Income	Industry	Services	Commercial & Retail	Industry & Quarry	Farm
	(1)	(2)	(3)	(4)	(5)	(6)
Rebellion	-1.152***	0.191	-0.876***	0.0008	0.0416***	-0.0930*
	(0.340)	(0.217)	(0.283)	(0.0012)	(0.0126)	(0.0508)
Mean	10.39	0.178	0.281	0.0009	0.0199	0.0631
Std. Dev.	0.784	0.383	0.450	0.003	0.026	0.111
Optimal BW	85.74	123.2	112	131.6	49.64	57.03
Observations	232	301	301	194	104	112

Notes: The table reports the estimated impact of state capacity on a household's income, occupations, and the use of land in 2016 and 20219 from the baseline specification (fuzzy GRD), using data from LiTS and OSM. Column (1) reports results for a household's income, Columns (2) and (3) for respondents that work in industry and services, Columns (4–6) for the proportion of the land used by activities of commerce and retail, industry and quarry, and farms. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Finally Table 2.9 shows that in 2016, household incomes were significantly lower inside the rebellion boundary. It also establishes that greater historical state presence has almost no impact on the industrial sector nowadays, in spite of its positive effect in 1926 in Table 2.8. The share of land in the rebellion area was only 4.2% more likely (1.81

[24]While there is always some uncertainty about the reliability of official statistics, these concerns may be heightened when it comes to the quality of Soviet data. However, there is no reason to suspect that the civil servants who collected data at the local level or those who worked in the higher echelons of the Soviet bureaucracy systematically biased local statistics to show that the NEP had a positive and significant effect just within the boundary of Pugachev's rebellion. Such data falsification would serve no obvious purpose, and in particular, no propaganda objective of the Soviet regime. If anything, the regressions in Columns (3)–(6) of Table 2.8 rely on crowd-sourced infrastructure data and show the impact of historical state capacity on the implementation of Soviet policies, thereby providing additional support for the validity of the regressions in Columns (1) and (2).

of a standard deviation) to be occupied by industrial plants and quarries in 2019 while the share of the workforce employed in industries in 2016 within the rebellion area was not significantly different from that outside the rebellion area. Table 2.9 also shows that increased state capacity had no significant impact on the share of land used by commercial and retail outlets in 2019 but a large negative and significant effect on the workforce of the service sector in 2016: an individual within the rebellion boundary was 87.6% less likely to work in the service sector.

Overall, the results in Table 2.9 on income and the workforce are in line with the negative impact of state presence on human capital formation which we noted above in Table 2.6 whereby individuals inside the rebellion boundary were less likely to have post-secondary education than those outside the boundary. Just as in formerly industrialized regions in Western Europe and in the USA where the workforce did not adapt to changing economic conditions (Franck and Galor, 2021), industrialization within the rebellion boundary entailed a predisposition towards limited investments in human capital. This eventually slowed the acquisition of higher human capital and thus, the transition to modern profitable skill-intensive occupations. As such, these results suggest that greater historical state capacity inside the rebellion boundary did not prevent the industrial decline of the Southern Urals.

2.5.3 Alternative Explanations and Robustness Checks

This section shows that our main results are not driven by changes in population composition and migration. They are also not explained by a potential standard recovery effect that could affect areas experiencing substantial destruction in physical and human capital during conflicts. Finally, they are also robust to accounting for spatial autocorrelation and using alternative estimation methods.

Population Size, Ethnic Composition and Migration

While our results establish the long-term impact of increased state capacity on local economic development, another explanation for these findings could stem from migratory movements, either free or forced, that occurred after the rebellion. It may indeed be hypothesized that after Pugachev's rebellion, sections of the population moved out of the region because they feared another uprising in the future.[25] Conversely, others may have moved into the region because of opportunities created by the increase in public infrastructure. Furthermore, Russia experienced substantial migratory movements during the 20th century, some of which were triggered by WWII while others were caused by Stalin's policies of forced relocation of specific ethnic groups. Still, there is no historical evidence

[25]There is no historical evidence that some individuals moved out of the rebellion area to escape the reach of the state. For a general discussion, see, e.g., Scott (1998).

suggesting that the rebellion boundary was a focal point for migratory movements after 1775 (Polian, 2004).

To evaluate whether our results might be driven by population movements, we assess the impact of Pugachev's rebellion on the population size and its composition in 1864, 1910 and 2010 in Tables C.4 and C.5. The results suggest that the change in state capacity at the rebellion's boundary neither entailed differential outcomes in terms of the total population or urban population in 1864, nor on the total population and its ethnic composition in 1910. We also find no effect on the total population in 2010. These robustness checks suggest that our main regression results are unlikely to be driven by migratory movements.

State Response and Catch-up Effect in the Aftermath of Rebellions

It might be hypothesized that the increase in state capacity within Pugachev's rebel-held territory was not a one-time push decided by Catherine II but the usual response of the Russian state to major rebellions. It may also be conjectured that the economic changes inside the rebellion boundary, characterized by higher education following Alexander II's 1860s reforms, forced industrialization in the 1930s and economic decline nowadays, are attributable to the consequences of a standard catch-up effect that follows the destruction of human and physical capital after rebellions as opposed to increased state capacity.

For this purpose, we re-estimate our main results in Tables 2.2–2.9 over the boundary of Stepan Razin's rebel-held territory in 1670–1671 in Appendix Tables C.6–C.13.[26] It was the largest peasant revolt in 17th century Russia and only second to Pugachev's rebellion in Russian history. As can be seen in Panel (a) of Figure 2.3, the territory controlled by Razin at the height of his rebellion had an area size of 690,352 km^2, i.e., 73% of the territory held by Pugachev (O'Neill, 2016).

The results in Table C.6 show that the towns within Razin's rebellion territory had a significantly lower fiscal capacity than those outside of it in 1910. While those towns had a more developed road network in 1820, this effect turned out not to be persistent in 1910. In addition, Razin's rebellion had no significant effect on the presence of monasteries, civilian administrators as well as military officers and police forces. Hence, in line with the historical evidence, the robustness checks in Table C.6 suggest that neither Tsar Alexis I, who ruled Russia during Razin's revolt, nor his successors (including Catherine II) increased state capacity within the territory held by Razin's rebels.

Furthermore, Tables C.8, C.9 and C.11 show that the border of Razin's territory did not experience any major and long-lasting change in economic and educational outcomes under the imperial regime. Thus, our main results in Tables 2.4, 2.5 and 2.7 regarding the impact of Alexander II's state-driven educational policies and the limited development of

[26] We estimate a sharp GRD for the boundary of Razin's rebellion, as we lack the information on the movements of the rebels and the Tsarist army to use a fuzzy GRD.

industries before 1917 cannot be explained by a standard catch-up effect that the Southern Urals could have experienced after the destruction of physical and human capital caused by Pugachev's rebellion.

Finally, Table C.7 establishes that nowadays, Razin's former territory is unlike that of Pugachev insofar as it bears no marker of historical state capacity, either in the form of public infrastructure or religious buildings. This lack of historical state capacity is in line with Table C.12 showing the insignificant effect of Razin's boundary on the number of Gulags, whose presence proxies for the collectivization of industry during the 1930s. It is also in line with the significant effect of Razin's boundary on the number of kolkhozes and its insignificant impact on the number of sovkhozes, thus suggesting that there was no differential state support for extensive agricultural collectivization in the area during the same time period. It also explains why Tables C.10 and C.13 show that in 2016, individuals living within Razin's rebellion boundary were richer, less likely to work in the industrial sector and more likely to have a post-secondary degree. This confirms our results in Tables 2.6 and 2.9 that the policies of intensive industrialization within Pugachev's territory ultimately had negative effects on economic growth.

Alternative Specifications and Spatial Autocorrelation

To ensure the robustness of our main results in Tables 2.2–2.9, we report alternative specifications in Appendix Tables C.14–C.21. For each variable, Column (1) shows the original result as presented in the main text for reference, Column (2) reports the results using the sharp GRD and Column (3) uses the fuzzy GRD baseline specification with an updated sample that includes the major towns formerly excluded in the main regressions. Column (4) employs Conley standard errors with a distance cutoff at 100 km to account for spatial autocorrelation (Conley, 1999; Colella et al., 2019). Column (5) clusters the standard errors at the province level or, at the sampling unit level for contemporary LiTS surveys (in Tables C.15 and C.18) or at the grid cell level (in Tables C.20 and C.21). Columns (6), (7) and (8) use bandwidths of 80 km, 100 km and 120 km respectively. Reassuringly, the size and significance of the estimated coefficients remain similar throughout.

To further test that our main results are not driven by spatial autocorrelation (for a discussion see, e.g., Kelly, 2019), we report Moran's I measures and related statistics in Appendix Tables C.22–C.29. Overall, as we discuss in more detail in the Appendix, spatial autocorrelation does not seem to be a major issue in our analysis.

2.6 Conclusion

This study analyzes the effects of increased state capacity on local economic development. It focuses on the aftermath of Yemelyan Pugachev's rebellion in the Southern Urals between 1773 and 1775. To prevent another uprising in that region, Catherine II engineered an increase in state capacity at the border of the formerly rebel-held area that we exploit to assess the long-run impact of state presence at the local level. Focusing on a specific instance of an increase in local state capacity comes at the cost of external validity. Still, it avoids the issues associated with studies that focus on the local long-term effects of two (or more) historical states within a modern country or with cross-country analyses since the Russian state has governed the Southern Urals uninterruptedly since the 18th century. As such, our approach alleviates concerns that the findings can be driven by an omitted variable bias related to differences in cultural and political institutions.

Our results show that under the Russian Empire, the local increase in state capacity had been conducive to the development and persistence of activities provided by the state by their very nature, such as national security and public infrastructure. However, increased state capacity did not affect local human capital formation until there was a national political commitment to improve the provision of education from the 1860s onward. Moreover, during the interwar period, the pre-existing local state capacity developed by the imperial regime shaped Soviet economic policies. When Soviet leaders sought to foster small private enterprises, places within the boundary of Pugachev's rebellion experienced a rise in the number of self-employed individuals within family households. Later, when they implemented policies of forced collectivization, the area witnessed an increase in the number of collective farms and camps of forced labor. However, in the absence of relevant public policies, historical state capacity in the Southern Urals has not prevented the present decline in industrial employment or enabled the rise of a service sector. In fact, individuals currently living inside the formerly rebel-held area are poorer and less educated than those living just outside of it.

Overall, the study suggests that a locally bolstered state capacity, in the form of efficiently levied taxes and a greater number of soldiers, policemen, and civil servants, is not conducive to growth per se. Instead, it shows that such state capacity impacts the local implementation of state-led initiatives. A potential downside is therefore that state-led policies are not necessarily implemented more effectively in regions where they are needed but where there is already strong pre-existing state capacity.

Appendix

A Variable Definitions and Descriptive Statistics

A.1 Variable Definitions and Sources

Table 2.1

Elevation: Average physical elevation in meters within a 10 × 10 km grid-cell. Source: Jarvis et al. (2008).

Slope: A function of a grid-cells surrounding elevation in degrees within a grid-cell. Source: Jarvis et al. (2008), authors' calculation.

Ruggedness: Terrain Ruggedness Index in meters within a grid-cell. Source: Nunn and Puga (2012).

Distance to St. Petersburg: Great circle distance between a grid cells centroid and the centroid of St. Petersburg. Source: Authors' calculation.

Distance to Moscow: Great circle distance between a grid cells centroid and the centroid of Moscow. Source: Authors' calculation.

Precipitation: Long-term average over monthly mean for 1981–2010 in centimeter within a grid-cell. Source: Willmott and Matsuura (2001).

Temperature: Long-term average over monthly mean for 1981–2010 in degree Celsius within a grid-cell. Source: Willmott and Matsuura (2001).

Wheat Potential: Agro-climatically attainable yield in kilogram of dry matter per hectare within a grid-cell. Source: FAO/IIASA (2011).

Caloric Suitability Index: Post-1500 crop based data for the average calories including crops with zero yield within a grid-cell. Source: Galor and Özak (2016).

Factories 1745: Binary indicator equal to one if grid-cell within 25km of a factory or a site of craft production (including iron, glass, brick, leather and textiles) in 1745. Source: Kirilov (1727), geocoded by O'Neill (2016).

Mines 1762: Binary indicator equal to one if grid-cell is within 25km of an open copper mine in 1762. Source: Blanchard (1989).

Population 1763: Logged count (+1) of the population at the district level for European Russia 1763. Source: Kabuzan (1963), coded to match European Russia as in Castañeda Dower et al. (2018).

Churches 1727: Binary indicator equal to one if grid-cell is within 25km of a church in 1727. Source: Kirilov (1727), geocoded by O'Neill (2016).

Monasteries 1727: Binary indicator equal to one if grid-cell is within 25km of a monastery in 1727. Source: Kirilov (1727), geocoded by O'Neill (2016).

Civil Administrators 1727: Binary indicator equal to one if grid-cell is within 25km of Tsarist officials assigned to chancelleries and other offices. Source: Kirilov (1727), geocoded by O'Neill (2016).

Military Officers 1727: Binary indicator equal to one if grid-cell is within 25km of posted soldiers and officers in 1727. Source: Kirilov (1727), geocoded by O'Neill (2016).

Table 2.2

Military 1820: Binary indicator equal to one if grid-cell is within 25km of a fortress, forepost, cordon or redoubts in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Military 1910: Number of military population at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Police 1910: Number of local police stations at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914)

Monasteries 1910: Number of monasteries at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Mosques 1910: Number of mosques at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Roads 1820: Length of a district postal road network in km per grid-cell in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Roads 1910: Length of the road network in km per grid-cell in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Civil Administrators 1897: Number of personal nobility and bureaucrats at the town level in 1897. Source: Troynitsky (1897).

Executive Council 1883: Number of executive council members, uprava, at the local zemstvo administration in 1883. Source: Nafziger (2011).

Municipal Debt 1910: Municipal debt of the town measured in rubels, averaged over three consecutive years, reported as of January 1 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Table 2.3

Police Stations 2019: Number of police stations at the town level in 2019. Source: OpenStreetMap.

Military Area 2019: Military installations as a share of land use at the town level in 2019. Source: OpenStreetMap.

Public Sector and Public Administration 2016: Respondent works in the public sector or the public administration at the town level in 2016. Source: Life in Transition Survey.

Railway Stop 2019: Number of railway stops at the town level in 2019. Source: OpenStreetMap.

Primary Roads 2019: Length of the primary road network in km at the town level in 2019. Source: OpenStreetMap.

Secondary Roads 2019: Length of the secondary road network in km at the town level town in 2019. Source: OpenStreetMap.

Tertiary Roads 2019: Length of the tertiary road network in km at the town level in 2019. Source: OpenStreetMap.

Orthodox Monasteries 2019: Number of orthodox monasteries at the town level in 2019. Source: OpenStreetMap.

Orthodox Churches 2019: Number of orthodox churches at the town level in 2019. Source: OpenStreetMap.

Mosques 2019: Number of mosques at the town level in 2019. Source: OpenStreetMap.

Table 2.4

Schools Opening until 1893: Number of schools opening until 1860, between 1866–1870, between 1881–1885, and between 1891–1893 at the town level. Source: Falbork and Charnoluskii (1900).

Table 2.5

School Types 1895: Number of state secular and christian orthodox schools at the town level in 1895. Source: Falbork and Charnoluskii (1900).

Pupils 1895: Number of female and male pupils at the town level in 1872. Source: Falbork and Charnoluskii (1900).

School Types 1910: Number of coeducational, all female, and all male schools at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Pupils 1910: Number of male and female pupils in 1910.
Source: Ministerstvo Vnutrennykh Del (1914).

Table 2.6

Schools 2019: Number of schools at the town level in 2019. Source: OpenStreetMap.

Post-Secondary Education, Respondent 2016: Respondent has post-secondary education at the town level in 2016. Source: Life in Transition Survey.

Post-Secondary Education, Father 2016: Respondent's father has post-secondary education at the town level in 2016. Source: Life in Transition Survey.

Post-Secondary Education, Mother 2016: Respondent's mother has post-secondary education at the town level in 2016. Source: Life in Transition Survey.

Table 2.7

Factories 1820: Binary indicator equal to one if grid-cell is within 25km of a factory in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Factories 1910: Number of factories in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Workshops 1910: Source: Number of workshops in 1910. Ministerstvo Vnutrennykh Del (1914).

Open Markets 1910: Number of open air markets in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Share Workers 1910: Number of all, factory, and workshop workers in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Production per Worker 1910: Production per factory and workshop worker in thousand rubles at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Table 2.8

Self-Employed 1926: Ratio of self-employed individuals to family households at the town level in 1926. Source: Ministerstvo Vnutrennykh Del (1926).

Factory Workers 1926: Ratio to industrial factory workers to family households at the town level in 1926. Source: Ministerstvo Vnutrennykh Del (1926).

Sovkhoz: Number of sovkhozes at the grid cell level. Source: GeoNames.

Kolkhoz: Number of kolkhozes at the grid cell level. Source: GeoNames.

Gulags Count: Number of Gulags at the grid cell level. Source: Memorial.

Gulags Years Open: Number of years each Gulag was in operation at the grid cell level. Source: Memorial.

Table 2.9

Household Income 2016: Log household net monthly income at the town level in 2016. Source: Life in Transition Survey.

Industry 2016: Respondent works in the industrial sector at the town level in 2016. Source: Life in Transition Survey.

Services 2016: Respondent works in the service sector at the town level in 2016. Source: Life in Transition Survey.

Land Use, Commercial and Retail 2019: Commercial and Retail areas as a share of land used at the town level in 2019. Source: OpenStreetMap.

Land Use, Industry and Quarry 2019: Industrial and quarry areas as a share of land used at the town level in 2019. Source: OpenStreetMap.

Land Use, Farm 2019: Farm land areas as a share of land used at the town level in 2019. Source: OpenStreetMap.

Table C.1

Frequency of Unrest 19th Century: Proportion of years between 1851–1863 for which a disturbance is recorded, devided into all, "large" unrests which spanned several villages or districts, and unrests listed in the Central State Archive of the October Revolution (TsGAOR) at the district level in the 19th century. Source: Castañeda Dower et al. (2018).

Homicides 1910: Number of violent deaths in 1910 at the town level. Source: Ministerstvo Vnutrennykh Del, Tsentralnyi Statisticheckyi Komitet (1912).

Total Deaths 1910: Number of total deaths in 1910 at the town level. Source: Ministerstvo Vnutrennykh Del, Tsentralnyi Statisticheckyi Komitet (1912).

Homicides/Deaths 1910: Ratio of homicides to deaths in 1910 at the town level. Source: Ministerstvo Vnutrennykh Del, Tsentralnyi Statisticheckyi Komitet (1912).

Table C.2

Army Conscripts Height: The average height in cm for army conscripts in a given district in 1877 and 1882 respectively. Source: Markevich and Zhuravskaya (2018).

Total Army Conscripts: The average total number of drafted army conscripts in a given district in 1877 and 1882 respectively. Source: Markevich and Zhuravskaya (2018).

Table C.3

Taxes to Land: Direct taxes from peasant land between 1888–1890 as a ratio to land at the district level. Source: "Statisticheskie dannye po vydache ssud na obsemenenie i prodo

vol'stvie naseleniu, postradavchemu ot neurozhaia v 1891–1892 gg." 1894. Vremennik no. 28 St. Peterburg: CSC MVD via Charnysh (2022).

Months on Relief: Count of months in which more than 1 percent of the rural population received public assistance (central relief, "disbursed from the provincial food supply capital funds and the central fund for the empire as a whole" Charnysh (2022, p.219). Source: "Statisticheskie dannye po vydache ssud na obsemenenie i prodo vol'stvie naseleniu, postradavchemu ot neurozhaia v 1891–1892 gg." 1894. Vremennik no. 28 St. Peterburg: CSC MVD via Charnysh (2022).

Relief Onset: Ordinal variable coded 1 for July 1891, 2 for August 1891, and so on up to 14 for August 1892. Source: "Statisticheskie dannye po vydache ssud na obsemenenie i prodo vol'stvie naseleniu, postradavchemu ot neurozhaia v 1891–1892 gg." 1894. Vremennik no. 28 St. Peterburg: CSC MVD via Charnysh (2022).

Avg. Bread Loan: Mean size of bread loan. Source: "Statisticheskie dannye po vydache ssud na obsemenenie i prodo vol'stvie naseleniu, postradavchemu ot neurozhaia v 1891–1892 gg." 1894. Vremennik no. 28 St. Peterburg: CSC MVD via Charnysh (2022).

Table C.4

Population 1864: Logged count (+1) of the population at the district level for European Russia 1864. Source: Castañeda Dower et al. (2018).

Population 1910: Logged count (+1) of the population at the town level in 1910. Source: Ministerstvo Vnutrennykh Del (1914).

Population 2010: Logged count (+1) of the population at the town level in 2010. Source: All-Russian Population Census 2010.

Table C.5

Nationalities 1910: Logged count (+1) of the following populations out of the total population at the town level in 1910: Russians, Armenians, Finns, Germans, Jews, Poles, Turco-Tartars. Source: Ministerstvo Vnutrennykh Del (1914).

A.2 Descriptive Statistics

The following descriptive statistics are organized by table in the main body of the paper and are reported for the standardized bandwidth of 100 km into each side of the boundary.

Table A.1 – Descriptive Statistics

	N	*Mean*	*SD*	*Min*	*Max*
Variables from Table 2.1					
Elevation	7,442	182.6	133.6	-26.18	1,040
Slope	7,442	1.338	1.160	0	10.18
Ruggedness	7,442	33.79	25.87	0	295.5
Distance to St. Petersburg	7,442	1,582	356.5	872.0	2,224
Distance to Moscow	7,442	1,083	419.8	285.9	1,866
Precipitation	7,442	3.802	0.776	1.491	5.669
Temperature	7,442	4.330	2.448	-0.574	11.66
Wheat Potential	7,442	3,514	1,273	1,348	5,805
Caloric Suitability Index	7,442	1301.201	423.544	271.875	2155.32
Factories 1745	7,442	0.0313	0.174	0	1
Mines 1762	7,442	0.0623	0.242	0	1
Population 1763	33	10.601	0.417	8.834	11.265
Churches 1727	7,442	0.113	0.317	0	1
Monasteries 1727	7,442	0.0656	0.248	0	1
State: Civil Administrators 1727	7,442	0.0998	0.300	0	1
State: Military Officers 1727	7,442	0.0161	0.126	0	1
Variables from Table 2.2					
Military 1820	75	0.173	0.381	0	1
Military 1910	89	117.3	300.1	0	2,213
Police 1910	90	24.08	27.99	0	169
Monasteries 1910	90	0.100	0.302	0	1
Mosques 1910	90	0.322	0.872	0	6
Roads 1820	75	1.754	3.889	0	19.93
Roads 1910	90	34.60	26.62	0	150
Civil Administrators 1897	73	162.7	298.2	4	1,589
Executive Council 1883	62	2.887	1.320	0	6
Municipal Debts 1910	90	1.491	1.939	0	6.306
Variables from Table 2.3					
Police Stations 2019	156	1.968	4.720	0	40
Military Area 2019	156	0.00419	0.0218	0	0.237
Public Sector & Administration 2016	301	0.159	0.367	0	1
Primary Roads 2019	156	16.43	22.96	0	126.9
Secondary Roads 2019	156	22.12	22.51	0	129.5

Table A.1 Descriptive Statistics, Continued

	N	*Mean*	*SD*	*Min*	*Max*
Tertiary Roads 2019	156	30.45	22.11	0	136.8
Railway Halt 2019	156	0.878	1.686	0	10
Mosques 2019	156	0.103	0.344	0	2
Variables from Table 2.4					
Schools opened until 1860	75	1.093	1.117	0	7
Schools opened 1866-1870	75	0.413	0.639	0	2
Schools opened 1881-1885	75	0.747	1.079	0	5
Schools opened 1891-1893	75	0.493	1.167	0	9
Variables from Table 2.5					
State Secular Schools 1895	75	0.0800	0.273	0	1
Christian Orthodox Schools 1895	75	1.147	2.110	0	16
Female Pupils 1895	75	163.1	177.8	0	1,157
Male Pupils 1895	75	297.8	304.9	0	1,990
Coeducational primary schools 1910	90	1.933	2.647	0	14
All female primary schools 1910	90	1.811	1.817	0	11
All male primary schools 1910	90	3.067	2.543	0	15
Female Pupils 1910	90	274.9	281.9	0	1,624
Male Pupils 1910	90	465.8	386.5	0	2,022
Variables from Table 2.6					
Schools 2019	156	1.276	2.906	0	25
Post-Secondary Educ. Respondent 2016	301	0.748	0.435	0	1
Post-Secondary Educ. Father 2016	286	0.594	0.492	0	1
Post-Secondary Educ. Mother 2016	293	0.587	0.493	0	1
Variables from Table 2.7					
Factories 1820	75	0.107	0.311	0	1
Factories 1910	90	6.822	20.81	0	163
Workshops 1910	90	9.444	25.52	0	141
Open Markets 1910	90	1.822	1.555	0	7
Share Workers 1910	90	0.0628	0.198	0	1.526
Production per Factory Worker 1910	90	0.697	1.495	0	8.099
Production per Workshop Worker 1910	90	0.147	0.457	0	3.088
Variables from Table 2.8					
Occupation Self-Employed 1926	33	1.799	0.427	0.157	2.579
Occupation Factory Workers 1926	33	0.252	0.333	0.00158	1.451
Collectivization Sovkhoz	9,939	0.139	0.460	0	6
Collectivization Kolkhoz	9,939	0.277	0.940	0	10
Gulag Count	9,939	0.0432	0.341	0	6

Table A.1 Descriptive Statistics, Continued

	N	*Mean*	*SD*	*Min*	*Max*
Gulag Years Open	248	2.710	2.908	0	12
Variables from Table 2.9					
Household Income 2016	245	10.25	0.603	6.909	11.78
Occupation Industry 2016	301	0.176	0.382	0	1
Occupation Services 2016	301	0.286	0.453	0	1
Land Use Farm 2019	156	0.0520	0.0845	0	0.462
Land Use Commercial and Retail 2019	156	0.00121	0.00436	0	0.0364
Land Use Industry and Quarry 2019	156	0.0195	0.0248	0	0.150
Variables from Table C.1					
Freq. of Unrest 19th c.	62	0.223	0.1643859	0	0.6
Freq. of Unrest (large events) 19th c.	62	0.071	0.0837387	0	0.3
Freq. of Unrest (TsGAOR) 19th c.	62	0.076	0.0899644	0	0.3
Homicides	123	33.130	108.382	0	866
Total Deaths	123	1778.789	5276.153	45	40153
Homicides/Deaths	123	0.017	0.0172	0	0.117
Variables from Table C.2					
Army Conscripts Height 1877	57	161.815	1.254	159.737	165.756
Army Conscripts Height 1882	57	163.702	1.363	161.460	168.536
Total Army Conscripts 1877	57	488.649	186.202	240	1015
Total Army Conscripts 1882	57	444.526	168.430	225	887
Variables from Table C.3					
Taxes to Land	55	3.806	1.340	1.067	6.141
Months on Relief	60	9.25	2.440	0	13
Relief Onset	58	4.155	2.150	1	11
Average Bread Loan	60	0.501	0.209	0	1.333
Variables from Table C.4					
Population 1864	62	11.829	0.409	10.552	12.627
Urban Population 1864	62	8.41	1.77	0	11.071
Population 1910	91	9.065	0.984	7.098	11.256
Population 2010	155	10.417	1.258	5.595	13.968
Variables from Table C.5					
Population 1910	91	9.065	0.984	7.098	11.256
Russians 1910	91	8.567	2.133	0	11.541
Armenians 1910	91	0.415	1.141	0	4.6245
Finns 1910	91	0.318	1.019	0	4.727
Germans 1910	91	1.392	1.698	0	6.732
Jews 1910	91	1.999	2.117	0	7.184

Table A.1 Descriptive Statistics, Continued

	N	*Mean*	*SD*	*Min*	*Max*
Poles 1910	91	1.777	1.875	0	7.409
Turco-Tartars 1910	91	3.327	2.677	0	8.837

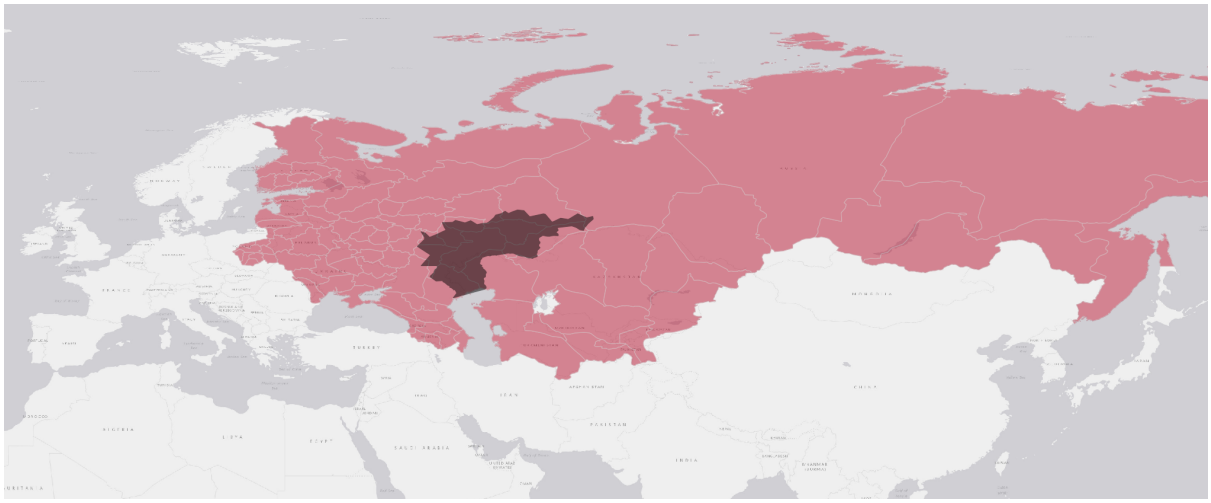
B Historical Background and the Geography of the Rebellion

B.1 The rebel-held area within the Russian Empire and contemporary Russia

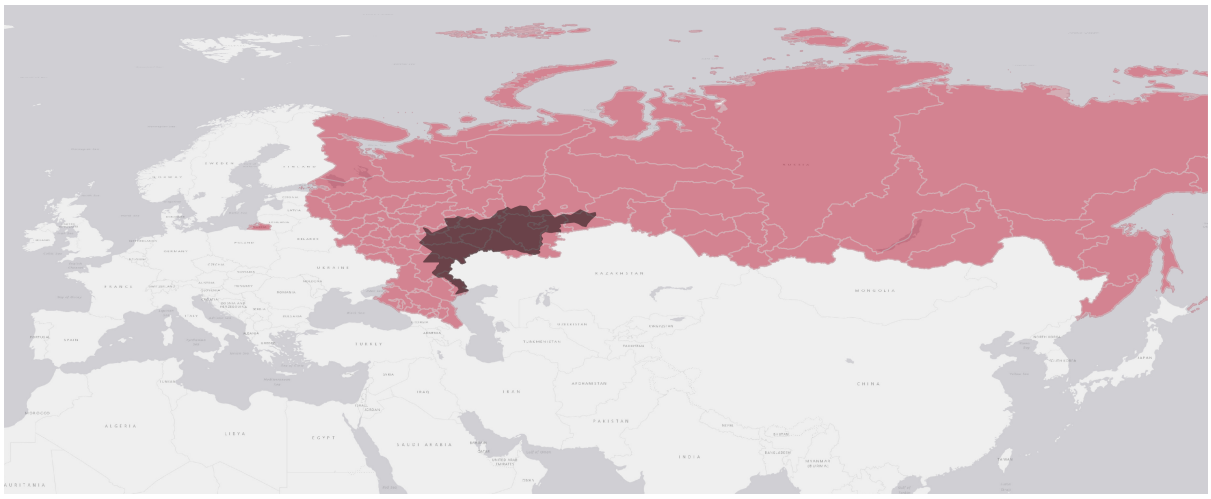
Figure B.1 maps the area held by Yemelyan Pugachev and his rebels at the height of the 1773-1775 rebellion within the 1897 boundaries of the Russian Empire (Panel (a)) and within the contemporary boundaries of the Russian Federation (Panel (b)).

Figure B.1 – Rebel-held Territory within the Russian Empire and Contemporary Russia

(a) Russian Empire



(b) Contemporary Russia



Notes: The Russian Empire (a) and contemporary Russia (b) are shaded in red. The darker shaded area represents the rebel-held territory.

B.2 Catherine II's national reforms in the wake of Pugachev's rebellion

In the aftermath of Pugachev's rebellion. Catherine II implemented several political, legal and economic reforms at the national level. Her March 17 1775 decree, which was enacted two months after Pugachev's execution, did not only grant 47 "favors" to various segments of the population but also entailed a set of reforms that progressively rationalized the tax base (officially, the decree celebrated the ratification of the peace treaty with the Ottoman Empire). Catherine II abolished inefficient taxes and redefined the fiscal obligations of the urban population which was divided between a merchant elite and burghers. As she was keen to prevent the merchant elite from monopolizing trade and manufacturing, she stipulated that freed serfs could be a part of the burghers to reaffirm her commitment that free enterprise was open to her subjects. In modern terms, such policies can be seen as a small but significant step toward more cohesive and inclusive institutions.

Catherine II also wanted to strengthen security, notably by rationalizing the selection process of the overseers of local security in the countryside and towns. To this end, she enacted the Police Code on April 8 1782 as well as the twin charters to the nobility and the towns on April 21 1785 that regulated the privilege of Russian aristocrats and redefined the governance of urban society. Those two charters ended the legislative reforms which had begun with the March 17 1775 decree.

It must also be pointed out that Catherine II's policies were not necessarily a break from the past, but sometimes the continuation of the undertakings of Peter I (r. 1682–1725) and his successors. This was particularly true in the case of road construction. Catherine II had already stressed the importance of roads in her 1767 Instruction (Nakaz) and in her April 8 1768 Supplement to the Instruction, but the aftermath of Pugachev's rebellion served as a new impetus to road building. Naturally, the actual construction and management of roads were left to her trusted administrators (Busch, 2008). In turn, the presence of more administrators, as was the case in the Southern Urals after Pugachev's rebellion, meant that more roads would be built.

B.3 Towns in official censuses and in Bairoch's atlas

As discussed in Section 2.4.2, major towns at the time of the rebellion are a potential confounding factor to our identification strategy. This is because major towns could have already been on a specific economic trajectory prior to the events of 1773–1775 and could also have been of tactical importance to the rebels or to the Tsarist army. Therefore, to mitigate concerns of endogeneity and avoid biased sample selection, we choose to exclude major towns from our analysis. For this purpose, we rely on the population atlas of Bairoch et al. (1988) which highlights major towns in 1750, i.e., before Pugachev's rebel-

lion. The excluded towns are therefore (using the French spelling of Bairoch et al., 1988): Astrakhan, Borissoglebsk, Elatma, Kazan, Koungour, Kozmodemiask, Krasnoslobodsk, Mourome, Nijni-Novgorod, Orenbourg, Oufa, Perm, Petrovsk, Pronsk, Saransk, Saratov, Skopine, Tambov, Tcheboksary, Verkhni-Lomov, Volsk, Voronege.

The following list reports locations documented by province as used from the 1910 town level census data. The spelling corresponds to the French original transcription as provided by the Census.

Akmolinsk: Atamansky Khoutor;

Astrakhan: Bolkhouny, Enotaevsk, Kapoustine-Iar, Khanskaya Stavka, Prichib, Sredne-Aktoubinskoe;

Daghestan: Petrovsk, Temir-Khan-Choura;

Ekaterinoslav: Alexandrovsk, Sofievka;

Jaroslavi: Petrovsk;

Kazan: Arsk, Iadrine, Leichev, Mamadyche, Merrinsky Possad (Bourgade), Porokhovya Sloboda, Spassk, Sviajsk, Tchistopol, Tetiouchi,Troitsky Possad (Bourgade), Tsarevokokchaisk, Tsivilsk;

Kostroma: Varnavine, Vetlouga;

Moscou: Bogorodns;

Nijni-Novgorod: Ardatov, Arzamas, Balakhna, Gorbatov, Kniaguinine, Loukoyanov, Piansky Perevose, Potchinki, Semenov, Sergatch, Sormovo, Vassilsoursk;

Orenbourg: Beloretsky (usine), Tcheliabinsk, Troitsk, Verkhneouralsk;

Oufa: Birsk, Koussinsky (usine), Menzelinsk, Satkinsky (usine), Sterlitamak, Zlatoust;

Ouralsk: Lbistchensk (Kalmukov), Temir;

Penza: Bessonovka, Chichkeev, Gorodichtche, Insar, Kerensk, Mokchane, Narovtchate, Ninjni-Lomov, Penza, Tchembar, Troitsk;

Perm: Alopayevsk, Beresovksy (usine), Chadrinsk, Dedioukhine, Dolmatov, Ekaterinbourg, Irbite, Kamychlov, Krasnoonfimsk, Kyehtymsky (usine), Laslinksky (usine), Louchvinsky (usine), Lysvensky (usine), Motovilikha (usine), Nadejdlinsky (usine), Neviansky (usine), Niase-Petrovsky (usine), Nijne-Serguinsky (usine), Nijne-Taguilsky (usine), Okhansk, Ossa, Solikamsk, Verkh-Issetsky (usine), Verkhne-Oufaleisky (usine), Verkhotourie;

Riazan: Kassimov, Ranenbourg, Riajsk, Sapojok, Spassk;

Samara: Balakovo, Bolchaya Glouchitsa, Bougoulma, Bougoulrouslane, Bouzoulouk, Ekaterinenstadt, Novo-Ouzensk, Orlov-Gay;

Saratov: Atkarsk, Balachov, Doubovka (bourgd), Ielane, Kamychine, Khvalynsk, Kouznetsk, Serdobsk, Traritsyne;

Simbirsk: Alatur, Alatyrsky Iamskoy possad, Ardatov, Bouinsk, Karsoun, Kourmyche, Senghiley, Syzrane;

Tambov: Chatsk, Kadome, Kirsanov, Kozlov, Lipetsk, Morchansk, Ousmane, Rasskasovo, Spassk, Temnikov;
Territoire du Don: Constantinovskaya stanitsa, Kamenskaya stanitsa, Nijne-Tchirskaya stanitsa, Ourst-Medveditskaya stanitsa, Ourupinskaya stanitsa, Velikokniajskaya stanitsa;
Tobolsk: Berezov, Ialoutorovsk, Ichime, Kourgane, Tara, Tioumene, Tobolsk, Tourinsk;
Tourgai: Koustanai;
Viatka: Elobouga, Glazov, Iaransk, Ijevsky (usine), Katelnitch, Malmyge, Nolinsk, Orlov, Ourjoume, Sarapoul, Tsarevosantchour, Viatka, Votkinsky (usine);
Vladimir: Gorockhovets, Gousj-Chrostalnu, Melenki, Nikolskoe-Orechovo, Viazniki;
Voronege: Birloutch, Bogoutchar, Boutorlinovka, Constantinova, Kalatch, Kozlovka, Makarovo, Manima, Ninjny-Mamone, Novaya-Tchigia, Novokhopersk, Ourasovo, Pesky, Staraya Krioucha, Troitskoe, Verkhny Mamone.

C Robustness and Placebo Tests for Main Results

C.1 Additional Outcomes

This sub-section presents regression results for the additional outcomes discussed in the main text.

Table C.1 – Frequency of Unrest in the 19th Century, and Crime in 1910

	Frequency of Unrest					
	All	Large Events	TsGAOR	Homicides	Total Deaths	Homicides/Deaths
	(1)	(2)	(3)	(4)	(5)	(6)
Rebellion	-0.0109***	-0.00139	-0.00865***	-0.0656	-4.497	0.000184
	(0.00141)	(0.000967)	(0.00241)	(0.471)	(24.68)	(0.000412)
Mean	0.199	0.0634	0.0578	19.43	1061	0.0206
Std. Dev.	0.162	0.0788	0.0798	33.88	1716	0.0293
Optimal BW	46.21	59.78	37.75	200+	200+	200+
Observations	35	42	25	14	14	14

Notes: This table reports the estimated impact of Pugachev's rebellion on the frequency of unrest in the 19th century and the level of crime in 1910. Columns (1–3) use data on 19th century unrest from Castañeda Dower et al. (2018) at the district level for European Russia to test whether districts affected by Pugachev's rebellion experienced more riots. The estimated coefficients are based on a sharp regression discontinuity only, since the movement layer which is used to identify the fuzzy treatment crosses through all districts and therefore does not lead to a different variation. Columns (4–6) report the relationship between Pugachev's rebellion and crime in 1910 at the town level measured by the total number of deaths, deaths by homicides and homicides relative to deaths. We limit the reported towns to our study area which only leads to 14 observations. We consequently refrain from employing an optimal bandwidth selection but choose to include all observations leading to a left-hand side bandwidth of 206 km and a right-hand side bandwidth of 279 km. Resulting estimates suggest a negative but insignificant sign for columns (4) and (5). For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.2 – Conscripts and their Height in 1877 & 1882

	Army Conscripts Height		Total Army Conscripts	
	1877	1882	1877	1882
	(1)	(2)	(3)	(4)
Rebellion	1.772**	1.143	-51.99	-32.62
	(0.811)	(1.098)	(147.8)	(126.2)
Mean	162.1	164.4	385.6	371.6
Std. Dev.	1.261	1.389	180.3	165.5
Optimal BW	84.35	89.32	84.44	88.73
Observations	51	52	51	52

Notes: This table reports the estimated impact of Pugachev's rebellion on the total number of army conscripts (Columns 1–2) as well as their height in cm (Columns 3–4) in the years 1877 and 1882 at the district level using the data of Markevich and Zhuravskaya (2018). For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.3 – Local Taxes 1888–1890 & Provision of Relief in Response to the 1891–1892 Famine

		Provision of Relief		
	Taxes to Land Ratio	Duration in Months	Onset	Avg. Bread Loan
	(1)	(2)	(3)	(4)
Rebellion	-0.106	-1.668*	-1.854*	0.203**
	(0.859)	(0.910)	(1.018)	(0.0840)
Mean	4.413	7.763	5.314	0.425
Std. Dev.	2.142	3.279	2.523	0.219
Optimal BW	75.89	79.58	63.17	63.88
Observations	44	52	43	44

Notes: This table reports the estimated impact of Pugachev's rebellion on local tax receipts as a measure of the state's fiscal capacity between 1888–1890 (Column 1) as well as on famine relief in 1891–1892 (Columns 2–4) using the data of Charnysh (2022). Column (1) reports results on the direct taxes levied from peasant land between 1888–1890 as a ratio to land at the district level. Column (2) focuses on the number of months spent on relief, Column (3) on the onset of relief, and Column (4) on the average bread loan from the state. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.4 – Population in 1864, 1910 and 2010

	Population			
	Total 1864	Urban 1864	Total 1910	Total 2010
	(1)	(2)	(3)	(4)
Rebellion	-0.004	-0.003	0.713	-0.882
	(0.005)	(0.014)	(0.452)	(0.739)
Mean	11.62	8.730	9.174	10.38
Std. Dev.	0.478	1.302	0.964	1.340
Optimal BW	52.78	64.06	75.66	71.22
Observations	36	43	77	131

Notes: This table reports no difference in population size for those areas located within the treated region compared to those outside in logged (+1) values. Columns (1) and (2) use data for 1864 from Castañeda Dower et al. (2018) at the district level for European Russia. The estimated coefficients are based on a sharp regression discontinuity as the movement layer which is used to identify the fuzzy treatment crosses through all districts and therefore does not lead to a different variation. Columns (3) and (4) for report the population size based on the 1910 town census and the 2010 census data of contemporary towns. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

C.2 State Response and Catch-up Effect in the Aftermath of Rebellions

Following our discussion in section 2.5.3, this sub-section presents placebo tests for the results in Tables 2.2-2.9 over the boundary of Stepan Razin's territory in 1670–1671.

Table C.5 – Population and Ethnic Composition in 1910

	Total Population (1)	Russians (2)	Armenians (3)	Germans (4)	Jews (5)	Turco-Tartars (6)
Rebellion	0.713	0.222	0.0955	0.723	1.269	0.180
	(0.452)	(0.871)	(0.395)	(0.837)	(1.135)	(1.805)
Mean	9.174	8.624	0.454	1.638	2.275	3.191
Std. Dev.	0.964	2.185	1.156	2.007	2.167	2.739
Optimal BW	75.66	45.94	93.75	80.93	91.66	102.8
Observations	77	53	87	80	86	92

Notes: This table reports the lack of impact of Pugachev's rebellion on the logged total population and logged ethnic groups using the town level census of the Russian Empire in 1910. For each outcome, the number of observations varies with the bandwidth. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.6 – Razin's Revolt: Placebo Test for Table 2.2

	Military 1820 (1)	Police 1910 (2)	Monasteries 1910 (3)	Roads 1820 (4)	Roads 1910 (5)	Civil Admin. 1897 (6)	Municipal Debt 1910 (7)
Rebellion	-0.191	12.70	0.105	1.622**	-29.48	173.6	-0.424
	(0.216)	(24.45)	(0.108)	(0.825)	(21.32)	(150.3)	(0.888)
Mean	0.0474	32.28	0.119	1.327	46.13	158.7	1.818
Std. Dev.	0.213	51.31	0.385	3.194	45.76	289.1	2.091
Optimal BW	80.58	53.32	34.55	74.19	74.69	82.52	85.05
Observations	74	65	50	65	96	81	112

Notes: This table presents placebo checks for Table 2.2 as discussed in section 2.5.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.7 – Razin's Revolt: Placebo Test for Table 2.3

	Police Stations (1)	Military Area (2)	Public Sector & Administration (3)	Railway Stop (4)	Road Length by Type			Orthodox	
					Primary (5)	Secondary (6)	Tertiary (7)	Monasteries (8)	Mosques (9)
Rebellion	-0.0954	-1.61e-05	-0.263	0.169	-5.483	0.961	2.784	2.784	-0.437
	(0.120)	(1.58e-05)	(0.202)	(0.364)	(5.340)	(10.01)	(8.346)	(8.346)	(0.301)
Mean	0.0466	2.95e-05	0.171	0.161	4.273	6.788	17	0	0.0573
Std. Dev.	0.503	0.000335	0.377	0.640	13.95	15.76	21.06	0	0.300
Optimal BW	51.74	32.26	881.3	78.70	50.29	65.57	108.1	108.1	72.20
Observations	52	35	543	80	50	67	128	128	73

Notes: This table presents placebo checks for Table 2.3 as discussed in section **??**. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.8 – Razin's Revolt: Placebo Test for Table 2.4

	Until	Between		
	1860	1866–1870	1881–1885	1891–1893
	(1)	(2)	(3)	(4)
Rebellion	0.722	0.195	1.747**	1.380
	(0.673)	(0.345)	(0.819)	(0.890)
Mean	1.076	0.455	0.782	0.791
Std. Dev.	1.048	0.731	1.265	1.395
Optimal BW	89.72	65	55.72	62.22
Observations	79	57	45	55

Notes: This table presents placebo checks for Table 2.4 as discussed in section 2.5.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.9 – Razin's Revolt: Placebo Test for Table 2.5

	School Types 1895		Pupils 1895		School Types 1910			Pupils 1910	
	State Secular	Christian Orthodox	Female	Male	Coeducational	All Female	All Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rebellion	0.326**	1.261	167.1	126.6	6.367	0.990	-0.113	378.7	263.5
	(0.153)	(1.311)	(153.7)	(188.4)	(4.035)	(1.871)	(2.479)	(238.4)	(282.4)
Mean	0.0513	1.325	201.3	362.6	3.500	2.059	3.904	340.3	612.2
Std. Dev.	0.221	1.882	234.1	344.3	6.006	3.439	5.083	471.5	637.9
Optimal BW	52.35	85.20	102.7	77.10	53.72	100.9	99.06	74.06	91.62
Observations	50	87	103	80	72	146	145	103	131

Notes: This table presents placebo checks for Table 2.5 as discussed in section 2.5.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.10 – Razin's Revolt: Placebo Test for Table 2.6

	School	Post-Secondary Education		
	Buildings	Respondent	Father	Mother
	(1)	(2)	(3)	(4)
Rebellion	-0.143	0.807***	1.278***	1,325
	(0.214)	(0.216)	(0.228)	(6,495)
Mean	0.0681	0.757	0.619	0.605
Std. Dev.	0.423	0.429	0.486	0.489
Optimal BW	72.95	704.1	582.7	77.72
Observations	73	543	525	121

Notes: This table presents placebo checks for Table 2.6 as discussed in section 2.5.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.11 – Razin's Revolt: Placebo Test for Table 2.7

	Factories	Factories	Workshops	Open Markets	Share Workers	Production per Worker	
	1820	1910	1910	1910	1910	Factory 1910	Workshop 1910
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rebellion	-0.127	13.71*	-0.377	0.110	0.0119	1.014	-0.730
	(0.147)	(8.190)	(14.06)	(1.417)	(0.0247)	(2.274)	(0.863)
Mean	0.0569	7.262	8.579	2.713	0.0285	1.612	0.332
Std. Dev.	0.232	18.34	32.78	1.918	0.107	8.335	2.266
Optimal BW	75.81	37.09	41.81	52.51	51.70	30.52	52.84
Observations	69	53	59	65	64	43	65

Notes: This table presents placebo checks for Table 2.7 as discussed in section 2.5.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.12 – Razin's Revolt: Placebo Test for Table 2.8

	Family households 1926		Collectivization		Gulag	
	Self-Employed	Industrial Workers	Sovkhoz	Kolkhoz	Count	Years in Operation
	(1)	(2)	(3)	(4)	(5)	(6)
Rebellion	5.801	0.565	-0.0153	0.0395**	0.00964	2.021
	(5.436)	(0.568)	(0.0521)	(0.0186)	(0.0138)	(1.783)
Mean	1.978	0.304	0.134	0.132	0.0293	2.593
Std. Dev.	1.820	0.390	0.556	0.817	0.239	2.582
Optimal BW	147.8	62.82	36.34	21.50	41.43	55.13
Observations	28	13	2812	1668	3215	115

Notes: This table presents placebo checks for Table 2.8 as discussed in section 2.5.3. Robust standard errors in parentheses. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.13 – Razin's Revolt: Placebo Test for Table 2.9

	Household	Occupation		Land Use		
	Income	Industry	Services	Commercial & Retail	Industry & Quarry	Farm
	(1)	(2)	(3)	(4)	(5)	(6)
Rebellion	1.377***	-0.353*	0.0970	-2.68e-05	-0.00554	-0.0152
	(0.497)	(0.215)	(0.233)	(2.43e-05)	(0.00455)	(0.0712)
Mean	10.59	0.204	0.260	6.22e-06	0.00302	0.0505
Std. Dev.	1.011	0.404	0.439	4.36e-05	0.0250	0.125
Optimal BW	906.9	839.6	859.2	113.7	42.82	102.2
Observations	421	543	543	134	42	119

Notes: This table presents placebo checks for Table 2.9 as discussed in section 2.5.3. Robust standard errors in parentheses. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

C.3 Alternative specifications and spatial autocorrelation

Alternative specifications. Following our discussion in section 2.5.3, we present in Appendix Tables C.14–C.21 alternative specifications to ensure the robustness of our main results in Tables 2.2–2.9. Reassuringly, the size and significance of the estimated coefficients remain similar throughout.

Spatial autocorrelation. To test that our main results are not driven by spatial autocorrelation (for a discussion see, e.g., Kelly, 2019), we report Moran's I measures and related statistics for the regression residuals of each significant variable of Tables 2.2–2.9 in Appendix Tables C.22–C.29. To avoid endogenous concerns due to changes in the boundaries of the Russian provinces, we define the distance threshold as the sum of the average distance between all locations as measured by the Vincenty formula and its standard deviation.

For most of our significant outcomes in Tables 2.2–2.9, Appendix Tables C.22–C.29 show that we cannot reject the null hypothesis that there is no spatial autocorrelation at the 5%-level. The only exceptions are some of the educational variables (Christian Orthodox Schools 1895, Schools between 1891–1893, Schools in 2019, Post Secondary Education of Respondent in 2016), Railway Stops in 2019, Sovkhozes and Gulags as well as present-day measures of income, occupations and land use (Household Income and Occupation Services in 2016 as well as Land Use Farm and Land Use Industry & Quarry in 2019). These results may not be surprising. The development of the school network and of the railroad system would reflect some spatial pattern designed to reach most of the population. Conversely Gulags were usually built in remote areas. Finally, the clustering of agricultural sovkhozes, industries and services (and hence of household income) would reflect agglomeration economies. As such, spatial autocorrelation does not seem to be a major issue in our results, and in any case, does not explain our main findings regarding the increase of state presence in the Southern Urals in the aftermath of Pugachev's rebellion and the local impact of national economic policies.

Table C.14 – Robustness Checks for Table 2.2

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Military 1820							
Rebellion	0.345***	0.298***	0.344***	0.308***	0.308**	0.304***	0.312***	0.308***
	(0.0726)	(0.0700)	(0.0782)	(0.103)	(0.120)	(0.0884)	(0.0857)	(0.0824)
Effective Obs.	85	85	68	85	85	68	75	85
	Panel (b)—Military 1910							
Rebellion	26.50	23.83	-202.3	120.5*	120.5*	69.33	60.06	120.5*
	(114.2)	(102.0)	(267.4)	(64.58)	(68.34)	(95.76)	(75.83)	(67.53)
Observations	56	56	46	100	100	79	89	100
	Panel (c)—Local Police 1910							
Rebellion	18.37**	16.66**	27.88	14.72*	14.72**	17.81**	11.08	14.72*
	(7.809)	(7.242)	(17.94)	(8.384)	(6.094)	(7.882)	(7.837)	(8.253)
Observations	73	73	90	101	101	80	90	101
	Panel (d)—Monasteries 1910							
Rebellion	0.212*	0.190*	0.289	0.122**	0.122*	0.158*	0.217**	0.122*
	(0.114)	(0.104)	(0.176)	(0.0572)	(0.0665)	(0.0834)	(0.0940)	(0.0713)
Observations	77	77	85	101	101	80	90	101
	Panel (e)—Mosques 1910							
Rebellion	0.348	0.301	0.902	0.328	0.328	0.241	0.256	0.328
	(0.381)	(0.344)	(0.581)	(0.287)	(0.314)	(0.348)	(0.301)	(0.276)
	Panel (f)—Roads 1820							
Rebellion	3.780***	3.357***	3.552***	2.808**	2.808**	3.138***	2.607**	2.808**
	(1.159)	(1.038)	(1.091)	(1.204)	(1.254)	(1.029)	(1.075)	(1.169)
Observations	59	59	74	85	85	68	75	85
	Panel (g)—Roads 1910							
Rebellion	22.58***	20.61***	24.38*	10.88	10.88	19.71*	17.35**	10.88
	(6.811)	(6.345)	(12.87)	(9.840)	(8.650)	(10.71)	(7.405)	(7.710)
Observations	71	71	62	101	101	80	90	101
	Panel (h)—Civil Administrators 1897							
Rebellion	159.7**	141.1**	485.4**	73.13	73.13	116.3	65.81	73.13
	(67.99)	(60.86)	(213.5)	(87.94)	(92.44)	(74.31)	(88.16)	(89.15)
Observations	58	58	57	84	84	66	73	84
	Panel (i)—Executive Council 1883							
Rebellion	1.078***	1.078***	1.078***	1.078***	1.078**	0.685	0.204	-0.203
	(0.325)	(0.325)	(0.325)	(0.340)	(0.392)	(0.428)	(0.437)	(0.516)
Observations	35	35	35	35	35	52	62	73
	Panel (j)—Municipal Revenues 1910							
Rebellion	1.447	1.274	1.301	1.270**	1.270**	1.083	1.158*	1.270**
	(1.009)	(0.902)	(1.008)	(0.620)	(0.572)	(0.736)	(0.647)	(0.610)
Observations	83	83	90	101	101	80	90	101
	Panel (k)—Municipal Expenses 1910							
Rebellion	1.374	1.209	1.406	1.237**	1.237**	1.050	1.111*	1.237**
	(1.007)	(0.900)	(0.997)	(0.630)	(0.582)	(0.739)	(0.652)	(0.615)
Observations	83	83	90	101	101	80	90	101
	Panel (l)—Municipal Debt 1910							
Rebellion	2.127**	1.886**	2.405***	1.877***	1.877**	1.744***	1.911***	1.877***
	(0.869)	(0.768)	(0.791)	(0.555)	(0.719)	(0.592)	(0.591)	(0.553)
Observations	80	80	80	101	101	80	90	101

Notes: This table presents robustness checks for Table 2.2 as discussed at the beginning of Section C.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.15 – Robustness Checks for Table 2.3

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Police Stations 2019							
Rebellion	-2.092	-1.990	-1.657	-1.819	-1.819	-1.874	-2.233	-1.885
	(2.514)	(2.372)	(2.482)	(1.843)	(1.755)	(2.579)	(2.488)	(2.190)
Observations	191	191	163	191	191	139	156	183
	Panel (b)—Military Area 2019							
Rebellion	0.00399	0.00386	-0.00198	0.00456	0.00456	-0.000426	0.00109	0.00456
	(0.00551)	(0.00522)	(0.00605)	(0.00461)	(0.00445)	(0.00533)	(0.00470)	(0.00467)
Observations	183	183	146	183	183	139	156	183
	Panel (c)—Public Sector & Administration 2016							
Rebellion	-0.158**	-0.158**	-0.158**	-0.0812	-0.0812	-0.117	-0.0998	-0.0998
	(0.0716)	(0.0716)	(0.0716)	(0.0674)	(0.0648)	(0.0913)	(0.0904)	(0.0904)
Observations	540	540	540	540	540	341	401	401
	Panel (d)—Railway Stop 2019							
Rebellion	1.278**	1.246**	1.329**	1.043***	1.043**	0.561	0.783	0.565
	(0.532)	(0.513)	(0.547)	(0.230)	(0.378)	(0.435)	(0.482)	(0.436)
Observations	126	126	118	126	126	139	156	183
	Panel (e)—Primary Road Length 2019							
Rebellion	12.15	11.94	13.42	10.32	10.32	9.043	4.608	9.691
	(8.550)	(8.315)	(8.706)	(6.320)	(6.134)	(6.617)	(6.233)	(5.869)
Observations	136	136	118	136	136	139	156	183
	Panel (f)—Secondary Road Length 2019							
Rebellion	-0.638	-0.637	10.93	-1.520	-1.520	-1.498	1.661	-1.042
	(10.55)	(10.29)	(14.72)	(6.040)	(6.511)	(8.097)	(7.754)	(6.608)
Observations	136	136	113	136	136	139	156	183
	Panel (g)—Tertiary Road Length 2019							
Rebellion	21.79**	21.45**	20.83**	18.29***	18.29**	9.068	10.93*	5.935
	(8.853)	(8.660)	(8.865)	(7.010)	(7.931)	(7.224)	(6.565)	(6.246)
Observations	112	112	118	112	112	139	156	183
	Panel (h)—Orthodox Monasteries 2019							
Rebellion	-0.0196	-0.0196	0.482*	-0.0561	-0.0561	-0.0176	-0.0497	-0.0244
	(0.113)	(0.109)	(0.261)	(0.109)	(0.102)	(0.111)	(0.120)	(0.124)
Observations	164	164	108	164	164	139	156	183
	Panel (i)—Orthodox Churches 2019							
Rebellion	0.0580*	0.0558*	0.0520*	0.0230	0.0230	-0.0505	-0.0890	-0.0680
	(0.0307)	(0.0296)	(0.0302)	(0.0223)	(0.0229)	(0.0562)	(0.0620)	(0.0559)
Observations	91	91	92	91	91	139	156	183
	Panel (j)—Mosques 2019							
Rebellion	0.160**	0.154**	0.157**	0.112**	0.112**	0.0517	0.0889	-0.0351
	(0.0720)	(0.0700)	(0.0706)	(0.0508)	(0.0531)	(0.0800)	(0.100)	(0.0947)
Observations	94	94	98	94	94	139	156	183

Notes: This table presents robustness checks for Table 2.3 as discussed at the beginning of Section C.3 with the exception of Column (5) for panel (c) which is clustered at the LiTS primary sampling unit level. Robust standard errors in parentheses. *** : $p < 0.01$; ** : $p < 0.05$; * : $p < 0.1$.

Table C.16 – Robustness Checks for Table 2.4

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Schools Opened Until 1860							
Rebellion	-1.061	-0.962	-0.0405	-0.667*	-0.667	-0.0566	0.181	0.105
	(0.688)	(0.618)	(0.666)	(0.389)	(0.487)	(0.493)	(0.441)	(0.406)
Observations	51	51	78	51	51	68	75	85
	Panel (b)—Schools Opened Between 1866-1870							
Rebellion	0.623***	0.553***	0.842***	0.479***	0.479**	0.511***	0.423**	0.336**
	(0.173)	(0.159)	(0.250)	(0.164)	(0.170)	(0.155)	(0.170)	(0.166)
Observations	59	59	68	59	59	68	75	85
	Panel (c)—Schools Opened Between 1881-1885							
Rebellion	0.975**	0.897**	1.709***	0.768***	0.768**	1.173***	0.821***	0.679**
	(0.460)	(0.407)	(0.547)	(0.288)	(0.343)	(0.362)	(0.307)	(0.302)
Observations	50	50	73	50	50	68	75	85
	Panel (d)—Schools Opened Between 1891-1893							
Rebellion	0.778*	0.694*	1.003**	0.539	0.539	0.699*	0.387	0.695*
	(0.446)	(0.400)	(0.401)	(0.349)	(0.359)	(0.372)	(0.337)	(0.395)
Observations	59	59	68	59	59	68	75	85

Notes: This table presents robustness checks for Table 2.4 as discussed at the beginning of Section C.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.17 – Robustness Checks for Table 2.5

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—State Secular Schools 1895							
Rebellion	0.109	0.1000	0.366*	0.107*	0.107*	0.111*	0.0738	0.0944*
	(0.0750)	(0.0669)	(0.208)	(0.0581)	(0.0584)	(0.0574)	(0.0603)	(0.0550)
Observations	59	59	78	59	59	68	75	85
	Panel (b)—Christian Orthodox Schools 1895							
Rebellion	1.733*	1.490*	2.133***	1.325*	1.325*	1.311*	0.933	1.286*
	(0.941)	(0.822)	(0.812)	(0.723)	(0.645)	(0.769)	(0.673)	(0.682)
Observations	69	69	68	69	69	68	75	85
	Panel (c)—Female Pupils 1895							
Rebellion	155.6**	135.1**	230.8***	118.7***	118.7**	120.9**	130.5**	110.8**
	(68.34)	(60.50)	(67.90)	(44.66)	(43.57)	(52.81)	(53.54)	(50.86)
Observations	64	64	68	64	64	68	75	85
	Panel (d)—Male Pupils 1895							
Rebellion	178.8**	153.8**	295.3***	143.5**	143.5**	143.5*	147.4*	147.1*
	(89.21)	(78.24)	(92.19)	(66.86)	(61.55)	(77.22)	(84.72)	(83.28)
Observations	68	68	70	68	68	68	75	85
	Panel (e)—Coeducational Schools 1910							
Rebellion	2.365***	2.192***	2.364***	2.051***	2.051**	1.289**	0.740	1.101
	(0.870)	(0.809)	(0.632)	(0.670)	(0.778)	(0.582)	(0.745)	(0.767)
Observations	62	62	80	62	62	80	90	101
	Panel (f)—All Female Schools 1910							
Rebellion	1.373***	1.262***	1.919**	1.039***	1.039**	0.597	0.924*	0.535
	(0.529)	(0.484)	(0.902)	(0.372)	(0.370)	(0.438)	(0.537)	(0.499)
Observations	70	70	101	70	70	80	90	101
	Panel (g)—All Male Schools 1910							
Rebellion	1.185	1.090	2.266	1.079	1.079*	0.734	0.709	0.782
	(1.072)	(0.979)	(1.460)	(0.682)	(0.568)	(0.697)	(0.717)	(0.694)
Observations	71	71	99	71	71	80	90	101
	Panel (h)—Female Pupils 1910							
Rebellion	185.6*	167.6*	226.8**	159.3**	159.3*	150.5**	146.3*	133.6*
	(97.76)	(86.33)	(113.7)	(68.46)	(85.02)	(66.33)	(78.68)	(67.91)
Observations	57	57	90	57	57	80	90	101
	Panel (i)—Male Pupils 1910							
Rebellion	311.7***	276.3**	626.0***	255.7**	255.7**	255.7**	257.4**	282.4**
	(120.5)	(110.2)	(241.6)	(104.7)	(118.8)	(103.9)	(126.1)	(128.0)
Observations	80	80	103	80	80	80	90	101

Notes: This table presents robustness checks for Table 2.5 as discussed at the beginning of Section C.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.18 – Robustness Checks for Table 2.6

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—School Buildings 2019							
Rebellion	2.431**	2.366**	3.205***	1.956***	1.956**	0.215	-0.0337	-0.0662
	(1.028)	(0.988)	(1.031)	(0.709)	(0.742)	(0.906)	(0.882)	(0.836)
Observations	119	119	98	119	119	139	156	183
	Panel (b)—Post-Secondary Education Respondent 2016							
Rebellion	-0.690***	-0.690***	-0.368***	-0.479	-0.479	-0.415**	-0.479**	-0.479**
Observations	301	301	540	301	301	241	301	301
	Panel (c)—Post-Secondary Education Father 2016							
Rebellion	-0.305	-0.305	-0.536***	-0.292	-0.292	-0.264	-0.292	-0.292
	(0.279)	(0.279)	(0.0623)	(0.465)	(0.520)	(0.226)	(0.225)	(0.225)
Observations	286	286	188	286	286	232	286	286
	Panel (d)—Post-Secondary Education Mother 2016							
Rebellion	-0.320	-0.320	-0.559***	-0.299	-0.299	-0.240	-0.299	-0.299
	(0.286)	(0.286)	(0.0872)	(0.420)	(0.472)	(0.227)	(0.225)	(0.225)
Observations	293	293	487	293	293	235	293	293

Notes: This table presents robustness checks for Table 2.6 as discussed at the beginning of Section C.3 with the exception of Column (5) for panels (b)–(d) which are clustered at the LiTS primary sampling unit level. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.19 – Robustness Checks for Table 2.7

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Factories 1820							
Rebellion	0.268***	0.239***	0.260**	0.212**	0.212	0.176**	0.151	0.122
	(0.0922)	(0.0809)	(0.101)	(0.102)	(0.123)	(0.0843)	(0.0937)	(0.0962)
Observations	58	58	64	58	58	68	75	85
	Panel (b)—Factories 1910							
Rebellion	-2.074	-1.852	3.373	-0.829	-0.829	3.803	4.503	6.751**
	(6.337)	(5.650)	(3.893)	(4.812)	(4.876)	(2.682)	(2.880)	(3.193)
Observations	58	58	80	58	58	80	90	101
	Panel (c)—Workshops 1910							
Rebellion	10.21	9.379	17.38*	11.50**	11.50*	12.38**	12.33**	11.11**
	(7.052)	(6.444)	(10.27)	(5.031)	(5.618)	(5.693)	(5.161)	(4.624)
Observations	46	46	54	46	46	80	90	101
	Panel (d)—Open Markets 1910							
Rebellion	0.598	0.527	0.330	0.683	0.683	0.683	0.771	0.765
	(0.658)	(0.588)	(0.688)	(0.567)	(0.584)	(0.558)	(0.538)	(0.491)
Observations	80	80	81	80	80	90	101	
	Panel (e)—Share Workers 1910							
Rebellion	0.133**	0.117**	0.124**	0.110**	0.110*	0.0706	0.0980*	0.0914*
	(0.0606)	(0.0544)	(0.0600)	(0.0457)	(0.0558)	(0.0451)	(0.0496)	(0.0461)
Observations	84	84	96	84	84	80	90	101
	Panel (f)—Production per Factory Worker 1910							
Rebellion	1.084*	0.993*	-0.815	0.774*	0.774	0.562	0.321	0.245
	(0.601)	(0.554)	(1.604)	(0.432)	(0.440)	(0.451)	(0.489)	(0.493)
Observations	47	47	113	47	47	80	90	101
	Panel (g)—Production per Workshop Worker 1910							
Rebellion	-0.0292	-0.0262	0.00286	-0.0130	-0.0130	-0.0237	0.0362	0.0243
	(0.0926)	(0.0826)	(0.0957)	(0.0669)	(0.0644)	(0.0719)	(0.0741)	(0.0666)
Observations	57	57	64	57	57	80	90	101

Notes: This table presents robustness checks for Table 2.7 as discussed at the beginning of Section C.3. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.20 – Robustness Checks for Table 2.8

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Self-Employed in Family Households 1926							
Rebellion	0.972**	0.895**	0.628**	0.786**	0.786*	0.683*	0.646*	0.535*
	(0.435)	(0.383)	(0.285)	(0.307)	(0.372)	(0.359)	(0.346)	(0.304)
Observations	29	29	31	29	29	28	33	40
	Panel (b)—Industrial Workers in Family Households 1926							
Rebellion	0.613**	0.562**	0.512**	0.335*	0.335	0.624*	0.298	0.198
	(0.269)	(0.250)	(0.220)	(0.175)	(0.204)	(0.346)	(0.184)	(0.164)
Observations	19	19	26	19	19	28	33	40
	Panel (c)—Collectivization Sovkhoz							
Rebellion	0.0789**	0.0727**	0.101***	0.0792*	0.0792**	0.0634**	0.0723***	0.0770***
	(0.0385)	(0.0360)	(0.0360)	(0.0453)	(0.0314)	(0.0249)	(0.0225)	(0.0208)
Observations	4,004	4,004	4,585	4,004	4,004	6,116	7,442	8,705
	Panel (d)—Collectivization Kolkhoz							
Rebellion	-0.0435	-0.0396	-0.0375	-0.0535	-0.0535	-0.131**	-0.110**	-0.0239
	(0.111)	(0.103)	(0.0863)	(0.110)	(0.0870)	(0.0597)	(0.0514)	(0.0468)
Observations	3,585	3,585	4,636	3,585	3,585	6,116	7,442	8,705
	Panel (e)—Gulag Count							
Rebellion	-0.0498**	-0.0486**	0.0569**	-0.0441	-0.0441**	-0.0243	-0.0549***	-0.0591***
	(0.0247)	(0.0239)	(0.0247)	(0.0697)	(0.0207)	(0.0218)	(0.0199)	(0.0183)
Observations	6,772	6,772	5,544	6,772	6,772	6,116	7,442	8,705
	Panel (f)—Gulags Years in Operation							
Rebellion	2.868	2.868	4.112**	2.046	2.046	-0.691	-0.232	3.226***
	(1.861)	(1.861)	(1.984)	(1.307)	(1.551)	(1.014)	(0.948)	(1.084)
Observations	44	44	90	44	44	136	177	222

Notes: This table presents robustness checks for Table 2.8 as discussed at the beginning of Section C.3 with the exception of Column (5) for panels (c)–(f) which are clustered at the grid cell level. Robust standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table C.21 – Robustness Checks for Table 2.9

	Baseline			Standard Errors		Bandwidth		
	Fuzzy	Sharp	Major Towns	Conley	Clustered	80km	100km	120km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Household Income 2016							
Rebellion	-1.166***	-1.166***	-1.939	-0.734**	-0.734	-0.740***	-0.717***	-0.717***
	(0.321)	(0.321)	(1.836)	(0.368)	(0.427)	(0.257)	(0.256)	(0.256)
Observations	221	221	151	221	221	198	245	245
	Panel (b)—Occupation in Industry 2016							
Rebellion	0.185	0.185	0.0119	0.113	0.113	0.0893	0.113	0.113
	(0.221)	(0.221)	(0.0762)	(0.117)	(0.140)	(0.157)	(0.156)	(0.156)
Observations	301	301	540	301	301	241	301	301
	Panel (c)—Occupation in Services 2016							
Rebellion	-0.876***	-0.876***	-0.316***	-0.685***	-0.685***	-0.678***	-0.685***	-0.685***
	(0.296)	(0.296)	(0.101)	(0.181)	(0.196)	(0.213)	(0.212)	(0.212)
Observations	301	301	540	301	301	241	301	301
	Panel (d)—Land Use: Commercial & Retail 2019							
Rebellion	0.000786	0.000751	0.00146	0.000489	0.000489	0.000991	0.000471	0.000626
	(0.00115)	(0.00109)	(0.000976)	(0.00107)	(0.000970)	(0.00106)	(0.00107)	(0.00103)
Observations	194	194	146	194	194	139	156	183
	Panel (e)—Land Use: Industry & Quarry 2019							
Rebellion	0.0416***	0.0408***	0.0339***	0.0368***	0.0368***	0.0128	0.00680	0.00265
	(0.0126)	(0.0123)	(0.00814)	(0.00897)	(0.0103)	(0.00796)	(0.00788)	(0.00768)
Observations	104	104	92	104	104	139	156	183
	Panel (f)—Land Use: Farm 2019							
Rebellion	-0.0930*	-0.0916*	-0.0906*	-0.0800*	-0.0800	-0.0431	-0.0281	-0.0225
	(0.0508)	(0.0495)	(0.0484)	(0.0463)	(0.0521)	(0.0380)	(0.0413)	(0.0368)
Observations	112	112	117	112	112	139	156	183

Notes: This table presents robustness checks for Table 2.9 as discussed at the beginning of Section C.3 with the exception of Column (5) for panel (a) which is clustered at the LiTS primary sampling unit level. Robust standard errors in parentheses. *** : $p < 0.01$; ** : $p < 0.05$; * : $p < 0.1$.

Table C.22 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.2

	Military 1820 (1)	Police 1910 (2)	Monasteries 1910 (3)	Roads 1820 (4)	Roads 1910 (5)	Civil Admin. 1897 (6)	Municipal Debt 1910 (7)
Moran I	0.001	-0.005	-0.012	-0.007	0.002	-0.010	-0.009
Moran I z-score	1.710	0.195	-1.583	0.162	1.922	-0.546	-0.832
Moran I p-value	0.087	0.846	0.114	0.871	0.055	0.585	0.405
Distance Threshold	1111.711	1129.356	1129.356	1111.711	1129.356	1154.814	1129.356

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.2.

Table C.23 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.3

	Public Sector & Administration 2016 (1)	Railway Stop 2019 (2)	Tertiary Roads 2019 (3)	Orthodox Churches 2019 (4)	Mosques 2019 (5)
Moran I	0.002	0.015	0.012	-0.008	-0.005
Moran I z-score	2.597	8.585	7.004	-2.386	-0.733
Moran I p-value	0.009	0.000	0.000	0.017	0.464
Distance Threshold	1152.158	1140.077	1140.077	1140.077	1140.077

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.3.

Table C.24 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.4

	Schools Opened Between		
	1866–1870 (1)	1881–1885 (2)	1891–1893 (3)
Moran I	-0.009	-0.004	0.001
Moran I z-score	-0.336	0.618	1.808
Moran I p-value	0.737	0.537	0.071
Distance Threshold	1111.711	1111.711	1111.711

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.4.

Table C.25 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.5

	Christian Orthodox	Pupils 1895		School Types 1910		Pupils 1910	
	School 1895 (1)	Female (2)	Male (3)	Coeducational (4)	All Female (5)	Female (6)	Male (7)
Moran I	0.009	-0.004	-0.002	0.001	-0.003	-0.009	-0.005
Moran I z-score	3.371	0.654	1.117	1.770	0.670	-0.639	0.156
Moran I p-value	0.001	0.513	0.264	0.077	0.503	0.523	0.876
Distance Threshold	1111.711	1111.711	1111.711	1129.356	1129.356	1129.356	1129.356

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.5.

Table C.26 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.6

	Schools 2019 (1)	Post-Secondary Education Respondent 2016 (2)
Moran I	0.014	-0.008
Moran I z-score	8.126	-2.574
Moran I p-value	0.000	0.010
Distance Threshold	1140.077	1152.158

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.6.

Table C.27 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.7

	Factories 1820 (1)	Share Workers 1910 (2)	Production per Factory Worker 1910 (3)
Moran I	-0.010	0.001	-0.011
Moran I z-score	-0.535	1.827	-1.536
Moran I p-value	0.593	0.068	0.125
Distance Threshold	1111.711	1129.356	1129.356

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.7.

Table C.28 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.8

	Family households 1926			Gulag	
	Self-Employed (1)	Industrial Workers (2)	Sovkhoz (3)	Count (4)	Years in Operation (5)
Moran I	-0.021	-0.012	-0.002	-0.003	0.015
Moran I z-score	-0.512	0.290	-79.610	-111.058	13.200
Moran I p-value	0.609	0.772	0.000	0.000	0.000
Distance Threshold	1186.886	1186.886	1283.008	1283.008	1107.659

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.8.

Table C.29 – Moran's I for Spatial Autocorrelation in Regression Residuals of Table 2.9

	Household	Occupation	Land Use	
	Income (1)	Services (2)	Industry & Quarry (3)	Farm (4)
Moran I	0.034	0.002	0.022	0.045
Moran I z-score	16.075	2.792	11.750	23.014
Moran I p-value	0.000	0.005	0.000	0.000
Distance Threshold	1097.471	1152.158	1140.077	1140.077

Notes: The table presents Moran's I test and associated statistics where the null hypothesis is that there is no spatial autocorrelation in the residuals of the regressions with significant results in Table 2.9.

This chapter is single-authored

3

Liberal Values and Civic Engagement: Evidence from a Failed Revolution

3.1 Introduction

Political participation of citizens is one of the cornerstones of modern democratic societies. An active and informed citizenry contributes to ensuring that governments remain checked and serve their people (Diamond, 1999). Politically involved citizens may, for instance, lead social movements that demand political adjustments (Morris, 1986) and even topple governments or entire economic systems (see, e.g., Stearns, 1974; Acemoglu and Robinson, 2009). For political participation and social movements to strive, however, citizens have to overcome collective action problems (see, e.g., Olson, 1965; Putnam, 1993; Cantoni et al., 2019).[1] Social psychology suggests that civic engagement can positively affect collective action on a larger scale (Carbone and McMillin, 2019). An important question is how such civic engagement evolves and what makes it persistent.

In this study, I explore how the transmission of values can affect civic engagement. To do so, it exploits the random placement of an educated elite–the Decembrists–into the Hinterland of the Russian Empire, then a sparsely populated peasant region, and views it as a quasi-natural experiment to study the spread of liberal values to a society removed from the center of the political stage. The Decembrists were mainly noblemen

[1] Collective action problems occur when groups would be better off collaborating but instead focus on individual interests at the expense of joint action.

and senior officers that had served during the French Invasion of Napoleon. Their quest to pursue the French troops led to their exposure to Western ideals. Their high status and educated background allowed them to read in French and English and thereby a world of liberal and enlightenment thoughts entered their spheres. Upon their return to the Russian Empire, realizing its backwardness in terms of socio-economic and political development, they demanded major reforms such that a constitutional monarchy could be established and serfdom abolished. The sudden death of Tsar Alexander I and the subsequent interregnum offered a rare window of opportunity to stage a revolt renouncing the oath of loyalty to their new Tsar. Ill-prepared, however, the revolution eventually failed, leading to the punishment of the insurgents of whom 115 were sentenced to settle in exile in Siberia until 1856 after fulfilling up to 20 years of hard labor. Their reputation as noblemen in blood and character preceded them on a grand scale. While they were demonized by the throne, they were hailed as heroes in the places they were forced to settle, inspiring local communities and future revolutionaries alike.

I compile original data on the locations of the exiles between 1825 and 1856, to asses whether contemporary civic engagement and liberal values can be linked to the presence of the Decembrists who continued to foster their liberal ideas while in exile through the establishment of private schools. In addition, their homes often became focal points of societal and cultural exchange, offering the space to exchange ideas. In that spirit, their revolt, despite failing at the center stage of the uprising, rolled out its legacy in a somewhat unexpected fashion. As some locations of their stations during their up to 30 years of punishment were special in that they constituted prisons or Katorgas[2] as well as administrative centers in which they performed civil duties or were sent to military divisions, I limit the analysis to those locations strictly considered exile locations, i.e., the sparsely populated and at the time largely remote settlements. Using survey data from the Life in Transition Surveys (LiTS), I document that today individuals that live in places that hosted at least one Decembrist exile are more likely to engage in informal and formal political activities such as participation in demonstrations, signing petitions, and participating in strikes. They appear to seek information on their country and the world more often than the average and express their approval of liberal values that can be considered cornerstones of modern democratic societies, such as the importance of free and fair elections, the freedom of speech, and an independent press. When asked to weigh the importance of full political liberties vis-à-vis strong economic growth, they differentiate themselves from the average by placing a higher value on political liberties.

To ensure that the exile locations to which the Decembrists were sentenced are random, I test whether their historical characteristics differ systematically from other places. I

[2]Katorga camps were established in the 17th century in Siberia and the Far East of Russia and were characterized by isolation and labor-camp type of imprisonment. Together with the Soviet Gulag system they perpetrated the image of a rough and gruesome connotation to Siberia as a punishment.

use Pyadyshev's Atlas of the Russian Empire in 1820, i.e., five years preceding the uprising, to document balance in public infrastructure, geographic features, urban and rural structures, and places of worship. I also show that survey respondents do not vary in terms of age and gender. Therefore, the results are not driven by underlying observable differences in local conditions or differences in the demographic structure.

This study offers a unique quasi-experimental setting, where values and attitudes are transmitted laterally, without potentially confounding incentives often accompanying policies or private political campaigns designed to alter perceptions. The exposure of the local communities to the Decembrists in exile was plausibly exogenous as they were not designed to accommodate convicts. There was no particular structure of cooperation between local citizens and Decembrists imposed, instead, they were created at the initiative of the two groups. What is more, while few in numbers, the number of years the Decembrists had ended up spending in their exile settlements let them put down roots–they came to stay and organized community around them. This further lends support to the hypothesis that their local impact outlasted them.

My main finding that a few highly educated individuals shaped values and culture in their exile locations relates to the literature on the diffusion of knowledge and cultural norms. Moser et al. (2014), for example, show that some five hundred German-Jewish scientists that emigrated to the U.S. during World War II had a lasting influence on scientific productivity that was concentrated in their respective fields. Exploiting another event in Russian history, Toews and Vezina (2020) analyze how the inhabitants of locations around Stalin's Gulags with larger shares of 'enemies of the people,' that is, educated elites who posed a threat to the Soviet regime, are more educated and prosperous to this day. Regarding norms and values, Miho et al. (2019) show that a horizontal diffusion of gender norms took place from those that Stalin forcibly deported to Siberia and Central Asia, while Giuliano and Tabellini (2020) document the horizontal transmission of ideology in the United States of America through an influx of European immigrants in the early 20th century. My study differs from these contributions in that it examines the impact of a very small but highly educated elite that ends up in some of the most backward regions of Russia and continued to spread their liberal ideas. Contrary to migration which is typically selective, the Decembrists had little choice over where they were to sit out their punishment.

My results also speak to a literature on nation building and the formation of a common identity. Civic values, education, and broad-based rule are presumed to be closely linked (see, e.g., Glaeser et al., 2007). Bandiera et al. (2018), for example, study how U.S. states introduced compulsory schooling to instill civic values to diverse migrants and did so earlier in states whose migrant populations were less exposed to civic values in their home countries. Cantoni et al. (2017) study the reverse case of a textbook reform in China which influenced student attitudes towards trusting Chinese officials more while

being skeptical of unconstrained democracy and unchecked free markets. The Decembrists were government elites and nobility with high-minded reformist ideals that suddenly became exiled. Their exile experiences illustrate how the private provision of education and the spreading of inclusive political ideas can positively shape local civic values and civic engagement over the long run.

The remainder of the paper is organized as follows. Section 3.2 provides some historical context. Section 3.3 presents the data and Section 3.4 the empirical method. Section 3.5 analyzes the results, discusses alternative explanations, and presents the robustness checks. Section 3.6 concludes.

3.2 Historical Context

3.2.1 The Russian Empire's First Revolution in 1825

The beginning of the 19th century in the Russian Empire was marked by one of the most prominent military campaigns: the Napoleonic invasion of the Russian Empire, also known as the Patriotic War of 1812 in Russian historiography. During their defeat of Napoleon's *Grande Armée*, well-educated Russian officers were sent to pursue the French on their retreat to Western Europe, where they were exposed to liberal Western ideas and values. Upon their return, a subset of these army officers and liberal nobles sought to reform their autocratic home country. They formed secret societies that discussed liberal ideas and devised plans to establish a constitutional monarchy by force, if necessary.[3]

Nikita Muravyov and Pavel Pestel are considered two of the most prominent figures of the Decembrist movement. Their biographies illustrate how the movement radicalized. Together with other officers who had taken part in the Patriotic War, they founded the first secret society of the Decembrists (the *Union of Salvation*) in 1816. Initially patriotically oriented, the organization soon turned into an oppositional society promoting liberalism, the introduction of a constitutional monarchy, and the abolition of serfdom. Within a few years, separate wings of the organization became more radical in their demands, ranging from the necessity of introducing a republican system to a revolution brought about by military means. The organization was dissolved in 1821 and split into two separate secret societies–the Northern and Southern Societies–in St. Petersburg (led by Nikita Muravyov) and Tulchyn[4] (led by Pavel Pestel), respectively. The Northern Society was more moderate, favoring the introduction of a constitutional monarchy and a limited franchise. The Southern Society was more radical. Their overarching goal was that the monarchy should be abolished entirely and replaced by a republic. Both societies

[3]The events that would follow have been studied extensively by historians and in this section I roughly follow the depictions of Yarmolinsky (2014); Mazour (1937) and Raeff (1966).

[4]Tulchyn is a town in today's western Ukrainian province Vinnytsia.

agreed on the abolition of serfdom and that the best opportunity for regime change would be the succession of the next Emperor, if necessary by force. The coup was to happen in the summer of 1826.

The sudden death of Alexander I in 1825 and Russia's brief interregnum presented an opportunity to strike but also significantly accelerated the timeline. Alexander's brother and next in line to the throne, Constantine, who had enjoyed a liberal reputation, had renounced his claim to the throne and informed Alexander of this decision two years before his death. Alexander's decision to secretly remove him from the order of succession and only tell three confidants of this decision ushered in a dynastic crisis. Seeking to exploit this crisis, the Northern Society tried to persuade military leaders to abstain from supporting Nicholas, the heir presumptive, and instead mount a coup d'état in favor of Constantine. The confusion culminated at Senate Square on December 26[5] 1825, when a small group of liberal nobles and army officers led some 3,000 insurgents to assemble on Senate Square in St. Petersburg to proclaim their loyalty to Constantine and take control of the government. Disagreements within the leadership and the sudden need to act implied that the coup was not well organized. Contrary to the Decembrist's expectations, they were not joined by the rest of the military in St. Petersburg, their elected interim ruler (Prince Sergei Trubetskoy) did not show, and they found themselves confronted by some 9,000 loyalists of Nicholas I. After negotiations, quarrels, and (failed and successful) assassinations, the loyalist tsarist troops ultimately opened fire and the rebels scrambled.

After their failed revolution, the Decembrists were rounded up to be tried and sentenced. The Supreme Court established for this purpose defined eleven categories of crimes and attributed the sentences according to the gravity of the participation. The punishments ranged from the deprivation of titles and ranks, forced labor, imprisonment, and exile, to death by hanging. The punishment often entailed a combination of different sentences with various time frames, frequently starting with imprisonment and ending in exile. Those sentenced to "exile-to-settlement" were moved to isolated places in Siberia, such as Berezov, Narym, Surgut, Yakutsk, or Viliusk. At the time of the events, these were sparsely populated places up to 8,000 km away from the political centers–Moscow and St. Petersburg–of the Russian Empire. A larger group was sent to prison in Chita, followed by Petrovsky Zavod, a small settlement close to Nerchinsk and Lake Baikal. In prisons and work camps, the Decembrists exercised their hard labor sentences.

The main goal of imprisonment and subsequent exile in faraway locations was to remove their influence on Russian politics and society. The Siberian Governor-General Lavinsky considered it easier to control a group of convicts as opposed to isolating them in separate confinement (Mazour, 1937). However, being imprisoned together also ensured that the Decembrists could continue their exchange and existence as a community

[5]December 14 according to the Julian calendar in use at the time.

of like-minded men.[6] The sentences of hard labor, which could last for up to 20 years, were subsequently reduced such that the Decembrists could often leave to their exile locations ahead of schedule. Upon arrival in the settlements, the exiles were welcomed with hospitality. Locals, merchants, and local public administrators were generally sympathetic to their cause and viewed their movement as inherently supportive of the people (Mazour, 1937). Despite being mostly separated at this point, many Decembrists upheld lines of communications and received help to this end from the native population. The Decembrists were bound to their settlements and under surveillance by the local police that was tasked with reporting any moves attempted by the convicts.[7]

3.2.2 The Roots of Liberal Ideas of the Decembrists

Prior to the trial, the interrogators requested written testimonies on a range of questions. Question seven asked about the origins of their liberal values. Specifically, the question asked "When and from where did you acquire liberal ideas? From contacts with others or from their suggestion, from the reading of books or works in manuscript? Specifically which ones? Who helped to reinforce these ideas [in you]?" (Raeff, 1966, pp. 44).

The answers were often straightforward and pointed to their experiences in Europe.[8] Prince Sergei Petrovich Trubetskoi, for instance, writes "I acquired liberal ideas at the end of the war against the French, as a result of the events that had occurred after the establishment of peace in Europe, such as: the transformation of the French Empire into a constitutional monarchy; the promise of other European sovereigns to give their peoples a constitution, and the latter's introduction into several countries; the annexation of the Kingdom of Poland and the establishment there of a government of this nature." This attribution was echoed by many, such as Prince Evgenii Petrovich Obolenskii, who wrote "I acquired a liberal way of thinking from the time I entered service–through intercourse with educated people who had participated in the campaign of 1812; through the reading of various books on politics; through reflection and membership in a society that had political goals." Aleksandr Nikolaevich Muravyov wrote "I acquired my insane liberal ideas during my stay in foreign countries from the spirit of the age, that is, during and after the War of 1813–14. This lead me to read various books on politics, such as

[6] This holds especially for Chita, as the Petrovsky Zavod–a settlement centered around an iron refinery–was characterized by a rather oppressive and compartmentalized organization. The latter, e.g., held 71 Decembrists in detention in the 1830s.

[7] On rare occasions they could travel freely within a 10 miles radius of their residence. Attempts to resettle would usually take a long time and they would have to file a petition, often at the request of close family members. The approval rates were very low.

[8] Raeff (1966) contains a selection of the testimonies parts of which are reproduced here. The original accounts are collected in Pokrovsky (1954), which, among other materials, includes testimonies from the sentenced Decembrists and eyewitnesses, as well as archival documents from the involved military institutions with testimonies of common soldiers, participating departments, numbers of wounded and killed during the revolt, and information on officers that suppressed the uprising.

Machiavelli, Montesquieu, the Contrat Social of J. J. Rousseau, etc."[9] These testimonies not only imply that indeed the liberal ideas came from outside of Russia, but also that their access to it was rooted in their education. Most of the Decembrists were descendants of aristocratic families. Their knowledge of French and English was necessary to access Western ideas and understand the liberal movements spurred in the wake of the Napoleonic wars. Another testament of the Western influence is the resemblance of the draft constitution written by Muravyov with the, then very modern, 1787 constitution of the United States (Bolkhovitinov, 1999).

3.2.3 The Liberal Legacy of the Decembrists in Exile

Sending the Decembrists into Siberian exile until 1856 translated into a "permanent implantation of an intelligentsia in Siberia," notes Mazour (1937, p.256). Previously, migrants to the Russian hinterland came for financial or material reasons and had few incentives to stay longer than necessary. The Decembrists, however, knew that they would not be returning home any time soon and began integrating themselves into the cultural lives of their new neighbors (Mazour, 1937). While they no longer influenced the politics in St. Petersburg and Moscow, historical accounts suggest that the Decembrists greatly influenced the cultural, economic, and political lives of their exile locations. Instead of being forgotten, they remained a focal point of liberal reformist ideas and introduced these ideas in places that would not have been exposed to them to this extent in their absence.

Most exiles took up farming, though only a few were successful. Their most reliable income was support from their families and contributions from more wealthy companions. Muravyov's mother, for example, spent large parts of her annual income helping her sons and their friends (Zetlin, 1958, p. 322). Mazour (1937) summarizes their historical influence as consisting mainly of the legends they left behind (rather than any tangible accomplishments). The early legend focused on their heroism and fight for their values, but later the Decembrists were primarily seen as enlightened educators and "[i]n the opinion of many a young Siberian, no one anywhere could be more admirable, more wonderful than these aging exiles, and there could be no better system of education than the one they practiced [...]" (Zetlin, 1958, p. 324). Several founded schools, two of which (one for girls, one for boys) became reputable institutions in Western Siberia. Striving toward freedom and dismissal of serfdom found fertile grounds in Siberia. Locals prided themselves to be hosting representatives of the Russian intelligentsia for the first time in Siberia (Zetlin, 1958, p. 325). The Decembrists directly or indirectly influenced an entire generation of educated Siberians, some of which would live to witness the centennial

[9] This testimony in particular also illustrates the radical nature as which liberal thought was perceived.

jubilee in 1925 (Mazour, 1937).

3.3 Data

3.3.1 Locations of the Exiles

After the failed revolt, Nicholas I established the Supreme Criminal Court for judging the Decembrists. The court convicted 120 Decembrists, of which five were sentenced to death, and the remainder to hard labor, serfdom, and settlement. To trace all locations which hosted Decembrists between 1826–1856, I consult the digitized version of the Russian Biographical Dictionary (Polovtsov, 1918). It is one of the most comprehensive Russian biographical sources for the 19th and 20th centuries and was published by the Russian Historian Society in 25 volumes between 1896 and 1918. The Decembrists were sent to remote, sparsely-populated areas of Siberia. Many were sentenced to hard labor in mines, factories, prisons, and forts before arriving at their exile settlements. Locations of prisons, labor camps, and factories are particular as they rely on specific pre-existing infrastructure. In addition, some Decembrists were sent to military service in the Caucasus region, which at the time was a stage of intense fighting. In the subsequent analysis, I exclude all locations that were either prisons or fortresses as well as all locations where Decembrists were sent to fulfill military service or civil administration. The remaining locations then are strictly labeled as exile locations by historical sources.

3.3.2 Characteristics of Exile Locations

I employ the *Geographical Atlas of the Russian Empire* (Piadyshev, 1829) to study the pre-1825 characteristics of the locations that hosted Decembrists and compare them to locations that did not host exiles. The atlas was produced by the topographical unit of the imperial military between 1820–1827 and has been digitized, geo-referenced, and made available by O'Neill (2016). The atlas is the first comprehensive and detailed map of the Russian Empire. Locations depicted there are approximately accurate to 3.5–5 km.

To test the notion that contemporary survey respondent locations do not differ in their historic pre-1825 characteristics, I collect data on the urban structure of locations irrespective of whether their locations hosted a Decembrist in the past. First, I examine the number of villages, farmsteads, hamlets, and district and provincial towns. Second, I add the number of orthodox monasteries to explore whether monasteries were used as locations to host exiles. Third, to study remoteness and market access, I consider the length of district roads, main postal roads, provincial postal roads, and rivers. Finally, I use several variables from the Life in Transition Survey (LiTS) to ensure the sample

Figure 3.1 – Locations of Exile Locations of Decembrists

Notes: Black triangles indicate all locations of the exiled Decembrists, while black circles illustrate strictly exile locations, i.e., this excludes Katorgas (a Russian Empire system of penal labor), and locations in which Decembrists served in a civil or military function as part of their punishment. These excluded locations would not be considered random.

composition of respondents in former Decembrist locations is not different in terms of demography. I always include indicator variables for gender, age, whether the survey is conducted in an urban or rural area, and the survey round.

3.3.3 Liberal Values, Attitudes, and Civic Engagement

I rely on three Life in Transition Survey (LiTS) rounds, conducted in 2006, 2010, and 2014 (European Bank for Reconstruction and Development, 2016), to study the long run impact of the proliferation of liberal thought. I use a variety of variables derived from the pooled LiTS to measure contemporary values, attitudes, civic participation, and more. First, I generate indicator variables for informal political participation (in demonstrations, strikes, or petitions) as well as formal political participation (in elections). I also study news consumption using the average of a categorical variable that measures the intensity of news consumption over different news outlets (on a scale of 1 'never' to 7 'daily').[10]

[10]The news source options provided in the LiTS are: newspapers; radio/TV; print magazine; in-depth reports on radio/TV; internet/Email; family, friends, colleagues; social media.

Next, I code binary variables indicating the (strong) approval of liberal values such as free and fair elections, law and order, freedom of speech, peace and stability, independence of the press, and a fair court system. Liberal attitudes can be derived from a set of questions in which the respondents are given two options, one of which typically has a liberal leaning. In addition, I use a question from the survey that directly asks a respondent to choose a country with few or full political liberties.

Political participation requires a certain level of trust in institutions, particularly in settings with limited democratic freedoms, such as contemporary Russia. In a next set of outcomes, I study whether individuals that live within an area that hosted at least one Decembrist trust their local and national institutions. Finally, I examine whether people in Decembrist locations perceive their world differently than their peers or organize themselves in community associations that might facilitate civic organization. I construct binary indicators, assessing whether the values listed above are existent in the current time. In addition, I create indicator variables for whether respondents are members of various religious, intellectual, humanitarian, professional, and charitable organizations. Appendix 3.6 contains the definitions and sources of all variables as well as descriptive statistics.

3.4 Empirical Strategy

I use the geocoded locations of Decembrists in exile between 1826–1856 to analyze whether the promotion of liberal values impacted the level of political and civic participation of those living within 10 km of such locations to this day. My main specifications are linear probability models[11] with district-fixed effects:

$$Y_{ild} = \beta DEC_l + \mathbf{x}_{il}'\boldsymbol{\gamma} + \mu_d + \epsilon_{ild}, \tag{3.1}$$

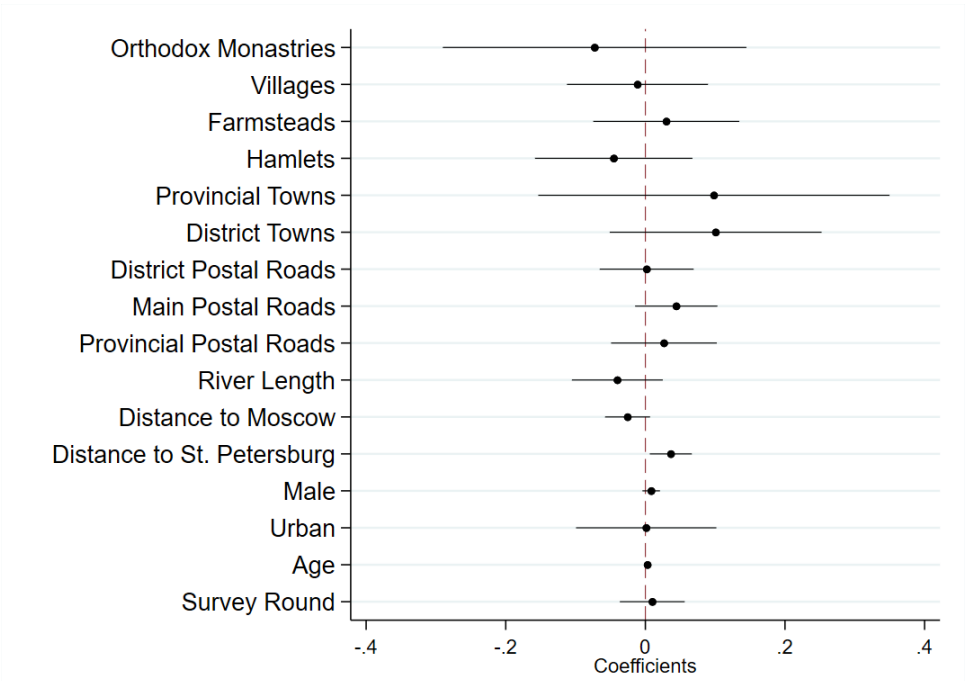
where i indexes individuals that are nested in locations l and districts d. DEC_l is an indicator that equals 1 if location l is within 10 km of at least one Decembrists' exile location and 0 otherwise, $\mathbf{x}_i$ contains individual and location-specific characteristics, such as age, gender, and whether the respondent is located in a rural or urban area. μ_d are district fixed effects which account for district-specific characteristics. Standard errors are clustered at the district level to allow for spatial correlation within districts and across survey waves.

My effect of interest is β, which captures the difference in the outcome for Decembrist and non-Decembrist locations after conditioning on control variables and district fixed

[11] My treatment variable is a dummy. The linear model closely approximates the average treatment effect (ATE) in models with a binary treatment and additional continuous controls. Moreover, it delivers precisely the ATE in completely saturated models (only containing dummy variables). Hence, I do not use non-linear models that reflect the binary nature of the dependent variable.

effects. If the assignment of exiles to settlements within Russia was truly random, then this coefficient is identified by conditional independence. To validate this strategy and establish confidence in the set up, I run a test of means on the locations of the LiTS survey to assess whether the locations of households that are close to a Decembrist exile location today do not differ in their historic pre-1825 characteristics from those that are close to a Decembrist. Just as the main equation, I condition this test on district fixed effects.

Figure 3.1 – Balancing pre-1825 and Individual Characteristics of Survey Households



Notes: This coefficient plot includes 95% confidence intervals and documents no evidence of differences for households that are in locations which hosted a Decembrist exile between the years 1825–1856 in terms of the urban structure, as well as individual characteristics as listed along the y-axis. The following continuous variables have been scaled (divided by 10): district postal roads, main postal roads, provincial postal roads, river length, distance to Moscow, distance to St. Petersburg, and age.

Figure 3.1 shows the results from a regression with the treatment variable on the left-hand side and the potential confounders on the right-hand side. Reassuringly, I find no evidence of different levels of urbanization between treated and untreated household locations as proxied by the number of monasteries, villages, hamlets, and provincial and district towns in 1825. I also find no differences in market access as proxied by the length of the postal road networks and rivers in 1825. I observe no differences in the average distance to Moscow but a significant gradient for the distance to St. Petersburg. The exile locations within each district appear to be somewhat displaced. The regression indicates that for each kilometer that a place is further away from St. Petersburg than the average district location, the probability of hosting at least one Decembrist rises

by 0.36 percentage points. This is unsurprising as the main goal of exile was to place the Decembrists far way from the capital of the empire and the Tsar's palace.[12] I also test whether the demographics of the respondents differ, whether the survey rounds are balanced and whether the location types noted in the survey vary. I find no evidence for differences in age, gender, urban versus rural, or the survey's sampling frame across different rounds.

3.5 Results

In this section, I document that the presence of Decembrists in exile had an effect on the levels of civic engagement of individuals today as illustrated by an increased level of political participation. I then provide evidence for the hypothesis that such activities may be related to liberal values and attitudes which are more prevalent in such households and were promoted by Decembrists throughout their tenures in exile. Finally, I discuss alternative explanations and present robustness checks.

3.5.1 Civic Engagement

Table 3.1 establishes part one of my main result. It documents higher levels in informal and formal political participation nowadays of individuals living in an area that hosted at least one Decembrist between 1825–1856.

First, I test whether individuals who live in proximity to a Decembrist exile location consume more news than the average respondent in other locations. News consumption is in many ways a prerequisite for political participation. Individuals that consume various sources of media more frequently are more knowledgeable with respect to political events and have a higher likelihood to participate informally or formally in democratic activities. While the average citizen appears to consume news a little less than once per week, individuals that live in areas closer to Decembrist exile locations tend to do so several times per week. In other words, their average news consumption across all sources of news increases by almost a full category.

Second, I examine the impact on indicators of informal and formal political participation. Columns (2)–(4) assess whether individuals that live close to a Decembrist's exile location are more likely to participate in demonstrations, strikes, or petitions. I find that such individuals are on average 7 percentage points more likely to have attended a lawful demonstration (16% of a standard deviation), 14 percentage points more likely to have participated in a strike (34% of a standard deviation), and 22 percentage points more likely to have signed a petition (45% of a standard deviation). Column (5) turns to a

[12] Including the distance to St. Petersburg as a control variable into my regressions does not meaningfully affect the results, see column (6) in Table B.1–Table B.6 of the Appendix.

Table 3.1 – Civic Engagement

		Political Participation:			
	News Consumption	Demonstration	Strike	Petitions	Vote
	(1)	(2)	(3)	(4)	(5)
Decembrists	0.939**	0.0720*	0.144***	0.220**	0.173*
	(0.470)	(0.0398)	(0.0413)	(0.109)	(0.0987)
Individual Controls	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓
Std. Dev.	1.076	0.447	0.427	0.489	0.458
Mean	4.561	0.275	0.240	0.394	0.700
Observations	3,091	3,091	3,091	3,091	3,428

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their civic engagement between 2006–2016. The first outcome (Column 1) is a score from 1–7, coded 1 if the respondent never consumes news via the named source, 2 for once per year, 3 for several times per year, 4 indicates once per month, 5 once per week, 6 several times per week and 7 stands for daily. The outcomes (2)–(5) are indicator variables coded 1 if the respondent has or might have attended a demonstration, participated in a strike, signed a petition, or voted in past local, presidential or parliamentary elections, respectively, and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

more formal indicator of political participation and provides information on the likelihood of an individual to have participated in a past election, which can either be the last parliamentary or presidential election, or a local election. Individuals living in proximity of a former Decembrists exile location are 17 percentage points more likely to have voted (38% of a standard deviation).

In sum, this first set of results supports the notion that the Decembrists had a lasting legacy on the level of civic engagement in their exile location. This impact can be seen in terms of informal and formal political participation, as well as a higher intensity of obtaining information from news sources.

3.5.2 Liberal Values and Attitudes

My second set of main results deals with the legacy of liberal values in remote places not known for their embrace of liberal ideals. As discussed in Section 3.2, historians report many instances in which the Decembrists continued to promote liberal values during their journey across the Russian hinterland and even shaped the emergence of a Siberian elite.

Table 3.2 tests these claims in my regression framework by analyzing specific liberal values. I find that individuals living within proximity of at least one Decembrist are 7 percentage points (20% of a standard deviation) more likely to agree that free and fair elections are important. In addition, they tend to be 10 percentage points (25% of a standard deviation) more likely to value their freedom of speech and 24 percentage points (50% of a standard deviation) more likely to consider an independent press as important. Less obviously, individuals within a Decembrists exile location are about 7

percentage points (25% of a standard deviation) less likely to consider law and order an important value. While 'rule of law' implies checks and balances on authorities as well as equal rights for its citizens, 'law and order' does not necessarily indicate the provision of equal treatment in front of the law. Hence, a possible interpretation of this negative result would be that it reflects the disapproval of the imposed laws of a semi-autocratic environment at the expense of fair treatment. In 2016—the year of the last LiTS round in this study—Russia is considered an open anocracy (Marshall MG, 2017), which is a regime that mixes democratic and autocratic features (Fearon and Laitin, 2003).[13]

Columns (7) and (8) of Table 3.2 support these results by examining directly elicited preferences for political liberties. The survey asks respondents whether they prefer country A which offers "few political liberties but strong economic growth," or country B, which "has full political liberties but weak economic growth." The results show that individuals residing in proximity to a Decembrist exile location are 10 percentage points (28% of a standard deviation and almost 70% of the mean) more likely to favor country B. This shows that respondents influenced by the Decembrists' local legacy and presented with a trade-off between political freedom and economic growth are more inclined toward the former.

Table 3.2 – Liberal Values

	The Following Values are Important:						Preference:
	Free & Fair Elections (1)	Law & Order (2)	Freedom of Speech (3)	Peace & Stability (4)	Independent Press (5)	Fair Court System (6)	Political Liberties: Full (7)
Decembrists	0.0715**	-0.0732**	0.101*	-0.0284	0.241***	0.143	0.0981**
	(0.0318)	(0.0310)	(0.0553)	(0.0244)	(0.0295)	(0.246)	(0.0429)
Individual Controls	✓	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓	✓
Std. Dev.	0.361	0.292	0.401	0.295	0.467	0.490	0.348
Mean	0.846	0.906	0.798	0.903	0.679	0.598	0.141
Observations	1,844	1,844	1,844	1,844	1,844	3,4281	3,091

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their liberal/ democratic values between 2006–2016. The outcomes are indicator variables coded 1 if the respondent (strongly) agrees that the respective value is important for the country and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table 3.3 adds additional insights on preferences related to liberal values and market economy. For each outcome in Columns (1)–(5) the respondent is offered two positions on a scale of 1–10 in which 1 would indicate a strong agreement with the first statement and a score of 10 would indicate full agreement with the second statement.

Column (1) studies responses to the following two options: (i) "Incomes should be made more equal" and (ii) "We need larger income differences as incentives for individual

[13]In addition, Russia was considered 'Not Free' (NF) by the Freedom in the World index, with an aggregate score of only 2 out of 16 possible points in the 'rule of law' subcategory (Freedom House, 2016).

Table 3.3 – Opinions

	Incomes Equal/Unequal (1)	Firm Ownership Private/Public (2)	Competition Good/Harmful (3)	Law Obey/Break (4)	Authorities Question/Respect (5)	Immigrants Burden (6)
Decembrists	3.279***	4.279	3.741	3.087**	1.491	-0.277**
	(1.137)	(3.116)	(2.390)	(1.216)	(1.614)	(0.128)
Individual Controls	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓
Std. Dev.	14.68	20.83	15.82	12.44	14.01	0.500
Mean	2.434	2.131	1.870	1.707	1.330	0.497
Observations	3,024	2,886	3,013	3,037	3,018	3,091

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their liberal/ democratic values between 2006–2016. The outcomes from Columns (1)–(5) are on a score between 1 and 10 where 1 indicates agreement to the left-handed statement and 10 indicates agreement to the right-handed statement. Any value in between could be chosen. Column (6) is an indicator variable coded 1 if the respondent agrees and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

effort." While on average individuals lean more toward the first statement with a score of 2.4, individuals that are exposed to liberal ideas score higher by about 3.3 points (22% of a standard deviation) above this baseline. They are considerably more inclined to go with the second statement, suggesting more openness toward a market economy that often relies on incentives. However, this interpretation is not confirmed by Columns (2) and (3) which report (insignificant) results for attitudes on firm ownership and competition.

Column (4) supports the rule of law finding from Table 3.2. It shows that individuals are more likely to agree with the statement "There are times when people have good reasons to break the law." While the population, on average, leans strongly toward obeying the law with a score of 1.7, those exposed to Decembrists tend to score right in the middle of the scale. One interpretation that would be consistent with the other findings would be that their higher levels of political participation imply that they have to be flexible regarding laws that are often used to sanction disagreement and stifle civil disobedience. Finally, as an additional indication of their liberal tendencies, Column (5) shows that such individuals are 27 percentage points (50% of a standard deviation) less likely to perceive immigrants as a burden "for the national social protection system."

3.5.3 Trust in Institutions

I now study an important set of auxiliary results on trust in institutions. Higher levels of civic engagement often go together with higher levels of trust in institutions (just as low trust and political apathy are emblematic of low engagement), so my expectation is that trust is elevated near exile locations. What is less clear in the Russian context is whether the Decembrists' legacy is one of increased trust in all institutions or a specific subset.

Table 3.4 examines this question and shows an interesting pattern. On the one hand,

Table 3.4 – Trust in Institutions

		Government				Political	Armed	
	Presidency	National	Regional	Local	Courts	Parties	Forces	Police
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Decembrists	-0.0344	0.0405	0.0858*	0.0931**	0.186***	0.105	-0.117	0.0193
	(0.104)	(0.0679)	(0.0481)	(0.0393)	(0.0557)	(0.0791)	(0.0737)	(0.0575)
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓	✓	✓
Std. Dev.	0.493	0.481	0.460	0.459	0.446	0.368	0.500	0.454
Mean	0.584	0.364	0.305	0.302	0.273	0.161	0.513	0.291
Observations	3,428	3,428	3,091	3,091	3,428	3,428	3,428	3,428

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their trust in institutions between 2006–2016. The outcomes are indicator variables coded 1 if the respondent trusts the institution at least somewhat or completely and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

I find that trust in the presidency and national government is unaffected (see Columns 1 and 2). On the other hand, Columns (3) and (4) document higher levels of trust in regional and, more robustly, local governments, with an increase by 8 and 9 percentage points, respectively. Column (5) also shows higher levels of trust in courts, which is almost 19 percentage points higher than that of the average citizen (42% of a standard deviation). The remaining columns again detect no differences in the trustworthiness of political parties, the armed forces, and the police.

These findings reveal a very particular pattern that is geared towards local institutions and courts but do not extend to (most) national institutions. Whether this is a direct consequence of the Decembrists' teachings in exile is difficult to determine. A plausible interpretation is that the "Great Reforms" of 1861–64 and the introduction of local self-government (*zemstvos*) shortly after the end of the exile period (Pearson, 1989) meant that the Decembrists' disciples had an opportunity to shape local government in their localities and this legacy is being picked up by these regressions.

3.5.4 Alternative Explanations and Robustness Checks

In this section, I support the main results by showing that these differences in attitudes are not driven by differences in how the respondents view their personal situation. They are also not explained by higher levels of social organization in terms of active or passive memberships in community associations. Finally, they are robust to accounting for variously clustered standard errors, controlling for the distance to Moscow and St. Petersburg, as well as a placebo test which randomizes the treatment.

Individual Situation and Views on the Existence of Liberties

Even though the demographics are balanced across different types of location, if those near exile locations view their situation differently than the average citizen, they might differ on other unobservable characteristics that could be driving the results presented here.

Table 3.5 – Assessment of Economic and Political Situation

			The Following Exist in Russia:					
	Situation in Russia		Free & Fair	Law &	Freedom of	Peace &	Independent	Fair
	Economic	Political	Elections	Order	Speech	Stability	Press	Court System
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Decembrists	0.0998	-0.0381	-0.0381	0.0761	0.0567	0.0909	-0.0684	0.0517
	(0.105)	(0.102)	(0.116)	(0.119)	(0.218)	(0.148)	(0.158)	(0.0822)
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓	✓	✓
Std. Dev.	0.401	0.421	0.475	0.433	0.500	0.479	0.486	0.378
Mean	0.202	0.231	0.344	0.250	0.493	0.355	0.382	0.172
Observations	3,428	3,428	3,091	3,091	3,091	3,091	3,091	3,091

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their assessment of the economic and political situation between 2006–2016. The outcomes of Columns (1) and (2) are indicator variables coded 1 if the respondent deems the current economic and political situation better than 4 years ago and 0 otherwise. The outcomes of Columns (3)–(9) are indicator variables coded 1 if the respondent agrees and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table 3.5 turns toward questions on how the respondents perceive Russia's political and economic situation. It also examines whether individuals observe certain liberal freedoms in their country. Individuals near exile locations do not view today's economic and political situation better than 4 years ago, as reported in Columns (1) and (2). There is also no evidence supporting the notion that such individuals view the existence of certain liberties differently (but differ on their importance, as documented above). What is more, I observe no significant differences in Columns (3)–(8), whose dependent variables ask whether the following exist: free and fair elections, law and order, freedom of speech, peace and stability, an independent press, and a fair court system. Even though the average agreement rate is only 17–49%, depending on the question, those near former exile locations do not fundamentally assess the current situation differently.

Social Organization

Table 3.6 shows that individuals who live in areas linked to the promotion of liberal thought, are not organized differently than those in other locations today. Columns (1)–(6) reveal no evidence of differences in terms of an individual's active or passive membership of church and religious organizations; art, music, or educational organizations;

labor unions; environmental organizations; and humanitarian or charitable organizations, respectively.

Table 3.6 – Pro-Social Behavior

	Social Organization Membership:					
	Religious (1)	Intellectual (2)	Labor (3)	Environment (4)	Professional (5)	Charity (6)
Decembrists	0.00860	0.00257	0.0195	-0.00120	-0.0142	-0.00849
	(0.0472)	(0.0280)	(0.0177)	(0.0165)	(0.0188)	(0.0170)
Individual Controls	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓
Std. Dev.	0.278	0.192	0.244	0.130	0.168	0.154
Mean	0.0844	0.0385	0.0634	0.0171	0.0291	0.0243
Observations	3,091	3,091	3,091	3,091	3,091	3,091

Notes: The table reports the estimated impact of the proximity of at least one Decembrist exiled within 10 km of the respondents' household on their social engagement between 2006–2016. Columns (1)–(6) are coded 1 if the respondent is a passive or active member of one of the categories and 0 otherwise. In all regressions, I control for the individual characteristics gender, age, urban vs. rural areas and employ district-fixed effects. Standard errors are clustered at the district level and presented in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Alternative Specifications and Placebo Tests

Finally, I report alternative specifications in Table B.1–Table B.6 of the Appendix. For each variable, Column (1) shows the original result as presented in the main text for reference, Columns (2)–(4) cluster the standard errors at the grid level, the province level, and the level of the Primary Sampling Unit (PSUs), which are census enumeration areas of the Russian Federation, respectively. Column (5) uses Conley standard errors with a cutoff at 100 km to allow for spatial autocorrelation. Column (6) controls for the distance to the main centers of political activity, Moscow and St. Petersburg, Column (7) uses the number of Decembrist exiles instead of the indicator variable as a treatment, and Column (8) randomizes the treatment status, such that the result can be viewed as a placebo test. Reassuringly, the size and significance of the estimated coefficients confirms the main results (except for Column (8), of course, which is a placebo test).

3.6 Conclusion

This study examines the lasting impact of liberal ideas through the sudden implantation of an educated elite into a sparsely populated area far away from the political center. It focuses on the case of the failed Decembrist revolt that led to the punishment of the leadership of the insurgents through hard labor and exile. Most of the Decembrists ended up in exile settlements as a punishment for their revolt. As the sentence was up to 30 years long, the new arrivals knew they would potentially settle for the remainder

of their time. Therefore, they actively shaped the communities in which they set foot, by continuing to express their ideas and maintaining their network through facilitated exchange by mail. To test the conjecture that the values survived their hosts and shaped the localities of exile, I analyze survey questions related to values and attitudes as well as civic engagement. By focusing strictly on exile locations as opposed to places of civil and military service and hard labor, which were also part of the punishment, I attempt to eliminate concerns of validity of the estimation design. In addition, I document balance between locations that were treated to Decembrist exposure and those that were not, based on pre-exile observable characteristics.

My results show that individuals living within 10 km of at least one Decembrist's exile settlement are more likely to show civic engagement in terms of participation in demonstrations, in strikes, and by signing petitions. They are also more regular consumers of news sources. Values and attitudes strongly associated with pillars of contemporary democracies are also more likely to be deemed important by respondents that were exposed to former exiles. They are more likely to find free and fair elections, an independent press and freedom of speech important. Moreover, they reveal stronger preferences for political liberties when offered the choice between full liberties and a weak economy versus few liberties and strong economic growth. I also find that indeed these individuals are more likely to trust their local and regional governments, rather than national institutions or the president.

Observing such local effects after a period of nearly two hundred years suggests that the total impact of the Decembrists on the Russian hinterland is underestimated. More than enough time has passed for these ideas to diffuse from the Decembrists' exile locations to other parts of the Russian plain. Such a diffusion pollutes the control group, so that my finding of contemporary differences suggests that in spite of the potential diffusion there is a specific legacy in terms of schools and local elites that were influenced by the Decembrists. Hence, while the Decembrist revolt was ill-prepared and a failure, the ideas that motivated it had a lasting influence in unexpected places.

Appendix

A Variable Definitions and Descriptive Statistics

A.1 Variable Definitions and Sources

Figure 3.1

Monasteries 1820: Number of orthodox monasteries within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Villages 1820: Number of orthodox monasteries within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Farmsteads 1820: Number of farmsteads (khutory) within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Hamlets 1820: Number of hamlets (sela) within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Province Towns 1820: Number of provincial towns within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

District Towns 1820: Number of district towns within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

District Post Roads 1820: Length of a district postal road network within in km 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Main Post Roads 1820: Length of a main postal road network within in km 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Province Post Roads 1820: Length of a provincial postal road network in km within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Major Rivers 1820: Length of major rivers in km within 10 km of a LiTS household in 1820. Source: Piadyshev (1829), geocoded by O'Neill (2016).

Age: Age in years of the LiTS respondent. Source: European Bank for Reconstruction and Development (2016).

Urban: Indicator equal to 1 if the location of the LiTS respondent is considered urban and 0 if rural. Source: European Bank for Reconstruction and Development (2016).

Male: Indicator equal to 1 if the indicated gender is male of the LiTS respondent and 0 for female. Source: European Bank for Reconstruction and Development (2016).

Table 3.1

News Consumption: This outcome is a composite created as average value from 7 news categories. The original question asked in the Life and Transition Survey is "People use different sources to learn what is going on in their country and the world. For each of the following sources, please indicate how often you use it?" The provided source options are a) 'Newspaper,' b) 'News broadcasts on radio or TV,' c) 'Printed magazines,' d) 'In-depth reports on radio or TV,' e) 'Internet, Email,' f) 'Talk with family, friends or colleagues,' g) 'Social media.' The response options are coded on a score from 1–7. In particular the outcome is coded 1 if the respondent never consumes news via the named source, 2 for once per year, 3 for several times per year, 4 indicates once per month, 5 once per week, 6 several times per week and 7 stands for daily. The score from 1–7 has been used. Source: European Bank for Reconstruction and Development (2016).

Participation in Demonstration: The question asked in the Life in Transition Survey is "How likely are you to attend a lawful demonstration?" The response options are 1) 'have done,' 2) 'might do,' and 3) 'would never do.' The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Participation in Strike: The question asked in the Life in Transition Survey is "How likely are you to participate in a strike?" The response options are 1) 'have done,' 2) 'might do,' and 3) 'would never do.' The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Participation in Petitions: The question asked in the Life in Transition Survey is "How likely are you to sign petitions?" The response options are 1) 'have done,' 2) 'might do,' and 3) 'would never do.' The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Participation in Voting: The questions asked in the Life in Transition Survey are "Did you vote in the last parliamentary or presidential elections?" and Did you vote in the most recent [a) local-level elections, b) parliamentary elections, c) presidential elections?]" with the response options 'yes' and 'no.' The outcome has been re-coded as indicator variable if the respondent voted in recent elections at any level and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Table 3.2

Free and Fair Elections Important: The question asked in the Life in Transition Survey is "To what extent do you agree that [free and fair elections are] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Law and Order Important: The question asked in the Life in Transition Survey is "To what extent do you agree that [law and order is] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Freedom of Speech Important: The question asked in the Life in Transition Survey is "To what extent do you agree that [freedom of speech is] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Peace and Stability Important: The question asked in the Life in Transition Survey is "To what extent do you agree that [peace and stability are] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Independent Press Important: The question asked in the Life in Transition Survey is "To what extent do you agree that [a press that is independent from the government is] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Fair Court System Important: The question asked in the Life in Transition Survey is "To

what extent do you agree that [a courts system that treats all citizens equally, rather than favouring some over others is] important for Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Few Political Liberties: The question asked in the Life in Transition Survey is a hypothetical one in which the respondent is asked to choose between living in two countries. This outcome has been coded as indicator with 1 if the respondent chose 'Country A has few political liberties but strong economic growth.' and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Full Political Liberties: The question asked in the Life in Transition Survey is a hypothetical one in which the respondent is asked to choose between living in two countries. This outcome has been coded as indicator with 1 if the respondent chose 'Country B has full political liberties but weak economic growth.' and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Table 3.3

Incomes Equal vs. Unequal: The question asked in the Life in Transition Survey is "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between." The statement on the left reads 'Incomes should be made more equal,' while the statement on the right reads 'We need larger income differences as incentives for individual effort.' The score from 1–10 has been used. Source: European Bank for Reconstruction and Development (2016).

Firm Ownership Private vs. Public: The question asked in the Life in Transition Survey is "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between." The statement on the left reads 'Private ownership of business and industry should be increased,' while the statement on the right reads 'Government ownership of business and industry should be increased.' The score from 1–10 has been used. Source: European Bank for Reconstruction and Development (2016).

Competition Good vs. Harmful: The question asked in the Life in Transition Survey is "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between."

The statement on the left reads 'Competition is good. It stimulates people to work hard and develop new ideas,' while the statement on the right reads 'Competition is harmful. It brings out the worst in people.' The score from 1–10 has been used. Source: European Bank for Reconstruction and Development (2016).

Law Obey vs. Break: The question asked in the Life in Transition Survey is "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between." The statement on the left reads 'People should obey the law without exception,' while the statement on the right reads 'There are times when people have good reasons to break the law.' The score from 1–10 has been used. Source: European Bank for Reconstruction and Development (2016).

Authorities Question vs. Respect: The question asked in the Life in Transition Survey is "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between." The statement on the left reads 'As citizens, we should be more active in questioning the actions of our authorities,' while the statement on the right reads 'In our country today, we should show more respect for our authorities.' The score from 1–10 has been used. Source: European Bank for Reconstruction and Development (2016).

Immigrants Burden: The question asked in the Life in Transition Survey is "Of the following statements, which is the one that is closest to your opinion on immigrants?" The three response options are 1) 'Immigrants make a valuable contribution to the national economy of our country,' 2) 'Immigrants are a burden for the national social protection system,', and 3) 'None of the above.' The second option has been coded as indicator variable with 1 if chosen and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Table 3.4

Trust in Presidency: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [The Presidency]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in National Government: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [The Government/Cabinet of

Ministers]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Regional Government: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [Regional Government]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Local Government: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [Local Government]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Courts: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [Courts]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Political Parties: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [Political Parties]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Armed Forces: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [Armed Forces]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5)

'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Trust in Police: The question asked in the Life in Transition Survey is "To what extent do you trust the following institutions? [The Police]." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'complete trust,' 2) 'some distrust,' 3) 'neither trust nor distrust,' 4) 'some trust,' and 5) 'complete trust.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Table 3.5

Economic Situation in Russia: The question asked in the Life in Transition Survey is "The economic situation in our country is better today than around 4 years ago." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Political Situation in Russia: The question asked in the Life in Transition Survey is "The political situation in our country is better today than around 4 years ago." The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Free and Fair Elections Exist: The question asked in the Life in Transition Survey is "To what extent do you agree that [free and fair elections] exist in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Law and Order Exists: The question asked in the Life in Transition Survey is "To what extent do you agree that [law and order] exist[s] in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options

4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Freedom of Speech Exists: The question asked in the Life in Transition Survey is "To what extent do you agree that [freedom of speech] exist[s] in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Peace and Stability Exists: The question asked in the Life in Transition Survey is "To what extent do you agree that [peace and stability] exist[s] in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Independent Press Exists: The question asked in the Life in Transition Survey is "To what extent do you agree that [a press that is independent from the government] exist[s] in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Fair Court System Exists: The question asked in the Life in Transition Survey is "To what extent do you agree that [a courts system that treats all citizens equally, rather than favouring some over others] exist[s] in Russia?" The response options are originally coded on a score from 1–5. In particular the outcome is coded 1) 'strongly disagree,' 2) 'disagree,' 3) 'neither disagree nor agree,' 4) 'agree,' and 5) 'strongly agree.' The variable has been re-coded as indicator variable, with 1 indicating answer options 4 or 5, and 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Table 3.6

Religious Organization Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [church and religious organizations]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Intellectual Organization Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [art, music or educational organizations]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Labor Union Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [labor unions]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Environmental Organization Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [environmental organizations]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Professional Association Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [professional associations]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

Charity Organization Membership: The question asked in the Life in Transition Survey is "[... P]lease indicate, whether you are [1)] an active member, [2)] an inactive member, or [3)] not a member of [humanitarian or charitable organizations]." The outcome has been re-coded as indicator variable if the respondent chose response 1 or 2 and has been coded 0 otherwise. Source: European Bank for Reconstruction and Development (2016).

A.2 Descriptive Statistics

The following descriptive statistics are organized by table in the main body of the paper and are reported for the sample of the estimated equation respectively.

Table A.1 – Descriptive Statistics

	N	*Mean*	*SD*	*Min*	*Max*
Table 3.1					
News Consumption	1,507	4.500	1.115	1	7
Participation in Demonstration	1,507	0.287	0.452	0	1
Participation in Strike	1,507	0.215	0.411	0	1
Participation in Petitions	1,507	0.464	0.499	0	1
Participation in Elections	3,428	0.694	0.461	0	1
Table 3.2					
Incomes Equal vs. Unequal	1,440	4.976	2.975	1	10
Firm Ownership Private vs. Public	1,302	6.228	2.613	1	10
Competition Good vs. Harmful	1,429	4.859	2.710	1	10
Law Obey vs. Break	1,453	3.933	3.160	1	10
Authorities Question vs. Respect	1,434	4.109	2.900	1	10
Immigrants Burden	1,507	0.544	0.498	0	1
Table 3.3					
Free and Fair Elections Important	1,844	0.849	0.358	0	1
Law and Order Important	1,844	0.894	0.308	0	1
Freedom of Speech Important	1,844	0.803	0.398	0	1
Peace and Stability Important	1,844	0.889	0.314	0	1
Independent Press Important	1,844	0.683	0.465	0	1
Fair Court System Important	1,844	0.870	0.336	0	1
Few Political Liberties	1,507	0.671	0.470	0	1
Full Political Liberties	1,507	0.162	0.368	0	1
Table 3.4					
Trust in Presidency	1,844	0.655	0.476	0	1
Trust in National Government	1,844	0.366	0.482	0	1
Trust in Regional Government	1,507	0.299	0.458	0	1
Trust in Local Government	1,507	0.277	0.448	0	1
Trust in Courts	1,844	0.295	0.456	0	1
Trust in Political Parties	1,844	0.178	0.383	0	1
Trust in Armed Forces	1,844	0.597	0.491	0	1
Trust in Police	1,844	0.328	0.470	0	1
Table 3.5					
Economic Situation in Russia	1,844	0.137	0.344	0	1
Political Situation in Russia	1,844	0.206	0.405	0	1

Table A.1 Descriptive Statistics, Continued

	N	*Mean*	*SD*	*Min*	*Max*
Free and Fair Elections Exist	1,507	0.368	0.482	0	1
Law and Order Exists	1,507	0.262	0.440	0	1
Freedom of Speech Exists	1,507	0.470	0.499	0	1
Peace and Stability Exists	1,507	0.352	0.478	0	1
Independent Press Exists	1,507	0.370	0.483	0	1
Fair Court System Exists	1,507	0.198	0.398	0	1
Table 3.6					
Religious Organization Membership	1,507	0.121	0.326	0	1
Intellectual Organization Membership	1,507	0.0610	0.239	0	1
Labor Union Membership	1,507	0.0657	0.248	0	1
Environmental Organization Membership	1,507	0.0292	0.168	0	1
Professional Association Membership	1,507	0.0431	0.203	0	1
Charity Organization Membership	1,507	0.0372	0.189	0	1

A.3 List of Exile Settlements

The following list reports the exile settlement locations that were matched with a 10 km radius to the respondents' household locations.

Aksha, Balakhta, Barguzin, Baturino, Bel'sk, Beryozovo, Bol'shaya Elan', Bukhtarma Fortress, Buret', Chita, Drokino, Elan', Irkutsk, Ishim, Itanza, Kabansk, Kamenka, Kirensk, Kodinsk, Krasnojarsk, Kuda, Kuragino, Kurgan, Mertvyj Kultuk, Mikhaylovka, Minusinsk, Moty, Narva, Narym, Nazarov, Novaya Razvodnaya, Novoselenginsk, Odoyevsky District, Oek, Oktyabrskoye, Olyokminsk, Pelym, Podlopatki, Pokrovskoe, Shlisselburg Fortress, Shushenskoye, Smolenshchina, Smolino, Sokovnino, Solnechnyy, Srednekolymsk, Sumino, Suomenlinna, Surgut, Tagino, Tara, Taseyevo, Timofeevsky, Tobolsk, Tomsk, Troitskoe, Tula, Turinsk, Turukhansk, Tver, Ulan-Ude, Urik, Ust'-Kuda, Ust'-Kut, Verkhnekolymsk, Verkhnevilyuysk, Verkholensk, Vilyuysk, Vitim, Vodyanje, Volod'kovo, Vvedenshchina, Vysokoe, Yakutia, Yalutorovsk, Yaroslavl, Yeniseysk, Zaledeevo, Zhigansk, Zhilkino.

B Robustness: Alternative Specifications

In Appendix Tables B.1–B.5, I present alternative specifications for each variable to ensure robustness of the main results in Tables 3.1–3.5. Reassuringly, the size and significance of the estimated coefficients remain largely similar throughout.

The following perturbations have been employed. Column (1) reports the original result as presented in the main text for reference, Columns (2)–(4) cluster the standard errors at the Grid Level, at the Province Level, and at the Primary Sampling Unit Level which corresponds to census enumeration areas of the Russian Federation, respectively. Column (5) employs Conley standard errors with a distance cut off at 100 km to account for spatial autocorrelation (Conley, 1999; Colella et al., 2019). Column (6) controls for the distance to the main centers of political activity, Moscow and St. Petersburg, Column (7) uses the number of Decembrist exiles instead of the indicator variable as a treatment, and Column (8) randomizes the treatment status, such that the result can be viewed as a placebo test.

Table B.1 – Robustness Checks for Table 3.1

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—News Consumption							
Decembrists	0.939**	0.939***	0.939***	0.939***	0.939***	0.889**	0.0705	-0.00654
	(0.470)	(0.149)	(0.168)	(0.349)	(0.166)	(0.418)	(0.121)	(0.0656)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (b)—Political Participation: Demonstrations							
Decembrists	0.0720*	0.0720**	0.0720**	0.0720**	0.0720**	0.0589	0.0760***	0.00508
	(0.0398)	(0.0317)	(0.0349)	(0.0314)	(0.0344)	(0.0396)	(0.00767)	(0.0278)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (c)—Political Participation: Strike							
Decembrists	0.144***	0.144***	0.144***	0.144***	0.144***	0.130***	0.0875***	-0.0120
	(0.0413)	(0.0276)	(0.0280)	(0.0304)	(0.0275)	(0.0414)	(0.00988)	(0.0255)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (d)—Political Participation: Petitions							
Decembrists	0.220**	0.220***	0.220***	0.220***	0.220***	0.213*	0.0209	0.0144
	(0.109)	(0.0322)	(0.0321)	(0.0694)	(0.0318)	(0.126)	(0.0292)	(0.0306)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (d)—Political Participation: Vote							
Decembrists	0.173*	0.173***	0.173***	0.173*	0.173***	0.174*	0.0345	-0.0394
	(0.0987)	(0.0453)	(0.0550)	(0.103)	(0.0547)	(0.103)	(0.0226)	(0.0328)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table B.2 – Robustness Checks for Table 3.2

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Important: Free & Fair Elections							
Decembrists	0.0715**	0.0715***	0.0715***	0.0715***	0.0715***	0.0778*	0.0715**	-0.0330
	(0.0318)	(0.0115)	(0.0118)	(0.0250)	(0.0117)	(0.0433)	(0.0318)	(0.0307)
Observations	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
	Panel (b)—Important: Law & Order							
Decembrists	-0.0732**	-0.0732***	-0.0732***	-0.0732***	-0.0732***	-0.0913**	-0.0732**	0.0117
	(0.0310)	(0.00968)	(0.0107)	(0.0255)	(0.0105)	(0.0380)	(0.0310)	(0.0284)
Observations	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
	Panel (c)—Important: Freedom of Speech							
Decembrists	0.101*	0.101***	0.101***	0.101**	0.101***	0.0885	0.101*	0.0199
	(0.0553)	(0.0177)	(0.0173)	(0.0488)	(0.0171)	(0.0554)	(0.0553)	(0.0346)
Observations	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
	Panel (d)—Important: Peace & Stability							
Decembrists	-0.0284	-0.0284**	-0.0284**	-0.0284**	-0.0284	-0.0407	-0.0284	-0.00738
	(0.0244)	(0.0116)	(0.0126)	(0.0203)	(0.0124)	(0.0309)	(0.0244)	(0.0298)
Observations	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
	Panel (e)—Important: Independent Press							
Decembrists	0.241***	0.241***	0.241***	0.241***	0.241***	0.244***	0.241***	0.00291
	(0.0295)	(0.0279)	(0.0274)	(0.0242)	(0.0271)	(0.0325)	(0.0295)	(0.0436)
Observations	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
	Panel (f)—Important: Fair Court System							
Decembrists	0.143	0.143	0.143	0.143	0.143	0.137	0.0665*	-0.0202
	(0.246)	(0.153)	(0.189)	(0.239)	(0.186)	(0.256)	(0.0346)	(0.0241)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (g)—Preference: Few Political Liberties							
Decembrists	-0.339*	-0.339*	-0.339*	-0.339**	-0.339*	-0.294	0.0150	0.0409
	(0.195)	(0.175)	(0.192)	(0.163)	(0.190)	(0.195)	(0.0497)	(0.0274)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (h)—Preference: Full Political Liberties							
Decembrists	0.0981**	0.0981***	0.0981***	0.0981***	0.0981***	0.0986**	-3.27e-05	-0.0144
	(0.0429)	(0.0223)	(0.0242)	(0.0315)	(0.0239)	(0.0473)	(0.0153)	(0.0209)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table B.3 – Robustness Checks for Table 3.3

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Incomes: Equal & Unequal							
Decembrists	3.279***	3.279***	3.279***	3.279***	3.279***	4.863***	-0.174	-1.843
	(1.137)	(0.522)	(0.587)	(0.949)	(0.580)	(1.304)	(0.521)	(1.311)
Observations	3,024	3,024	3,024	3,024	3,024	3,024	3,024	3,024
	Panel (b)—Firm Ownership: Private & Public							
Decembrists	4.279	4.279**	4.279**	4.279	4.279**	5.635	-0.471	-1.281
	(3.116)	(1.682)	(1.967)	(2.869)	(1.947)	(3.466)	(0.705)	(1.591)
Observations	2,886	2,886	2,886	2,886	2,886	2,886	2,886	2,886
	Panel (c)—Competition: Good & Harmful							
Decembrists	3.741	3.741	3.741	3.741	3.741	5.377**	-0.512	-0.996
	(2.390)	(2.480)	(2.812)	(2.255)	(2.773)	(2.162)	(0.683)	(1.329)
Observations	3,013	3,013	3,013	3,013	3,013	3,013	3,013	3,013
	Panel (d)—Law: Obey & Break							
Decembrists	3.087**	3.087**	3.087**	3.087***	3.087**	4.372***	-0.365	-1.149
	(1.216)	(1.234)	(1.373)	(1.129)	(1.364)	(1.103)	(0.508)	(1.080)
Observations	3,037	3,037	3,037	3,037	3,037	3,037	3,037	3,037
	Panel (e)—Authorities: Question & Respect							
Decembrists	1.491	1.491	1.491	1.491	1.491	2.467	-0.647	-2.485**
	(1.614)	(1.664)	(1.903)	(1.879)	(1.534)	(1.814)	(0.427)	(1.198)
Observations	3,018	3,018	3,018	3,018	3,018	3,018	3,018	3,018
	Panel (f)—Immigrants Burden							
Decembrists	-0.277**	-0.277***	-0.277***	-0.277***	-0.277***	-0.226	0.0339	-0.0350
	(0.128)	(0.0188)	(0.0235)	(0.0903)	(0.0235)	(0.140)	(0.0434)	(0.0331)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table B.4 – Robustness Checks for Table 3.4

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Trust: Presidency							
Decembrists	-0.0344	-0.0344	-0.0344	-0.0344	-0.0344	-0.0550	-0.0316**	-0.0391
	(0.104)	(0.0801)	(0.0930)	(0.0915)	(0.0923)	(0.0994)	(0.0147)	(0.0283)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (b)—Trust: National Government							
Decembrists	0.0405	0.0405	0.0405	0.0405	0.0405	0.0212	-0.0329**	-0.0128
	(0.0679)	(0.0280)	(0.0327)	(0.0623)	(0.0322)	(0.0690)	(0.0153)	(0.0306)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (c)—Trust: Regional Government							
Decembrists	0.0858*	0.0858***	0.0858***	0.0858**	0.0858***	0.0796	-0.0223	-0.0411*
	(0.0481)	(0.0149)	(0.0156)	(0.0428)	(0.0154)	(0.0521)	(0.0168)	(0.0213)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (d)—Trust: Local Government							
Decembrists	0.0931**	0.0931***	0.0931***	0.0931**	0.0931***	0.0672*	-0.0256	-0.0192
	(0.0393)	(0.0279)	(0.0305)	(0.0439)	(0.0299)	(0.0393)	(0.0183)	(0.0241)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (e)—Trust: Courts System							
Decembrists	0.186***	0.186***	0.186***	0.186***	0.186***	0.126*	-0.0214	-0.0214
	(0.0557)	(0.0280)	(0.0271)	(0.0457)	(0.0269)	(0.0654)	(0.0300)	(0.0267)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (f)—Trust: Political Parties							
Decembrists	0.105	0.105***	0.105***	0.105	0.105***	0.103	-0.0298	-0.00989
	(0.0791)	(0.0153)	(0.0165)	(0.0679)	(0.0165)	(0.0768)	(0.0215)	(0.0208)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (g)—Trust: Armed Forces							
Decembrists	-0.117	-0.117	-0.117	-0.117*		-0.117 -0.145***	-0.0862***	-0.0129
	(0.0737)	(0.0815)	(0.0897)	(0.0661)	(0.0887)	(0.0499)	(0.0127)	(0.0353)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (h)—Trust: Police							
Decembrists	0.0193	0.0193	0.0193	0.0193	0.0193	-0.00918	-0.0442***	0.00559
	(0.0575)	(0.0318)	(0.0330)	(0.0480)	(0.0329)	(0.0590)	(0.0130)	(0.0311)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. *** : $p < 0.01$; ** : $p < 0.05$; * : $p < 0.1$.

Table B.5 – Robustness Checks for Table 3.5

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Economic Situation Better Today							
Decembrists	0.0998	0.0998	0.0998	0.0998	0.0998	0.0923	0.00903	0.00181
	(0.105)	(0.0878)	(0.102)	(0.0829)	(0.101)	(0.105)	(0.0181)	(0.0246)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (b)—Political Situation Better Today							
Decembrists	-0.0381	-0.0381	-0.0381	-0.0381	-0.0381	-0.0599	-0.0203	-0.000338
	(0.102)	(0.109)	(0.122)	(0.0855)	(0.121)	(0.114)	(0.0144)	(0.0268)
Observations	3,428	3,428	3,428	3,428	3,428	3,428	3,428	3,428
	Panel (c)—Exists: Free & Fair Elections							
Decembrists	-0.0381	-0.0381***	-0.0381***	-0.0381	-0.0381***	-0.0656	-0.0709***	-0.00353
	(0.116)	(0.00893)	(0.0105)	(0.0779)	(0.0104)	(0.120)	(0.0171)	(0.0253)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (d)—Exists: Law & Order							
Decembrists	0.0761	0.0761	0.0761	0.0761	0.0761	0.0482	-0.00861	-0.0363
	(0.119)	(0.0818)	(0.0965)	(0.0969)	(0.0954)	(0.127)	(0.0188)	(0.0268)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (e)—Exists: Freedom of Speech							
Decembrists	0.0567	0.0567	0.0567	0.0567	0.0567	0.0546	-0.0659**	-0.0443
	(0.218)	(0.188)	(0.217)	(0.188)	(0.214)	(0.214)	(0.0305)	(0.0298)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (f)—Exists: Peace & Stability							
Decembrists	0.0909	0.0909	0.0909	0.0909	0.0909	0.0639	-0.0133	0.00152
	(0.148)	(0.0836)	(0.102)	(0.125)	(0.100)	(0.154)	(0.0226)	(0.0264)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (g)—Exists: Independent Press							
Decembrists	-0.0684	-0.0684	-0.0684	-0.0684	-0.0684	-0.0617	-0.102***	-0.00371
	(0.158)	(0.136)	(0.162)	(0.149)	(0.160)	(0.152)	(0.0217)	(0.0274)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (h)—Exists: Fair Court System							
Decembrists	0.0517	0.0517	0.0517	0.0517	0.0517	0.0427	-0.0299**	-0.0367**
	(0.0822)	(0.0461)	(0.0558)	(0.0689)	(0.0550)	(0.0811)	(0.0144)	(0.0177)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

Table B.6 – Robustness Checks for Table 3.6

	Standard Errors					Distances	Treatment	
	District	Grid	Province	PSU	Conley	Moscow/StP	Count	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel (a)—Membership: Religious Organization							
Decembrists	0.00860	0.00860	0.00860	0.00860	0.00860	-0.0224	0.124***	-0.00957
	(0.0472)	(0.0260)	(0.0310)	(0.0344)	(0.0307)	(0.0309)	(0.0171)	(0.0171)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (b)—Membership: Intellectual Organization							
Decembrists	0.00257	0.00257	0.00257	0.00257	0.00257	-0.0224	-0.0101**	-0.0173
	(0.0280)	(0.0240)	(0.0257)	(0.0247)	(0.0255)	(0.0309)	(0.00474)	(0.0111)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (c)—Membership: Labor Union							
Decembrists	0.0195	0.0195	0.0195	0.0195	0.0195	0.0147	-0.00606	0.00679
	(0.0177)	(0.0123)	(0.0134)	(0.0168)	(0.0133)	(0.0187)	(0.00496)	(0.0137)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (d)—Membership: Environmental Organization							
Decembrists	-0.00120	-0.00120	-0.00120	-0.00120	-0.00120	0.00198	0.00372	-0.0117*
	(0.0165)	(0.0201)	(0.0209)	(0.0128)	(0.0205)	(0.0149)	(0.00253)	(0.00621)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (e)—Membership: Professional Association							
Decembrists	-0.0142	-0.0142	-0.0142	-0.0142	-0.0142	-0.00858	-0.0222***	-0.000398
	(0.0188)	(0.0219)	(0.0237)	(0.0166)	(0.0234)	(0.0181)	(0.00332)	(0.0101)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
	Panel (f)—Membership: Charity Organization							
Decembrists	-0.00849	-0.00849	-0.00849	-0.00849	-0.00849	-0.00750	-0.0130***	-0.0112
	(0.0170)	(0.0133)	(0.0153)	(0.0142)	(0.0151)	(0.0101)	(0.00282)	(0.00722)
Observations	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091

Notes: This table presents robustness checks for Table 3.1. Clustered standard errors in parentheses. $^{***}: p < 0.01$; $^{**}: p < 0.05$; $^{*}: p < 0.1$.

This chapter is co-authored with Richard Bluhm and Tobias Korn

4

Independence Movements and Ethnic Politics: The Mau Mau Origins of Ethnic Voting and Distrust in Kenya

4.1 Introduction

The salience of ethnic identities is a prominent feature of politics in many diverse developing countries. In Africa, elections can amount to ethnic censuses at the ballot box (Horowitz, 1985), and generalized trust in others, particularly members of other ethnic groups, is low (Knack and Keefer, 1997; Robinson, 2020).[1] Politicians often exploit such ethnic divisions to mobilize support (Eifert et al., 2010), further weakening electoral accountability and governance. The roots of these social tensions are often traced back to the "divide and rule" approach of European colonizers (Ali et al., 2018) and differences in pre-colonial institutions (Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013a). Nevertheless, there is remarkable variation in the importance of ethnicity in politics among countries that share much of their colonial history. For example, ethnicity is the defining cleavage in Kenya's "high-stake ethnic politics" (Mueller, 2020) whereas it plays less of a role in neighboring Uganda or Tanzania (Miguel, 2004; Conroy-Krutz, 2013; Carlson, 2015; Long and Gibson, 2015).

[1] Identity-based voting is not limited to Africa but has been documented in Latin America (see, e.g., Madrid, 2012) and South Asia (see, e.g., Chandra, 2007).

The aim of this paper is to show that colonial repression of independence movements and the exploitation of ethnic identities by the colonial power set the stage for ethnic politics and a lack of social cohesion[2] decades later. While others have studied different aspects of how the transition to independent statehood occurred (see, e.g., Garcia-Ponce and Wantchekon, 2018, on democracy) or how nation-building was done post-independence through school curricula (Miguel, 2004) and pro-national propaganda (Blouin and Mukand, 2019), we lack evidence that links the (often violent) path to independence to contemporary ethnic politics and social cohesion. To fill this gap, we exploit the indiscriminate nature of the British response to the Mau Mau uprising in 1950s Kenya and local variation in the intensity of the repression.

After their arrival in the 1880s, British settlers claimed some of the colony's most fertile land, while natives where confined to reserves or squatting on white farms (Mosley, 1982; Moradi, 2009; Fazan, 2014). When the acreage per person in the native reserves fell dramatically in the late 1940s, disgruntled farmers, former soldiers, and radical politicians demanded independence and started attacking natives and white settlers who supported the colonial government (Bates, 1987; Anderson, 2005). In response to this nationalist movement, later coined the "Mau Mau," Britain set up a system of detention camps and interned anyone they believed to be associated with the uprising. Between 1952 and 1959, the vast majority of three specific Kenyan tribes (the Kikuyu, Embu and Meru) were interrogated and many of them subsequently sent to a camp (see, e.g., Majdalany, 1963; Odhiambo and Lonsdale, 2003; Elkins, 2005). The colonial government sought to frame the uprising as a civil (ethnic) conflict rather than a nationalist uprising. It used members from other ethnic groups and loyalists[3] as fighters, informants, prison guards and overseers (Anderson, 2017). Somewhere between 50,000 and 300,000 people died while being held in a camp or shortly thereafter, while survivors suffered from physical and psychological abuse (Elkins, 2005; Blacker, 2007). Britain was ultimately successful in repressing the rebellion, but the conflict paved the way for independence in 1963 when Jomo Kenyatta, who had himself been detained, became the country's first president.

We collect a rich body of census and survey data, spanning the period from 1989 until the 2010s, and combine these with archival data on the location of Mau Mau detention camps in the 1950s. We use these data to study two sets of outcomes. First, we examine whether camp exposure affected ethnic allegiances in national politics in the contested 2007 election, as well as contemporary levels of generalized trust and civic engagement. We obtain individual-level votes, a voter's ethnicity, and basic demographic information from a nationwide exit poll conducted during the 2007 general election (Long and Gibson, 2015). We consider any vote an 'ethnic vote' if it is for the presidential candidate preferred

[2]On foreign intervention and social cohesion during periods of conflict see, e.g., Langlotz (2021).

[3]The term loyalist refers to individuals who were part of the three Central Province tribes and supportive of the colonial government. It is also often used more specifically to refer to supporters who served in the so-called Home Guard militias or the colonial military, i.e., the King's African Rifles.

by the overwhelming majority of a voter's ethnic group.[4] We measure the effects of camp exposure on current levels of trust and civic engagement using survey data from the Afrobarometer between 2003 and 2016. Second, we address the lack of hard evidence on the scope and effects of detention (Anderson, 2011). More specifically, we examine whether individuals likely affected by the camps have worse development outcomes in 1989—three decades after the uprising—and today. We focus on a household's wealth, literacy, and employment using geocoded census data from 1989 and Demographic and Health Surveys conducted between 2003 and 2014.

We analyze the long-run effects of internment on ethnic politics, social cohesion, and individual development outcomes using a triple-difference estimation design that proxies for exposure to detention camps. We focus on the impact of camp exposure on individuals that identify as Kikuyu, Embu or Meru, live within 30 km of a former camp locations, and were already born at the time of the uprising. The historical record suggests that the British screened for alleged insurgents solely on an ethnic basis[5] and a significant share of the 1.5 million Kikuyu, Embu, and Meru were in one of the camps during the state of emergency from 1952 to 1959 (although no precise estimate of the total camp population and their mortality is available). Non-Mau Mau tribes, untreated cohorts, and more distant locations serve as control groups. Our triple-difference design therefore isolates the effect on those that were likely treated by these camps and eliminates bias that may arise from different mechanisms driving selection into camp sites and non-camp sites of Mau Mau and non-Mau Mau tribes, as long as the resulting bias does not change fundamentally for those born before and after 1959. We focus on tracing out the direct impact on those that were affected at different points in time (from 1989 until the 2010s). This sets up a relatively strict test where any diffusion of (typically negative) effects of detention to other tribes, sites, or later cohorts are not part of our estimate. Combined with the fact that we follow fewer and fewer survivors over time, we consider most of our results to be a lower bound. We support the validity of our design using placebo checks where we use cohorts that were not immediately affected to construct placebo exposures.

Our analysis establishes two main findings. First, we document that those exposed to detention camps are more likely to vote based on ethnic identity and have a more pessimistic assessment of the trustworthiness of others. For example, they were 13 percentage points more likely to vote for the Kikuyu candidate (Uhuru Kenyatta) in the 2007 presidential election, even though they were about 38 percentage points less likely to evaluate the outgoing Kikuyu candidate (Mwai Kibaki) positively. Surveys on attitudes show that camp exposure sharply reduces generalized trust, by more than 80

[4]Usually, such a candidate would share the voter's ethnic affiliation or that of the larger ethnic family or is part of a well-known coalition of ethnic groups.

[5]For a detailed description of the screening process see, e.g., Odhiambo and Lonsdale (2003). Non-Kikuyus (and related tribes) were interviewed and then allowed to return home, while "Kikuyu, Embu and Meru suspects were not so fortunate."

percentage points, and trust in other people, by about 1.5 categories on a scale of 0 to 3. Moreover, engagement in voluntary community organizations increases by about 0.55 on a scale of 0 to 3). These results confirm that the colonial repression of the Mau Mau significantly altered the fabric of national politics and social cohesion in Kenya by fortifying in-group preferences at the ballot box and raising the level of activity in the local community but eroding trust in others. Second, we find that detention was a negative shock to the long-term development trajectories of former detainees and affected individuals. Exposure to a camp reduces household wealth by about one-fifth of a wealth quintile 30 years after the end of the uprising. Today, this effect persists at one-tenth of a wealth quintile. Moreover, literacy falls by 20 percentage points 30 years after the emergency and remains 3.5 percentage points lower for those that survived until the 2000s and 2010s. We also show that the probability of employment of exposed individuals in 1989 is about five percentage points lower, while the likelihood of being out of work or seeking work rises by about one percentage point each.

Our study contributes to a broad literature on nation building and ethnic politics. Widespread ethnic favoritism in the allocation of public funds is one of the key reasons why different ethnic groups compete over control of the central government (Banerjee and Pande, 2007; Franck and Rainer, 2012; Burgess et al., 2015; Kramon and Posner, 2016; De Luca et al., 2018). Once ethnic voting and ethnic favoritism are entrenched, there are only few interventions which appear to be able to (marginally) shift voting behavior.[6] Ali et al. (2018) show that the emphasis on native rule implies stronger ethnic identities in former British colonies (as opposed to French colonies) but this finding cannot explain differences in the prevalence of ethnic politics within British colonies. Our work builds on Garcia-Ponce and Wantchekon (2018), who show that independence movements supported by rural uprisings, rather than urban protest, gave rise to more autocratic regimes. We add within-country evidence explicitly linking the *repression* of the quintessential rural uprising in Sub-Saharan Africa to ethnic voting.

Our work also speaks to a growing literature on the long-run consequences of forced labor, re-education or resettlement camps on local development and social cohesion (see, e.g., Chin, 2005; Dippel, 2014; Lupu and Peisakhin, 2017; Lowes and Montero, 2021; Abel, 2019; Nikolova et al., 2022). The effects of detention and resettlement on development trajectories appear to depend on who went to these camps and what they experienced there.[7] Moreover, the literature typically finds higher levels of trust towards the in-group following traumatic events (see, e.g., Lupu and Peisakhin, 2017, on descendants

[6] See, e.g., Ichino and Nathan (2013) on voting in mixed neighborhoods, Casey (2015), Conroy-Krutz (2013), and Carlson (2015) on information, or Arriola et al. (2022) on cross-ethnic endorsements.

[7] Toews and Vezina (2020), for example, show that areas and firms *around* Gulags with a higher share of skilled intellectuals, artists, politicians, and affluent peasants are more prosperous today, whereas Chin (2005) documents large negative effects of internment on labor market outcomes of Japanese-Americans during World War II.

of Crimean Tatars) or higher levels of trust in general (see, e.g., Abel, 2019, on mixed resettlement camps in South Africa or Lowes and Montero, 2021, on rubber concessions in the Congo Free State).[8] Although the Mau Mau fighters were mostly peasants, the colonial government treated all members of related tribes as suspects and deliberately attempted to break ethnic bonds (both within and across ethnic groups). We show that this translates into both less generalized trust, more civic engagement in the local community, and—going beyond a shift in attitudes and values—a revealed preference for in-group candidates in national elections.

Last but not least, ours is the first study (to the best our knowledge) to quantitatively evaluate the effects the Mau Mau uprising and study its role in Kenya's post-independence politics. The systematic destruction of records by the colonial government and the British authorities (Anderson, 2011) implies that the voluminous literature on the Mau Mau and their detention is almost exclusively qualitative in nature (see, e.g., the extensive interviews conducted in Elkins, 2001, 2005).[9] By combining archival data on camp locations with geocoded historical census data and contemporary surveys, we show that internment represented a lasting negative shock to the individual development trajectories of likely internees and their relatives. The repression of the Mau Mau movement in Kenya is also a particularly interesting case. The movement was led by the country's largest ethnic group (the Kikuyu) who defined much of post-independence politics, were often accused of favoring their ethnic kin, and violently clashed with the Kalenjin, Luo and Luhya in the aftermath of the disputed 2007 election.

The remainder of this paper is organized as follows. Section 4.2 provides an overview of the historical context. Section 4.3 discusses the data on internment camps and characteristics of their locations, as well as historical and contemporary outcomes. Section 4.4 describes our triple-difference strategy. Section 4.5 presents the results on the subsequent development trajectories of affected individuals and the impact on ethnic politics and social cohesion. Section 4.6 presents several extensions and robustness checks. Section 4.7 concludes.

4.2 A Brief History of the Emergency

Most historians trace the origins of the Mau Mau uprising to historic grievances over land and increasing population pressures experienced by the Kikuyu on the native reserves (e.g., Bates, 1987; Odhiambo and Lonsdale, 2003; Anderson, 2005; Elkins, 2005). Kenya was one of the few settler colonies in Sub-Saharan Africa and the white settler minority

[8] Some studies suggest the opposite. Nikolova et al. (2022), for example, find that trust and civic engagement are universally lower for people that live near Stalin's gulags.

[9] One exception is a descriptive study among 180 former Mau Mau detainees which shows that they experience high levels of post traumatic stress disorder (Atwoli et al., 2006).

claimed large parts of the fertile land (the so-called 'white highlands,' an area in the central province of Kenya). Since the settler community only numbered a few thousand, most labor was carried out by Africans who were cohabiting on the farm. The remaining native population was assigned land in designated reserves. Increasing mechanization in the 1910s meant that African labor squatting on the farm became redundant, so that the native reserves were becoming increasingly crowded. A former district commissioner estimates that an average family of five in Fort Hall district had access to as little as 9 acres of land around the late 1930s (Fazan, 2014). Similar conditions prevailed in many other parts of Kenya's Central Province.

The colonial government did little to address this problem. Amid heightened grievances, the Kikuyu and related tribes started to form political groups demanding change and opposing (parts or all of) the colonial state. In 1920 the Kikuyu Central Association (KCA)[10] was formed, was banned in 1940, and then reemerged as the Kenya African Union (KAU) in 1944. Both groups challenged the colonial law via petitions and constitutional redresses. The Kenya Land Commission (KLC) established in 1932 was tasked to look into the grievances related to land and to propose lasting solutions for the colony (summarized in Carter, 1934). These, however, were neither far reaching nor adopted by the government.

Growing resentment led a group of several thousand Kikuyu, who were released from sharecropping contracts, to adopt more violent means. The first openly violent act took place on October 9 1952, when a small group of Mau Mau fighters presumably shot Senior Chief Waruhiu in the backseat of his car (Wamagatta, 2016). Numerous attacks followed, often aimed at loyalist Kikuyus, but sometimes involving white settlers. The violence of these attacks stoked widespread fear among the settler community, which pressured the colonial government to react forcefully to the violence. Evelyn Baring—the governor general of Kenya colony—announced a state of emergency immediately after the Waruhiu killing. Jomo Kenyatta, at that time heading the KAU, was arrested together with around 150 other suspected Mau Mau leaders. When these attempts failed to stem the violence, several counter-insurgency laws were announced by the government between January and April 1953. These new laws permitted unhindered information collection about the native population, gave control over any native property to the state, re-imposed movement controls in part of the country, and allowed for detention without trial (Anderson, 2005). The colonial government instructed their police and military to systematically investigate anyone suspected of loyalty to the Mau Mau and sentenced these suspects to detention. Lacking actionable intelligence about the Mau Mau, the officials started to engage in a large scale interrogation process termed 'screening.'

The main purpose of screening was to identify those who were loyal to the Mau Mau,

[10]The KCA was a political organisation acting on behalf of the Kikuyu community addressing their concerns vis-à-vis the British government.

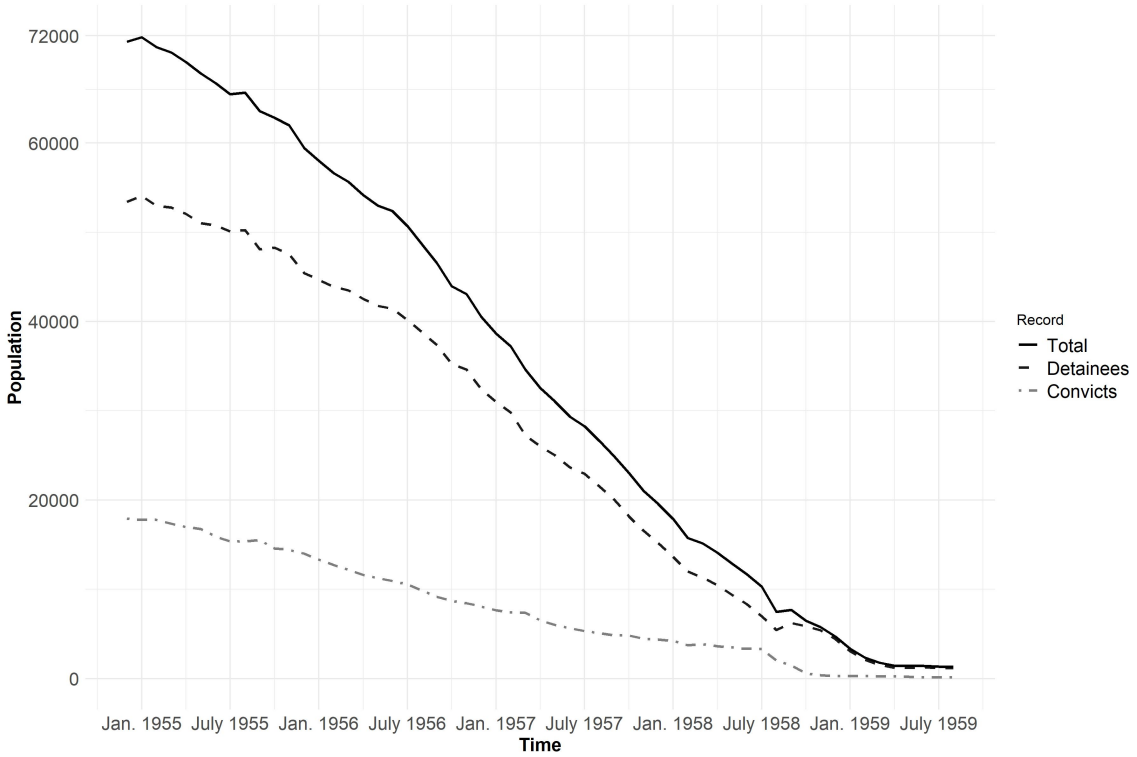
either by supporting them directly or by providing shelter and food (Elkins, 2001). British police and military relied heavily on loyal natives who helped to identify whether or not an individual could be attributed to the Kikuyu, Embu, or Meru tribe. Once a suspect was identified, the interrogators often resorted to torture and other brutal examination techniques to determine how loyal a suspect was and if the person was willing to squeal on other potential Mau Mau fighters. The rules restricting the British forces—the King's African Rifles and the Kikuyu Home Guard militia—in their interrogation techniques declined steadily over time. Anderson (2012), for example, discusses how violence was first considered a functional tool of interrogation, while after 1956 systematic torture became widespread.[11] In 2013, Britain apologized for subjecting Kenyans "to torture and other forms of ill treatment at the hands of the colonial administration" which marred "Kenya's progress toward independence" (William Hague, Foreign Secretary, speaking in the House of Commons on behalf of the government and crown).

The internment camps were organized in a network called the 'pipeline,' in which each inmate was to be assigned to a particular location (Elkins, 2001). Inmates were divided into white, grey or black according to the assessment following the interrogation. Those marked as "white" had confessed and were transferred to camps in their home district with the prospect of eventually being released after additional interrogations and education sessions. Those classified as "grey" were deported to a mid-level work camp for hard labor, re-education and counter-propaganda. Inmates in a grey camp were forced to work in stone pits or similar facilities, e.g., to build the foundation of what is now the Jomo Kenyatta International Airport in Embasaki. Inmates would only leave a grey camp once they were either considered redeemable or hard-core. The latter were designated "black" and deported into exile camps where they often remained until the end of the Emergency in 1959. The repression was disproportionate. The Mau Mau killed 32 white settlers, while thousands of Kikuyu, Embu, and Meru were killed, detained, or both (Odhiambo and Lonsdale, 2003).

The total number of casualties and scale of internment in the British camps is still subject to debate. Elkins (2005) offers an estimate of up to 300,000 Kikuyu, Embu and Meru who are unaccounted for during this period—much more than the 90,000 Mau Mau who were killed according to official numbers (Branch, 2007). Blacker (2007) instead suggests that there were at most 75,000 excess deaths during this period in total. Official sources suggest that about 70,000 people were held in the camps at the height

[11] Britian settled a case brought by four Mau Mau survivors in 2012 and payed 19.9 million GPB in compensation to 5,228 survivors involved in a larger class-action law suit. Anderson (2011) describes the allegations brought by Ndiku Mutwiwa Mutua and others. Suspected of giving Mau Mau fighters food, Mutua was dragged out of his hut one morning and violently beaten. After almost losing consciousness, he was driven to a prison where the beating continued. In the camp, Mutua was humiliated, beaten and castrated by European and African officers. Left in his cell to rot, he was rescued by one of the few Mau Mau attacks on a camp. Many of the other camp experiences were similar, often involving hard labor, beatings, torture, castration and rape (Elkins, 2001).

Figure 4.1 – Official Estimates of the Daily Average Detainee Population



Notes: Based on Elkins (2001) who compiled these figures from Monthly Reports of the Ministry of Defence from January 1954 through September 1959.

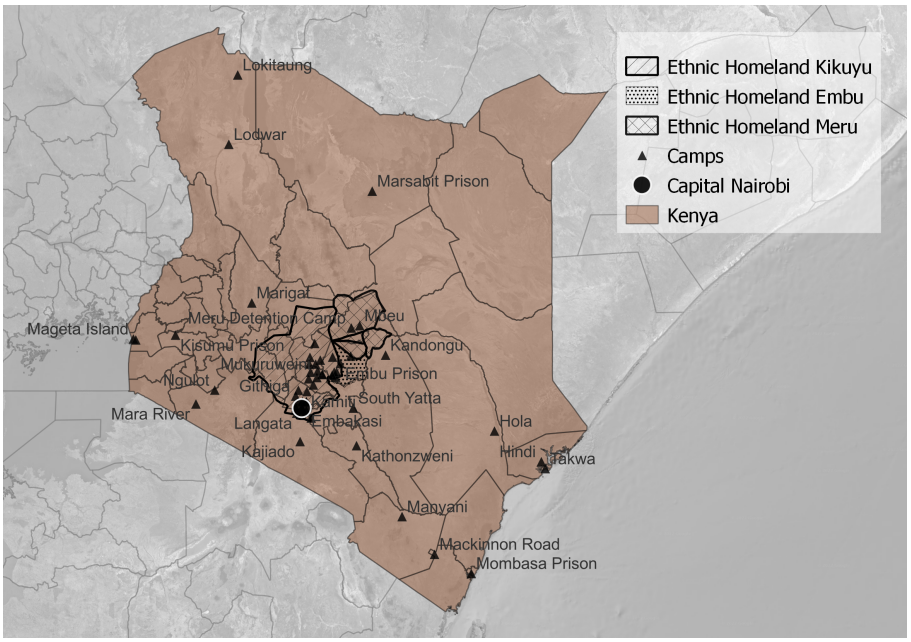
of the Emergency in 1954 (see Elkins, 2001, and Figure 4.1). Many more will have spent at least a few months in the camps during their period of operation from 1952 to 1959. Some have been in over 14 different camps (Kariuki, 1964). We have no record of committals into detention camps under the Emergency Ordinances. However, the steady decline of the average detainee population from 1955–1959, as illustrated in Figure 4.1, hides significant turnover. For comparison, although 25,970 people had been committed to Kenya's non-Emergency detention camps over the course of the year 1954, the daily average population in such camps was only 3,591 (Colony and Protectorate of Kenya, Prisons Department, 1954). Hence, while the average length of the detention sentences during the Emergency may have been longer, the affected population is likely several multiples of the daily average occupancy numbers. The entire Kikuyu, Embu and Meru population was only about 1.5 million people according to the 1948 census, about half of whom were children, so that a substantial proportion of the adult population faced a non-trivial probability of internment.

4.3 Data

4.3.1 Internment Camps

We rely on three primary sources to identify the name, size, type and location of the Emergency detention camps. *i)* Annual reports from the Prisons Department and the Community Development Department of Kenya Colony and Protectorate, *ii)* fortnightly issues of the *Kenya Government Gazette*—the official government source for new legislation and official notices, and *iii)* parliamentary records from the United Kingdom (the UK Hansard). We identify 58 Mau Mau detention camps and prisons in operation between 1952 and 1959. This matches well with the number of camps reported at particular points in time, e.g., the Prisons Department refers to 49 special detention and work camps in 1955, after several camps have been closed. We then cross reference our findings with archival records and qualitative information about each camp compiled by Elkins (2001).

Figure 4.1 – Locations of Detention Camps in Kenya



Notes: Black triangles illustrate detention camp sites in Kenya. Homelands of the three Mau Mau-related ethnic groups are added in overlayed patterns.

Most of these camps were named after the city or township where they were located. We define three precision codes during the manual geocoding process: exact location (accuracy below one km), city or township (accuracy below 5 km), and area or location (accuracy of 5–10 km). For 22 camps we are able to identify the exact location or building of the camp using newspaper articles and other information, for 34 sites we can identify the city or township, and for two sites we are only able to match the camp at a level corresponding approximately to a census location. The camps are plotted in Figure 4.1.

The camps cluster in Kenya's Central Province. The historical homelands of the affected tribes of Kikuyu, Meru and Embu are located in this province. Camps were set up within or close to the home districts of the targeted population. Former inmates were released to their home location, under the auspices of loyalist chiefs and severe movement restrictions, enforced through a passbook system (see, e.g., Anderson, 2000, on the reintroduction of the Kipande). Many camps are located close to Nairobi which was the site of some of the heaviest counter-insurgency crack downs by British and African forces. Away from the cluster, camps were established further away towards the East African coast or closer to the border region with Uganda and today's South Sudan. The selection of detainees into the different camps occurred via the pipeline, so that inmates followed a progression from their capture until release. Large camps within Central Province, such as the Nairobi Dispersal Center or the Fort Hall Reception Center, served as holding camps in which prisoners were held for a limited amount of time for interrogations. Individuals who confessed were transferred into a camp or prison nearby, e.g., to Mbeu, Aguthi, or Kajiado. Political leaders and others who were deemed impossible to be redeemed and re-educated were deported into one of the farther away detention camps like Lokitaung, Lodwar, Mageta Island, Marsabit, Manyani, or Mackinnon Road. According to former inmates (e.g., Kariuki, 1964), it was not uncommon to be transferred across a variety of camps, and repeatedly be moved up and down the pipeline, until one made it to the district work camp.

4.3.2 Ethnic Politics and Social Cohesion

Individual-level voting information in Kenya is difficult to obtain. Aggregate election results are sometimes available at the level of polling stations, but they lack information on demographics and the ethnic affiliation of voters. We use results from the first nationally-representative exit poll conducted in Kenya during the 2007 election (Long and Gibson, 2015). The pollsters interviewed every fifth voter leaving a voting center. 281 centers were randomly selected using proportional stratified random sampling from constituencies and provinces, resulting in a sample of 5,495 individuals. We geocode the polling stations using the (known) coordinates of polling stations, Google, and a registry of schools (which are typically used as polling stations). We were able to identify the exact location for 93% of all stations.[12] The exit poll is a brief survey meant to be answered in a little more than five minutes but still contains ample data on vote choices, perceptions about government performance, ethnic affiliation, and basic demographic characteristics. The poll has an 82 percent response rate, similar to the Afrobarometer (Long and Gibson, 2015), and records actual vote choices for president, which are gathered during the

[12]We coded the remaining 24 using ward centroids (a ward is the smallest electoral unit which usually contains a handful of polling stations that are in close proximity) and the location of markets.

election, as opposed to party preferences one or two years before/after.

There were three candidates in the 2007 race and each of them received the overwhelming majority of votes from their ethnic group: Uhuru Kenyatta (94% of Kikuyu vote), Raila Odinga (98% of the Luo vote), and Musyoka (85% of the Kamba vote). We measure ethnic voting as a vote for a presidential candidate for whom at least 80% of a respondent's ethnic group voted for.[13] This criterion captures two standing ethnic alliances in 2007 Kenya. The Kalenjin and their leader William Ruto strongly supported Odinga, who received 88% of the ethnic vote. The Meru are of the same ethnic family as the Kikuyu and traditionally support their candidate (87% in 2007).[14] While these high levels of support are reminiscent of "ethnic headcounts," Kenyan elections are notoriously close, so that small differences in the ethnic turnout or cross-ethnic voting are enough to swing an entire election. To study if performance evaluations of presidents are affected by internment, we use a question on whether President Mwai Kibaki (the Kikuyu incumbent) kept all, most, some, or none of his promises.

Contemporary outcomes related to social cohesion and civic engagement are from the Afrobarometer survey. Rounds 1–6 of the survey, conducted between 1999 and 2015, have been geocoded by BenYishay et al. (2017), while round 7 includes the GPS coordincates of the interviewed households directly (Afrobarometer Data, 2016). Kenya was part of rounds 2–7 which took place during the years 2003, 2005, 2008, 2011, 2014, and 2016. With 1,104 respondents in the smallest round, and 2,398 respondents in the largest one, this amounts to a total of 11,175 observations. Contrary to the DHS data, the geocoding of households in the Afrobarometer rounds 2–6 was done ex post. This leads to considerable variation in geographic precision. The data contains a categorical precision code that assesses the quality of the provided coordinates, where 1 indicates that the coordinate pair corresponds to an exact location and 6 indicates that a location can only be attributed to an independent political entity. The exact location of a respondent is crucial for our identification strategy, which is why we restrict the sample to the two highest accuracy levels (1 = exact place and 2 = "near" or adjacent). The final sample includes a maximum of 6,160 respondents.

We focus on two trust variables—trust in most people and trust in other people—to investigate how the British detention camps affected general trust levels of citizens related to the Mau Mau uprising, compared to others. Trust in most people is a binary

[13] We follow Huber (2012) and take a group-based perspective of ethnic voting. "A group-centered measure is based on the assumption that ethnicization increases when voting behavior by group members becomes more cohesive, making it easier to predict an individual's vote by knowing the individual's group" (Huber, 2012, p. 987). Clearly, it is easy to predict the vote of, say, a Kikuyu voter simply by knowing their ethnic identity but the same goes for a Meru or Kalenjin voter, even though they do not have a co-ethnic candidate in the race.

[14] We do not include the Embu (90% of whom supported Kenyatta) or other groups for whom we have less than 100 respondents in the raw data. Our results are not sensitive to the choice of (sufficiently high) percent threshold to identify common voting or whether we include groups with as few as 20 respondents.

variable, where 1 indicates that "most people can be trusted" and 0 stands for "you must be very careful." The response options for trust in others are categorical and are coded as integer values between 0 and 3, where 0 indicates "not at all," 1 indicates "just a little," 2 indicates "somewhat" and 3 indicates "a lot." In addition we look at two variables indicative of civic engagement. The survey asks whether a respondent is a member in a voluntary association with the categorical response options coded 0 for "not a member," 1 for "inactive member" 2 for "active member" and 3 for "official leader." The level of activity in demonstrations is coded as 0 to indicate "no, would never do this," 1 for "no, but would do if had the chance," 2 for "Yes, once or twice," 3 for "yes, several times," and 4 indicates "yes, often."

4.3.3 Individual Development Outcomes

Our outcome variables for the direct impact of camp exposure on individual well-being—wealth, literacy, employment—are drawn from censuses and household surveys.

For contemporary wealth and literacy, we use three survey rounds 4 (2003), 5 (2008/2009), and 7 (2014) from the Demographic and Health Surveys (DHS) to extract individual information of 62,584 individuals, including their geographical location (round 6 was not a standard DHS survey).[15] We measure household wealth using an index computed on the basis of the DHS. While the DHS do not track income or expenditures directly, the surveys record several variables that can be linked to economic status. These are, among others, access to electricity, type of roof and floor, or whether the household owns a toilet, a TV, a bike, motorbike, or a car. Based on these indicators, the DHS computes a wealth index using principal component analysis and divides households into quintiles on this index (for details, see, Rutstein et al., 2004). In other words, the DHS data allow us to distinguish households located in the poorest 20 percent in Kenya in a given survey year from those located in, say, the richest 20 percent.[16] As a measure of basic education, we create an indicator for literacy coded as one if an individual can easily read a whole sentence.

We supplement the contemporary data with historical census data from 1989. The 1989 census was one of the most comprehensive earlier censuses conducted in Kenya. It has wide geographic coverage, records literacy and housing conditions in a manner similar to the DHS, and, perhaps most importantly, includes each individual's tribal

[15]The DHS survey enumeration areas were geocoded on site, allowing us to locate a given individual or household within a range of less than 5 kilometers in Kenya (2 kilometers for urban households). Individuals are split among 399 clusters in the 2003 survey, 397 clusters in the 2008/09 survey, and 1585 clusters in the 2014 survey, where each cluster contains on average between five and ten households.

[16]Cultural, geographic and other differences across countries can influence what kind of roof or floor can be attributed to wealthier as opposed to poorer households across different countries, but these influences are less relevant in our context, as we are only comparing households *within* Kenya.

affiliation.[17] Until the 2010 constitutional reform, Kenya was administratively divided into provinces, divisions, districts, locations and sub-locations—the latter are comparable to census tracts or block groups in the United States and are only a few square kilometers in size in densely populated areas. We geocode each sub-location by combining the individual data with census tabulations and digitized maps.[18] Our final sample is a sample of one million observations (every 20th household) located at the geographic centroid of each sub-location in 1989. For household wealth, we follow the DHS guidelines to construct an index that is strictly comparable to its wealth index quintiles (Rutstein et al., 2004). We base the wealth index only on housing condition indicators shared with the DHS surveys (i.e., type of roof, wall and floor, main source of drinking water, type of sewage disposal, cooking fuel, and type of lighting). Literacy is measured in the individual census as the ability to read and write a simple statement in any language. The census also asks all individuals above the age of 10 for their main occupation during the 7 days preceding the interview. We use indicator variables for "worked for pay or profit," "no work," and "seeking work" to study employment outcomes in 1989 but limit the sample to those aged 16 and older to approximate the working age population.[19]

4.3.4 Geographic and Individual Controls

Geographic factors directly and indirectly impact historical outcomes, which then may affect economic development until today (e.g., Nunn and Puga, 2012; Sokoloff and Engerman, 2000). For Kenya, the roots of the Mau Mau conflict can be traced to the alienation of some of the country's most attractive lands by the settlers. The area in the high highlands with its mild climatic conditions was particularly attractive to Europeans, much more so than the hot, humid and disease ridden areas near Lake Victoria or the coast around Mombasa. Nairobi lies on a plateau (the low and high highlands) with an elevation of almost 1,800 meters, precipitation is regular, the temperature is moderate, and the disease vector is favorable (Whittlesey, 1953).

We account for this exceptional geography with a variety of controls derived from raster and vector data: elevation (Jarvis et al., 2008), slope (Jarvis et al., 2008), ruggedness (Nunn and Puga, 2012), wheat suitability (FAO/IIASA, 2011), the length of river and road networks (Natural Earth, 2017), prevalence of the tsetse fly (FAO/AGAH, 2007), and malaria suitability (World Health Organization, 2018), precipitation (Willmott and

[17] While tribal affiliation is still surveyed by the enumerators, the Kenya National Bureau of Statistics (KNBS) stopped releasing this information at the individual level in the decennial censuses after 1989.

[18] Location and sub-location names are missing from the micro-data provided by the KNBS. We match the totals implied by the individual data with census reports and tabulations to recover the names of each geographic entity. The names can then be matched to a digitized map of census sub-locations provided by Kenya's International Livestock Research Institute (ILRI).

[19] Other possible answers are "on leave/sick leave," "working on family holding," "student," "retired," "disabled," "home maker," and "other."

Matsuura, 2001), and temperature (Willmott and Matsuura, 2001). To extract the relevant information, we partition Kenya into grid cells at a $0.1° \times 0.1°$ resolution (approx. 11km $\times$ 11km). We then spatially join these grid cells with the geolocated survey and census data described earlier. In addition, we control for the great circle distances to Nairobi, the forests in which the Mau Mau fighters were hiding, i.e., the Aberdare Range and Mount Kenya, and the province capitals.

We also use a basic set of individual characteristics that are available in every survey or census that we analyze. Apart from a respondent's ethnic affiliation, these are age, gender, and whether the location is urban or rural. In most surveys, we observe age as a continuous variable, so that we precisely identify the Mau Mau cohort. In the 2007 exit poll, age is recorded in approximately five year brackets.[20] We consider those aged 50 and older to be the relevant Mau Mau cohort.

4.4 Empirical Strategy

4.4.1 Specification

Our approach to approximating the (infeasible and unethical) experimental ideal of random assignment to camps is a triple differences-in-differences (DDD) strategy. Triple differences were first introduced by Gruber (1994) and are becoming increasingly popular since they allow for weaker identification assumptions than difference-in-differences (DD) estimation, offer estimates of the spillover effect to non-treated units (or bias), and yield the same answer as DD designs if both constituent DDs are unbiased (Olden and Møen, 2022).

We construct the DDD along three dimensions. First, we define an indicator that is unity if an individual identifies with the Kikuyu, Embu, or Meru tribes to select individuals who were likely to have been accused of Mau Mau activities at the time. Second, a detained individual is likely to have lived close to but not necessarily in the immediate vicinity of a camp. We define our baseline measure of proximity as being within 30 km of the nearest former camp (similar to Isaksson and Kotsadam, 2018, and Abel, 2019). Third, we define an indicator for whether an individual was already alive during the time. This allows us to compare those who were born before 1959—the last year of the Emergency—to younger cohorts that were neither alive nor born in a camp or born while at least one of their parents was detained.[21]

[20] The brackets are 18–24, 25–29, 30–34, ..., 56-60, 60 and above.

[21] Similar DDD strategies have recently been used by Muralidharan and Prakash (2017), in their study of cohorts of Indian girls exposed to a cycling program, and Nilsson (2017), who studies the effects of increased alcohol availability for mothers on the long-term labor market outcomes of their children. Our context differs somewhat, in that we do not observe the actual treatment status of each individual but instead recover an intention-to-treat estimate using the DDD parameter as a proxy for exposure.

All of our regressions are variants of the following specification:

$$\begin{aligned} y_{il} = \; & \beta_1 M_{il} + \beta_2 P_{il} + \beta_3 C_{il} + \gamma_1 (M_{il} \times P_{il}) + \gamma_2 (M_{il} \times C_{il}) + \gamma_3 (P_{il} \times C_{il}) + \\ & \delta (M_{il} \times P_{il} \times C_{il}) + \mathbf{x}'_{il}\boldsymbol{\phi} + \mathbf{d}'_{l}\boldsymbol{\psi} + \mathbf{z}'_{l}\boldsymbol{\zeta} + \mathbf{FE}_{il} + u_{il}, \end{aligned} \tag{4.1}$$

where y_{il} is an outcome for individual or household i in location l. M_{il} indicates whether the respondent identifies as a Mau Mau tribe (either Kikuyu, Embu, or Meru), P_{il} is a dummy variable equal to one if the individual is close to a former camp location (i.e., within 30km) and C_{il} is an indicator for individuals born before 1959. We typically refer to $P_{il} \times M_{il}$ as 'Exposure' and $P_{il} \times M_{il} \times C_{il}$ as 'Exposure × Cohort.' $\mathbf{x}_{il}$ is a vector of individual level controls (age, sex, household size), $\mathbf{d}_l$ is a vector of distances to economic or political centers and areas of shelter of the Mau Mau fighters.[22] $\mathbf{z}_l$ are geographic characteristics of the location or enumeration area (urban, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature). $\mathbf{FE}_{il}$ are different sets of fixed effects varying across specifications.

We present our main results by incrementally adding higher dimensions of fixed effects. Fixed effects are omitted in the most basic regressions. We then add age, tribe and province fixed effects to arrive at our preferred specification since it can be consistently estimated for all outcomes. For the strictest set of results, we include camp and distance interval fixed effects (running from 0–30, 30–60, 60–90, 90–120, and 120–150 km) and—if the variation in the data permits—interactions between the tribe, distance interval, and age fixed effects. This implies that we can only estimate all constituent terms of the triple interaction in the model without fixed effects. Age, tribe and province fixed effects remove C_{il} and M_{il}. Distance interval effects remove P_{il} and the high-dimensional interactions of the fixed effects absorb all constituent terms but the DDD interaction. Including these fixed effects generalizes the DDD estimator but does not fundamentally alter the interpretation. We only progressively account for systematic differences among non-Mau Mau tribes, age groups/ cohorts, province, distance-by-cohort specific factors, distance-by-tribe specific factors, differences in the demographic composition of ethnic groups, and make sure we do not compare respondents across different camp sites. Accounting for these characteristics is important, as it mitigates the influence of compositional changes among treated and untreated groups (Olden and Møen, 2022).

Our baseline results limit the sample to households within 150 km distance to former

[22]The distances to Nairobi, Mount Kenya, and the Aberdare Range account for Mau Mau hot spots. Nairobi is located in the Kikuyu homeland and was the site of Operation Anvil. Mount Kenya and the Aberdare Range are the two forest areas where Mau Mau fighters were based and organized their attacks from. This was well known to British officials, who tried to deprive these areas of food supplies and carried out intense raids near the forest boundaries (Anderson, 2012). Finally, we also include the distance to each province capital, as these urban centers may host a camp site but differ on many other characteristics which could be correlated with our outcomes of interest.

camp sites. We use two types of standard errors throughout all tables. Errors clustered on the latitude-longitude pair identifying each location allows respondents in the same enumeration area or survey cluster to be arbitrarily correlated. Conley errors with a distance cutoff at 150 km allow for wide-ranging spatial correlation in the responses (Conley, 1999). Both account for the spatial clustering within in the same enumeration area, but the latter also allow for correlation among different enumeration areas.

4.4.2 Interpreting the Triple-Difference Estimate

Our DDD parameter of interest, δ, captures the effect of being exposed to a detention camp and can be decomposed as follows

$$\begin{aligned}\delta = \; & \mathbb{E}[Y|M_1, P_1, C_1] - \mathbb{E}[Y|M_1, P_0, C_1] - \{\mathbb{E}[Y|M_0, P_1, C_1] - \mathbb{E}[Y|M_0, P_0, C_1]\} - \\ & (\mathbb{E}[Y|M_1, P_1, C_0] - \mathbb{E}[Y|M_1, P_0, C_0] - \{\mathbb{E}[Y|M_0, P_1, C_0] - \mathbb{E}[Y|M_0, P_0, C_0]\}),\end{aligned} \tag{4.2}$$

where $\mathbb{E}[Y|M_1, P_1, C_1]$ is a shorthand for the conditional expectation $\mathbb{E}[Y|M = 1, P = 1, C = 1, \mathbf{x}_{il}, \mathbf{d}_l, \mathbf{z}_l, \mathbf{FE}_{il}]$ and so on. Eq. 4.2 shows that the DDD estimate is the difference of two differences-in-differences. In the absence of covariates and other fixed effects, it coincides exactly with the differences in the means of these eight different groups. With covariates and fixed effects, it becomes a generalized DDD. Specifically, the first DD eliminates region-specific confounders common to all ethnic groups of the cohort of interest, while the second DD eliminates region-specific differences for those that were born later. The resulting DDD then reflects the impact of camp exposure on individuals of Mau Mau-related ethnicity that were already born at the time of the Emergency and live near former camp locations. If there is no bias, conditional on observables and unobserved fixed factors, then the second difference over the non-affected cohort can be interpreted as a placebo DD. In that case, we would expect the treatment effect to be zero in the placebo DD and could proceed with DD estimation. To learn whether this is likely, we follow Gruber (1994) and report the two unconditional DDs before estimating eq. 4.2.

4.4.3 Identifying Variation

The main advantage of our DDD estimation is that it allows us to weaken the required identification assumptions. Instead of requiring that selection into camp locations is the same for Mau Mau and non-Mau Mau tribes, we can allow for differential selection of Mau Mau and non-Mau Mau tribes, as long as this differential is stable across affected and non-affected cohorts. Put differently, if the two DD estimates suffer from the same bias (due to differential selection into particular locations across groups), then the DDD delivers a consistent and unbiased estimate (Frölich and Sperlich, 2019; Olden and Møen,

2022). This is easy to see in eq. 4.2. Any bias remaining after the first DD (top line) will be cancelled by the second (second line), provided that the bias is stable across both DDs.[23] While we cannot test the identification assumption in our setting, where the differences are not across time and no data prior to the intervention is available, we exploit the wealth of data on untreated units after the event, so that we can construct robustness checks using placebo DDDs for cohorts that were never directly treated.

4.5 Results

4.5.1 Detention, Ethnic Politics and Social Cohesion

We first examine the effects of the Mau Mau uprising and its repression on post-independence politics and social cohesion. All tables follow the same structure. For illustration, columns (1) and (2) present results from the two separate DDs which form the basis of the DDD estimate. From column (3) onward we present the DDD parameter of interest after accounting for observable differences across individuals and geographic locations.[24] Column (4) adds fixed effects for age, tribe and provinces, while column (5) adds camp and distance interval fixed effects and, for everything but the Afrobarometer, also includes higher order interactions of age, tribe and distance interval fixed effects.

Ethnic Politics

The key question of our paper is whether the violent repression of the Mau Mau uprising and the deliberate attempt to break ethnic bonds had exactly the opposite effect and strengthened the salience of ethnicity in ways that are still relevant decades later. Table 4.1 addresses this question.

Panel (a) reports the results for ethnic voting. Columns (1) and (2) show estimates of the simple DDs within treated and untreated cohorts. Members of the Mau Mau-related tribes that were alive during the uprising and live close to former detention camps are 11.5 percentage points more likely to vote for their ethnic candidate (Uhuru Kenyatta) in the 2007 election than those who are not members of these tribes but live close to

[23] Note that we could equivalently rearrange the DDD decomposition and interpret the cohort indicator as time (before and after the intervention). While this would bring the interpretation more into line with traditional DDD strategies and would lead us to talk about parallel trends, we do not think this avenue is attractive in our setting. C_{il} only vaguely resembles time, since we compare everyone born before 1959 to everyone born after. Similar applications of DDD in cross-sectional data (e.g., Muralidharan and Prakash, 2017) have used cohorts in lieu of time but then restricted themselves to adjacent cohorts, e.g., girls (boys) aged 14 and 15 versus girls (boys) aged 16 and 17 in two different states. The equivalent parallel trends assumption would be that, in the absence of treatment, the differential among Mau Mau and non-Mau Mau tribes in proximate (treated) places would trend the same way (across cohorts) as the differential among these two groups in non-proximate (untreated) places.

[24] To reduce clutter, we do not report the DDD without controls and fixed effect. It can be easily calculated by subtracting the estimates provided in columns (1) and (2).

detention camps. We observe no such differences in the cohort born after the end of the uprising and, hence, no spillovers to other cohorts or selection into camp locations that differs by tribes. Of course, there could still be a diffusion of ethnic voting as a dominant political strategy that is driven by this historical event but does not depend on tribal affiliation or proximity to former detention camps. The DDD results confirm this basic finding. While the estimated effect first falls relative to the standard error in columns (3) and (4), it is 13.3 percentage points (with a t-statistic ranging from 1.87 to 2.25) in our strictest specification.

Table 4.1 – Exit Polls in 2007: Ethnic Voting and Performance of Incumbent

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) Ethnic voting				
Exposure	0.115	0.042	0.032	−0.044	
(P × M)	(0.066)*	(0.037)	(0.040)	(0.047)	
	[0.054]**	[0.035]	[0.039]	[0.041]	
Exposure × Cohort			0.083	0.068	0.133
(P × M × C)			(0.067)	(0.067)	(0.071)*
			[0.068]	[0.060]	[0.059]**
	Panel b) Performance of incumbent (Kibaki)				
Exposure	−0.223	0.076	0.006	0.098	
(P × M)	(0.178)	(0.095)	(0.084)	(0.099)	
	[0.140]	[0.082]	[0.061]	[0.077]	
Exposure × Cohort			−0.296	−0.292	−0.386
(P × M × C)			(0.171)*	(0.170)*	(0.189)**
			[0.138]**	[0.147]**	[0.163]**
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Interactions of FEs					✓
Observations (a)	316	2,277	2,593	2,593	2,593
Observations (b)	312	2,253	2,565	2,565	2,565

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual controls for age and sex as well as geographic controls which include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects and three interaction fixed effects between tribe, distance to the closest camp, and age. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Panel (b) shows that the performance evaluation of the Kikuyu incumbent runs in the

opposite direction.[25] Columns (1) and (2) show that the raw data suggest that members of Mau Mau tribes that live close to camps today but were born before 1959 were less likely to view Kibaki's performance favorably, although the effect is moderate and statistically insignificant (-0.223 units on a scale of 0 "did not fulfill promises" to 3 "fulfilled all promises"). The relationship becomes significant at conventional levels once we estimate the DDD design with additional controls and progressively more stringent fixed effects in columns (3)–(5). Our strictest specification with camp fixed effects, distance interval fixed effects, and the full battery of interacted fixed effects shows that the direct effect of camp exposure reduced the performance evaluation of Kibaki by a little more than one third of a category. The Mau Mau tribes generally view the incumbent positively. Their mean score is close to 2 ("most promises"), so that this is about 20% of the group mean, while the non-Mau Mau score is close to 1 ("some promises").

Our result that camp exposure raises ethnic voting but lowers performance evaluations of the co-ethnic incumbent might appear puzzling. However, one way to think about ethnic voting is that voters discount their performance valuations of the incumbent (or track record of their candidate) and still vote for them if they are an ethnic kin (Long and Gibson, 2015). This is precisely why ethnic voting is detrimental to accountability and governance (Banerjee and Pande, 2007). The effect of camp exposure on ethnic voting is large, even without considering that the intention-to-treat effects documented here are likely to be a lower bound. The Kikuyu alone were 17.1% of the population in 2009. A 13.3 percentage points drop in ethnic voting would have significantly narrowed the gap between Odinga and Kenyatta in the flawed 2007 election results.

Trust

We now turn to a test of the long-run effects of detention on social cohesion. The corresponding estimates are reported in Table 4.2. The first panel focuses on generalized trust. Recall that the variable is coded as binary indicator where 1 indicates that "Most people can be trusted" and 0 corresponds to "You must be very careful." The second panel focuses on trust in others which is based on four different categories ranging from 0 ("Not at all") to 3 ("A lot"). As before, we ignore the binary or categorical nature of the dependent variable and interpret the regressions as linear probability models in the case of the former, or like a continuous variable in the case of the latter.

The raw DDs already summarize our main results. Column (1) shows that those who were exposed to detention are about 98 percentage points less likely to trust others and score an entire category lower on the trust in other people index. The placebo DDs in column (2) cannot confirm similar effects for the non-Mau Mau cohorts. The effect remains

[25] We limit the sample to the same set of tribes with co-ethnic candidates used in Panel (a) to avoid changing the composition of the sample. The results for the full sample are qualitatively similar (not reported).

Table 4.2 – Trust Most and Other People

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) Trust in Most People				
Exposure	−0.975	−0.060	−0.067	−0.035	0.005
(P × M)	(0.062)***	(0.043)	(0.053)	(0.061)	(0.062)
	[0.055]***	[0.032]*	[0.041]	[0.044]	[0.033]
Exposure × Cohort			−0.921	−0.785	−0.869
(P × M × C)			(0.091)***	(0.101)***	(0.085)***
			[0.071]***	[0.080]***	[0.090]***
	Panel b) Trust in Other People				
Exposure	−1.054	0.059	−0.118	0.001	−0.300
(P × M)	(0.328)***	(0.156)	(0.209)	(0.230)	(0.245)
	[0.267]***	[0.108]	[0.171]	[0.185]	[0.188]
Exposure × Cohort			−1.105	−1.479	−1.493
(P × M × C)			(0.343)***	(0.422)***	(0.422)***
			[0.256]***	[0.333]***	[0.345]***
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Observations (a)	220	1,281	1,432	1,432	1,432
Observations (b)	156	1,142	1,235	1,235	1,235

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual controls for age and sex as well as geographic controls which include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

large, no matter if we control for observable characteristics at the individual or location level, add age, tribe and province fixed effects, or include camp fixed effects together with distance interval effects in columns (3)–(5).[26] In all instances, the probability of a respondent indicating generalized trust falls by 79% to 92% and trust in other people falls by up to 1.5 categories. Considering that Kenya is not a high trust society—only 9% of respondents indicate that others can be trusted—this effect size is remarkable. We repeat this exercise using trust in neighbors and relatives as proxies for in-group trust and find comparable results (see Table C.1).[27]

[26]Note that we no longer include higher order interactions among fixed effects (Afrobarometer observations are strongly clustered in space so that there is less effective geographic variation than in the other surveys).

[27]In Kenya, the effect of the detention camps swamps the historical legacy of the transatlantic slave trade. Using Nunn and Wantchekon's (2011) preferred specification suggests that a doubling of slave

These results are unusual as much of the extant literature suggests that the experience of traumatic events *increases* generalized and in-group trust (see, e.g., Abel, 2019; Bauer et al., 2016; Lowes and Montero, 2021). Instead, our results are more in line with Nunn and Wantchekon (2011) who show that the African slave trade was detrimental to in-group and out-group trust. In the case of the Mau Mau uprising, the historical evidence sheds some light on potential explanations for this result. Breaking the cohesion of the Kikuyu, Embu and Meru was explicit British policy. It is possible that this policy was very effective in reducing trust across the board. Another plausible interpretation of our results is that all of these variables proxy for generalized trust and our result on ethnic voting can be interpreted as greater in-group trust (after all, ethnic voting is a direct measure of revealed in-group preferences).[28]

Civic Engagement

To test whether detention had lasting effects on civic engagement, we study participation in voluntary community associations and participation in demonstrations. Bauer et al. (2016) document a trend towards more pro-social behavior in post-conflict communities. Kariuki (1964) and Elkins (2005) document many instances of voluntary organization of classes, elaborate systems to spread information, and community support that were developed inside the detention camps.

Table 4.3 confirms this conjecture. The simple DDs and the DDDs in Panel (a) consistently show a positive effect of camp exposure on participation in community associations for the affected cohort. In the strictest specification in column (5) we estimate that exposed individuals increase their engagement by more than half a category from a mean of about 1 "inactive member" towards being an "active member." What is more, we find some evidence that community activity of Mau Mau tribes around camp sites is elevated in general. Panel (b) adds that we observe few differences in active participation in demonstrations. If anything, column (5) suggests that Mau Mau tribes near former camp locations are generally more active in demonstrations (but the overall mean is 0.57, right between the answers on protest attendance of "no, would never do this" and "no, but would do if had the chance").

Taken together, these results complement our results on ethnic voting and trust. Camp exposure increases revealed in-group behavior in the form of ethnic voting and higher civic engagement but reduces generalized trust.

exports per area decreases trust in neighbors by 0.271 units but relatively few Kikuyu were "exported" in the slave trades, so that this effect is only a fraction of the impact of detention.

[28]This would be in line with the positive effects on cohesion among inmates documented in Kariuki (1964) and Elkins (2005), among others. Unfortunately, we cannot study the effects of detention on in-group (co-ethnic) trust directly, as the relevant questions are only included in round 3 of the Afrobarometer which contains too few exposed individuals.

Table 4.3 – Civic Engagement

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) Membership in Voluntary Associations				
Exposure	0.536	0.093	0.041	0.147	0.223
(P × M)	(0.269)**	(0.099)	(0.107)	(0.129)	(0.127)*
	[0.172]***	[0.067]	[0.090]	[0.080]*	[0.081]***
Exposure × Cohort			0.394	0.518	0.551
(P × M × C)			(0.292)	(0.310)*	(0.328)*
			[0.177]**	[0.192]***	[0.200]***
	Panel b) Active Participation in Demonstrations				
Exposure	0.081	0.007	0.022	0.098	0.184
(P × M)	(0.192)	(0.074)	(0.081)	(0.091)	(0.086)**
	[0.190]	[0.046]	[0.053]	[0.065]	[0.088]**
Exposure × Cohort			0.117	0.132	0.113
(P × M × C)			(0.212)	(0.235)	(0.232)
			[0.181]	[0.179]	[0.182]
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Observations (a)	437	3,658	3,881	3,881	3,881
Observations (b)	545	4,094	4,396	4,396	4,396

Notes: The table reports weighted OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual controls for age and sex as well as geographic controls which include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

4.5.2 Detention and Individual Development

Our second set of results establish that exposure to detention camps had long-term effect on individual development outcomes, in terms of household wealth, literacy, and employment status.

Wealth

Differences in wealth accumulation between those exposed to the camps and those who were not are of interest for at least three reasons. First, internment translates into a loss of valuable time. Second, anecdotal evidence suggests that detainees were often expropriated, in effect losing the assets they acquired up to the point of incarceration or being forced to divest (see, Kariuki, 1964, who was forced to sell his business on

internment). Third and most importantly, systematic abuse during the interrogations and widespread offenses by prison guards are likely to have significantly affected the physical and mental health of detainees. Such negative effects on well-being will have contributed to further income losses and closed off entire career paths.

Table 4.4 – DHS and 1989 Census: Wealth

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) DHS 2003-2014				
Exposure	−0.413	−0.411	−0.059	0.002	
(P × M)	(0.108)***	(0.092)***	(0.067)	(0.065)	
	[0.254]	[0.260]	[0.118]	[0.108]	
Exposure × Cohort			−0.196	−0.204	−0.188
(P × M × C)			(0.085)**	(0.083)**	(0.086)**
			[0.090]**	[0.076]***	[0.073]**
	Panel b) 5% Sample of 1989 Census				
Exposure	−0.346	−0.419	−0.016	0.049	
(P × M)	(0.088)***	(0.077)***	(0.058)	(0.044)	
	[0.191]*	[0.178]**	[0.080]	[0.059]	
Exposure × Cohort			−0.111	−0.117	−0.076
(P × M × C)			(0.044)**	(0.039)***	(0.035)**
			[0.049]**	[0.050]**	[0.056]
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Interactions of FEs					✓
Observations (a)	6,631	30,811	37,442	37,442	37,442
Observations (b)	152,081	53,737	205,818	205,818	205,818

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual (or a household's head) controls for age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects and three interaction fixed effects between tribe, distance to the closest camp, and age. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively.

Table 4.4 analyzes the impact of detention on household wealth. For the DHS surveys, we find that households headed by an individual who was alive during the Emergency and exposed to the camps are ranked about one fifth lower in the quintiles of the wealth distribution today (columns 3–5). This suggests a strong and lasting income effect which is still visible more than 50 years after detention. The results from the 1989 census confirm that this is already visible three decades after the end of the Emergency when a broader set of treated household is in the sample. The effect size falls to about one

tenth of a wealth quintile, which may be due to a variety of reasons. For instance, the census data could be more accurate or there is a negative survivor bias, in the sense that households still headed by camp survivors in the 2000s have been less able to adapt to the post-independence economy. DHS respondents were substantially younger during the uprising than census respondents in 1989, which might indicate a stronger effect on younger children. In any case, the census estimates are usually within a standard error of the DHS results.

Columns (1) and (2) reveal how biased simple DD estimates can be. We observe either approximately the same effect in both groups in the DHS data or even less of an effect on the relevant cohort in the census data. However, this "effect" on the non-Mau Mau cohort disappears immediately when we add individual and geographic controls in column (3) and remains close to zero in column (4). The estimate on the $P \times M$ interaction still measures the effect on the placebo cohort, while the coefficient on the $P \times M \times C$ interaction is the effect on the Emergency cohorts. In other words, the estimates in column (2) can be entirely explained by observable differences across households and locations, while the estimates in column (1) shrink but remain sizable in the DDD setting.

Literacy

The ability to read and write, our proxy for basic education, is usually acquired in early years during primary school. We focus on early education, as already literate individuals may have had a chance to accumulate more human capital later on. Much of the anticipated negative effects will run through a lack of parental investments while they were interned, rather than rare instances of children being interned or being born inside detention camps (although both did occur). The microeconomic literature stresses the importance of "critical early windows" where shocks can have lifelong effects on cognitive skills (Cunha and Heckman, 2007). In line with this, we consider learning the ability to read and write a crucial indicator of early parental investments which likely has been negatively affected by the detention of the parents.

Table 4.5 shows the corresponding results. The simple DDs and the implied DDD estimates in columns (1) and (2) of both panels already suggest a strong negative effect on the exposed members of the Mau Mau cohort. As before, we observe that the effect on the post-1959 cohort vanishes once we add controls and our battery of fixed effects. Columns (3)–(5) contain the main results. For the DHS surveys, we find that individuals exposed to detention camps are 10 to 20 percentage points less likely to read and write. This effect is sizable and up to a fourth of the raw probability to be literate in our sample. Our estimates based on the 1989 census data point in the same direction but the effect size is considerably smaller—down to about 3.5 percentage points. The mean level of literacy of the census sample is somewhat lower with about 72% of the population indicating

Table 4.5 – DHS and Census: Literacy

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) DHS 2003-2014				
Exposure	−0.413	−0.411	−0.059	0.002	
(P × M)	(0.108)***	(0.092)***	(0.067)	(0.065)	
	[0.254]	[0.260]	[0.118]	[0.108]	
Exposure × Cohort			−0.196	−0.204	−0.188
(P × M × C)			(0.085)**	(0.083)**	(0.086)**
			[0.090]**	[0.076]***	[0.073]**
	Panel b) 5% Sample of 1989 Census				
Exposure	−0.098	−0.061	−0.051	0.004	
(P × M)	(0.026)***	(0.017)***	(0.014)***	(0.012)	
	[0.052]*	[0.040]	[0.030]*	[0.018]	
Exposure × Cohort			−0.035	−0.034	−0.034
(P × M × C)			(0.011)***	(0.011)***	(0.011)***
			[0.013]***	[0.014]**	[0.017]**
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Interactions of FEs					✓
Observations (a)	6,631	30,811	37,442	37,442	37,442
Observations (b)	97,519	676,321	772,439	772,439	772,439

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual (or a household's head) controls for age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects and three interaction fixed effects between tribe, distance to the closest camp, and age. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

that they are literate. Clearly this only explains a small part of the drop in the DDD estimate. Most of the discrepancy is likely owed to differences in the age composition. Our exposure variable only affects people who were children during the Mau Mau revolt in the DHS surveys but are now in their 40s and 50s, while the relevant cohort in the 1989 census includes all adults older than 30, who will have often been literate before the Emergency. A larger effect on those aged less than ten during the Emergency is also compatible with the earlier finding of lower household wealth in 1989. So far as wealth proxies for the permanent income of parents, a lack of parental resources is a key impediment to investments in children (Carneiro and Heckman, 2003).[29]

[29]The estimate is likely to be underestimated in absolute value for another reason. Political leaders and educated rebels were often giving classes to non-literate inmates, especially in less violent camps

Employment

Table 4.6 complements our results on household wealth by studying employment outcomes 30 years after the emergency. Some detainees will have spent up to six and a half years in custody (if we take the total duration of the Emergency as the upper bound). Apart from suffering from physical and emotional trauma, internment translated into loss of valuable time which they could have spent in gaining experience, earning income, and/or obtaining more education. Chin (2005), for example, finds that the internment of Japanese-Americans during WW II in the United States depressed their labor market earnings by 9–13% 25 years later, but did not make them so unsuitable for the job market to change their overall participation rates.

Table 4.6 shows that we find a sizable impact on labor market participation and unemployment. Exposed individuals are less likely to be working for pay and profit, more likely to be out of work, and more likely to be looking for work. The simple DDs in columns (1) and (2) document discrepancies between participation rates, whose difference goes in the expected direction. However, they also reveal that Kikuyu, Embu, and Meru that live near former detention sites in 1989 but do not belong to the treated cohorts are generally less likely to work, less likely to be out of work, and less likely to be seeking work than people from other tribes in the same area. These results are indicative of differences in selection or sample composition and not to be interpreted causally. The DDDs with controls and fixed effects in columns (3)–(5) once again resolve this seeming contradiction. The triple-differences remain stable, suggesting that treated tribes and cohorts near detention sites are 4.9–5.4 percentage points less likely to work, 0.9–1.7 percentage points more likely to have left the labor force, and 1.1 percentage points more likely to be seeking work.[30] The effects on the untreated cohort of Mau Mau tribes often disappear or turn around once differences in the sample composition are accounted for via controls and fixed effects. Column (4), for example, shows that non-treated Mau Mau tribes near former camps are more likely to work, no more or less likely to be out of work, and somewhat less likely to be looking for work than people from other tribes that live near former camp sites. Introducing camp and distance interval fixed effects together with the full battery of interacted fixed effects does little to change the results on triple interaction. In sum, the camp experience negatively impacted earnings (if we consider asset wealth as a proxy for earnings) and participation rates three decades later. Moreover, the negative effects on literacy documented above are consistent with both deteriorating employment matches and increased withdrawal from the labor market.

and before torture became systematic (see, e.g., Kariuki, 1964). Hence it seems safe to conclude that 3.5 percentage points is a lower bound of the effect of detention on literacy and that this effect is persistent until today.

[30] The remaining 2–3 percentage points are distributed over the other activity states.

Table 4.6 – 1989 Census: Employment

	DD_1 $(C=1)$ (1)	DD_0 $(C=0)$ (2)	DDD (3)	DDD (4)	DDD (5)
	Panel a) Work for pay or profit				
Exposure	−0.133	−0.110	0.019	0.039	
(P × M)	(0.028)***	(0.024)***	(0.012)	(0.017)**	
	[0.057]**	[0.053]**	[0.023]	[0.031]	
Exposure × Cohort)			−0.052	−0.054	−0.049
(P × M × C)			(0.013)***	(0.012)***	(0.012)***
			[0.014]***	[0.015]***	[0.018]***
	Panel b) No work				
Exposure	0.003	−0.015	−0.003	−0.005	
(P × M)	(0.003)	(0.005)***	(0.004)	(0.004)	
	[0.008]	[0.007]**	[0.005]	[0.003]	
Exposure × Cohort			0.017	0.012	0.009
(P × M × C)			(0.004)***	(0.004)***	(0.004)**
			[0.006]***	[0.005]**	[0.005]*
	Panel c) Seek work				
Exposure	−0.002	−0.015	−0.008	−0.008	
(P × M)	(0.001)**	(0.004)***	(0.003)***	(0.003)***	
	[0.001]*	[0.006]***	[0.003]**	[0.003]***	
Exposure × Cohort			0.011	0.011	0.011
(P × M × C)			(0.003)***	(0.003)***	(0.003)***
			[0.004]**	[0.004]***	[0.005]**
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Interactions of FEs					✓
Observations (a–c)	222,297	267,446	489,743	489,743	489,743

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual (or a household's head) controls for age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects and three interaction fixed effects between tribe, distance to the closest camp, and age. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

4.6 Extensions and Robustness

We perform several tests to support the causal interpretation of our results and explore potentially relevant heterogeneity in our data. First, we conduct placebo tests on untreated populations. Second, we vary our definition of proximity to the camps to get a sense of how the treatment diffuses around these locations. Third, we explore hetero-

geneity in camp types to understand if some camps were worse than others. We discuss the findings of the robustness checks below but relegate all tables to the Appendix.

4.6.1 Placebos Cohorts

Our key identification assumption is bias stability, or, put differently, differential selection into camp locations and non-camp locations for Mau Mau tribes and non-Mau Mau would have been the same in the absence of treatment. We support this assumption by running placebo DDDs where we remove the treated cohort entirely and test for differences among placebo populations that were born after the end of the Emergency. For these tests, we leverage the contemporary surveys (rather than the census data), as these contain a larger number of potentially untreated cohorts than the 1989 data.

The results show that differential selection is stable across the range of key outcomes we consider in this paper. Our estimates of placebo DDDs in five year intervals are always at the 5%-level insignificant for wealth and literacy (see Table C.2), insignificant for ethnic voting and performance of the incumbent (see Table C.3), insignificant for all but the cohort that is adjacent to the treated cohort in the case of trust (see Table C.4) and always insignificant for civic engagement (see Table C.5). Given the large number of placebo tests, we take this as strong evidence that our design is valid.

4.6.2 Proximity

Next we alter the proximity definition to test the effect on those living within 10 to 90 km of a camp site. We exclusively use the census data for these perturbations, since the sample is large enough and contains a density of sub-locations high enough to examine small variations in distance to a camp. In addition to the proximity adjustment, we also vary the cutoff until which the control group is included. This has the effect of comparing individuals which are increasingly close by and hence unlikely to vary on unobserved factors other than exposure to a camp site.

The results show that individuals and households in close vicinity to a camp drive our results (see Table C.6 and Table C.7). In both tables, the first column limits the proximity indicator to those that live within 10 km and then varies the maximum spatial extent of the control group to 60 km, 100 km and 150 km (Panels (a), (b), and (c), respectively). At 10 km, the DDD estimate for wealth is between -0.108 and -0.162 of a quintile, while the estimate for literacy is between -4.6 and -5.1 percentage points. Both are highly significant at conventional levels in all variants. The other columns expand the proximity definition. We observe that the effect persists for those living up to 50 km near a former camp site but shrinks substantially in size and significance. The treatment effect vanishes from 70 km onward.

4.6.3 Camp Types

Finally, we test the sensitivity of our results with respect to the type of camp that an individual was exposed to. Elkins (2001) provides us with a classification of camps which we supplement with estimates of their capacity. We distinguish between special, holding, exile, large, and work camps. Large camps have a capacity of above 5,000 detainees at any point in time. While there is some reason to believe that there may be some heterogeneity in the treatment effects across camp types, it is hard to establish a clear hierarchy. Some exile camps involved comparatively little hard work and abuse, while the treatment of detainees in some work camps was particularly harsh. A change in camp command could alter the experience of inmates completely (Kariuki, 1964).

Table C.8 and Table C.9 show that the effects on wealth and literacy are driven by work camps which make up almost 60% of the camps in our sample. Removing special camps and exile camps for political detainees raises the DDD estimates. Using only work camps also leads to estimates that are about 15–21% larger than our baseline. Note that we drop all those who are close to any of the omitted camp types to not pollute the control group.[31]

4.7 Conclusion

Our study links the violent transition to independence to contemporary ethnic politics and social cohesion. To do so, we explore the long-run effect of the systematic repression of a nationalist uprising during Kenya's late colonial period in the 1950s. This case offers a unique window into understanding how the salience of ethnic identities in politics can come about. The colonial government repressed the emergence of a common national identity by screening everyone that was vaguely associated with the Mau Mau movement and detaining many without cause. In those camps, the government attempted to break ethnic bonds, and subjected inmates to systematic abuse. Today, Kenya is unique among its neighbors in the sense that ethnic allegiances are the defining cleavage in politics and brought the country close to civil war in the aftermath of the 2007 presidential election.

We analyze the indirect effects of camp exposure on ethnic voting and social cohesion, as well as the direct effects on individual well-being. In a first set of results we turn toward voting behavior, trust and civic engagement to trace out the political implications of the repression. We document that those who were exposed to the detention camps, are more likely to vote along ethnic lines and are even willing to discount their relatively more negative assessment toward their co-ethnic incumbent. We also observe an increase in civic engagement, as evidenced by greater engagement in voluntary community organi-

[31] Table C.10 and Table C.11 repeat this analysis using the Afrobarometer data. The pattern shares some similarities but the limited variation in this survey relative to the census data does not lend itself to drawing more definitive conclusions.

zations. Nevertheless, the indiscriminate nature of the repression in which both Kikuyu loyalists and members of other ethnic groups were used as informants and guards, led to a deep erosion of generalized trust. In a second set of results we quantitatively establish, for the first time, the long-term effects of the detention camps on those who were likely to be detained. We find that to this day, those individuals and households that were exposed to the Mau Mau camps, are less wealthy, less literate, and have poorer labor market outcomes.

Our research broadly supports the notion that the experience of traumatic levels of violence and war increase local cooperation, even when those affected by such violence suffered deeply. However, the Kenyan case shows that this behavior can have a distinct pro-ethnic feature which can represent a significant challenge for contemporary politics and express itself in low levels of trust towards others in the larger society.

Appendix

A Definition of Variables

A.1 Internment Camps

Proximity to Internment Camp: The Proximity to an internment camp is a binary indicator equal to one if the respondent is close to a former camp location, i.e., within 30 km of a former camp location. Locations and Types of internment camps were collected from various sources by the authors. To asses the level of local exactness with respect to the geographic coordinates, we assign three codes of precision: (i) exact location (accuracy below 1 km), (ii) city or township (accuracy below 5 km), (iii) and area or location (accuracy of 5–10 km). Based on historiography we distinguish between special camps (for hard-core Mau Mau supporters), holding camps (set up very hastily after mass arrests), exile camps, large camps (capacity $> 5,000$ detainees), and work camps (included hard labor). All camps maintained re-education and counter-propaganda. Source: Issues of the Kenya Government Gazette, parliamentary records from the United Kingdom (UK Hansard); Colony and Protectorate of Kenya, Prisons Department (1954); Elkins (2000).

A.2 Census Data

Wealth: We construct a wealth index following the method from the Demographic and Health Surveys (Rutstein et al., 2004). Drawing from various survey question on a household's housing conditions (i.e., the type of roof, wall, and floor, the main source of water, the main type of sewage disposal, the main cooking fuel, and the main type of lighting), we run a Principal Component Analysis (PCA) and allocate households to quintile-categories based on their PCA scores. Hence, our wealth variable is a categorical variable, where the values 1 to 5 assign a household to a given wealth category based on their housing conditions stated in the census survey.

Literacy: The 1989 Census asked every person aged 6 years and over: "Does ... know how to read and write a simple statement in any language?". Enumerators could answer this question with 0 (NA), 1 (Yes), or 2 (No). We code this item as an indicator variable,

setting all 0-values to missing, and assigning the value of one to any person where the enumerator ticked "Yes", and 0 otherwise.

Employment: The 1989 Census asked every person aged 10 years and over: "What was ... mainly doing during the last 7 days preceding the Census night?". Enumerators could tick one of the following boxes: 01 ("Worked for pay or profit"), 02 ("On leave/sick leave"), 03 ("Working on family holding"), 04 ("No work"), 05 ("Seeking work"), 06 ("Student"), 07 ("Retired"), 08 ("Disabled"), 09 ("Home makers"), and 10 ("Other"). We code three indicator variables that indicate with a value of one whether a respondent answered *a*) "Worked for pay or profit", *b*) "No work", or *c*) "Seeking work", respectively.

A.3 Afrobarometer Survey Data

Trust in Most People: The question asked in the Afrobarometer Survey is "[...] Generally speaking, would you say that most people can be trusted or that you must be very careful in dealing with people?" with a binary response option where 1 indicates that "Most people can be trusted" and 0 stands for "You must be very careful." The question is available for Kenya in survey rounds 3 and 5. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

Trust in Other People: The question asked in the Afrobarometer Survey is "How much do you trust [... o]ther people you know?" with categorical response options that are coded as integer values between 0 and 3. 0 indicates "not at all," 1 indicates "just a little," 2 indicates "somewhat" and 3 indicates "a lot." The question is available for Kenya in survey rounds 4 and 5. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

Trust in Neighbors: The question asked in the Afrobarometer Survey is "How much do you trust [... y]our neighbors?" with categorical response options that are coded as integer values between 0 and 3. 0 indicates "not at all," 1 indicates "just a little," 2 indicates "somewhat," and 3 indicates "a lot." The question is available for Kenya in survey rounds 3 and 5. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

Trust in Relatives: The question asked in the Afrobarometer Survey is "How much do you trust [... y]our relatives?" with categorical response options that are coded as integer values between 0 and 3. 0 indicates "not at all," 1 indicates "just a little," 2 indicates "somewhat," and 3 indicates "a lot." The question is available for Kenya in survey rounds 3–5. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

Active Participation in Voluntary Associations: The question asked in the Afrobarometer Survey is "[... C]ould you tell me whether you are an official leader, an active member, an inactive member, or not a member: Some other voluntary association or community group?" with categorical response options that are coded as integer values between 0 and 3. 0 indicates "Not a member," 1 indicates "Inactive member," 2 indicates "Active

member," and 3 indicates "Official leader." The question is available for Kenya in survey rounds 4–7. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

Active Participation in Demonstrations: The question asked in the Afrobarometer Survey is "[... P]lease tell me whether you, personally, have done any of these things during the past year. If not, would you do this if you had the chance: Attended a demonstration or protest march?" with categorical response options that are coded as integer values between 0 and 4. 0 indicates "No, would never do this," 1 indicates "No, but would do if had the chance," 2 indicates "Yes, once or twice," 3 indicates "Yes, several times," and 4 indicates "Yes, often." The question is available for Kenya in survey rounds 2–7. Source: BenYishay et al. (2017); Afrobarometer Data (2016).

A.4 Demographic and Health Surveys

Wealth: The Demographic and Health Surveys provide a wealth index computed via Principal Component Analysis (PCA). They conduct the PCA based on various variables about a household's housing conditions, e.g., the type of floor, roof, and wall, the type of water, lighting, or sewage disposal, or whether the household owns a bike, motorbike, or car. Based on the result from the PCA, they allocate households to quintiles according to their PCA scores, which results in a categorical wealth variable taking the values 1 to 5. Source: Rutstein et al. (2004), DHS.

Literacy: The DHS surveys ask respondents to read a sentence from a card in the respondent's native language. The enumerate then notes whether a respondent 0) cannot read at all, 1) is able to read only parts of a sentence, or 2) is able to read a whole sentence. We construct an indicator variable that indicates with a value of 1 whether a respondent is able to read a whole sentence, and zero otherwise. Source: DHS.

A.5 Exit Polls

Ethnic Voting: The Exit Polls during the Kenya 2007 election asked respondents which presidential candidate they voted for, and at the same time elicited a respondent's ethnic affiliation. We code ethnic voting as an indicator variable which takes the value of 1 if a respondent voted for the same presidential candidate as at least 80% of the respondent's co-ethnics. This is, several ethnic groups had a clearly favored candidate, for whom at least 80% of co-ethnics voted. For these groups, we code the ethnic voting variable as described above. For the remaining groups, the ethnic voting variable always takes the value of zero. Source: Long and Gibson (2015).

Performance of Incumbent (Kibaki): The Exit Polls during the Kenya 2007 election asked respondents: "Thinking about President Kibaki: did he mostly fulfill his promises, only fulfill some promises, or not fulfill promises since the last election?". Respondents could

check one of the following boxes: *a*) All fulfill, *b*) Mostly fulfill, *c*) Only some, *d*) Not fulfill, *e*) Don't Know, *f*) Refuse to Answer. We code this item as a categorical variable, where the value of 0 indicates the lowest score ("Not fulfil") and 3 indicates the highest score ("All fulfill"). Source: Long and Gibson (2015).

A.6 Geographic Controls

Elevation: Average physical elevation in meters within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Jarvis et al. (2008).

Slope: A function of a grid-cells surrounding elevation in degrees within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Jarvis et al. (2008), authors' calculation.

Ruggedness: Terrain Ruggedness Index in meters within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Nunn and Puga (2012).

Wheat Suitability: Agro-climatically attainable yield in kilogram of dry matter per hectare within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: FAO/IIASA (2011).

River Length: Length of the river network in km within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Natural Earth (2017).

Road Length: Length of the road network in km within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Natural Earth (2017).

Prevalence Tse Tse Fly: Predicted areas of suitability for tsetse fly species Morsitans, Pallidipes, Austeni and Swynnertoni. The index is created by modelling the "known" presence and absence of the flies using a logistic regression of fly presence against a wide range of predictor variables, such as vegetation, temperature, moisture, for a large number of regularly spaced sample points for each area. The index is then aggregated to the $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: FAO/AGAH (2007).

Malaria Suitability: Temperature suitability for Plasmodium vivax transmission globally, calculated using a dynamic biological model and spatial time series across an average year (1950–2000). The index is then aggregated to the $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: World Health Organization (2018).

Precipitation: Long-term average over monthly mean for 1981–2010 in centimeter within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Willmott and Matsuura (2001).

Temperature: Long-term average over monthly mean for 1981–2010 in degree Celsius within a $0.1° \times 0.1°$ grid-cell resolution, i.e., approx. 11×11 km. Source: Willmott and Matsuura (2001).

B Descriptive Statistics

The following descriptive statistics are organized by source of data in the main body of the paper and are reported for the regression sample of the main specification.

Table B.1 – Descriptive Statistics by Type & Source of Data

	N	*Mean*	*SD*	*Min*	*Max*
Demographic and Health Survey					
Wealth	37,442	3.078	1.428	1	5
Literacy	60,136	0.774	0.419	0	1
Census					
Wealth	206,171	3.286	1.236	1	5
Literacy	773,840	0.727	0.446	0	0
Work for Pay or Profit	646,749	0.202	0.401	0	1
No Work	646,749	0.0377	0.191	0	1
Seek Work	646,749	0.013	0.114	0	1
Exit Polls					
Ethnic Voting	2,593	0.905	0.294	0	1
Performance of Incumbent (Kibaki)	4,302	1.334	0.717	0	3
Geographic Controls					
Elevation	4,900	794.951	629.038	1.000	3,921.923
Slope	4,884	2.015	2.533	0.000	18.920
Ruggedness	4,968	66.371	94.545	0.000	1,135.225
Wheat suitability	4,962	741.324	1,579.290	0.000	5,838.500
Afrobarometer					
Trust in Most People	1513	0.09	0.29	0	1
Trust in Neighbors	1524	1.65	0.88	0	3
Trust in Other People	1307	1.56	0.84	0	3
Trust in Relatives	1894	2.17	0.87	0	3
Active Part. in Voluntary Assoc.	4116	1.05	1.08	0	3
Active Part. in Demonstrations	5900	0.57	0.88	0	4

C Robustness and Placebo Tests for Main Results

C.1 Additional Outcomes

This sub-section presents regression results for the additional outcomes discussed in the main text.

Table C.1 – Trust in Neighbors and Relatives

	DD_1 $(C=1)$	DD_0 $(C=0)$	DDD	DDD	DDD
	(1)	(2)	(3)	(4)	(5)
	Panel a) Trust in Neighbors				
Exposure	−0.994	0.283	0.016	−0.053	−0.194
(P × M)	(0.203)***	(0.172)*	(0.182)	(0.185)	(0.249)
	[0.151]***	[0.124]**	[0.121]	[0.095]	[0.119]
Exposure × Cohort			−1.521	−2.207	−2.274
(P × M × C)			(0.339)***	(0.321)***	(0.344)***
			[0.248]***	[0.194]***	[0.197]***
	Panel b) Trust in Relatives				
Exposure	−0.505	0.097	−0.016	0.042	−0.140
(P × M)	(0.184)***	(0.115)	(0.147)	(0.207)	(0.239)
	[0.126]***	[0.114]	[0.113]	[0.131]	[0.171]
Exposure × Cohort			−0.510	−0.828	−0.898
(P × M × C)			(0.206)**	(0.330)**	(0.380)**
			[0.161]***	[0.214]***	[0.279]***
Individual controls			✓	✓	✓
Geographic controls			✓	✓	✓
Age, Tribe & Province FEs				✓	✓
Camp & Distance Interval FEs					✓
Observations (a)	220	1,292	1,442	1,442	1,442
Observations (b)	270	1,611	1,787	1,787	1,787

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Column (3) includes individual controls for age and sex as well as geographic controls which include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. Column (4) adds age, tribe, and province fixed effects, while column (5) in addition includes fixed camp and distance interval effects. We also include fixed effects for the survey year. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

C.2 Altering the Cohort Definition

Table C.2 – DHS Wealth and Literacy—Placebo Cohorts

	Born before:				
	1969	1974	1979	1984	1989
	(1)	(2)	(3)	(4)	(5)
	Panel a) Wealth				
Exposure	0.055	-0.076	-0.081	-0.051	-0.207
(P × M)	(0.067)	(0.069)	(0.073)	(0.086)	(0.113)*
	[0.118]	[0.120]	[0.116]	[0.107]	[0.106]**
Exposure × Cohort	0.067	0.083	0.069	0.013	0.181
(P × M × C)	(0.073)	(0.066)	(0.069)	(0.078)	(0.109)*
	[0.061]	[0.055]	[0.052]	[0.064]	[0.122]
	Panel b) Literacy				
Exposure	-0.034	-0.035	-0.031	-0.031	-0.029
(P × M)	(0.016)**	(0.016)**	(0.017)*	(0.017)*	(0.018)
	[0.039]	[0.039]	[0.038]	[0.037]	[0.037]
Exposure × Cohort	-0.031	-0.007	-0.017	-0.011	-0.011
(P × M × C)	(0.028)	(0.021)	(0.018)	(0.016)	(0.018)
	[0.031]	[0.025]	[0.022]	[0.017]	[0.021]
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	30,811	30,811	30,811	30,811	30,811
Observations (b)	59,135	59,135	59,135	59,135	59,135

Notes: The table reports OLS estimates. The unit of analysis is the individual. We subset the DHS Sample to people born after the end of the Emergency in 1959. All regressions control for the base levels of the interaction terms. Household's head controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.3 – 2007 Exit Poll—Placebo Cohorts

	Born before:				
	1962	1967	1972	1977	1982
	(1)	(2)	(3)	(4)	(5)
	Panel a) Ethnic voting				
Exposure	-0.039	-0.042	-0.043	-0.038	-0.039
(P × M)	(0.049)	(0.050)	(0.052)	(0.056)	(0.072)
	[0.043]	[0.042]	[0.047]	[0.059]	[0.050]
Exposure × Cohort	0.053	0.037	0.022	0.003	0.006
(P × M × C)	(0.100)	(0.065)	(0.053)	(0.050)	(0.068)
	[0.091]	[0.064]	[0.048]	[0.047]	[0.044]
	Panel b) Performance of the incumbent (Kibaki)				
Exposure	0.039	0.019	0.0005	-0.053	0.029
(P × M)	(0.097)	(0.100)	(0.101)	(0.104)	(0.123)
	[0.085]	[0.092]	[0.091]	[0.080]	[0.102]
Exposure × Cohort	-0.153	0.049	0.087	0.161	-0.001
(P × M × C)	(0.180)	(0.122)	(0.100)	(0.101)	(0.105)
	[0.189]	[0.109]	[0.071]	[0.099]	[0.080]
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	2,277	2,277	2,277	2,277	2,277
Observations (b)	2,253	2,253	2,253	2,253	2,253

Notes: The table reports OLS estimates. The unit of analysis is the individual. We subset the DHS Sample to people born after the end of the Emergency in 1959. All regressions control for the base levels of the interaction terms. Household's head controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.4 – Trust—Altering the Definition of Cohorts

	Born before:				
	1969	1974	1979	1984	1989
	(1)	(2)	(3)	(4)	(5)
	Panel a) Trust in Most People				
Exposure	-0.106	-0.099	-0.068	-0.043	0.017
(P × M)	[0.051]**	[0.069]	[0.051]	[0.065]	[0.058]
	(0.054)**	(0.061)	(0.049)	(0.069)	(0.057)
Exposure × Cohort	0.180	0.071	-0.018	-0.043	-0.113
(P × M × C)	[0.065]***	[0.102]	[0.043]	[0.067]	[0.077]
	(0.071)**	(0.095)	(0.054)	(0.077)	(0.083)
	Panel b) Trust in Other People				
Exposure	-0.144	-0.135	-0.093	-0.048	-0.162
(P × M)	[0.157]	[0.142]	[0.171]	[0.237]	[0.433]
	(0.170)	(0.156)	(0.191)	(0.258)	(0.436)
Exposure × Cohort	0.527	0.284	0.114	0.062	0.163
(P × M × C)	[0.264]**	[0.243]	[0.233]	[0.263]	[0.451]
	(0.281)*	(0.256)	(0.264)	(0.275)	(0.445)
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	1,281	1,281	1,281	1,281	1,281
Observations (b)	1,142	1,142	1,142	1,142	1,142

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.5 – Active Participation—Altering the Definition of Cohorts

	Born before:				
	1969	1974	1979	1984	1989
	(1)	(2)	(3)	(4)	(5)
	Panel a) Voluntary Associations				
Exposure	-0.002	0.034	0.065	0.108	0.011
(P × M)	[0.102]	[0.110]	[0.112]	[0.159]	[0.157]
	(0.112)	(0.118)	(0.122)	(0.176)	(0.184)
Exposure × Cohort	0.229	-0.014	-0.109	-0.151	0.015
(P × M × C)	[0.259]	[0.243]	[0.219]	[0.239]	[0.190]
	(0.293)	(0.245)	(0.219)	(0.241)	(0.209)
	Panel b) Demonstrations				
Exposure	0.006	0.032	0.040	-0.026	0.048
(P × M)	[0.066]	[0.075]	[0.075]	[0.072]	[0.093]
	(0.079)	(0.086)	(0.088)	(0.095)	(0.128)
Exposure × Cohort	0.112	-0.035	-0.044	0.085	-0.039
(P × M × C)	[0.137]	[0.139]	[0.107]	[0.116]	[0.114]
	(0.155)	(0.151)	(0.129)	(0.139)	(0.148)
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	3,658	3,658	3,658	3,658	3,658
Observations (b)	4,094	4,094	4,094	4,094	4,094

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

C.3 Altering the Proximity Definition

Table C.6 – Census Wealth—Altering the Definition of Proximity

	Proximity within:				
	10 km	30 km	50 km	70 km	90 km
	(1)	(2)	(3)	(4)	(5)
	Panel a) Cutoff = 60 km				
Exposure	−0.095	−0.065	−0.104		
	(0.062)	(0.054)	(0.067)		
Exposure × Cohort	−0.108	0.001	0.033		
	(0.039)***	(0.044)	(0.071)		
	Panel b) Cutoff = 100 km				
Exposure	−0.028	−0.012	−0.005	0.090	−0.409
	(0.064)	(0.056)	(0.060)	(0.066)	(0.211)*
Exposure × Cohort	−0.160	−0.119	−0.124	−0.179	0.201
	(0.037)***	(0.041)***	(0.045)***	(0.045)***	(0.246)
	Panel c) Cutoff = 150 km				
Exposure	−0.033	−0.013	−0.010	0.073	−0.264
	(0.064)	(0.055)	(0.059)	(0.068)	(0.087)***
Exposure × Cohort	−0.162	−0.121	−0.126	−0.182	0.008
	(0.037)***	(0.041)***	(0.044)***	(0.046)***	(0.068)
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	155,251	155,251	155,251		
Observations (b)	202,103	202,103	202,103	202,103	202,103
Observations (c)	205,818	205,818	205,818	205,818	205,818

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Clustered standard errors are reported below the coefficients in parentheses. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.7 – Census: Literacy—Altering the Definition of Proximity

	Proximity within:				
	10 km	30 km	50 km	70 km	90 km
	(1)	(2)	(3)	(4)	(5)
	Panel a) Cutoff = 60 km				
Exposure	-0.006	0.017	0.017		
	(0.009)	(0.014)	(0.024)		
Exposure × Cohort	-0.046	-0.023	-0.018		
	(0.012)***	(0.016)	(0.025)		
	Panel b) Cutoff = 100 km				
Exposure	-0.007	0.012	0.010	0.009	-0.066
	(0.008)	(0.011)	(0.012)	(0.008)	(0.064)
Exposure × Cohort	-0.051	-0.035	-0.029	-0.006	-0.077
	(0.011)***	(0.011)***	(0.011)**	(0.012)	(0.134)
	Panel c) Cutoff = 150 km				
Exposure	-0.011	0.004	0.001	-0.001	-0.112
	(0.008)	(0.012)	(0.013)	(0.010)	(0.022)***
Exposure × Cohort	-0.051	-0.034	-0.029	-0.008	-0.019
	(0.011)***	(0.011)***	(0.011)**	(0.012)	(0.042)
Individual controls	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓
Observations (a)	579,058	579,058	579,058		
Observations (b)	757,986	757,986	757,986	757,986	757,986
Observations (c)	772,460	772,460	772,460	772,460	772,460

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Clustered standard errors are reported below the coefficients in parentheses. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

C.4 Exploring Camp Types

Table C.8 – DHS and Census: Wealth—Exploring Camp Types

	Camp Types					
	All	No Special	No Holding	No Exile	No Large	Only Work
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel a) DHS 2003-2014					
Exposure	-0.059	-0.039	0.057	-0.078	0.057	-0.018
	(0.067)	(0.068)	(0.071)	(0.142)	(0.071)	(0.072)
Exposure × Cohort	-0.196	-0.199	-0.219	0.007	-0.219	-0.199
	(0.085)**	(0.085)**	(0.078)***	(0.181)	(0.078)***	(0.089)**
	Panel b) 1989 Census					
Exposure	-0.013	0.069	0.184	0.012	0.184	0.076
	(0.055)	(0.060)	(0.053)***	(0.112)	(0.053)***	(0.059)
Exposure × Cohort	−0.121	-0.151	-0.167	-0.250	-0.167	-0.146
	(0.041)***	(0.045)***	(0.041)***	(0.097)**	(0.041)***	(0.044)***
Individual controls	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓	✓
Observations (a)	37,442	37,442	37,442	37,442	37,442	34,359
Observations (b)	205,818	188,980	188,980	188,980	188,980	188,980

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Household's head controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Clustered standard errors are reported below the coefficients in parentheses. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.9 – DHS and Census: Literacy—Exploring Camp Types

	Camp Types					
	All	No Special	No Holding	No Exile	No Large	Only Work
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel a) DHS 2003-2014					
Exposure	0.005	0.009	0.004	0.009	0.004	0.020
	(0.015)	(0.015)	(0.020)	(0.016)	(0.020)	(0.016)
Exposure × Cohort	-0.159	-0.161	-0.143	-0.188	-0.143	-0.178
	(0.079)**	(0.080)**	(0.087)	(0.082)**	(0.087)	(0.082)**
	Panel b) 5% Sample of 1989 Census					
Exposure	0.004	0.002	0.011	0.017	0.011	0.014
	(0.012)	(0.012)	(0.014)	(0.012)	(0.014)	(0.012)
Exposure × Cohort	-0.034	-0.041	-0.030	-0.051	-0.030	-0.039
	(0.011)***	(0.011)***	(0.012)**	(0.012)***	(0.012)**	(0.012)***
Individual controls	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓	✓
Observations (a)	60,136	57,414	53,824	60,136	53,824	55,123
Observations (b)	772,460	747,777	697,566	698,726	697,566	710,678

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a households head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Clustered standard errors are reported below the coefficients in parentheses. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.10 – Trust—Exploring Camp Types

	Camp Types					
	All	No Special	No Holding	No Exile	No Large	Only Work
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel a) Trust in Most People					
Exposure	-0.068	-0.060	-0.059	-0.065	-0.059	-0.080
(P × M)	[0.033]**	[0.028]**	[0.048]	[0.035]*	[0.048]	[0.034]**
	(0.045)	(0.044)	(0.053)	(0.045)	(0.053)	(0.046)*
Exposure × Cohort	-0.889	-0.864	-0.910	-0.908	-0.910	-0.880
(P × M × C)	[0.077]***	[0.077]***	[0.096]***	[0.082]***	[0.096]***	[0.084]***
	(0.089)***	(0.096)***	(0.101)***	(0.104)***	(0.101)***	(0.102)***
	Panel b) Trust in Other People					
Exposure	0.015	0.032	0.002	-0.045	0.002	0.021
(P × M)	[0.106]	[0.106]	[0.134]	[0.110]	[0.134]	[0.104]
	(0.170)	(0.163)	(0.201)	(0.157)	(0.201)	(0.161)
Exposure × Cohort	-1.163	-1.122	-1.344	-1.199	-1.344	-1.176
(P × M × C)	[0.280]***	[0.289]***	[0.305]***	[0.256]***	[0.305]***	[0.290]***
	(0.354)***	(0.367)***	(0.378)***	(0.370)***	(0.378)***	(0.371)***
Individual controls	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓	✓
Observations (a)	1,501	1,439	1,089	1,367	1,089	1,397
Observations (b)	1,298	1,245	974	1,165	974	1,205

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C.11 – Active Participation—Exploring Camp Types

	Camp Types					
	All	No Special	No Holding	No Exile	No Large	Only Work
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel a) Voluntary Associations					
Exposure	0.029	0.071	0.023	0.077	0.023	0.046
(P × M)	[0.071]	[0.080]	[0.080]	[0.073]	[0.080]	[0.076]
	(0.100)	(0.101)	(0.106)	(0.103)	(0.106)	(0.102)
Exposure × Cohort	0.415	0.302	0.514	0.458	0.514	0.417
(P × M × C)	[0.168]**	[0.177]*	[0.188]***	[0.178]**	[0.188]***	[0.161]***
	(0.284)	(0.289)	(0.301)*	(0.306)	(0.301)*	(0.303)
	Panel b) Demonstrations					
Exposure	0.005	0.012	0.045	0.023	0.045	0.041
(P × M)	[0.054]	[0.057]	[0.067]	[0.050]	[0.067]	[0.052]
	(0.076)	(0.076)	(0.088)	(0.076)	(0.088)	(0.075)
Exposure × Cohort	-0.140	-0.121	-0.155	-0.162	-0.155	-0.156
(P × M × C)	[0.057]**	[0.071]*	[0.062]**	[0.072]**	[0.062]**	[0.068]**
	(0.079)*	(0.087)	(0.085)*	(0.086)*	(0.085)*	(0.084)*
Individual controls	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓
Age, Tribe & Province FEs	✓	✓	✓	✓	✓	✓
Observations (a)	4,095	3,898	3,263	3,723	3,263	3,786
Observations (b)	4,639	4,404	3,651	4,227	3,651	4,292

Notes: The table reports OLS estimates. The unit of analysis is the individual. All regressions control for the base levels of the interaction terms. Individual (or a household's head) controls are age and sex as well as the household size. The geographic controls include an indicator for rural or urban regions, elevation, slope, ruggedness, wheat suitability, length of river and road networks, prevalence of the tsetse fly and malaria, precipitation, and temperature. In addition we control for the distances to Nairobi, the Aberdare Range, Mount Kenya and the province capital. We add age, tribe, and province fixed effects. Conley and clustered standard errors are reported below the coefficients in brackets and parentheses respectively. Significant at: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

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