

Mavisakalyan, Astghik; Minasyan, Anna

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# Mining and Mistrust in Government\*

Astghik Mavisakalyan<sup>†</sup>      Anna Minasyan<sup>‡</sup>

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## Abstract

Recent research shows that natural resources can hurt institutions by promoting corruption and diverting resources from the production of public goods. This, in turn, may have implications for the trust individuals hold for their governments. We explore this possibility by linking survey data on over 43,000 individuals with spatial data on mine locations in 27 post-communist countries of Central and Eastern Europe and the former Soviet Union. By exploiting the information on the development status of each mine site, we draw comparisons between individuals living in the vicinity of active versus inactive mines, imitating a difference-in-differences strategy applied to cross-sectional data. We show that there is a negative association between mining and trust in government - a finding that is robust to a battery of tests. Our analysis of the mechanisms confirms that corruption perception and, to a lesser extent, dissatisfaction with public good provision, are likely behind this relationship. The analysis of the consequences of such mistrust in government points towards a potentially damaging impact of mining for new democracies. The results suggest that mining activity might decrease individuals' willingness to go on lawful demonstrations and participate in civil and political movements.

**Keywords:** Natural resources; Trust; Institutions; Post-communist countries.

**JEL Codes:** D72, L72, O13, P28, Q32.

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<sup>†</sup>Bankwest Curtin Economics Centre, Faculty of Business and Law, Curtin University, Australia. Postal address: GPO Box U1987, Perth WA 6845, Australia. E-mail: a.mavisakalyan@curtin.edu.au.

<sup>‡</sup>Faculty of Economics and Business, University of Groningen, The Netherlands. Postal address: Nettelbosje 2, 9747 AE Groningen, The Netherlands. E-mail: a.minasyan@rug.nl.

# 1 Introduction

Mistrust in government is widespread. In 2020, only 51 percent of people in the OECD countries trusted their government (OECD, 2021a). The governments in less developed countries on average tend to enjoy even lower levels of trust (UN DESA, 2021). In the post-communist countries of Central and Eastern Europe and the former Soviet Union - the region of focus of the current study - the figures were at 29 percent for trust in national government and at 37 percent for trust in local government as of 2016 (EBRD, 2016).

Previous research shows that such mistrust in government can have profound negative implications for civic participation and lead to disruptions in democracy (Grönlund and Setälä, 2007; Newton and Norris, 2000). It can also affect government legitimacy and individuals' willingness to support policies, including those addressing societal challenges threatening human survival such as pandemics (Bargain and Aminjonov, 2020; Brodeur et al., 2021) and climate change (Fairbrother et al., 2019; Smith and Mayer, 2018). More broadly, as Arrow, 1972 notes: "virtually every commercial transaction has within itself an element of trust" (p.50). Consistent with this point, a large body of literature links lack of trust in a society with low levels of economic development (see e.g., Algan and Cahuc, 2010; Knack and Keefer, 1997; Tabellini, 2010; Zak and Knack, 2001).<sup>1</sup> A relevant question to ask then is: what are the drivers of mistrust? This paper focuses on mistrust in government and puts forward one hypothesis: that mining contributes to such mistrust.

Why should mining be a source of mistrust in government? A body of research suggests that natural resources can hurt institutions by promoting corruption and diverting resources from the production of public goods (Arezki and Brückner, 2011; Busse and Gröning, 2013; Knutsen et al., 2017; Konte and Vincent, 2021; Vicente, 2010). From the rational choice perspective, quality of institutions, in turn, matters for trust in government (Christensen and Læg Reid, 2005; Dinesen, 2012; Espinal et al., 2006; Guerrero, 2011; OECD, 2021b; Van de Walle and Bouckaert, 2003; Wang, 2016; Yang and Holzer, 2006). We build on these two sets of observations and propose that exploitation of natural resources should have implications for the trust individuals hold for their governments. To investigate this relationship, we link survey data on over 43,000 individuals with spatial data on mine locations in 27 post-communist countries of Central and Eastern Europe and the former Soviet Union.

While mineral reserves may have a relatively random distribution within countries, the locations for mining production are unlikely to be independent of the outcome of our interest, trust in government. Location-specific factors, including pre-existing trust levels and other unobservable characteristics correlated with trust, may influence the governments' and

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<sup>1</sup>For surveys on the role of trust in economics, see Algan and Cahuc, 2014; Fehr, 2009; Guiso et al., 2011.

investors' decisions to setup a producing mine. In other words, ex-post, individuals who live close to mine locations may be different from those who live further away in ways that may confound the relationship between trust in government and active mine production.

Hence, results based on simply regressing trust in government on living close to a mine will likely be subject to endogeneity concerns. To avoid such concerns, we compare government trust among individuals who live close to an active mine to that of individuals living close to an inactive mine which may become active in the future. This strategy imitates a difference-in-differences approach applied to cross-sectional data, drawing inspiration from identification strategies used by Knutsen et al., 2017; Kotsadam and Tolonen, 2016.

We find that mining is associated with lower trust in government - a result that holds to a battery of validity and robustness tests. Our analysis suggests that this association is likely due to the positive effect of mining on corruption, and to a lesser extent, on dissatisfaction with public services. We engage with the consequences of our central results and show that mining affects individuals' intentions to attend lawful demonstrations and take part in civic and political movements - a finding that feeds into the concerns over the constraints imposed by natural resources on democratic regimes (Ross, 2001; Tsui, 2011).

This study offers several contributions to the literature on political economy of natural resources and development. First, we study the implications of resource abundance for an under-studied yet significant outcome: trust in government. To the best of our knowledge, the relationship between resource abundance and trust has so far been the focus of only two studies, both of descriptive nature. Kolstad and Wiig, 2012 studied the relationship at cross-country level while Ishiyama et al., 2018 drew comparisons across the states in Nigeria and Mexico in addition to cross-country comparisons. Additionally, we contribute to this literature by exploring the underlying mechanisms and consequences of the relationship between mining and low government trust.

Second, we employ micro-level spatially disaggregated data that enables us to draw close-to-causal inferences in line with emerging literature that has adopted similar setup to study the consequences of mining for local communities including female employment (Kotsadam and Tolonen, 2016), educational attainment (Ahlerup et al., 2020), health (Von der Goltz and Barnwal, 2019), infant mortality (Parker et al., 2016), consumption (Bazillier and Girard, 2020), conflict risk (Berman et al., 2017), quality of public services (Konte and Vincent, 2021) and corruption (Knutsen et al., 2017). Building on the work by Knutsen et al., 2017 and Konte and Vincent, 2021, this study contributes to the emerging literature on local institutional effects of mining by studying a novel outcome: trust in government.

Third, we focus on an under-researched yet highly relevant context - the post-communist countries of Central and Eastern Europe and the former Soviet Union - whereas most of

the existing evidence on micro-level impacts of resource abundance comes from the African continent. Existing evidence from the post-communist countries suggests that countries with a larger resources sector have underperformed others in terms of manufacturing performance (Horváth and Zeynalov, 2016) and the speed and the depth of economic reforms including privatization, enterprise restructuring and competition policy (BenYishay and Grosjean, 2014). BenYishay and Grosjean, 2014 also show that natural resource endowments are positively associated with the prevalence of corruption in Russian provinces. We add to these results by establishing the negative effects of mining on trust in government in 27 post-communist countries. In doing so, we also contribute to the emerging literature on the causes of within-country differences in trust in the post-communist countries (Becker et al., 2016; Cassar et al., 2013; Grosjean, 2011, 2014; Nikolova et al., 2022).

## 2 Background

### Mining and institutions

The main testable proposition put forward in this paper is that mining contributes to mistrust in government. We argue that it does so through its adverse impact on the quality of institutions. A large literature on “resource curse” documents significant negative economic consequences associated with natural resource abundance (see e.g., Gylfason, 2001; Gylfason et al., 1999; Sachs and Warner, 1995; Sachs and Warner, 2001).<sup>2</sup> Part of the resource curse literature highlights the existence of “political resource curse”, that is, the adverse political consequences of natural resource abundance (Humphreys et al., 2007; Ross, 2004, 2012, 2015) including risk of conflict (Berman et al., 2017; Humphreys, 2005; Lei and Michaels, 2014) and rise of authoritarianism (Caselli and Tesei, 2016; Ross, 2001; Tsui, 2011). This later strand of the literature also shows that mining has implications for the quality of institutions.

Conceptually, the models on the political economy of resource curse suggest several channels through which mining may hurt the quality of institutions. The underlying assumption of these models is that the rents from exploitation of natural resources serve as an incentive for political leaders to stay in power. These rents also provide the means for the incumbents to influence the outcome of elections (see Caselli and Cunningham, 2009 for a systematic analysis of how resource rents shape the incentives of political leaders). Namely, the theories of rentier state suggest that governments use the resource rents to relieve the social pressures on themselves by taxing their populations less heavily and spending more on patronage (see

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<sup>2</sup>Papyrakis, 2017; Van der Ploeg, 2011; Van Der Ploeg and Poelhekke, 2017; Wick and Bulte, 2009 provide reviews of the resource curse literature.

Ross, 2001, 2015 for overviews). Likewise, as Robinson and Torvik, 2005 and Robinson et al., 2006 point out, the resource rents incentivise strategic spending on inefficient projects and contribute to resource misallocation in the economy. Economic dependence on natural resources may also discourage investment in state capacities to raise revenues and to support markets (Besley and Persson, 2010), and it may encourage lower-quality candidates to compete in elections (Brollo et al., 2013). Moreover, economic and political costs for accepting corruption are lower in resource abundant economies (Brollo et al., 2013; Leite and Weidmann, 1999). In particular, Brollo et al., 2013 argue that the electoral punishment of corruption decreases with budget size, which induces the incumbent to misbehave more frequently. Knutsen et al., 2017 focus on understanding the local-level institutional effects of mining, and propose two types of channels linking mining with corruption locally: one focusing on increased supply of funds available for corruption, and another on increased demand for bribes generated by inflows of corrupt officials.

Empirical analyses of mining and institutions produce results that are largely consistent with these theoretical predictions. Country-level analyses by Arezki and Brückner, 2011; Busse and Gröning, 2013; Leite and Weidmann, 1999 establish positive associations between natural resources and corruption. However, some of the results in this literature are not robust to changes in model specifications (Alexeev and Conrad, 2009; Bhattacharyya and Hodler, 2010; Serra, 2006). Within-country analyses produce more convincing set of results pointing at a causal link between natural resources and corruption. Studies by Vicente, 2010, Brollo et al., 2013 and Knutsen et al., 2017 show that natural resources are associated with increased corruption in Sao Tome and Principe, Brazil and a large sample of African countries respectively. Moreover, mining also affects the production of public goods. As Konte and Vincent, 2021 show for the case of African countries, it has an adverse effect on the perceived quality of local public goods and services, including health, job creation and improving living standards of the poor.

## **Institutions and trust**

Economics literature construes trust as one of the most fundamental cultural values that could explain economic development (Algan and Cahuc, 2014). Previous studies have shown that trust as a cultural phenomenon can be passed on from one generation to another, through the so-called vertical transmission channel (Cavalli-Sforza and Feldman, 1981). Consistent with that possibility, Besley and Reynal-Querol, 2014 link the contemporary levels of trust in Africa to the legacy of conflicts in the precolonial period between 1400 and 1700. On the other hand, Nunn and Wantchekon, 2011 show that current trust levels in Africa can be

traced back to the Transatlantic and Indian ocean slave trades. Dohmen et al., 2012 explicitly document the inter-generational persistence of trust through the vertical transmission channel by showing strong correlations in trust attitudes of parents and children. Besides the inter-generational or vertical transmission channel, one's contemporary environment can also have an impact on the formation of trust through horizontal or oblique channels of cultural transmission (Cavalli-Sforza and Feldman, 1981). For example, Algan et al., 2013 document that progressive education practices promote trust while Olken, 2009 show that television erodes trust.

In this paper we link the development of institutional trust to the prevailing institutional environment. This view, based on the rational choice perspective, predicts that well-performing institutions will generate higher levels of trust. In line with this prediction, the empirical literature shows that perceptions of institutional performance, fairness and integrity are significant predictors of trust in the government (Christensen and Læg Reid, 2005; Dinesen, 2012; Espinal et al., 2006; Guerrero, 2011; OECD, 2021b; Van de Walle and Bouckaert, 2003; Wang, 2016; Yang and Holzer, 2006). All three channels of cultural transmission are potentially at play in the relationship between institutions and trust. Good quality historical institutions can lead to higher levels of concurrent trust that can then be passed on through generations. For example, Tabellini, 2008 finds that US immigrants from countries with more democratic institutions in the distant past have inherited a higher level of trust.

In the case of the post-communist countries, the existing evidence suggests that history of violence and repression has had important implications for institutional and social trust observed in the post-communist countries today. Grosjean, 2014 establishes the negative and enduring legacy of exposure to World War II and recent civil conflict in post-communist countries on institutional trust while Cassar et al., 2013 document a link between civil war exposure and trust based on a case study of Tajikistan. More recently, Nikolova et al., 2022 have linked the contemporary differences in trust levels within the former Soviet Union to the system of forced labor camps under Stalin. Existing studies have also highlighted the role of historical institutions in shaping the contemporary levels of trust observed in the region. Becker et al., 2016 find that historical legacy of the Habsburg empire has contributed to the contemporary levels of institutional trust in Eastern Europe while Grosjean, 2011 demonstrates the implications for living under common institutions of Ottoman, Habsburg, Russian or Prussian Empires for social trust observed in the region today.

If mining production lowers the quality of institutions as evidenced by previous research discussed above, then we can expect lower trust in government in regions where mining activity is present. The rest of the paper focuses on empirically exploring this possibility.

## 3 Data

### Sources and variables

We link individual-level survey data with spatial data on the locations of active and inactive mine sites to study the relationship between mining and trust in government at the subnational level.

The individual-level data we use comes from the Life in Transition Surveys (LiTS), a collection of nationally representative cross-sectional household surveys on public attitudes and perceptions carried out by the World Bank and the European Bank for Reconstruction and Development in 2006, 2010 and 2016, mainly in the countries of the former communist bloc. LiTS provides good quality data on a comprehensive set of individual-level indicators and has been used in other political economy studies on the region (Aksoy and Tumen, 2021; Anderson, 2021; Becker et al., 2016; Corrado, 2020; Grosfeld et al., 2013; Grosjean, 2011; Guriev and Melnikov, 2018; Mavisakalyan et al., 2021).

This is the first study that uses LiTS to explore the consequences of natural resource extraction in the countries of the former communist bloc. The data provided by LiTS is ideally suited for studying the question at hand. Beyond the socio-economic and demographic characteristics of the respondents, the survey includes a wide set of questions on trust, corruption, public services and political participation - all essential to our analysis. The most recent 2016 wave of the survey collected detailed information on the respondents' geographic location (GPS coordinates), not available in the two earlier waves. Hence, our analysis is based on the 2016 wave only, given the need to link the survey data with spatial data on the mine sites.

The 2016 wave of LiTS polled 51,000 households in 34 countries. In addition to the countries in the former communist bloc, the surveys were conducted in Cyprus, Germany, Greece, Italy and Turkey to give researchers an opportunity to compare their results to those from the countries outside the bloc (although the eastern regions of Germany that formed the German Democratic Republic were part of the bloc). The analysis in this paper focuses on post-communist countries, given their common historical and institutional heritage, and therefore Cyprus, Germany, Greece, Italy and Turkey are excluded from the sample of the main analysis but are used separately in supplementary analysis. The list of post-communist countries included in LiTS 2016 is presented in the Appendix Table A1.

The trust questions in LiTS are in Likert scale from 1 to 5. We convert these into a binary scale for the variables of our interest. The main outcome of interest in our study is the trust in local government, which equals 1 if the respondent expresses some (Likert scale 4) or complete (Likert scale 5) trust in local or regional government. Otherwise, the variable



is coded as 0 (Likert scale 1-3, denoting complete distrust, some distrust or neither trust nor distrust). We similarly code trust in national government and other executive and legislative bodies, which we use in the supplementary analysis.

Our data source on the location and development status of mineral reserves is the Mineral Resources Data System (MRDS) provided by the U.S. Geological Survey (USGS) (Schweitzer, 2019). MRDS includes high-quality geo-referenced data on metallic and non-metallic mineral resources for the world. A key strength of MRDS is its coverage of a very large and diverse set of mines, legacies, deposits, and smelters in comparison to other sources often limited to large homogenous mines (Von der Goltz and Barnwal, 2019). While the source doesn't contain sufficient information on the dates of discovery and start of the production for the mines in the region of our study, there is well-documented information on the development status of the mineral reserves. That is, we know to what extent a mineral site has been developed in terms of the specific stages of exploration and exploitation (production).

Our identification strategy exploits the information on development status of 2,388 deposits and mineral sites in 27 post-communist countries.<sup>3</sup> The development status in the database differentiates between Plants, Producers, Past Producers, Occurrences and Prospects. The MRDS assigns an Occurrence status to a mine site when there has been no or little activity since the discovery of the mineral resource. In the Prospect stage the deposit has passed the Occurrence stage and works have been carried out to identify the extent of mineralization, grade and tonnage, i.e. exploration activities. At this stage, the deposits may or may not have undergone feasibility studies that would lead to a decision on going into production. A Producer status means that a mine was in production at the time the information was entered into MRDS while a Past Producer is a formerly operating production that had been closed since. A mine site has a Plant status if it is an active processing plant such as a smelter or a refiner. If the precise development status was "unknown" at the time of data entry, it is coded as such in the MRDS database. In our baseline estimation approach, we define a mine as *active* if its development status in the MRDS database is either a Producer or a Plant.

It should be noted that there is a slight discrepancy in the timing of the two data sources since LiTS was conducted in 2016 whereas the last systematic update of the MRDS database was done in 2011. However, this is unlikely to be a source of significant concern in the context of the current study. In general, mining exploitation practices suggest that it usually takes

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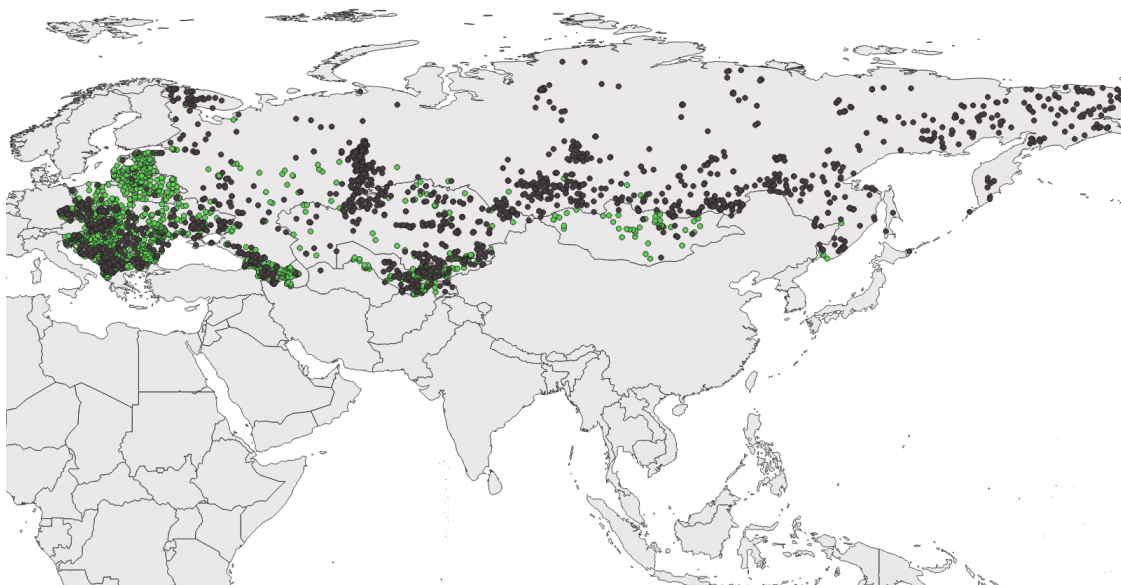
<sup>3</sup>While LiTS contains information on 29 post-communist countries, there are no records of mine locations in the MRDS database for Moldova and Kosovo. Hence, the analysis is effectively restricted to 27 countries with data in both sources.

5-10 years on average to reach the production stage after the discovery of natural resources and only a small share of discovered minerals pass the feasibility study to reach the final stage of production (Drebenstedt and Singhal, 2013; Haldar, 2018).

## Descriptive statistics

In Figure 1 we plot the spatial distribution of mines and LiTS respondents in our sample. The black dots denote the mineral deposits and the green dots denote the survey locations. The map shows a fairly large overlap in mine and survey locations in the region of our study. Only in certain parts of Russia, such as Siberia, we observe mine locations but no survey locations. This is not surprising given the sparse population in this area. In our analysis we restrict the sample to survey locations that are within 200km of any mine. The sample size employed in the baseline analysis equals 43,702 individuals.

Figure 1: Mine and survey cluster locations

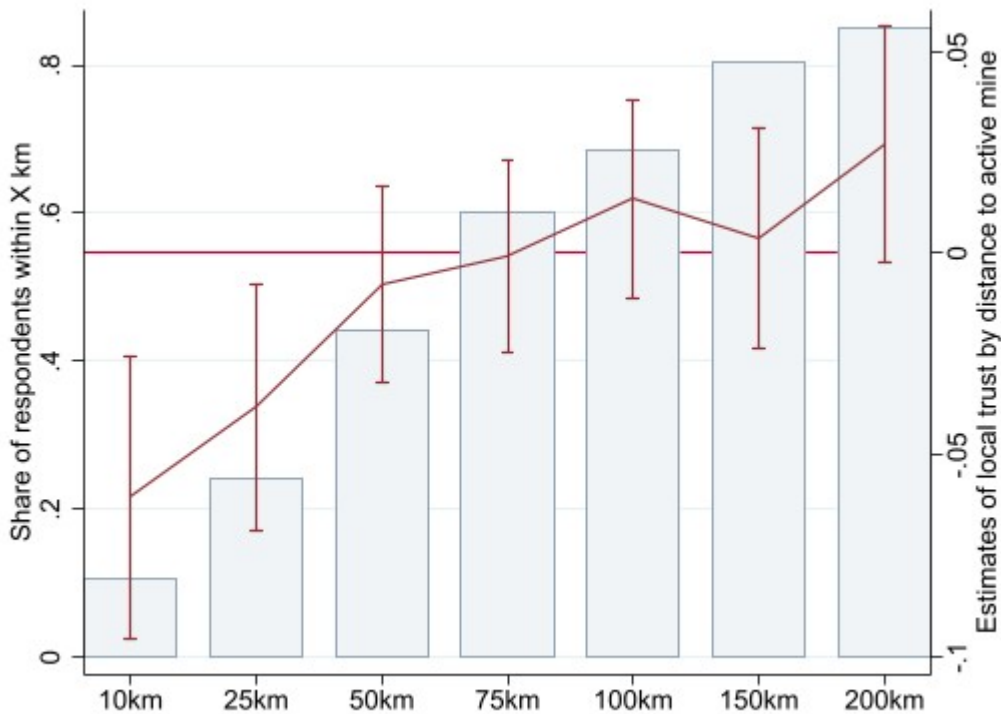


Note. The map shows 2,388 mine locations in 27 post-communist countries, denoted by black dots. The locations of LiTS household surveys (2,491 geographic clusters with over 43,000 observations in total) in the same group of countries are depicted by green dots.

Figure 2 displays the association between X km distance to an active mine and trust in local government, where X takes values from 10km to 200km with 15km intervals. The reference category (activeX=0) is individuals living further than X km of an active mine. The estimated coefficients show that the closer the survey respondents live to an active mine, the lower is their trust in local government. This association is statistically significant within 25km distance to an active mine. It gradually weakens beyond the 50km threshold.

Previous studies have identified the effects of mining on local employment or local corruption based on an assumption that the effects take place within a certain cutoff. These studies use distance from survey locations to the mine using a threshold of 20km or 50km in the main analysis (Knutsen et al., 2017; Kotsadam and Tolonen, 2016). In line with the recent literature and based on the descriptive data in Figure 2, we use 25km as the cutoff point in our analysis. In the robustness section we provide further evidence for the validity of the 25km distance cutoff (see Figure A1 in the Appendix).

Figure 2: Distance to active mine and trust in local government



Note. The right Y-axis depicts estimated difference in trust in the local government for various cutoff distances (10km to 200km) between respondents who live within each cutoff distance from an active mine relative to those who live further away from the cutoff. The vertical red line depicts confidence intervals for the point estimates while the red line connects the point estimates to show correlation with the distance cutoffs. The left Y-axis and the light blue bars show the shares of respondents living within each cutoff distance to an active mine. There are no controls included in these comparisons.

Based on the summary statistics presented in Table A2 of the Appendix, 40 percent of individuals in our sample express trust in local government. Around 24 percent of the sample lives within 25km of at least one active mine (active25) as defined above. The share of surveyed respondents who live within 25km of an inactive mine site (inactiveU\_25) is around 11 percent, which includes mine sites with the status of either Prospect (2 percent), Occurrence (5 percent) or Unknown (4 percent).

Turning to the control variables included in the baseline model, slightly more than half of the respondents are female (57 percent). The average individual in the sample is 48 years old, with age ranging from 18 to 95 years old. Slightly less than half of the sample lives in a rural area (45 percent) and around 24 percent have tertiary education, which is comparable to the observed levels in the western European countries. Around 18 percent of the sample is not married (single). The average household size is 3 members, ranging from minimum 1 to maximum 12.

The results from the group comparison tests, which we show in Table A3, reveal that there are statistically significant differences in the baseline variables between individuals who live within 25km of an active mine and those who live within 25km of an inactive mine. In terms of the magnitude, the largest differences (more than 1 percent relative to the mean) stem from the trust in local government, the outcome variable, in addition to the controls for living in rural area, being single and household size.

Overall there are over 10,663 respondents in the sample living within 25km of an active mine and about 4,779 respondents who live within 25km of an inactive mine; 2,246 respondents live within 25km of an inactive mine only which implies that 5 percent of all survey respondents live within 25km of both active and inactive mines. In the robustness analysis we exclude these observations from the sample.

## 4 Empirical strategy

We estimate the effect of mining production on trust in local government by comparing the average trust levels of individuals living within 25km of an active mine to those living within 25 km of an inactive mine, controlling for individual-level covariates and subnational region fixed effects (administrative level 1). This identification strategy echoes the approach used by Knutsen et al., 2017; Kotsadam and Tolonen, 2016 but instead of exploiting the differences in the timing of opening of a mine and the survey year as they do, we exploit the differences in the development status of mine sites. We expect that the effects of mining on trust are stronger for individuals living in the close proximity of an active mine relative to those living in the close proximity of an inactive mine.

By comparing trust in government for individuals living in close proximity of an active mine with that of individuals living in close proximity of an inactive mine we control for location-specific unobserved factors that are correlated with living in a geographic environment that is conducive to the formation and exploration of mineral reserves. We effectively compare a group of individuals that have been already treated by a mining production with a group that may be potentially treated by such production in the next 5-10 years. However,

the lack of information whether any of these inactive mines became operational remains a limitation as we observe the mines and the individuals only once in our dataset.

Comparing individuals living within a certain cutoff distance to active and inactive mines is necessary for the identification of the potential effects. Estimating only the difference in the levels of trust in local government between individuals living within 25km of an active mine to those living beyond 25km of an active mine, as shown in Figure 1, would lead to biased results as such comparison would have to assume that the location of mine production is not correlated with pre-existing levels of trust, a rather implausible assumption. Local distrust in institutions and public outrage borne by environmental awareness may hinder or delay a future mine production. Rather, an additional comparison to the group living close to inactive mines can better account for such pre-existing trust levels prior to the start of the mining production. Thus, our identification strategy is based on the difference in trust in local government between individuals living close to a *production* (active) mine site relative to those living close to an *exploration* (inactive) mine site, controlling for unobserved heterogeneity to the extent possible. This identification method implies that any difference emerging from this comparison arguably stems from the production activity of the mine itself.

A potential threat to our identification approach is the difference in timing of LiTS and the latest systematic update of the MRDS database as noted earlier. There is a five years difference between the two dates. However, given that it takes on average 5-10 years from discovery of a natural resource to a production, it is unlikely that a large number of mine sites that had a pre-production development status in 2011 (Prospect, Occurance) would have become a full-fledged actively producing mines in 2016. Even in such a low likelihood case, it would lead to a classical measurement error where we would have wrongly identified active mines as inactive, leading to a downward bias in the estimates.

A further threat to the identification approach could be posed by the fact that a mine that has been active as of 2011 was closed as of 2016. However, given that in the whole sample of mines in this larger region only 1 percent have closed (Past Producer) as of 2011, it is reasonable to assume that the share of mines that may have closed within those five years, in the time of the commodity market boom after the financial crises, is likely to be negligible.

We estimate the effects of mining production on the local government trust using a linear probability model, formally expressed as follows:

$$LGTrust_i = \alpha_i + \beta active25_i + \gamma inactive25_i + X_i' \delta + r_{j(i)} + \epsilon_i \quad (1)$$

where  $LGTrust_i$  is the outcome variable where  $i$  denotes the unit of observation (unique

identifier) at the individual level observed only once in our dataset. It equals 1 if a respondent reports complete or some trust in either local or regional government, and 0 otherwise. The vector  $X$  denotes individual-level controls including gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status, and household size.  $r_j$  denotes a set of dummy variables for the largest subnational administrative units (level 1) of a country to control for subnational region-specific unobserved heterogeneity, potentially including geography, climate, language, religion, traditions, customs, historical events and other factors common for residents of that specific region.  $\epsilon_i$  denotes standard errors clustered at the lowest available level of geographic (GPS) cluster, i.e., longitude and latitude of the place of residence (town, village or neighbourhood).

In line with the argument that the potential effects take place within a certain distance cutoff, namely 25km in this case, we effectively compare the impact of active mining production on trust in government between three groups. The first group is the individuals residing within 25km of an active mine where  $active25_i$  equals 1 and 0 otherwise. The second group is the individuals residing within 25km of an inactive mine (Occurrence, Prospect and Unknown status), where  $inactive25_i$  equals 1 and 0 otherwise. And the third (reference) group comprises individuals who live more than 25km of any mine (any development status).

This method of estimation resembles a difference-in-difference strategy for cross-sectional analysis, where  $\beta$  estimates the coefficient for the treated group on local government trust and  $\gamma$  is the estimated coefficient for the control group. As such we compare locations before a possible active production has started with locations *after* the active mine production has started. We calculate whether the difference between the two groups ( $\beta$  and  $\gamma$  coefficients) is statistically significant based on a Wald F-test and report it with our results. This test result reflects a difference-in-differences measure between active and inactive mine sites that controls for location-specific unobservable characteristics influencing endogenous selection into production.<sup>4</sup>

Besides studying the main effect of active mining production on government trust and conducting a battery of robustness tests, we explore the mechanisms and consequences associated with the relationship between mining and government trust. We do so by considering a range of alternative outcome measures to capture the quality of institutions and democratic participation following the setup in equation 1. Below we present the results from the baseline and supplementary analyses.

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<sup>4</sup>Note that given the cross-sectional nature of our data we cannot test for the common assumptions of difference-in-differences method, i.e., parallel trends.

## 5 Results

### Baseline results

In Table 1 we present the results for the estimated effects of mining on trust in government for those living within 25km of an active mine relative to those living within 25km of an inactive mine. We first present the results without the control variables and gradually add the covariates to observe the resulting changes in the estimated coefficients. In column 1, the estimation result from a simple bivariate regression model shows a negative and statistically significant association between trust in local government and living within 25km of an active mine relative to an alternative of not living within 25km of an active mine.

In column 2 we include the variable denoting residence within 25km of an inactive mine and compare the difference in coefficients between living within 25km of an active vs. an inactive mine based on the Wald (F) test, presented in the lower panel of the table. First, the results show that relative to the reference category (active25=0), living within 25km of an active mine production is negatively associated with local government trust, statistically significant at the one percent level. At the same time, residing within 25km of an inactive mine is positively associated with local government trust relative to the reference category (inactiveU\_25=0), statistically significant at the one percent level. This invalidates the possible identification threat that distrust levels before the start of the production may confound the results. Most importantly for our identification approach, the F-test shows that the difference in the estimated coefficients for the active25 and inactiveU\_25 groups is statistically significant at the one percent level.

In column 3 of Table 1, we include subnational region fixed effects (Admin Unit FE), which leads to an estimation of within regional differences in government trust levels for individuals living within 25km of an active mine and those living within 25km of an inactive mine. The inclusion of region fixed effects renders the estimated coefficient for the variable of living within 25km of an inactive mine insignificant. This suggests that most of the variation in the association between local government trust and living within 25km of an inactive mine is captured by region-specific factors. The negative and statistically significant association between living within close proximity to an active mine and local government trust remains robust and the difference between the two estimated coefficients remains statistically significant at the five percent level.

The model in column 4 includes additional individual-specific covariates (baseline controls) and thereby presents the results of the model as specified in equation 1. Based on the estimated coefficients, we can conclude that living within 25km of a mining production is associated with 6 percentage points (Wald (F) test: Difference) lower trust in local gov-

Table 1: Mining and trust in local government: baseline results

	(1)	(2)	(3)	(4)
active25	-0.038** (0.016)	-0.057*** (0.017)	-0.052*** (0.016)	-0.047*** (0.016)
inactiveU_25		0.111*** (0.021)	0.011 (0.020)	0.013 (0.020)
Admin Unit FE	no	no	yes	yes
Baseline controls	no	no	no	yes
Number of Admin Units	317	317	317	317
Observations	43702	43702	43702	43702
R-squared	0.001	0.006	0.163	0.166
Mean dependent variable	0.402	0.402	0.402	0.402
Wald (F) test: Difference		-0.168	-0.063	-0.059
Wald (F) test: P-value		0.000	0.022	0.031

Note. The dependent variable in columns 1-4 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondent's place of residence. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

ernment relative to living within 25km of an inactive mine, statistically significant at the 5 percent level (Wald (F) test: P-value) after controlling for individual-specific observable characteristics and region-specific factors.

## Robustness checks

In our main specification, the mine sites that have the status of Prospect, Occurrence and Unknown are coded as inactive mines. Yet, given that an Unknown mine could also be an active or past producer at the time of the survey (recall our discussion on the time gap between the LiTS and MRDS update), we employ alternative definitions where the Unknown mines are categorized as either an active mine or a past producer instead.

In Table 2 we test whether the established relationship in Table 1, column 4, changes as we exclude the mine sites with "Unknown" development status or code these as active or closed mines instead. Column 1 shows the results when we exclude mines with Unknown status from the dataset. The results show that the negative and statistically significant relationship between living within 25km of an active mine and lower trust in local government holds. The difference in coefficients between active25 and inactive25 variables remains negative but becomes statistically insignificant at the conventional levels as reflected in the p-value of the



Wald (F) test. This is likely borne by the fact that the share of people living within 25km of an inactive mine is reduced by one third, from 10 percent to 7 percent relative to the share of those living within 25km of an active mine (24 percent).

In column 2, we include the mines with Unknown status under Active mines. This does not alter the negative and statistically significant coefficient estimated for living within 25km of an active mine (activeU\_25). As in the previous case, the difference in the share of people residing in activeU\_25 and inactive\_25 mine sites becomes even larger, 26 percent relative to 7 percent, rendering it implausible to detect statistically significant result due to lower powered control group. In addition, inclusion of Unknown mines in the wrong category such as an active mine can lead to increase in the classical measurement error and thereby result in downward bias. We observe this downward bias as the size of the estimated coefficients for active25 in column 1 and activeU\_25 in column 2 are lower relative to the baseline finding, implying those mines with Unknown status are likely incorrectly coded as active in this case.

In column 3 we test the relationship between living within 25km of a mine that was a past producer, a closed mine, and trust in local government. The result shows a negative association, but it is not statistically significant at the conventional levels. The relatively small share of survey respondents living within 25km of a closed mine (about 1%) likely drives the lack of statistical power in this case. In column 4, the definition of closed mines (pastU\_25) also includes those with Unknown status. The result remains statistically similar to that found under column 3. Overall, this exercise shows that coding mines with an Unknown status as active or past mines likely increases attenuation bias and classical measurement error. Hence including these mines under inactive mines as we do in our baseline approach not only helps to increase the statistical power but also likely reduces the attenuation bias in estimates.

Differences in the socio-economic characteristics of individuals living within 25km an active mine versus within 25km of an inactive mine may confound our baseline results. In particular, income level and working status is likely to be different among these individuals and may also influence individual's trust in local government. Therefore, we test the robustness of our results to the inclusion of binary variables on perceived income class and working status in the last 12 months that reflect such differences. But this comes at the cost of significant reduction in sample size due to missing values on these variables. Table A4 in the Appendix displays the results, where in column 1 we augment the model with a variable that equals one if the individual has worked in the last 12 months, otherwise 0. The results are robust to the inclusion of this variable. In column 2 we include two income-related variables - own perception of belonging to high and middle income group, where the reference category is belonging to the lower income group. In column 3, we include all three, working

Table 2: Alternative treatments of mines with 'unknown' development status

	(1)	(2)	(3)	(4)
active25	-0.045*** (0.016)			
inactive_25	-0.002 (0.023)	-0.001 (0.023)		
activeU_25		-0.044*** (0.015)		
past25			-0.054 (0.056)	
pastU_25				-0.044 (0.034)
Admin Unit FE	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes
Number of Admin Units	317	317	290	292
Observations	43702	43702	32243	33069
R-squared	0.166	0.166	0.169	0.174
Mean dependent variable	0.402	0.402	0.405	0.411
Wald (F) test: Difference	-0.043	-0.043		
Wald (F) test: P-value	0.144	0.141		

Note. The dependent variable in columns 1-4 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

status and income-related variables, in the regression. The results show that the baseline finding in Table 1, column 4, is robust to the inclusion of these controls for socio-economic status of individuals.

Previous research from sub-Saharan African countries shows that expected rents from mining production may intensify ethno-linguistic or religious tensions and lead to civil conflicts (Berman et al., 2020). This suggests that our results may suffer from omitted variable bias stemming from ethno-linguistic and religious diversity and exposure to conflict. Locations that are closer to an active mine, may attract diverse population groups due to economic opportunities. Yet, if the majority ethnic group is represented in the local government and the rents of the mine production go mainly to that group, then the minority group may have less trust in local government. If active mine production is also associated with conflict in that area, then the experience of conflict rather than active mine production itself may shape people’s trust in the government.

Table 3: Robustness to controlling for ethnic, linguistic, religion and migration background

	(1)	(2)	(3)	(4)
active25	-0.047*** (0.016)	-0.046*** (0.016)	-0.047*** (0.016)	-0.046*** (0.016)
inactiveU_25	0.013 (0.020)	0.012 (0.020)	0.011 (0.020)	0.013 (0.020)
Belongs to the majority ethnic group	0.014 (0.010)			
Speaks the main language		0.033*** (0.012)		
Religion: Orthodox Christian			0.016 (0.010)	
Years in the current place of residence $\leq 5$				-0.008 (0.011)
Admin Unit FE	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes
Number of Admin Units	317	317	317	317
Observations	43475	43702	43140	43702
R-squared	0.167	0.167	0.168	0.166
Mean dependent variable	0.403	0.402	0.404	0.402
Wald (F) test: Difference	-0.060	-0.058	-0.058	-0.059
Wald (F) test: P-value	0.030	0.035	0.035	0.032

Note. The dependent variable in columns 1-4 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent’s gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

We test for these possible biases by including the relevant variables in our baseline model one-by-one to avoid multicollinearity issues between the added variables. In particular, in Table 3, column 1, we include a binary variable which equals 1 if the respondent belongs to the majority ethnic group, 0 otherwise. This added variable does not exhibit statistically significant association with the trust in local government, and our main result holds. In column 2, we include a dummy variable that equals 1 if the respondent speaks the main language in that country, 0 otherwise. The results indicate that those who speak the main language in the country are more likely to trust the local government relative to those who do not speak it. This relationship does not alter our main finding. In column 3, we include a dummy variable, which equals 1 if the respondent belongs to Orthodox Christian religion, 0 otherwise. The result show that there is no statistically significant relationship between the local government trust and belonging to one of the dominant religious affiliations in the larger region. Our main finding remains robust. It is also likely that trust in local government is lower for those who migrated to their current place of residence, which could be an important omitted variable in our model. The share of migrant respondents, who we define as those living less than 5 years in their current place of residence, is about 5 percent in the sample. In column 4, we include a control variable for recent migrants and the main results are not affected by the inclusion of this variable.

In Table 4 we test whether exposure to conflict and insecurity concerns confound our central result. We use two measures of conflict exposure based on three survey questions, which ask whether the respondent’s family members have been either injured, killed or relocated because of conflict involving their country. The respondents can provide Yes or No answer. Only half of the sample has responded to these questions, indicating that for the other half the question was not relevant. Therefore, we interpret the absence of any answer (either Yes or No) as absence of conflict affecting the respondent. This is a reliable measure as the list of countries with non-missing response largely matches those that are involved in known frozen or past conflicts in the region (see Table A5 in the Appendix).

We build two measures of conflict exposure as follows. First, we define a household-specific exposure measure which equals 1 if a ‘Yes’ answer was given to questions whether any member of the household was injured or killed by the conflict or if the household had to relocate because of the conflict; it equals zero, if the response was either a “No” to all these questions or if a response is missing. The second measure, location-specific exposure, equals 1 for a non-missing answer (either ‘Yes’ or ‘No’) to the same questions, and it equals 0 in the case of missing responses. We use these two measures as both are imperfect and prone to measurement error. In addition, we use a third variable to capture the perceived threat of conflict or political instability: a dummy that equals 1 if the respondent mentions political

stability and security as one of the top three concerns for their country, and 0 otherwise.

The results reported in column 1 of Table 4 do not show any statistically significant association between household-level exposure to conflict and local government trust given the region fixed effects and the baseline controls. Our main finding remains robust. In column 2, we find that location-level exposure to conflict is associated with higher government trust. This positive association is in contrast with majority of findings in the conflict literature in economics, yet a study by Garcia-Ponce and Pasquale, 2015 finds that indirect exposure to conflict can shape positive attitudes towards government and increase the trust in authorities, similar to the “rallying-around-the-flag” effect known from the political science literature. Our main finding remains robust to the inclusion of this variable. In column 3 we include a variable to capture the concerns over political instability among the respondents and do not find any statistically significant association. Our result remains robust.

Table 4: Robustness to controlling for exposure to conflicts and security concerns

	(1)	(2)	(3)
active25	-0.046*** (0.016)	-0.047*** (0.016)	-0.046*** (0.016)
inactiveU_25	0.013 (0.020)	0.013 (0.020)	0.013 (0.020)
Conflict exposure (household level)	-0.003 (0.011)		
Conflict exposure (location level)		0.038*** (0.013)	
Security concerns			-0.005 (0.008)
Admin Unit FE	yes	yes	yes
Baseline controls	yes	yes	yes
Number of Admin Units	317	317	317
Observations	43702	43702	43701
R-squared	0.166	0.167	0.166
Mean dependent variable	0.402	0.402	0.402
Wald (F) test: Difference	-0.059	-0.060	-0.059
Wald (F) test: P-value	0.032	0.030	0.032

Note. The dependent variable in columns 1-3 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent’s gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

A small share of respondents in our sample lives within 25km of both an active and

an inactive mine. We test if our results are robust to excluding this group of individuals with 'dual-status' from the sample. The results are presented in Table A6, column 1, in the Appendix. The exclusion of respondents with dual status does not undermine our results but rather increases the precision of estimated statistical difference.

Furthermore, our sample of countries includes Russia, which has the largest landmass among countries in the sample, and could be driving the results. Therefore, in column 2 of Table A6 in the Appendix we re-run the baseline specification excluding Russia from the sample, but the results still hold. Previous research using the LiTS 2016 survey has shown that living within 10km of gulags in the former Soviet Union is associated with contemporary levels of mistrust in people in those locations (Nikolova et al., 2022). It is possible that lower trust in local government is driven by such historical factors, for example location of gulags. Therefore, in column 3 of Table A6, we present results based on running the baseline regression on a sample that excludes the countries with the vast majority of gulags, which are Russia, Ukraine and Kazakhstan. Our main result remains robust to this test.

The LiTS database included additional four countries in the 2016 wave of the survey which are not part of the core sample - Germany, Cyprus, Greece and Turkey. These countries were also not part of the former communist bloc, except the eastern regions of Germany. In column (4) of Table A6 we test whether our findings extend to these countries which have a longer history of democracy relative to the newly independent states of the former communist bloc. The results do not show any statistical differences in trust levels of individuals living close to an active vs. an an inactive mine. This implies that the effects we find are likely extendable to new democracies but perhaps not to the established ones.

In Figure A1 in the Appendix we additionally test the validity of the currently employed cutoff distance (25km) by re-running the baseline regressions while varying the distance cutoffs from 5km to 50km in 5km intervals. This analysis shows that the results are consistent and statistically significant at 15km, 20km and 25km. We cannot detect any statistically significant differences between those living close to active and inactive mines beyond the 25km cutoff. This exercise validates the choice of the 25km cutoff in the analysis. The substantive nature of the results is robust to minor changes in the cutoff distance employed.

## **Implications for other dimensions of trust**

We further explore whether the effects of living close to an active mine extend to other dimensions of trust including trust in national government/cabinet of ministers, presidency, parliament, trust in other people (also called generalized trust) and trust in foreign investors. In Table 5, column 1 we use trust in national government as the outcome variable, which

equals 1 if the individual expresses some or complete trust on the single question related to national government/cabinet of ministers. Around 30 percent of respondents in the sample trust the government, and we find statistically significant difference in this trust measure between respondents living within 25km of an active mine and those living within 25km of an inactive mine (F-test: P-value=0.04). Namely, those living within 25km of an active mine have lower trust in national government.

Table 5: Mining and trust in other public authorities, people and foreign investors

	(1)	(2)	(3)	(4)	(5)
	National Government	Presidency	Parliament	People	Foreign investors
active25	-0.025*	-0.011	-0.022	-0.014	-0.009
	(0.015)	(0.016)	(0.014)	(0.016)	(0.014)
inactiveU_25	0.027	0.018	0.033	0.017	0.018
	(0.018)	(0.018)	(0.020)	(0.020)	(0.019)
Admin Unit FE	yes	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes	yes
Number of Admin Units	317	317	317	317	317
Observations	41957	42073	41593	43702	37670
R-squared	0.252	0.266	0.248	0.093	0.108
Mean dependent variable	0.300	0.419	0.251	0.294	0.281
Wald (F) test: Difference	-0.052	-0.029	-0.055	-0.031	-0.027
Wald (F) test: P-value	0.040	0.282	0.044	0.271	0.318

Note. The dependent variable in columns 1-5 is trust in national government/cabinet of ministers (1), presidency (2), national parliament (3), people in general (4) and foreign investors (5). Respectively, the dependent variable equals 1 if the respondent reports either complete or some trust, 0 otherwise. The baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In column 2, the dependent variable is trust in presidency, which equals 1 if the respondent reports some or complete trust in this institutions and 0 otherwise. The result does not reveal any statistically significant differences between respondents living within 25km of an active mine and those living within 25km of an inactive mine when it comes to trust in presidency. Similarly, in column 3 we do not find statistically significant differences in trust between the two groups when it comes to parliament. This implies that the effect of mining extends to the national government/ministers but not to the president or the parliament, indicating dissatisfaction with the executive branch of the government.

If individuals respond to active mining by lowering their trust in government, might their trust in people go up at the same time? To engage with that possibility, in column 4 of Table 5 we estimate the relationship between living within 25km of an active versus inactive mine and trust in people, broadly defined (the outcome variable for trust in people equals 1 if the respondents reported to have some or complete trust in people in general). About 30

percent of the respondents in the sample have some or complete trust in people in general. Yet, the Wald (F) test for group differences in the estimated coefficients shows that there are no statistically significant differences in this trust measure between those living close to active and inactive mines.

Next, we test whether living within 25km of an active mine might be related to trust in foreign investors, given that mining usually attracts them to the region. The outcome variable in column 5 is trust in foreign investors, which equals 1 if the respondent has some or complete trust for them. The results do not show any statistically significant difference in trusting foreign investors between individuals living next to an active mine relative to those living next to an inactive mine. Thus, the results from Table 5 show that active mining affects trust across all levers of executive power in important ways; it does not affect other dimensions of trust however.

## Mechanisms

In this section we investigate the possible mechanisms that may lead to lower trust levels in government in areas with active mine production relative to areas with mine exploration activity (inactive mines). As discussed earlier, mining might affect trust in government through affecting the quality of institutions. We consider two dimensions of such quality: corruption and quality of public good provision.

Previous literature has shown that mining activity leads to higher corruption incidents at the local level in the context of African countries (Knutsen et al., 2017). The countries of the former communist bloc are also known for their high corruption levels. Indeed, based on Transparency International's Corruption Perception Index, the post-communist countries have the second highest prevalence of corruption after Sub-Saharan Africa (Transparency International, 2016).

Therefore, mining may exacerbate the local corruption levels in these countries, which in turn could lead to lower trust in government. We test this mechanism with a set of regressions reported in Table 6, where the outcome variables are various measures of corruption. In column 1, the outcome variable is the respondent's perception on the prevalence of corruption among the regional and local authorities; it equals 1 if the respondent perceives that most or all local public officials are corrupt and 0 otherwise. The results show that respondents living within 25km of an active mine are 8 percentage points more likely to suspect corruption among the local public officials relative to those living within 25km of an inactive mine, statistically significant at the one percent level (Wald (F) test: P-value=0.005). Hence, it is likely that heightened perception of corruption at the local level is one of the mechanisms



driving the difference in trust in local government between these two groups.

Table 6: Mining and corruption

	(1)	(2)	(3)
	Local government	National government	Bribed an official
active25	0.041** (0.017)	0.048** (0.019)	0.011 (0.014)
inactiveU_25	-0.040** (0.020)	-0.021 (0.024)	-0.026 (0.017)
Admin Unit FE	yes	yes	yes
Baseline controls	yes	yes	yes
Number of Admin Units	317	307	317
Observations	43702	28514	29800
R-squared	0.200	0.204	0.136
Mean dependent variable	0.328	0.483	0.203
Wald (F) test: Difference	0.081	0.069	0.038
Wald (F) test: P-value	0.005	0.039	0.113

Note. The dependent variables in columns 1 and 2 measure respondents' perception about corruption in the regional/local government and national government/cabinet of ministers. Respectively, the dependent variable is equal to 1 if the respondent perceives these authorities to be somewhat or completely corrupt, 0 otherwise. The dependent variable in column 3 equals 1 if the respondent reports having bribed at least one public official in the last 12 months, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In column 2 the outcome variable denotes respondent's perception of corruption among the national government/cabinet of ministers. The dependent variable equals 1 if the respondent perceives that most or all of the officials in the national government/cabinet of ministers are corrupt, otherwise it equals 0. The results in column 2 show that the respondents that live within 25km of an inactive mine are 7 percentage points less likely to perceive high corruption levels at the national and state level, relative to those living within 25km of an active mine, statistically significant at the five percent level (Wald (F) test: P-value=0.039).

In column 3 of Table 6 we take a look at the actual experiences of corruption instead of corruption perceptions. The outcome variable in column 3 equals 1 if the respondent reports having bribed at least one public official with whom they have had a contact in the last 12 months, and 0 otherwise. In our sample, only 2 percent of respondents report to have bribed a public official in the last 12 months. It is likely that this variable is measured with error. Given that bribing is illegal, and the potential stigma associated with reporting the experiences of bribing, some survey respondents may not answer the question about bribing truthfully (Mavisakalyan and Meinecke, 2016). Nonetheless, in the absence of other

information on the true experiences of bribing, this is an interesting outcome to consider. The results in column (3) show that the share of people who report experience of bribing is about 4 percentage points higher among those living within 25km of an active mine relative to those living within 25km of an inactive mine. But the difference in estimated coefficients is not statistically significant likely due to the low variation in the reported bribing experiences of individuals.

Table 7: Mining and dissatisfaction with government services and performance

	(1)	(2)	(3)	(4)
	Utilities & roads	Bureaucracy	Low rating (RG)	Low rating (NG)
active25	0.020 (0.019)	-0.017 (0.012)	0.001 (0.014)	0.032** (0.015)
inactiveU_25	0.002 (0.024)	0.025 (0.016)	0.019 (0.018)	-0.010 (0.017)
Admin Unit FE	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes
Number of Admin Units	317	317	317	317
Observations	43702	43702	43702	43702
R-squared	0.141	0.050	0.283	0.160
Mean dependent variable	0.462	0.180	0.310	0.277
Wald (F) test: Difference	0.018	-0.042	-0.018	0.042
Wald (F) test: P-value	0.582	0.049	0.459	0.078

Note. The dependent variable in column 1 equals 1 if the respondent reports dissatisfaction with any one of the following government services: provision of electricity, gas pipeline, tap water, fixed telephone lines, postal services, heating, and local roads. In column 2 the dependent variable equals 1 if the respondent reports dissatisfaction with at least one of the following government services: interaction with road police, requesting of official documents, going to courts for civil matters, getting public education, requesting unemployment benefits, requesting other social security benefits. In columns 3 and 4 the dependent variable takes the value of 1 if the respondent rates the overall performance of regional/local (RG) and national government (NG) as (very) bad. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Next, we consider whether mining is associated with a decline in perceived quality of public services. In Table 7 we look at dissatisfaction with government services and performance. The dependent variable in column 1, Utilities & roads, equals 1 if the respondent reports dissatisfaction with any one of the following government services: provision of electricity, gas pipeline, tap water, fixed telephone lines, postal services, heating, and local roads. In column 2 the dependent variable, Bureaucracy, equals 1 if the respondent reports dissatisfaction with at least one of the following government services: interaction with road police, requesting official documents, going to courts for civil matters, getting public education,

requesting unemployment benefits, requesting other social security benefits. We additionally look at individual ratings of government performance defined as dummy variables that take the value of 1 if the respondent rates the overall performance of regional/local (RG) (column 3) and national government (NG) (column 4) as (very) bad and 0 otherwise. We find statistically significant differences between individuals living close to an active mine relative to individuals living close to an inactive mine when looking at dissatisfaction with the bureaucracy and low rating assigned to national government performance (columns 2 and 4). Based on these results, it is possible that poor national government performance is one of the mechanisms behind the lower levels of trust in government in active mining communities.

## Consequences

Besides the possible mechanisms, we also explore the potential political economy consequences of the lower trust in government in active mining locations, focusing on the preferences over policies and political and civic participation.

In Table 8 we present the results for the differences in preferences for government spending between those living close to active vs. inactive mines. The dependent variables in columns 1-7 are based on a survey question asking the respondents to rank the top priority areas for government spending/investment. The outcome variable in each column (Housing, Pensions, Infrastructure, Education, Health, Climate, and Poverty) equals 1 if the respondent mentions the given domain among their top two priorities for government investment, and 0 otherwise. For example, in column 1 Housing takes the value of 1 if the respondent ranked it either as first or as second priority where the government should invest.

The results in Table 8 show statistically significant differences in preferences for more government spending on pensions (column 2), climate change or environment (column 6), and poverty reduction (column 7) between those living close to active vs. inactive mines. In particular, while on average about 33 percent of the sample mentions spending on pensions as a top priority, those living close to an active mine mention it more often than those living close to an inactive mine. Yet, when it comes to spending on public goods such as climate change and poverty reduction, those living close to an active mine are less likely to mention these two categories as a priority for government spending relative to those living close to an inactive mine. Therefore, mining potentially leads to seeking more individual-specific benefits rather than improvements in public goods.

To explore the political economy consequences of mining further, we look at its impact on voter turnout, willingness to oppose the status quo, and civic and political engagements.

Table 8: Mining and ranking of government spending priority areas

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Housing	Pensions	Infrastructure	Education	Health	Climate	Poverty
active25	0.005 (0.008)	0.021* (0.012)	0.007 (0.009)	0.001 (0.014)	-0.012 (0.013)	-0.001 (0.005)	-0.026* (0.013)
inactiveU_25	-0.002 (0.010)	-0.034** (0.013)	0.004 (0.010)	0.011 (0.016)	-0.032* (0.017)	0.020*** (0.007)	0.018 (0.017)
Admin Unit FE	yes	yes	yes	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes	yes	yes	yes
Number of Admin Units	317	317	317	317	317	317	317
Observations	43702	43702	43702	43702	43702	43702	43702
R-squared	0.086	0.172	0.068	0.108	0.077	0.036	0.093
Mean dependent variable	0.129	0.328	0.092	0.347	0.631	0.055	0.322
Wald (F) test: Difference	0.007	0.055	0.002	-0.010	0.021	-0.021	-0.044
Wald (F) test: P-value	0.647	0.004	0.873	0.661	0.372	0.027	0.060

Note. The dependent variables in columns 1-7 are equal 1 if the respondent mentions the outcome variable in each column (housing, pensions, infrastructure, education, health, climate and poverty) in their priorities for government investment. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In Table 9, column 1 the dependent variable equals 1 if the respondent states that they voted in the last local or national elections and 0 otherwise. We do not find any statistically significant difference in voter turnout between the two groups under consideration. In column 2, the dependent variable equals 1 if the respondent has had an experience of attending a lawful demonstration. The results, again, do not show any statistically significant differences between the groups. In column 3, the outcome variable measures the willingness to participate in democratic processes by means of demonstrations or protests. About 70 percent of respondents in the sample report that they have no intent to participate in a demonstration. Moreover, those respondents who live within 25km of an active mine are 4 percentage points more likely to state that they have no intent to attend a demonstration relative to those who live within 25km of an inactive mine (Wald (F) test: P-value=0.085). Finally, in column 4, the dependent variable equals 1 if the respondent is a member of at least one civil organization or a political party, 0 otherwise. Thirty percent of the sample has either civic or political engagement of some form. The results do not indicate any statistically significant difference in civic and political engagement between those living 25km of active vs. inactive mines, yet the negative estimated coefficient on active25, which is statistically significant at the 1 percent level, suggests that those living close to an active mine are 5 percentage points less likely to engage in political and civic activities relative to those further away. These results suggest that mining production may contribute to the status quo regime and numb

grassroots democratic movements.

Table 9: Mining and political and civic participation

	(1)	(2)	(3)	(4)
	Voted in elections	Have protested	No intent to protest	Civic/Pol membership
active25	-0.010 (0.012)	0.012 (0.008)	0.043*** (0.015)	-0.051*** (0.017)
inactiveU_25	-0.015 (0.014)	-0.005 (0.007)	-0.001 (0.018)	-0.011 (0.020)
Admin Unit FE	yes	yes	yes	yes
Baseline controls	yes	yes	yes	yes
Number of Admin Units	317	317	317	317
Observations	43010	43701	43702	42476
R-squared	0.117	0.075	0.132	0.126
Mean dependent variable	0.768	0.074	0.695	0.312
Wald (F) test: Difference	0.005	0.017	0.043	-0.040
Wald (F) test: P-value	0.766	0.160	0.085	0.176

Note. The dependent variable in column 1 equals 1 if the respondent voted in the latest local, regional or national elections, 0 otherwise. In column 2, the dependent variable equals 1 if the respondent reports to have ever participated in a lawful demonstration, 0 otherwise. In column 3 the dependent variable equal 1 if the respondent reports no intention to ever participate in a lawful demonstration, 0 otherwise. In column 4 the dependent variable equals 1 if the respondent is a member of at least one civil organization or political party, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 6 Conclusion

Mistrust in government is ubiquitous, and based on our findings, mining contributes to such mistrust in important ways. We document a robust link between mining and mistrust in government using micro-level data on over 43,000 individuals in 27 post-communist countries and drawing comparisons between individuals living in the vicinity of active versus inactive mines. We propose that the effect of mining on mistrust in government is likely to operate through its damaging impact on the quality of institutions. Consistent with this scenario, we show that mining is positively associated with the prevalence of corruption perceptions among the individuals in the sample. It is also associated with poorer evaluations of government performance in some areas.

Our research design employs rich micro-level spatially disaggregated data enabling us to contribute stronger causal inferences to the political resource curse literature which is predominantly based on cross-country comparisons with limited success to deal with endogeneity issues. In that respect, our work complements the emerging micro-level analyses on

local institutional effects of mining by Knutsen et al., 2017 and Konte and Vincent, 2021. We document that mining might lead to mistrust in local authorities, and we do so in the novel context of the post-communist countries.

The findings of this paper point towards potentially damaging consequences of mining for newly established democracies. We show that in the countries of the former communist bloc individuals living in areas where mining production is active are less likely to express an intention to go on demonstrations and take part in civil and political movements. While based on data from post-communist countries, our results are likely to be applicable to a wider range of young democracies where mining production is present. Indeed, they throw novel insights on the reasons behind the challenges for establishing strong democratic institutions in many resource-dependent communities (Ross, 2001; Tsui, 2011), and call for more evidence-based policy actions targeting the issues of institutional quality and trust in mining communities in these countries.

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# Appendix

Table A1: Post-communist countries represented in LiTS 2016

Country	Observations	Percent
Albania	1,500	3.43
Armenia	1,527	3.49
Azerbaijan	1,510	3.46
Belarus	1,504	3.44
Bosnia and Herzegovina	1,499	3.43
Bulgaria	1,500	3.43
Croatia	1,503	3.44
Czech Republic	1,532	3.51
Estonia	1,503	3.44
Georgia	1,508	3.45
Hungary	1,501	3.43
Kazakhstan	1,505	3.44
Kosovo*	1,500	3.43
Kyrgyzstan	1,500	3.43
Latvia	1,500	3.43
Lithuania	1,501	3.43
Macedonia	1,499	3.43
Moldova*	1,512	3.46
Mongolia	1,500	3.43
Montenegro	1,503	3.44
Poland	1,500	3.43
Romania	1,512	3.46
Russia	1,507	3.45
Serbia	1,508	3.45
Slovakia	1,544	3.53
Slovenia	1,501	3.43
Tajikistan	1,510	3.46
Ukraine	1,507	3.45
Uzbekistan	1,506	3.45
Total	43,702	100

Note. LiTS 2016 survey includes 29 countries from the former communist bloc.

\*Moldova and Kosovo have no records of mines in the MRDS database.

Table A2: Summary statistics: Baseline model

Variable name	Description	Mean	SD	Min	Max
Trust in local government	=1 if some/complete trust in local/regional government	0.40	0.49	0	1
Active25	=1 if lives $\leq$ 25km of producer/plant mine	0.24	0.43	0	1
InactiveU_25	=1 lives $\leq$ 25km of prospect/occurrence/unknown mine	0.11	0.31	0	1
<i>Reference group</i>	=1 if lives further than 25km of active and inactive mine	0.70	0.46	0	1
Female primary respondent	=1 if female	0.57	0.50	0	1
Age of primary respondent	Age in years	48.45	17.43	18	95
Tertiary or higher education	=1 if tertiary is the highest education level	0.24	0.43	0	1
Primary respondent is single	= 1 if single	0.18	0.38	0	1
Household size	Number of people living in the respondent's household	3.04	1.83	1	12
Rural area	=1 if living in rural area	0.45	0.50	0	1
Observations		43702			

Note. Summary statistics for the variables employed in the baseline regression model. Mine development status is assigned to the closest mine within the 25km radius of individual's residence; mean values correspond to share of individuals in the sample living within 25km of mine sites with the relevant development status. The mine development status in the raw data has one of the following descriptors: Plants, Producers, Past Producers, Occurrences, Prospects, and Unknown.

Table A3: Mean group comparison test of baseline variables by mine development status

	(1)	(2)	(3)
	active25	inactiveU_25	Difference
Trust in local/regional government	0.373	0.511	0.138***
Female primary respondent	0.585	0.564	-0.021
Age of primary respondent (years)	49.096	47.321	-1.774***
Tertiary or higher education	0.238	0.213	-0.025*
Primary respondent is single	0.200	0.135	-0.065***
Household size	2.924	3.739	0.815***
Rural area	0.355	0.535	0.180***
Observations	10633	2246	12879

Note. The table includes mean group comparison tests for the variables in the baseline regressions. Column 1 shows variable means for respondents living within 25km of an active mine and column 2 shows variable means for those living within 25km of an inactive mine. Column 3 provides the difference and statistical significance from mean group comparison tests. The comparison excludes observations where the respondents live within 25km of both an active and an inactive mine, hence difference in observations and mean values compared to Table A2.

Table A4: Mining and local government trust: Robustness to employment and income controls

	(1)	(2)	(3)
active25	-0.049*** (0.017)	-0.036** (0.016)	-0.033* (0.017)
inactiveU_25	0.023 (0.019)	0.008 (0.021)	0.020 (0.020)
Worked in the last 12 months	0.027*** (0.007)		0.026*** (0.008)
HH: middle income		0.018* (0.010)	0.027** (0.011)
HH: high income		0.017 (0.021)	0.023 (0.023)
Admin Unit FE	yes	yes	yes
Baseline controls	yes	yes	yes
Number of Admin Units	317	317	317
Observations	34154	34542	27370
R-squared	0.162	0.172	0.166
Mean dependent variable	0.397	0.417	0.412
Wald (F) test: Difference	-0.071	-0.043	-0.053
Wald (F) test: P-value	0.009	0.130	0.062

Note. The dependent variable in columns 1-3 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A5: Countries (survey locations) with non-missing responses on conflict exposure

Country	Conflict events	Latest periods
Armenia	Nagorno-Karabakh conflict	1992-1994, 2016
Azerbaijan	Nagorno-Karabakh conflict	1992-1994, 2016
Bosnia & Herzegovina	Bosnian War	1992-1995
Bulgaria	No major conflict events post 1990	
Croatia	Croatian War of Independence	1991-1995
Georgia	Russo-Georgian War (Abkhazia & South Ossetia)	2008
Kazakhstan	Region-specific interethnic clashes	1992-
Kosovo	Kosovo War	1998-1999
Kyrgyzstan	Kyrgyz revolution and riots; border with Tajikistan	2010
Macedonia	Insurgency in the Republic of Macedonia	2001
Mongolia	Mongolian-Chinese conflict	1946-1948
Montenegro	Croatian War of Independence: Siege of Dubrovnik	1991-1992
Romania	Romanian Revolution	1989
Russia	Chechen Wars, Insurgency in North Caucasus	1996-2009; 2015
Serbia	Yugoslavian Wars	1991-2011
Slovenia	The Ten Day War	1991
Tajikistan	Tajik Civil War; Tajikistan insurgency	1992; 2010/2012
Ukraine	Ukraine-Russia conflict (Crimea, Donbas, Luhansk)	2014

Note. These events are extracted from public domains and validated with reference to datasets provided under the Uppsala Conflict Data Program and the Correlates of War Project.

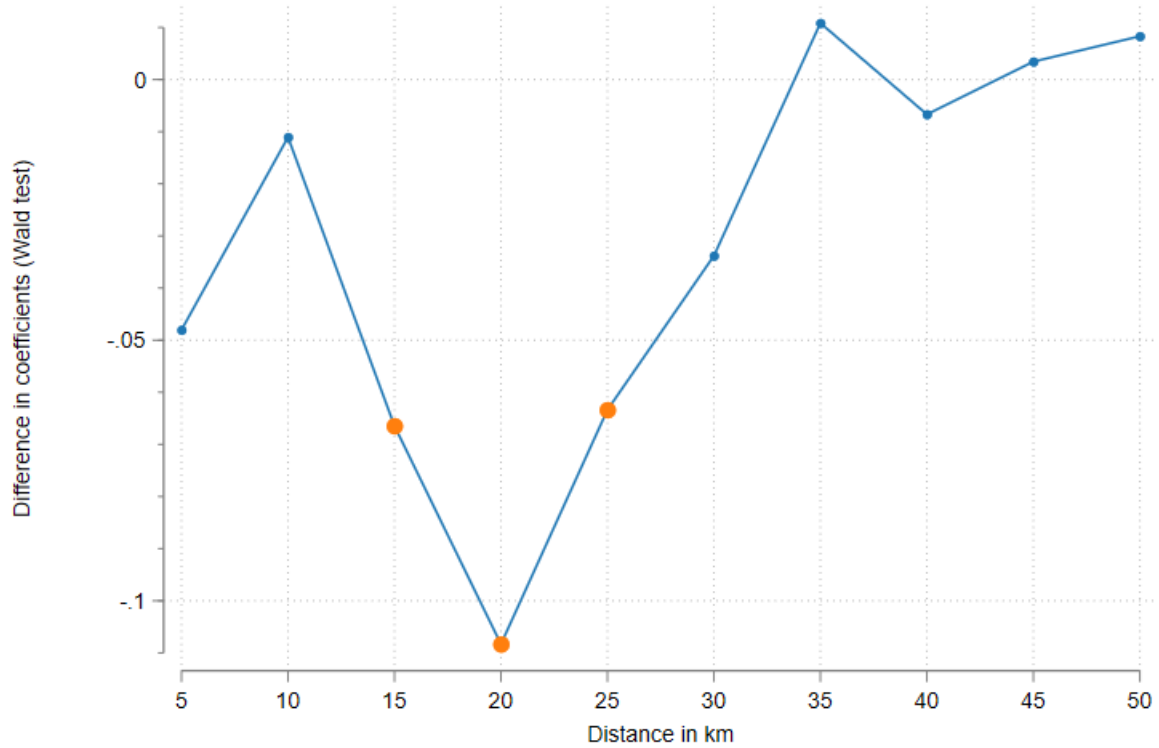
Table A6: Robustness to alternative sample definitions

	(1)	(2)	(3)	(4)
	excl. dual status	excl. Russia	excl. Gulag-afflicted countries	non-post-communist countries
active25	-0.047*** (0.013)	-0.049*** (0.016)	-0.052*** (0.017)	-0.049* (0.028)
inactiveU_25	0.023 (0.024)	0.013 (0.020)	0.017 (0.021)	-0.018 (0.043)
Admin Unit FE	no	yes	yes	yes
Country FE	yes	no	no	no
Baseline controls	yes	yes	yes	yes
Number of Admin Units	314	309	271	57
Observations	41169	42195	39183	7504
R-squared	0.119	0.171	0.165	0.130
Mean dependent variable	0.398	0.404	0.403	0.360
Wald (F) test: Difference	-0.070	-0.062	-0.068	-0.031
Wald (F) test: P-value	0.008	0.029	0.020	0.572

Note. The dependent variable in columns 1-4 is trust in local/regional government, which equals 1 if the respondent reports either complete or some trust either for local or the regional government, 0 otherwise. Baseline controls include respondent's gender, age, age squared, tertiary educational attainment, rural/urban residence, marital status and household size. Admin Unit FE denotes a set of dummy variables (fixed effects) for the largest subnational administrative units (level 1) of a country. Standard errors in parentheses, clustered at the level of GPS coordinates (longitude/latitude) of the respondents. Column 1 excludes observations that have a status of being within 25km of both active and inactive mine sites. Column 2 excludes Russia that has the largest share of mines per country. Column 3 excludes Russia, Ukraine and Kazakhstan that had most Gulags in the Soviet Union. Column 4 is limited to non-post-communist countries including Cyprus, Germany, Greece, Italy and Turkey. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



Figure A1: Difference in trust at various distance cutoffs - validity test for 25km cutoff



Note. The figure depicts the differences in trust in local/regional government between individuals living close to active and inactive mine sites with varying distance cutoffs from 5km to 50km. Orange dots show statistically significant difference at least at the 90 percent confidence interval, the blue dots reflect statistically insignificant differences at the conventional levels. The difference in coefficients is derived from Wald test as in the baseline regressions. Similarly, the regressions include all baseline controls and region dummies.