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# The Geography of Repression and Opposition to Autocracy

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Repression and Opposition to Autocracy

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# The Geography of Repression and Opposition to Autocracy

**Abstract:** State repression is a prominent feature of non-democracies, but its effectiveness in quieting dissent and fostering regime survival remains unclear. We exploit the location of military bases before the coup that brought Augusto Pinochet to power in Chile in 1973, which is uncorrelated to pre-coup electoral outcomes, and show that counties near these bases experienced more killings and forced disappearances at the hands of the government during the dictatorship. Our main result is that residents of counties close to military bases both registered to vote and voted “No” to Pinochet’s continuation in power at higher rates in the crucial 1988 plebiscite that bolstered the democratic transition. Potential mechanisms include informational frictions on the intensity of repression in counties far from bases and shifts in preferences caused by increased proximity to the events. Election outcomes after democratization show no lasting change in political preferences.

**Replication Materials:** The data, code, and any additional materials required to replicate all analyses in this article are available on the American Journal of Political Science Dataverse within the Harvard Dataverse Network, at: <http://dx.doi.org/XXX>

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# 1 Introduction

State repression is a prominent feature of non-democracies [Davenport and Armstrong, 2004, Davenport, 2007b]. However, the effectiveness of repression in quieting dissent and fostering regime survival remains unclear [Lichbach, 1987, Wintrobe, 1998]. Evidence is scant on whether repression leads to long-lasting fear and submissiveness or whether it bolsters political opposition. This is a difficult question to answer empirically because repression is not randomly assigned and responds to a strategic calculation [Ritter and Conrad, 2016, Klor et al., 2020]. Naive comparisons across areas or periods with varying levels of repression are thus likely to be confounded by unobserved differences in underlying factors like political attitudes or social capital.

In this paper we study the effects of increased exposure to repression on political opposition to an authoritarian regime. The setting is the dictatorship of Augusto Pinochet in Chile. Pinochet presided a military junta that governed the country until 1990, having overthrown socialist president Salvador Allende in a coup in 1973. Our main object of interest is the 1988 plebiscite that asked voters to decide whether Pinochet should continue in power. This was a high-stakes election and the first free one to take place in the country since 1973: 55% voted “No”, bolstering the democratic transition. During Pinochet’s dictatorship, the state was responsible for over 3,000 deaths or forced disappearances, while more than 38,000 people were imprisoned or tortured for political reasons [Comisión Rettig, 1996, Comisión Valech, 2004]. We seek to establish whether there is a causal link between repression at the hands of the regime over the previous years and regime opposition in the 1988 plebiscite. Answering this question involves surmounting a substantial empirical challenge, as repression was highly targeted towards supporters of the previous government and left-wing sympathizers, making it difficult to separate the effect of repression from pre-existing differences in political preferences.

We employ a novel empirical strategy that leverages variation in the location of military bases at the time of the military coup. This strategy is grounded on three ideas. First, the bases we study

were built throughout Chile during the many decades of democratic rule before the coup. Though bases are naturally not built at random, we can control for predetermined characteristics that potentially correlate with base location. Importantly, we show that the location of the bases was not a strategic choice of the incoming dictatorship. Second, proximity to these bases facilitated logistics (i.e. patrols and raids) and eased the flow of information, exposing local residents to a higher intensity of repression after the coup. Hence, by comparing counties with varying proximity to military bases, we harness variation in exposure to repression that is unrelated to the strategic targeting of violence by the military regime. Third, higher exposure to repression affects political behavior either by providing voters with additional information or by shifting their political preferences. A simple framework illustrates these mechanisms.

Our analysis uses original data on the universe of military bases built in Chile since independence and compares counties that housed or were nearby a base in 1970 (when Allende came to power) to those that did not. This comparison takes place within provinces and controls for predetermined economic, political and geographic factors. Our identification strategy assumes that the geographic distribution of military bases before the coup did not respond to future political opposition to the Pinochet regime. We provide historical evidence in support of these claims and validate our strategy using data on electoral outcomes in the two decades before the coup.

We then combine the information on location of bases with administrative data on the universe of documented victims of the dictatorship (i.e. killings or forced disappearances). Our measure of local exposure to repression is the number of victims of the regime between 1973-1990 per county, divided by population in 1970. This measure captures the intensity of state violence against civilians that residents of a county were indirectly exposed to. We show that counties with military bases had substantially higher rates of civilian victimization at the hands of the Pinochet regime. On average, military presence increases the number of victims per 10,000 inhabitants by 2.1, corresponding to a 91% increase over the sample mean.

Our two main outcomes of interest are the county-level rate of voter registration for the 1988

plebiscite and the share of votes for the “No” option. We find a robust, positive effect of military presence on both of these outcomes. On average, housing a military base is associated with a 9.3 percentage point (pp) increase in voter registration and a 6.2 pp increase in the “No” vote share (both normalized by 1970 population). These are quantitatively meaningful effects corresponding to 13% and 16% of the respective sample means. We provide evidence against alternative mechanisms connecting military presence with attitudes towards the regime, including differences in government spending and differential migration.

We next examine whether the difference in electoral outcomes in counties with military presence persists in the first two decades after democratization. We focus on voters’ support in national elections for the pro-democracy “Concertación” coalition that led the “No” campaign in 1988. We find suggestive evidence that Concertación candidates initially had a larger vote share in counties with military bases. However, this electoral advantage systematically decreases and converges to zero, indicating that the results for 1988 do not reflect a persistent change in political preferences.

This paper contributes to a growing literature on the effects of state repression. Existing evidence mostly comes from surveys and has often struggled to overcome the problem of endogeneity. Results are somewhat mixed. Some studies find that repression increases hostility towards the perpetrator [Balcells, 2012, Lawrence, 2017, Lupu and Peisakhin, 2017, Wang, 2019], while others show that it generates fear and disengagement [Bautista, 2014, Garcia-Ponce and Pasquale, 2015]. Only a handful of papers have analyzed the effects of plausibly exogenous exposure to repression on more reliable measures of actual political behavior [Rozenas et al., 2017, Zhukov and Talibova, 2018, Rozenas and Zhukov, 2019]. However, the latter all focus on indiscriminate violence in the former Soviet Union, which may limit their external validity. Unlike these papers, we study a setting with *targeted* violence and show that *indirect* exposure to repression increases opposition to the perpetrating government. Importantly, while most previous studies measure their outcomes following regime change, when opposition is less costly, we document heightened opposition to a government that is still in power. Contrary to the previous literature, we fail to find evidence of persistent effects, arguably as a result of differences in the nature of the violence.

Our paper also relates to the vast literature on democratization. Boix and Stokes [2003] show that episodes before 1950 are largely consistent with *modernization* theory [Lipset, 1959]. However, the third wave of democratization that took place at the end of the 20th century appears to be substantially different [Geddes, 2009]. In this regard, Chile's experience was similar to that of many other countries that transitioned to dictatorship at the peak of the Cold War and transitioned back to democracy as it came to an end. We contribute to this literature by providing within-country evidence that the repression that helped prop up authoritarian regimes during this period also contributed to their demise when a democratic window of opportunity arose. Treisman [2020] argues that democratization often occurs as a result of a miscalculation by the ruler. Our findings suggest that misperception about the lasting toll of repression may be one mechanism through which dictators like Pinochet overestimate their chances of winning elections.

Finally, our paper also sheds light on the functioning of repression within non-democracies. Prominent theories award an important role to repression as part of the strategies that autocrats use to remain in power [Acemoglu and Robinson, 2006, Boix, 2003], but our understanding of the mechanics of repression remains limited. Theoretical papers have largely focused on the agency problem that arises between the dictator and the repressive apparatus [e.g., Dragu and Przeworski, 2019]. Previous empirical work has focused on cronyism and reliance on the state's bureaucratic apparatus [Gregory, 2009, Klor et al., 2020]. A growing body of work has also shown the importance of logistical constraints [Zhukov, 2016]. We complement this line of research by highlighting a potential dark side of state capacity [Besley and Persson, 2011, Acemoglu and Robinson, 2019]. In particular, our finding of a positive relationship between the location of military bases and the intensity of repression indicates that the presence of the state may have a different impact on the welfare of the population depending on the political regime .

## 2 Institutional background

In 1969, the main left-wing parties in Chile joined a coalition called “*Unidad Popular*” (UP).<sup>1</sup> This coalition chose Salvador Allende, a member of the Socialist party, as its candidate for the 1970 presidential election. Allende won with 36.6% of the votes, having lost in the previous four elections. His time in office was characterized by redistributive policies, a deterioration of economic conditions and a sharp increase in political polarization. Allende was overthrown on September 11, 1973 by a military coup. A junta presided by General Augusto Pinochet, the commander-in-chief of the army, immediately suspended the Constitution and declared itself the supreme executive and legislative body of the country. It would govern Chile until 1990.

The junta established as one of its main objectives to “struggle against Marxism and extirpate it to the last consequences” [Constable and Valenzuela, 1991, p.36]. In the first months after the coup, army and police units engaged in the detention, torture and execution of supporters of the deposed Allende government, including members of left-wing parties and trade unions. Repression against political opponents remained very intense for over a year and would continue, albeit at a lower intensity, until the end of the dictatorship (see Appendix Figure C1 in page x). According to administrative records, 3,216 people were either killed or forcibly disappeared by the military government [Comisión Rettig, 1996]. Records also indicate that 38,254 people were imprisoned for political reasons and 94% were tortured [Comisión Valech, 2004].

Pinochet begun consolidating power shortly after the coup and was appointed president, with sole control over the executive, in late 1974. He also retained a vote in the junta, which was required to reach unanimity on all decisions. A new constitution, drafted under tight military control in 1980, formally extended his term as president for eight years [Barros, 2002]. At the end of this term, the junta would propose a presidential candidate for the following eight-year period,

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<sup>1</sup>Online Appendix A (page iii) provides a more detailed discussion of the institutional background.



who would have to be ratified through a plebiscite. If this candidate failed to get a majority of votes, an open presidential election would take place.

Domestic and foreign opposition to the military regime intensified throughout the 1980s, leaving Pinochet little option but to adhere to the rules in the constitution.<sup>2</sup> Aided by an economic crisis, political groups and student organizations advocating for the return to democracy became increasingly organized and there were a series of national strikes beginning in 1983. International pressure for democratization also mounted, with the UN issuing a US-backed resolution condemning Chile for human rights abuses in 1986. Five weeks before the day of the plebiscite, Pinochet was confirmed as the regime's candidate. On October 5, 1988, voters were faced with a simple choice: "Plebiscite for President of the Republic: Augusto Pinochet Ugarte -- YES -- NO."

Political parties, outlawed in 1973, were legalized in 1987 and a center-left coalition campaigning for the "No" option ("*Concertación de Partidos por el No*") was formed. Voter registration for the plebiscite begun in early 1987, as the dictatorship had declared the previous electoral census void in 1973 [Navia, 2004]. Most parties and social organizations encouraged participation in the plebiscite [El País, 1987]. By September 1988, 7.5 million people had registered to vote, corresponding to more than 90% of the estimated voting-age population.

Until 1987, the country lacked an independent institution in charge of electoral organization, allowing Pinochet to fraudulently enjoy comfortable victories in two previous plebiscites in 1978 and 1980 [Fuentes, 2013]. In order to enhance the legitimacy of the 1988 plebiscite, the junta awarded independence and objectivity to the organizations involved in its preparation [Engel and Venetoulis, 1992, Santa-Cruz, 2005]. As a result, the 1988 plebiscite was the first free election in

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<sup>2</sup>This decision was made easier by the fact that the resulting democratic system provided economic rents to the armed forces and electoral advantages to right-wing parties [Acemoglu and Robinson, 2006, Londregan, 2007, Albertus and Menaldo, 2018]. The use of democratic institutions by authoritarian regimes to address social discontent has been documented in other settings [Reuter and Robertson, 2015].

Chile since 1973.

The vote took place without major disturbances. The Concertación coalition called for an orderly process while Pinochet threatened to use force at the first sign of disorder [El País, 1988]. After some delays, it was officially declared that the “No” option had won with 55% of the votes. Chile’s transition to democracy was under way. Following the plebiscite, Pinochet’s term was extended for an extra year, in which time a presidential election was held. Concertación won this election and would go on to win the presidency uninterrupted until 2005. After leaving office, Pinochet remained as commander-in-chief of the army until 1998 and held a lifetime seat in congress until 2002, when he had to resign to face judicial prosecution for human rights violations and corruption. He died under house arrest in 2006.

### **3 Conceptual framework**

This section offers insights into three interrelated questions that drive the empirical analysis below. First, how can proximity to military bases affect exposure to repression? Second, how can exposure to repression affect voting? Third, why should exposure to repression disproportionately affect political behavior at the local level?

Following regime change, the responsibility for repression usually falls on pre-existing state agencies and only later transitions to more specialized units [Geddes et al., 2018]. This was the case in Chile, where most of the victims of the Pinochet dictatorship were arrested, tortured or killed by members of the armed forces in the first months after the coup. Like other government policies, repression is limited by existing state capacity [Besley and Persson, 2011]. In its most basic form, state capacity is defined by the actual territorial presence of the state [Migdal, 1989]. In our setting, the military government’s initial ability to repress was arguably determined by the pre-existing network of military bases. For example, out of the 16 counties visited by the military death squad known as the “Caravan of Death” in October 1973, all but one were home to a military base. It seems plausible that greater distance to a military base increases the cost of patrolling,

weakens informant networks, and creates a protective buffer for the civilian population.<sup>3</sup>

The effect of exposure to repression on political behavior is theoretically ambiguous [Dav-enport, 2007a] and empirically heterogeneous [Young, 2020]. On the one hand, exposure to repression may lead to fear, which in turn causes political disengagement [Young, 2019]. Survey evidence by Garcia-Ponce and Pasquale [2015] and Bautista [2014] lends support to this mechanism. On the other hand, repression may naturally generate hostility towards the perpetrator and foster political resistance [Rozenas et al., 2017, Lupu and Peisakhin, 2017].

A crucial factor likely to affect the direction of the effect is the perceived risk [Tarrow, 1998]. In this regard, Rozenas and Zhukov [2019] show that Soviet repression increased opposition in Ukraine only when the risk of retaliation was low. In our setting, most of the repression occurred in the initial years of the dictatorship, but the regime resorted to violence to address budding opposition throughout its existence. Repression was certainly a salient factor in voters' minds at the time of the 1988 plebiscite, but several factors arguably helped to reduce fear and foster opposition. First, the years of most intense repression were not the most recent, but were close enough to be remembered. Second, Pinochet could not count on U.S. support to the same extent as before, following the 1986 UN resolution condemning Chile for human rights abuses. Perhaps as a result, no major episodes of voter harassment by the military were reported in the run-up to the plebiscite. Finally, the transparency of the election (i.e. secret ballot and international monitoring) hindered retaliation against opponents [e.g., Hsieh et al., 2011].

Conceptually, we can think of the problem faced by voters using a simple framework along the lines of Fearon [1999]. Assume a one-dimensional policy  $x$  corresponding to the intensity of repression. The voter has ideal point  $x_0 \geq 0$ , but only gets to observe a noisy measure of welfare  $z = -(x - x_0)^2 + \epsilon$ , where  $\epsilon$  is a random noise term. The voter uses a cut-off rule on  $z$  to determine whether to re-elect the incumbent. In this environment, proximity to military bases can increase

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<sup>3</sup>Dube and Naidu [2015] and Martínez [2017] respectively show that proximity to military bases or insurgent safe havens increases local measures of conflict intensity in Colombia.

opposition (i.e. make it harder for the incumbent to get re-elected) through two mechanisms: better information or changes in preferences [Aytaç et al., 2018].

Regarding information, all media channels in Chile were censored from the day of the coup and the military regime went to great lengths to keep the population uninformed about the repression.<sup>4</sup> But it is likely that the dictatorship was more successful at keeping people ill-informed in areas farther away from the events. Residents of counties with higher victimization rates could have more easily observed an arrest or seen relatives queuing at the entrance to military bases demanding information. They were also somewhat more likely to be arrested themselves, though exposure was mostly indirect given the scale and targeted nature of the violence. In the model, proximity to bases reduces the noise in the signal (variance of  $\epsilon$ ) and allows for increased accountability (i.e. less tolerance to deviations from the bliss point  $x_0$  in the voting rule).<sup>5</sup>

Alternatively, knowledge about abuses closer to home plausibly had a heightened psychological impact. Previous work has shown that other forms of violence, like terrorist attacks, have a stronger effect on people close to the victims or in the cities in which they occur [Schlenger et al., 2002, Hersh, 2013]. For instance, exposure to repression could lead to more prosociality, as has been documented in the study of civil conflict [Bauer et al., 2016]. In the model, this corresponds to a case in which exposure to repression changes the preferences of the voter (i.e. a shift in the ideal point  $x_0$  away from the incumbent's). Another possibility is a heightened sense of collective

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<sup>4</sup>In 1975, government agents falsely identified burned corpses as alleged victims of forced disappearance and claimed they had died as a result of fighting among extremist groups [Kornbluh, 2013, p.330]. A pro-government newspaper famously printed in its front page that “There is no such thing as ‘The Disappeared’ ” in 1977. In the run-up to the plebiscite, content on repression was not allowed to be broadcast during the “No” campaign’s allotted television slot [La Tercera, 1988].

<sup>5</sup>This idea is also consistent with models in which information about the quality of the regime is dispersed among the population and varies depending on individual experiences [Lohmann, 1993, 1994].

injustice that leads to an expressive benefit in regime opposition or “pleasure in agency” [Wood, 2003], which would correspond to an additional source of utility  $\nu > 0$  when voting against the incumbent.

## 4 Data construction

We use administrative electoral data from the National Electoral Service (NES), some of which we digitized for this study.<sup>6</sup> Our main outcomes of interest are county-level measures of voter registration and support for the “No” option in the 1988 plebiscite. We define voter registration as the number of people who registered to vote for the plebiscite divided by county population in the census of 1970, which was the last population census before the military coup. Aggregate registration amounts to 71% of the 1970 population. Registration was voluntary, but voting was mandatory once registered. Hence, voter turnout was almost universal at 97.5%. Similarly, we measure support for the “No” option using the share of valid votes in support of this option. The NES is also the data source for elections in the period 1952-2017.

We constructed a dataset with the location of all major military facilities since independence, based on information from multiple sources. Our data includes the headquarters of all army units and military academies. It allows us to trace the creation of new units and the redeployment of existing ones to new locations. Our preferred measure of military presence is a dummy variable for counties with a military base in 1970. We also show results using the continuous distance to the nearest base. These predetermined measures of military presence shut down concerns about the potentially endogenous placement of military units in later years. Military bases are present in 36 different counties (13%), housing 34% of the population in 1970. Panel (a) in Figure 1 shows that these bases are spread throughout the country.

[FIGURE 1 ABOUT HERE]

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<sup>6</sup>Online Appendix B (page vii) provides more information.

Information on the victims of the dictatorship comes from the final report produced by the “*National Commission for Truth and Reconciliation*” [Comisión Rettig, 1996]. This document provides detailed information on 3,216 documented victims who were forcibly disappeared (1,093) or killed (2,123) between 1973-1990, including the county in which they were detained or died. We manually verified and complemented the information on each victim. We define our main measure of exposure to repression, the civilian victimization rate, as the total number of documented fatal victims of the Pinochet dictatorship per 10,000 inhabitants (inh.) in the 1970 census. This variable is a proxy for the local intensity of repression in a county, but does not take into account surviving political prisoners, exiles, or victims of torture. After dropping a dozen outliers and counties with missing data, our estimating sample includes 276 counties.<sup>7</sup> The nationwide civilian victimization rate was 2.3 victims per 10,000 inh., but the most-affected county in the sample had as many as 11 victims per 10,000 inh.<sup>8</sup>

## 5 Empirical strategy

Our research design exploits the predetermined location of military bases before 1970 to study the effects of military presence on repression after 1973 and political opposition in 1988. In this section, we provide historical and quantitative evidence to argue that proximity to military bases was largely uncorrelated to local political conditions before the coup. We also explore how other observable county characteristics correlate with the location of bases and introduce our baseline specification based on this analysis.

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<sup>7</sup>The 13 outliers are mostly small counties that housed improvised detention centers and experienced large massacres. The civilian victimization rate averages 25.82 among the outliers, compared to 1.38 (0.58) in our sample. Appendix Table D5 (page xxiv) shows that the results are robust to the inclusion of the outliers under three scenarios: (i) unmodified, (ii) winsorization of the civilian victimization rate at 95th percentile, (iii) adding a dummy for the outliers as control.

<sup>8</sup>A homicide rate above 2 per 10,000 inh. is classified as high by the United Nations.

Until 1973, Chile had a long-standing tradition of military subordination to democratic government. In a span of over 140 years since independence, the country had only been under military rule for 13 months [Constable and Valenzuela, 1991]. Despite rising levels of political polarization after 1950, there is no evidence that the military high command engaged in politics before the immediate run-up to the 1973 coup. Augusto Pinochet only became commander-in-chief of the army a few weeks before the coup and his two most immediate predecessors stood out in their defence of the democratic order. Even the CIA acknowledged that a coup was unlikely to succeed “because of the apolitical history of the military in Chile” [Kornbluh, 2013, p.9].

The historical record indicates that the size and organization of the military throughout the 19th and 20th centuries were mainly driven by national security concerns (i.e. securing the country’s borders and ensuring military presence throughout the territory). The oldest infantry regiments were created in the early years of the republic to defend the country from a possible invasion from Spain [González Salinas, 1987, p. 19]. In later years, technological innovations in weaponry, transportation and telecommunications played an important role in the creation of new military units.<sup>9</sup> Appendix Figure C2 (page x) shows the earliest decade in which counties with bases in 1970 had a military unit assigned to them. We observe a roughly uniform distribution in the timing of military arrival throughout the twentieth century. Military expansion was not a partisan policy, as 48% of bases were created under center-right governments and 52% under center-left or independent ones.

To better understand the geographic and economic factors that predict the location of bases in 1970, we estimate a series of regressions that project several variables on the dummy for military presence.<sup>10</sup> With a couple of exceptions, all the variables we consider are measured before the military coup to ensure that they are not affected by the dictatorship.<sup>11</sup> We examine basic demo-

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<sup>9</sup>International conflicts, such as the War of the Pacific against Perú and Bolivia in 1879-1883, only had a temporary effect as units created amid conflict were usually disbanded soon afterwards.

<sup>10</sup>Results are similar if we instead use the distance to the closest military base.

<sup>11</sup>Post-treatment variables include the exposure to trade liberalization under Pinochet and the

graphic and geographic characteristics (e.g. population, distance to Santiago), proxies for social and human capital accumulation (e.g. number of churches, share of population with 12+ years of education), exposure to important policies (e.g. agrarian reform begun by president Frei in 1964), and voter turnout and election results from 1970.

Table 1 shows the results. Column 1 displays the average and standard deviation of each variable in counties without bases as reference. Column 2 shows that the average is significantly different in counties with military presence for several variables. Importantly, even this raw mean comparison reveals no significant differences in electoral outcomes in 1970. Column 3 shows that many of the previous differences are no longer significant once we include province fixed effects.<sup>12</sup> Some significant differences remain, though, as is to be expected given that military bases are not built at random. In particular, counties housing bases tend to be closer to the regional capital, have larger population, be less rural and also more educated than counties without bases in the same province. In column 4, we include the parsimonious set of controls that we use in our baseline specification to follow. We observe that all but one of the other differences become insignificant. This indicates that counties with and without military bases are highly comparable, conditional on the province fixed effects and the baseline controls.<sup>13</sup>

[TABLE 1 ABOUT HERE]

Our baseline regression equation has the following form:

$$Y_{c,p} = \beta f(\text{Military presence})_{c,p} + \tau X_{c,p} + \lambda_p + \varepsilon_{c,p} \quad (1)$$

share of the population with TV in 1987 [González and Prem, 2018].

<sup>12</sup>The country was divided into 25 provinces at the time of the coup. In 1975, the military regime introduced 13 regions as the first level of sub-national government. The results below are robust to the use of region fixed effects instead.

<sup>13</sup>Appendix Table D1 (page xx) shows that our results are unaffected if we include all the controls considered in Table 1 or an optimal combination based on a machine-learning algorithm.



where  $Y_{c,p}$  is an outcome in county  $c$  from province  $p$ .  $f$  is a function of proximity to a military base in 1970. Our baseline specification uses a binary indicator equal to one in counties with a base, but we verify that the results hold for a continuous measure of proximity (log distance to the nearest base).  $\lambda_p$  is a fixed effect for each of the 25 provinces in the country, meaning that our estimation only compares counties located in the same province. The vector  $X_{c,p}$  contains our baseline controls. Based on the evidence on the correlates of military presence in Table 1, we include as controls total population and rural share in 1970, distance to Santiago and to the regional capital, and the vote shares for Salvador Allende and Arturo Alessandri in 1970 (winner and runner-up). The latter capture potentially persistent differences in political preferences [Valenzuela and Scully, 1997]. Finally,  $\varepsilon_{c,p}$  corresponds to a robust error term, though we also present p-values based on HAC standard errors that account for spatial autocorrelation, following Conley [1999]. Since our main outcomes of interest, voter registration and support for “No” in the 1988 plebiscite, correspond to individual behaviors, we weight our estimates by population in 1970. This way we ensure that we give equal importance to all voters, irrespective of the size of the county in which they reside. Hence, our estimates capture empirical relationships in the population rather than across counties.

The coefficient of interest is  $\beta$ , which measures the reduced-form relationship between military presence in 1970 and our outcomes of interest in 1988. A causal interpretation of the Ordinary Least Squares (OLS) estimate of  $\beta$  requires military presence to be uncorrelated with the error term, conditional on the included controls. This corresponds to a Conditional Independence Assumption (CIA) stating that the location of military bases in 1970 is as-good-as-random, conditional on the province fixed effects and the parsimonious set of baseline controls [Angrist and Pischke, 2009]. As a result of the inclusion of the 1970 vote shares among the controls, we can interpret  $\beta$  as the differential effect of military presence in political behavior in 1988 among counties with similar past political preferences. We hypothesize that this relationship is mediated by increased exposure to repression near military bases and present evidence in support of this claim below.

To validate our empirical strategy, we estimate a series of placebo regressions examining the

performance of Salvador Allende in elections taking place in the two decades before the military coup. If, as we claim, differences in the 1988 outcomes in counties with military presence are to be attributed to increased exposure to repression after the 1973 coup, we should not observe systematic differences in electoral outcomes before the coup. Figure 2 shows point estimates and 95% confidence intervals of  $\beta$  in separate regressions using the Allende vote share in each presidential election between 1952 and 1970 as dependent variable.<sup>14</sup> We also consider the vote share for Allende's UP coalition in the local council elections of 1971 and the legislative election of 1973, the last election before the coup. The round markers correspond to a specification without any controls, except for the province fixed effects (i.e. equivalent to column 3 in Table 1). If anything, we find that within-province support for Allende is somewhat weaker in counties with bases, though the  $\beta$  estimate is only significant in 1964. Once we control for economic characteristics (population, rurality, distances), the coefficients stabilize at around -5 percentage points (pp), all statistically insignificant (triangular markers). Finally, the squared markers show estimates from regressions that additionally control for the results from the previous election. In this case, we are asking whether support for Allende varies in counties with military presence, relative to the level of support in the previous election. This is the closest specification to the one we use for our main analysis. We observe that the  $\beta$  estimates are all very close to zero (though varying in sign), precisely estimated, and not statistically significant.<sup>15</sup>

[FIGURE 2 ABOUT HERE]

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<sup>14</sup>Appendix Figure C3 (page xi) shows equivalent figures with similar results for turnout and the vote share of the winning candidate.

<sup>15</sup>Alternatively, panel (a) in Appendix Figure C4 (page xii) provides difference-in-differences estimates (with county and year fixed effects) showing no significant changes in Allende's vote share relative to 1952.

## 6 Main results

### 6.1 *Exposure to repression*

In this section, we present quantitative evidence on the relationship between military presence and exposure to repression during the Pinochet dictatorship. The maps in panels (b) and (c) in Figure 1 provide preliminary evidence from the provinces of Coquimbo and Cautín. Both maps show that counties with a military base (denoted with stars) had high rates of civilian victimization relative to other counties in the same province. The historical evidence in Comisión Rettig [1996] indicates that this is not a coincidence: military units were active participants in the detention, torture and death of many of the victims. In Cautín, 23 out of 100 victims were last seen at one of the two military bases in the province. In Coquimbo, the local army regiment was responsible for 19 out of 22 deaths.

Table 2 shows estimates of equation (1). Panel A uses the binary indicator of military presence, while panel B uses the distance to the nearest military base. The dependent variable in column 1 is the civilian victimization rate – i.e. the number of victims per 10,000 inh. in 1970. We find that the victimization rate was 2.1 units higher in counties housing military bases, which corresponds to a 91% increase over the sample mean. The estimate is very precise, whether we use robust standard errors (shown in parenthesis) or Conley standard errors that account for spatial correlation in the error term (p-value shown in brackets). Similarly, panel B shows that a doubling of the distance to the nearest base is associated with 0.6 fewer victims per 10,000 inh. Panel (a) in Figure 3 provides a visualization of this result.<sup>16</sup>

[TABLE 2 ABOUT HERE]

[FIGURE 3 ABOUT HERE]

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<sup>16</sup>Appendix Table C1 (page xiii) shows that these effects were three times larger during the first two years of the dictatorship, when the armed forces were in charge of repression.

In columns 2 and 3 we disaggregate the effect of military presence into the extensive and intensive margins of repression. Column 2 shows that counties with bases were slightly more likely to report any victims, but the effect is small and insignificant. However, column 3 shows a large, positive effect of military presence on the probability of being in the top quartile of the distribution of the victimization rate. These results indicate that military presence had a much larger effect along the intensive margin of repression (number of victims) than the extensive margin (any victims). One concern with these results is that the number of victims in counties with bases may be artificially inflated by residents of other counties that died or were last seen at military bases. But column 4 shows that the estimates remain positive, significant and quantitatively important when we use our hand-collected data on county of residence of the victim instead of the county of death. Another concern is that our measure of exposure to repression only captures the phenomenon in its most extreme form (killings and forced disappearances). To address this concern, column 6 uses data on the universe of documented centers of detention during the dictatorship and shows that municipalities housing military bases also had more. Hence, military presence is also associated with increases in other forms of repression (e.g., torture).

## 6.2 *The 1988 plebiscite*

We now turn to the impact of military bases on the 1988 plebiscite. Panel A in Table 3 presents estimates of equation (1). The dependent variable in column 1 is the rate of voter registration. We find that registration for the plebiscite was 9.3 percentage points (pp) higher in counties with military presence. This point estimate is precisely estimated and corresponds to a 13% increase above the sample mean. Column 3 shows the equivalent estimate for the “No” vote share. Support for “No” was 2.2 pp higher in counties with military bases. This coefficient is also precisely estimated and corresponds to a 4% increase over the sample mean. These two estimates are *not* directly comparable, since the outcomes have different denominators. Column 4 shows that the latter effect increases to 6.2 pp if we divide the number of “No” votes by population in 1970. Hence, the large majority of the additional voters in counties with military bases voted against

Pinochet's continuation in power.<sup>17</sup> Columns 2 and 5 present the corresponding results using log distance to the nearest base. We find that a doubling of the distance to the nearest base is associated with respective decreases of 3 pp and 0.8 pp in voter registration and the "No" vote share. The scatter plots in panels (b) and (c) of Figure 3 illustrate these results. We observe a strong negative relationship between both of our outcomes of interest in 1988 and the distance to the nearest base in 1970.

[TABLE 3 ABOUT HERE]

The previous results constitute reduced-form evidence of the positive link between military presence at the time of the 1973 military coup and opposition to the dictator in the 1988 plebiscite. To quantify the impact of repression, panel B in Table 3 provides two-stage least squares estimates using military presence as an instrumental variable (IV). This IV strategy circumvents the bias in OLS estimates resulting from omitted variables and measurement error, the sign of which is not obvious *ex-ante*.<sup>18</sup> This part of the analysis requires us to assume an additional *exclusion restriction* stating that military presence affects our outcomes of interest exclusively through increased exposure to repression. We provide evidence in support of this assumption below and also test the sensitivity of the results to small violations.

Column 1 shows that a one unit increase in the civilian victimization rate led to respective increases of 4.4 pp and 1.1 pp in the voter registration rate and the "No" vote share. These effects are equivalent to increases of 6% and 2% over the corresponding sample averages. Under the IV assumptions, these estimates represent a positive causal effect of exposure to repression on voters'

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<sup>17</sup>Formally, we fail to reject the null that the coefficients in columns 1 and 4 are equal ( $p$ -value of 0.31).

<sup>18</sup>For example, hard-to-measure levels of social capital may have reduced the intensity of repression while increasing political opposition in 1988, leading to downward bias. However, targeted repression against more politically active districts, which may not be perfectly captured by our political controls, could lead to upward bias.

behavior in the plebiscite.<sup>19</sup> These estimates are somewhat larger than their OLS counterparts (shown in Appendix Table C2, page xiv), but we fail to reject the null that they are equal to one another ( $p=0.17$  in both cases), suggesting that the bias in OLS is small.<sup>20</sup>

### 6.3 *Robustness checks*

Online Appendix D (page xvii) provides a battery of tests on the robustness of our results. We verify that the results are unaffected if we randomly exclude subsets of counties, include outliers in the measure of repression, or omit the population weights. We also show that the results are robust to the inclusion of all the covariates in Table 1, random subsets of them, or an optimal combination using a machine-learning algorithm. Results are also robust to additional spatial controls. We further verify that the results are not driven by presence of other facilities, such as airports, or by large urban centers (provincial or regional capitals). Following Oster [2019], we visually show the stability of our estimates to potential selection on unobservables. The results are also robust to restricting the set of bases to those built several decades before the military coup. A permutation test that randomly assigns military bases across counties reveals that our results are very unlikely to arise by chance.

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<sup>19</sup>In the presence of heterogeneous effects, the IV estimates capture the Local Average Treatment Effect (LATE) of repression on the compliers: those voters that faced higher exposure to repression due to military presence. This interpretation requires a monotonicity assumption that is very likely satisfied (i.e. being farther away from a military base does not increase exposure to repression, all else equal). Appendix Table C3 (p. xiv) shows that our instrument satisfies additional validity tests, while Appendix Table C4 (p. xvi) provides a characterization of the complier counties.

<sup>20</sup>The discrepancy can be explained by classical measurement error in our measure of repression (attenuation bias) or by complier counties experiencing a more brutal type of repression than the average county, leading to a stronger response.

#### 6.4 *Alternative explanations*

This section considers channels other than repression through which military presence may have affected the behavior of voters in 1988.<sup>21</sup> One possibility is that the regime relied on the existing network of military units to run the country, which led to higher government spending in counties with military bases. To examine this possibility, we use a new dataset on local infrastructure projects to construct an aggregate measure of public spending per capita between 1979-1990.<sup>22</sup> We also construct disaggregate measures for highly visible projects, such as public spaces and housing, and less visible projects, including sanitation and indoor equipment. Columns 1-3 in Table 4 show estimates of equation (1) for these measures of government spending. We find that they are unrelated to the location of bases.

[TABLE 4 ABOUT HERE]

Military presence may have also affected the functioning of the local economy through channels different than spending. The expected sign of this relationship is not obvious *ex-ante*. On the one hand, military presence may have mechanically boosted demand for local products. On the other hand, potential rent-seeking and extortion could have displaced economic activity away from bases. A depressed local economy could explain the greater regime opposition that we observe in 1988. We test for this mechanism using the county-level unemployment rate as reported in the 1982 census, but the estimate in column 4 of Table 4 is small and insignificant.

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<sup>21</sup>An alternative approach, following Conley et al. [2012], involves gauging the quantitative importance of a partial violation of the exclusion restriction. In Appendix Figure D5 (page xxvi) we allow military bases to affect our outcomes directly, as well as indirectly through repression. The results show that the direct effect of military bases on the plebiscite would have to be positive and non-negligible, equivalent to 25% and 28% of the respective reduced-form effects on registration and the “No” vote, to make the effect of repression statistically insignificant.

<sup>22</sup>Online Appendix B (page vii) provides additional information on the data.

Military presence may have caused differential migration during the dictatorship, leading to changes in the composition of the electorate. In columns 5 and 6 of Table 4, we consider two alternative measures of migration using data from the 1982 census. These are the respective shares of county residents that report not living in their county of birth or in the same county as in 1977. Again, the point estimates are small and statistically insignificant.

## 7 Military Presence and Political Preferences After the 1988 Plebiscite

In this section, we examine potential persistence in the political preferences revealed in the 1988 plebiscite. In particular, we want to know whether the “Concertación” coalition that championed the vote for “No” and went on to govern the country until 2010 enjoyed stronger support in counties with military presence. This analysis helps us understand whether the 1988 vote should be interpreted as an instance of opposition to autocratic rule or as a reflection of a broader and lasting change in political attitudes and preferences. Motivating this analysis is the fact that the Pinochet dictatorship has remained a looming presence in Chilean politics up to this day and that all of the country’s presidents since 1990 are related to the dictatorship as victims, opponents or supporters.<sup>23</sup>

Figure 4 shows estimates of  $\beta$  in equation (1) for all the presidential elections in which Concertación took part before its dissolution in 2013. The dependent variable is the county-level vote share for the coalition’s presidential candidate. We observe a steady decrease in the electoral advantage held by Concertación in counties with military bases over the twenty-year period. While

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<sup>23</sup>Patricio Aylwin (1990-1994) was president of the senate at the time of the military coup and became a leader of the pro-democracy movement in the 1980s. Eduardo Frei Ruiz-Tagle (1994-2000) is the son of President Eduardo Frei Montalva (1964-1970), who became the main opposition figure in the early 1980s. Ricardo Lagos (2000-2006) was also a major opposition figure and one of the leaders of the pro-democracy movement. Michele Bachelet (2006-2010) was detained and tortured in 1975. Her father died during captivity. Sebastian Piñera (2010-2014 and 2018-) is the younger brother of a former minister of Pinochet.



the estimate for 1989 is not far from the effect on the “No” vote share in 1988, the estimate for 2009 is essentially zero.<sup>24</sup> These results suggest that exposure to repression bolstered political opposition to the dictatorship when a window of opportunity appeared, but did not lead to persistent changes in political preferences. Appendix E (page xxvii) presents additional evidence from survey responses in “Latinobarómetro” also showing no lasting effect on political preferences.

[FIGURE 4 ABOUT HERE]

These results suggest that informational frictions explain higher regime opposition in counties with military presence better than shifts in preferences. The decreasing support for Concertación is plausibly explained by efforts at accountability and reconciliation after democratization, including the release of the reports by Comisión Rettig [1996] and Comisión Valech [2004], that allowed people throughout the country to become better informed about the abuses during the dictatorship. These policies helped to eliminate the informational advantage held by residents of counties with military presence. Another possibility is that government performance gained prominence in voters’ assessment of Concertación relative to the coalition’s opposition to Pinochet in 1988.<sup>25</sup>

## 8 Conclusion

In this paper we study the effects of exposure to repression on political opposition to an authoritarian regime. We show that counties housing military bases at the start of the Pinochet dictatorship in Chile in 1973 experienced more civilian deaths and forced disappearances. Residents of these

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<sup>24</sup>The pattern is very similar for local elections (Appendix Figure C5, page xii) or if we run a difference-in-difference specification with county and election fixed effects (Appendix Figure C4, panel (b), page xii).

<sup>25</sup>One final possibility concerns demographic changes in the composition of the electorate (e.g. rising shares of younger voters unexposed to repression). The analysis of survey data in Appendix E (page xxvii), which controls for age, suggests that this is not the main explanation.

counties registered to vote and voted against Pinochet at higher rates in the crucial 1988 plebiscite that bolstered the democratic transition. After democratization, the pro-democracy Concertación coalition initially enjoys higher support in these counties, but this effect gradually disappears.

These findings indicate that targeted violence by an autocratic regime can contribute to regime change when a democratic window of opportunity arises. Naturally, repression is only one of many factors at play and establishing its relative contribution to the regime's electoral demise is complicated by the fact that we are only able to measure the differential effect in areas with greater exposure. What seems certain is that the regime's excesses caused a disproportionate backlash in these areas. The geography of repression matters.

Chile was one of many countries to live under a repressive dictatorship and to transition to democracy in the second half of the twentieth century [Huntington, 1991]. Hence, our findings could help explain recent episodes of democratization in various parts of the world. In this regard, the effects of repression on political behavior are likely shaped by three factors: (i) whether violence is targeted or indiscriminate, (ii) whether exposure is direct or indirect, (iii) whether there are credible opportunities for political expression. Our finding of no persistent effect on political preferences after democratization stands in contrast with previous research on indiscriminate violence [Lupu and Peisakhin, 2017, Rozenas et al., 2017]. Arguably, the effect of indirect exposure to targeted violence that we study is more easily diluted over time.

Our results could also help explain recent changes in the functioning of non-democracies. These include less reliance on repression by what are ever more often hybrid regimes that regularly hold elections [Levitsky and Way, 2010, Guriev and Treisman, 2019]. Our results provide a novel micro-foundation for these changes, as violent repression can backfire for an autocrat that participates in elections if a genuine democratic opening arises.

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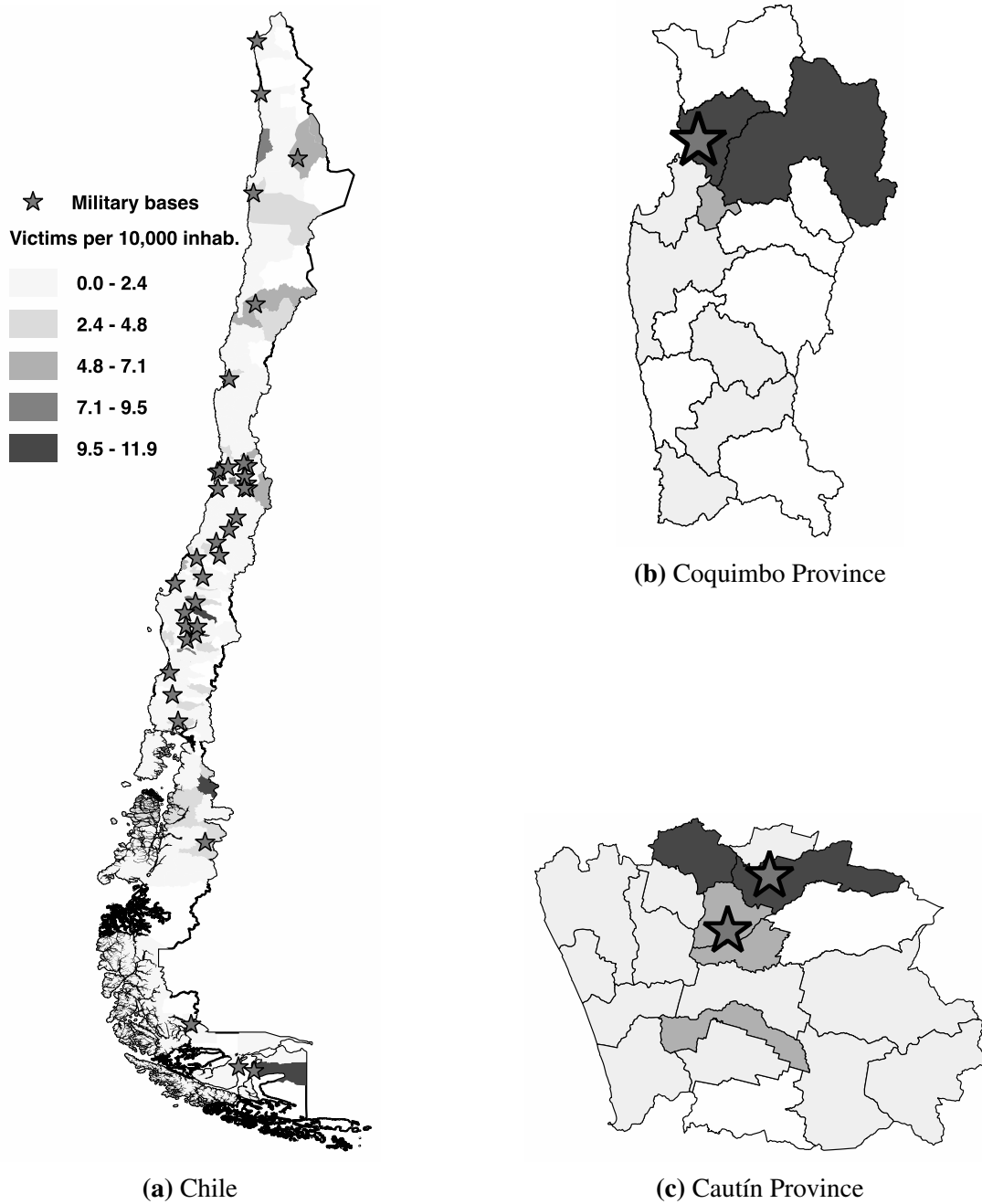
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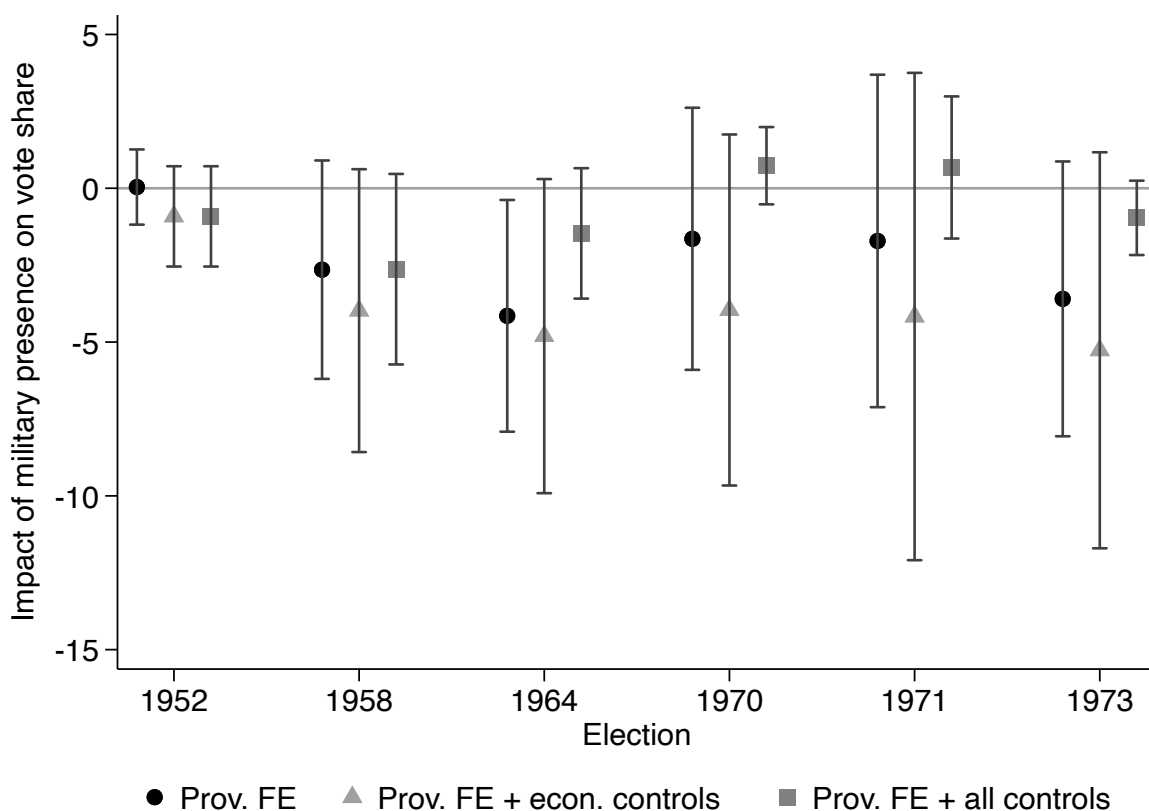


**Figure 1: Military presence and repression**



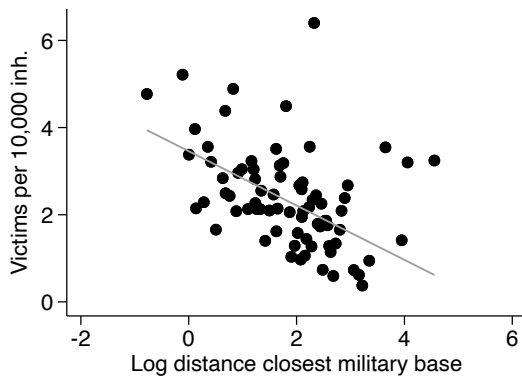
*Notes:* In panels (b) and (c), white denotes zero victims. Other shades represent terciles of the within-province distribution.

**Figure 2:** Military presence and Allende vote share before 1973

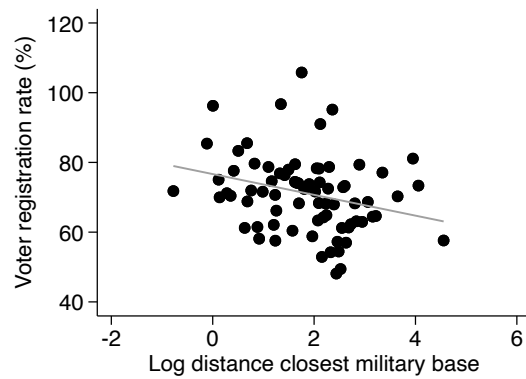


Notes: Graph shows point estimates and 95% confidence intervals. Dependent variable is Allende's vote share in 1952, 1958, 1964 and 1970 presidentials and UP vote share in local and legislative elections in 1971 and 1973. Markers indicate specification. Circle: province fixed effects; Triangle: Province fixed effects, distance to Santiago and regional capital, 1970 population and rural share. Square: same as triangle plus Allende and winner's vote share from previous election. Weights: 1970 population. Robust standard errors.

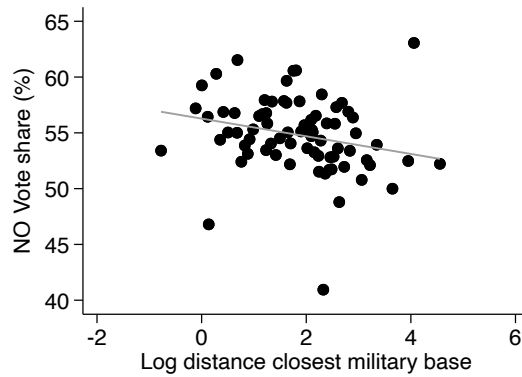
**Figure 3: Military presence, repression and the 1988 plebiscite**



**(a) Civilian victimization rate 1973-1990**



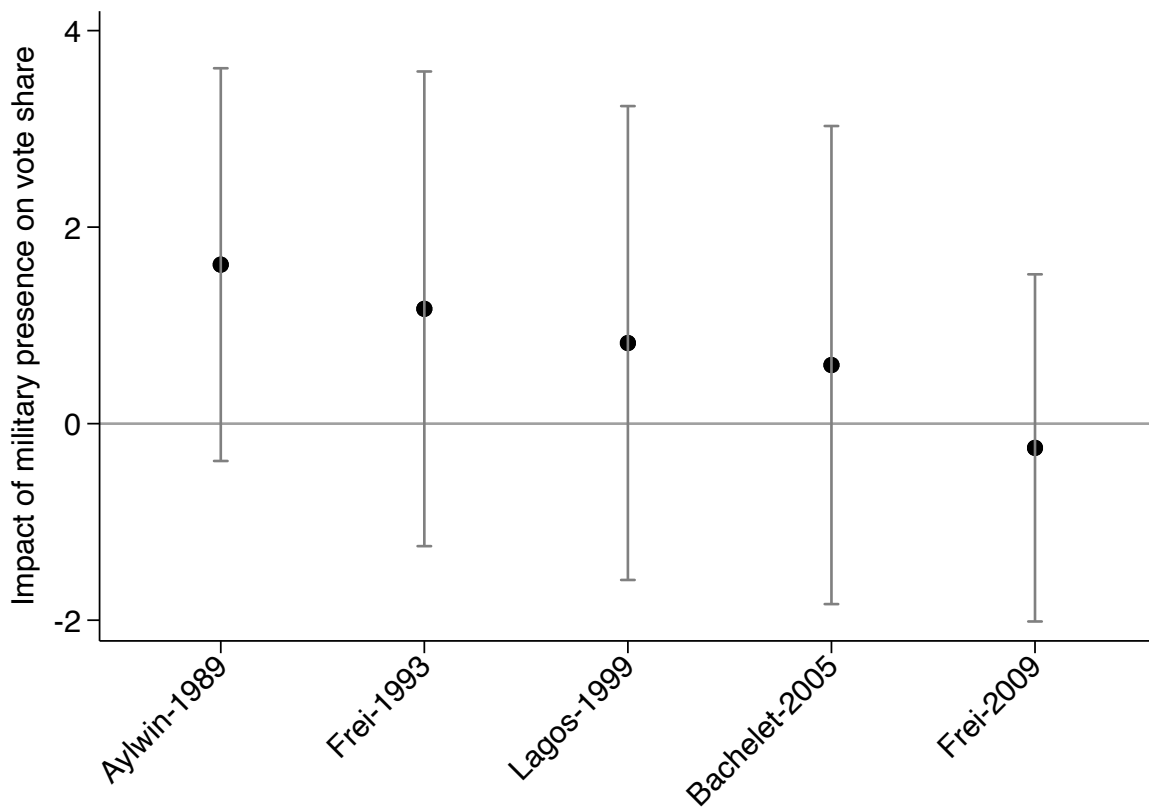
**(b) Voter registration 1988**



**(c) "NO" vote share 1988**

Notes: All panels include province fixed effects and control for distance to Santiago and regional capital, 1970 population and rural share, Allende and Alessandri's vote share in 1970. Weights: 1970 population.

**Figure 4:** Military presence and “Concertación” vote share after 1988



Notes: Graph shows point estimates and 95% confidence intervals. All regressions include province fixed effects and control for distance to Santiago and regional capital, 1970 population and rural share, Allende and Alessandri’s vote share in 1970. Weights: 1970 population. Robust standard errors.

**Table 1: Differences by military presence *before* the dictatorship**

	Avg. w/o military	Projection on military presence (N=276)		
	(N=240)	No controls	Province FE	Province FE + controls
	(1)	(2)	(3)	(4)
<b>Political characteristics</b>				
Vote share Salvador Allende in 1970	37.76 (12.13)	-1.73 (1.91)	-1.64 (2.16)	-
Vote share Jorge Alessandri in 1970	33.42 (9.46)	1.97 (1.81)	3.03 (1.90)	-
Turnout 1970	29.17 (44.13)	4.95** (2.49)	2.35 (3.13)	1.02 (2.58)
Vote share UP municipal election in 1971	51.35 (12.48)	-1.36 (2.34)	-1.71 (2.74)	0.68 (1.17)
UP mayor indicator 1971	0.39 (0.49)	-0.16 (0.10)	-0.13 (0.10)	-0.01 (0.11)
Vote share UP legislative election 1973	45.64 (11.54)	-3.75** (1.82)	-3.60 (2.27)	-0.96 (0.61)
<b>Geographic characteristics</b>				
In distance to Santiago	4.28 (1.98)	1.27*** (0.43)	0.16 (0.11)	-
In distance to regional capital	3.13 (1.28)	-0.95** (0.46)	-1.39*** (0.34)	-
Landlocked indicator	0.76 (0.43)	-0.25** (0.11)	-0.09 (0.07)	0.07 (0.07)
<b>Demographic characteristics</b>				
Population (Pop.) in 1970	0.96 (1.05)	0.18 (0.26)	0.44** (0.19)	-
Houses per capita in 1970	0.20 (0.04)	0.01 (0.00)	-0.00 (0.00)	-0.01** (0.01)
Community organizations 1970	4.91 (14.29)	7.13** (2.84)	6.29** (2.71)	1.56 (2.45)
Churches per capita 1962	0.07 (0.08)	-0.00 (0.01)	-0.02** (0.01)	-0.01 (0.01)
Pop. share w/ 12+ years of education 1970	0.02 (0.03)	0.01 (0.01)	0.02** (0.01)	0.00 (0.01)
Pop. density 1970	27.30 (47.89)	-21.51** (10.31)	-7.50 (6.72)	-7.96 (7.41)
Pop. share rural 1970	0.32 (0.33)	-0.19*** (0.05)	-0.24*** (0.04)	-
Pop. share economically active 1970	0.29 (0.03)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Pop. share female 1970	0.51 (0.03)	0.01 (0.01)	0.02*** (0.01)	0.00 (0.00)
Pop. share w/ TV ownership 1987	0.85 (0.13)	-0.01 (0.02)	0.04** (0.02)	-0.01 (0.02)
<b>Policy characteristics</b>				
Agr. land share expropriated before 1973	0.23 (0.25)	-0.07 (0.05)	-0.02 (0.03)	-0.05 (0.04)
Exposure to trade liberalization	-0.20 (0.18)	0.02 (0.06)	0.01 (0.02)	-0.02 (0.03)

Notes: Standard deviation in parenthesis in column 1. Standard error in parenthesis in columns 2-4. Weights: 1970 population. Robust standard errors. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table 2: Impact of military presence on repression**

Dependent variable:	Victims /	Indicator		Victims	Detention
	10,000 inh.	victims > 0	victims > p75	(residence)	centers
	(1)	(2)	(3)	(4)	(5)
<b>Panel A</b>					
Indicator military presence	2.09*** (0.41) [0.00]	0.08 (0.04) [0.06]	0.40*** (0.10) [0.00]	1.20*** (0.37) [0.00]	4.04*** (0.76) [0.00]
<b>Panel B</b>					
In distance closest military base	-0.62*** (0.14) [0.00]	-0.03 (0.02) [0.09]	-0.14*** (0.03) [0.00]	-0.35*** (0.14) [0.00]	-0.87*** (0.23) [0.00]
Observations	276	276	276	276	276
R-squared (A)	0.57	0.43	0.50	0.49	0.83
R-squared (B)	0.55	0.43	0.52	0.48	0.81
Province fixed effects	x	x	x	x	x
Controls	x	x	x	x	x
Avg. dependent variable	2.31	0.86	0.29	1.95	5.97

Notes: Dependent variable in column 1 is the civilian victimization rate. In columns 2 and 3, a dummy for victimization rate larger than zero or above the 75th percentile. In column 4, the civilian victimization rate based on county of residence. In column 5, the number of centers of detention/torture. All regressions include province fixed effects and control for distance to Santiago and regional capital, 1970 population and rural share, vote shares for Allende and Alessandri in 1970. Weights: 1970 population. Robust standard errors in parenthesis, p-values based on Conley (1999) standard errors in brackets. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table 3:** Impact of military presence and repression on the 1988 plebiscite

Dependent variable:	Voter registration		“NO” vote share		
	(/ pop. 1970)		(/ votes 1988)	(/ pop. 1970)	(/ votes 1988)
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Reduced form</b>					
Indicator military presence	9.26** (4.38) [0.04]		2.24** (1.01) [0.06]	6.21** (2.97) [0.00]	
ln distance closest military base		-2.98** (1.33) [0.01]			-0.79** (0.31) [0.02]
<b>Panel B: 2SLS</b>					
Victims per 10,000 inh.	4.44** (2.08) [0.13]	4.78** (2.16) [0.10]	1.08** (0.49) [0.08]	2.98** (1.46) [0.00]	1.27** (0.50) [0.06]
Observations	276	276	276	276	276
R-squared (A)	0.67	0.67	0.82	0.50	0.83
Kleibergen Paap F-stat. (B)	26.27	18.92	26.27	26.27	18.92
Province fixed effects	x	x	x	x	x
Controls	x	x	x	x	x
Avg. dependent variable	71.16	71.16	54.82	38.74	54.82

Notes: Dependent variable is the voter registration rate in columns 1-2 and the “NO” vote share in columns 3-5. Denominator indicated in the header. In panel B, the corresponding measure of military proximity is used as excluded instrument. All regressions include province fixed effects and control for distance to Santiago and regional capital, 1970 population and rural share, and vote shares for Allende and Alessandri in 1970. Weights: 1970 population. Robust standard errors in parenthesis, p-values based on Conley (1999) standard errors in brackets. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table 4: Alternative mechanisms**

Dependent variable:	Public investment			Unemp.	Outmigration	
	All	+ visible	- visible	rate (1982)	Birth	1977
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator military presence	0.00 (0.07)	0.00 (0.06)	-0.00 (0.02)	0.13 (0.44)	-0.01 (0.02)	-0.02 (0.01)
Observations	276	276	276	276	276	276
R-squared	0.493	0.452	0.625	0.624	0.592	0.715
Province fixed effects	x	x	x	x	x	x
Controls	x	x	x	x	x	x
Avg. dependent variable	0.57	0.49	0.08	9.64	0.64	0.18

Notes: Dependent variable in columns 1-3 is spending per capita in urban projects between 1979-1989. Total in column 1 and disaggregated into more and less visible projects in columns 2 and 3. Share of working-age population unemployed in 1982 in column 4. Share of people not living in county of birth or of residence in 1977 in columns 5 and 6. All regressions include province fixed effects and control for distance to Santiago and regional capital, 1970 population and rural share, vote shares for Allende and Alessandri in 1970. Weights: 1970 population. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .



# **The Geography of Repression and Opposition to Autocracy**

**APPENDIX (FOR ONLINE PUBLICATION)**

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## Appendix A Detailed institutional background

### *Before the military coup*

In 1952 Salvador Allende ran for president for the first time. He ran under the Popular Action Front party and obtained 5.4% of the vote share. The winner of this election was Carlos Ibañez who ran as an independent and obtained 46.8% of the votes. Allende ran for a second time in 1958 and obtained the second place with 28.1% of the vote share. The winner was the conservative and independent candidate Jorge Alessandri (31.6%). In 1964 Allende tried for a third time, but the winner was the candidate from the Christian Democrat Party (center-left), Eduardo Frei. He obtained the support of the right-wing parties and the ‘Radicales’ (a center-left party) in order to stop Allende from winning. During Frei’s presidency (1964-1970), the Christian Democrats made progress on policy areas such as education, rural development and agrarian reform.

Salvador Allende ran in the presidential elections of 1970 under the Popular Unity coalition (“Unidad Popular” or UP) formed by the Communist, Socialist and Radical parties. Two more candidates ran in this election: Jorge Alessandri who had been president between 1958 and 1964 and represented the conservative party, and Radomiro Tomic, who represented the Christian Democrats. Given that none of the candidates obtained a majority of votes, Congress had the final saying. During the months of September and mid-October the Christian Democrats and the Popular Unity coalition pushed for Allende. At the same time, some right-wing groups sought the support of the United States and the CIA in order to stop Allende. The main obstacle they faced was that the commander-in-chief of the Army, General René Schneider, opposed military intervention and insisted that the military should remain apolitical. The CIA developed a plan in which Schneider would be kidnapped, allowing for the officers below his command to take control. However, the kidnapping attempt did not go as planned and Schneider was shot and killed. This event had the opposite effect of what was intended. Allende was confirmed by Congress as the “first Marxist president in the western world” [Rector, 2003, p.172].

Allende’s government was marked by strong polarization. He lacked a congressional majority and had to rely on decrees and other methods which the opposition deemed unconstitutional. In a climate of heightened conflict, Congress passed on August 23, 1973 a motion severely censoring Allende for ruling by decree and refusing to enforce judicial decisions against its partisans. The political instability generated rumors about a possible coup but General Carlos Prats, Schneider’s successor as commander-in-chief of the Army and a fellow supporter of what became known as the ‘Schneider doctrine’ of military subordination, helped put down several small attempts. (e.g. “Tanquetazo” on June 29, 1973).

### *Repression by the Pinochet government*

The repression and its execution during the Chilean dictatorship can be divided in three periods, according to Comisión Valech [2004]. The first period starts on the day of the coup and lasts until the last day of 1973. These first days were characterized by mass raids in factories, shantytowns, mining camps and universities. Military bases were instrumental for this initial wave of repression. Some of Allende’s close collaborators were taken to the headquarters of “Tacna” regiment shortly

after the presidential palace was stormed by the military [Comisión Rettig, 1996, p. 119] and were killed two days later. An infamous military unit led by General Sergio Arellano-Stark toured 16 counties in a military helicopter a few weeks after the coup, all but one of which were home to a military base. This “Caravan of Death” aimed to set an example for how Allende’s sympathizers should be treated and killed almost 100 people along the way [Verdugo, 2001]. Due to the large number of prisoners, several improvised detention centers were opened, from schools to stadiums, where thousands of prisoners were held in terrible conditions. One of the most significant ones was the National Stadium (Estadio Nacional) which functioned from the day of the coup until November 9th 1973. This stadium was conveniently located 2.5 km away from the Tacna base.

The second period identified by the Valech commission runs from 1974 to 1977. In order to better coordinate surveillance and intelligence activities, the National Intelligence Directorate (DINA, according to its Spanish acronym) was created at the end of 1973 under the direction of Coronel Manuel Contreras. This was a group composed of “elite” military from all the intelligence units. In consequence, the way the repressive apparatus worked changed. Detentions became more selective and the targets were primarily members of the Revolutionary Left Movement or M.I.R. (acronym in Spanish), Socialist and Communist parties. The detentions usually took place in their place of work, homes or in the street and were conducted by men dressed in civilian clothes who would take the prisoner without any formal arrest warrant. As many as 1,200 informal detention centers started to spread under the control of the DINA [Comisión Valech, 2004]. Among them was Villa Grimaldi, where at least 4,500 people were tortured and 241 killed or disappeared. The selection of this place by the DINA does not seem random, since it had the “ideal characteristics for its new obscure function, such as its... proximity to the Telecommunication Regiment of the Army” [Corporación Villa Grimaldi, 2018]. Detainees who entered these places were tortured and, in many cases, were subjected to forced disappearance. The internal disputes among intelligence units and the assassination of General Orlando Letelier in Washington D.C. in 1976, which increased foreign pressure on human rights abuses, led to the dissolution of DINA in 1977. It was replaced by the National Center of Information (CNI in Spanish) and this marks the beginning of the third period of repression.

This last period stretches from 1977 to 1990. In 1977 the CNI and an elite unit called Comando Conjunto became the main organizations implementing repression. The CNI adopted some of the members from the DINA, their repressive methods and detention centers. These changes coincided with the return and reorganization of some militants of the MIR, the Movimiento de Acción Popular Unitario or MAPU- Lautaro and some segments of the Communist Party such as the FPMR. This led to constant confrontations and the hunt for the members of these groups. In 1983, the Frente Patriótico Manuel Rodríguez organized and started to commit violent acts including an assassination attempt on Pinochet in 1986. The CNI remained in charge of surveillance and repression until the end of the dictatorship, but the intensity of civilian victimization decreased substantially compared to the previous years. Still, the military regime occasionally resorted to repression against students and political activists throughout the 1980s.

## *Policies of the Pinochet government*

By 1974 Pinochet had persuaded his colleagues to make him the chief executive and by the end of the same year he had induced them to agree to him becoming president. This role was reaffirmed by the plebiscite in 1978 where Chileans were asked to answer ‘yes’ or ‘no’ to the following question: “Faced with international aggression launched against our fatherland, I support President Pinochet in his defense of the dignity of Chile and reaffirm the legitimacy of the government.” Official figures declared that the ‘yes’ option received 75% of votes. Pinochet’s position was further consolidated by the new constitution that the military wrote in 1980 [Barros, 2002, Cavallo et al., 2011]. This constitution made Pinochet president for 8 years with the *Junta* continuing as the legislative body of the country. The first term began in 1981. The constitution was ratified by another plebiscite held on September 11, 1980, with 67.5% of people voting favourably. Fuentes [2013] provides evidence of fraud in this election.

Substantial economic reforms were implemented during the dictatorship. Pinochet understood that the package of free-market policies offered by a team of advisors known as the “Chicago Boys” would facilitate the dismantling of the labor movement and reduce the role of the state in the provision of health care, social security and education. The *Junta* followed the policy recommendations of free-market advocate Milton Friedman. Some of these were to privatize banks and state-owned firms; to reduce tariffs from 100 to 10 percent between 1973 and 1980; to design and implement labor reforms that took away bargaining power from unions; and to facilitate foreign borrowing in order to increase capital investment. The agricultural sector went through several adjustments, since the military pushed back on the agrarian reform and land occupations that occurred in the previous governments. The shock treatment implemented by the “Chicago Boys” and the *Junta* brought prosperity during the late 1970s. However, in 1982 the economy was hit by a crisis that diminished enthusiasm in the free-market experiment and the experts reversed several of their policies (e.g introduced regulation in financial markets and exchange rates). By the end of the dictatorship, the economy had recovered (mostly due to improvements in copper prices), but the democratic government that started in 1990 had to deal with macroeconomic disequilibrium, poverty rates of 40% and one the largest increases in inequality recorded in the post-WWII world.<sup>1</sup>

## *The 1988 plebiscite*

The economic uncertainty brought by the free-market policies implemented during the dictatorship led to social and political discontent even among some of its supporters. Protests became more frequent but they were met with the expected repression. However, civil society became more organized and visible groups such as the Catholic Church and the center-left political parties and movements put strong pressure on the regime. In 1987, these parties formed a coalition named “Concertación”, providing unified leadership to the movement towards democracy. They saw the 1988 plebiscite as their opportunity to make this transition real and were bolstered by the fact that the Reagan administration in the U.S and other European countries started pushing for a democratic process. Opinion polls initially predicted an easy victory for Pinochet, but as the elec-

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<sup>1</sup> The Gini coefficient went from 0.46 in 1971 to 0.58 in 1989, representing an increase of over 25%.

tion approached the outcome became more uncertain and the expected “No” vote share steadily climbed [Méndez et al., 1988]. The coalition for “No” worked in an intense political campaign that aimed to send a reconciliation message that reached every Chilean. During the last four weeks before the vote, both sides were allowed to produce daily 15-minute spots that were aired on national television. Those produced by the “No” campaign revealed sensitive information, including previously-censored material related to human rights violations and had a positive effect on the “No” vote share [Boas, 2015, González and Prem, 2018].

As part of the preparations for the plebiscite, the National Electoral Service of Chile was re-created by Law 18.556. This Law regulated eligibility to register before the electoral service and the role of the different organizations involved in this process. It also established that witnesses from both campaigns should be present in every polling station to recount the votes [Tagle, 1995]. The law also created registration centers known as “juntas de inscripción” in each county where people could register in-person. Depending on demand, some counties were assigned two or more registration centers.

“No” won with around 55% of the votes, providing an irreversible boost to the movement towards democracy. The first election after the 1988 plebiscite took place in 1989 and determined Pinochet’s immediate successor. This election was held while Pinochet was still in power. The Concertación candidate, Patricio Aylwin, defeated Pinochet’s former Minister of Finance, Hernan Büchi, in what was “in many ways a replay of the plebiscite” [Angell and Pollack, 1990, p.2]. Concertación would go on to win the following three elections in 1993, 1999 and 2005. The Concertación candidates in these elections were Eduardo Frei, Ricardo Lagos and Michele Bachelet, respectively. In 2009, Eduardo Frei was again the Concertación candidate, but was defeated by independent conservative Sebastian Piñera. For the following election in 2013, the coalition expanded and added new opposition parties. It changed its name to “Nueva Mayoría” (New Majority).

The 1980 constitution would cast a long shadow over the democratic governments that followed, despite some initial modifications in 1989. Designed by the expert lawyers consulted by Pinochet, any amendment had to be approved by the conservative parties. This was practically impossible since 9 seats of the senate were allocated to the military. The Constitution also stated that Pinochet would stay as the head of the armed forces at least until 1998. Another way of shaping the political institutions was by imposing a binomial electoral system soon after the plebiscite. This system meant that each district would elect two senate members but voters could only cast ballots for one of them. The coalition of candidates with the highest number of votes would be elected as long as their share of votes was twice as high as the second coalition’s. The result of this system was that conservative parties were always favored and small parties, such as the Communist party, never had a chance to win a seat in the senate. This system was only changed in 2015.

## Appendix B Further information about the data

We exclude from the analysis counties lacking 1970 population data, leaving us with 289 counties (85% of plebiscite sample). We drop four other counties because they lack results for the 1970 election, as well as 13 outliers in the civilian victimization rate. The outliers are mostly small counties that housed improvised detention centers and experienced large massacres. Appendix Table D5 shows that the results are robust to their inclusion. Appendix Figure B1 illustrates the resulting sample attrition. Appendix Table B1 shows summary statistics for the main variables.

**Victims:** We rely on information about victims of the dictatorship from the report produced by the Rettig commission. This commission was headed by former minister and ambassador Raúl Rettig. It was created by President Aylwin in 1991 and its goal was to clarify and document the human rights violations committed by the Pinochet regime. The Rettig report was digitized by the Museum of Memory and Human Rights. From the resulting dataset, we observe each victim's full name, the county of detention or execution, the exact date of detention or execution, political affiliation (if any), age, and occupation. We have complemented this information by manually reconstructing the county of residence and work for the victims. We must exclude victims for which the county of detention/execution is unknown and victims who were assassinated abroad, which reduces the total number to 3,150 (98% of total).

**Military bases:** To construct the dataset, we digitized historical records kept at military libraries and historical museums [e.g., González Salinas, 1987]. We complemented this information with reports prepared by the army in response to our Freedom-of-Information requests. Army regiments belong to several subcategories: infantry, armored cavalry, artillery, engineering, communications, transportation and logistics. We also have information about the location of air force bases, which we use for robustness checks. Our measure of distance to the nearest base is calculated as the logarithm of the distance from a county's centroid to that of the centroid of the nearest county with a base. We set this measure to zero for counties with bases. These are straight-line "as-the-crow-flies" distances.

**Electoral outcomes:** County-level data on the outcome of the plebiscite is publicly available. We digitized the data on voter registration from archival documents kept at the Electoral Service. We also digitized some of the data for the elections in 1952-1973. Besides the 1988 plebiscite, the only other elections between 1973 and 1988 were the plebiscites of 1978 and 1980, which took place without an electoral registry. Furthermore, the county-level data on the electoral results is allegedly missing and the validity of the elections has been seriously questioned [Fuentes, 2013].

The normalization of the voter registration rate by population in 1970 can give rise to registration rates above 100% as a result of various factors (e.g., population growth). The number of counties with more registered voters in 1988 than inhabitants in 1970 is small and these have little weight in our estimations. In our baseline regressions, we winsorize the voter registration rate at the 98th percentile. As part of our robustness checks, we show that the results are unaffected by this choice. Regarding the "No" vote share, results are unaffected if we use total votes (including null and blank votes) in the denominator. The correlation between both measures is 0.999.

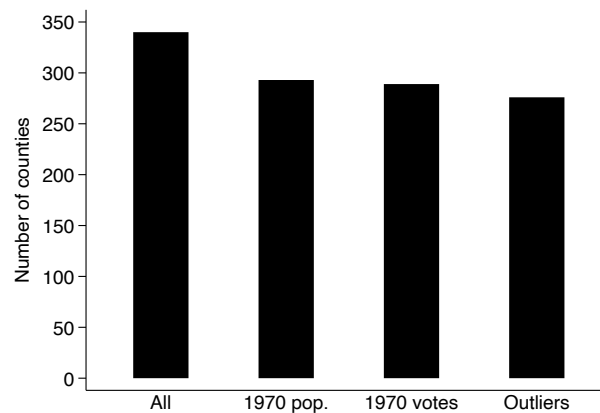
**Other sources:** Our analysis also uses information from the 1965 agricultural census. We use county-level measures of land inequality from the census to characterize the mostly rural society

of the time. We also incorporate measurements of the percentage of agricultural land expropriated during the implementation of the agrarian reform, which was one of the most important national policies of the 1960s and 1970s. The source for both of these pieces of data is Cuesta et al. [2017].

The 1970 population and housing census provides us with population counts. We use this census, instead of the more recent one from 1982, as population may have endogenously responded to repression by then. For instance, estimates of the number of people in exile due to the dictatorship range from 130,000 to 200,000, corresponding to 1.5-2.3% of the total population in 1970 [Orellana, 2015]. Similarly, the 1992 census may reflect population movements triggered by the return to democracy. We also use the 1970 census to construct county-level measures of wealth based on the number of houses per capita, which is arguably related to the level of income in the locality.

Information on public spending comes from a newly-digitized dataset on local infrastructure projects undertaken by the Ministry of Housing and Urban Planning (MHUP) between 1979-1990. The data comes from annual reports prepared by MHUP, which handled approximately 5% of the annual public budget, and includes almost 8,000 projects throughout the country. We add spending across projects in each county and construct an aggregate measure of public spending per capita on urban projects. In addition, we disaggregate this variable into separate measures for highly visible projects, such as public spaces and housing, and less visible projects, including sanitation and indoor equipment.

**Figure B1:** Characterization of sample attrition



Notes: This figure describes the attrition process in our sample. The universe of potential counties in our data is 340 counties, i.e. those with vote shares data in the 1988 plebiscite (“All”). The sample decreases to 293 counties because of missing population data in the 1970 census (“1970 pop.”). Then the sample decreases to 289 because of missing 1970 vote shares (“1970 votes”). Finally, the sample decreases to 276 counties after deleting 5% of counties we considered to be outliers in terms of victims per 10,000 inh. (“Outliers”).



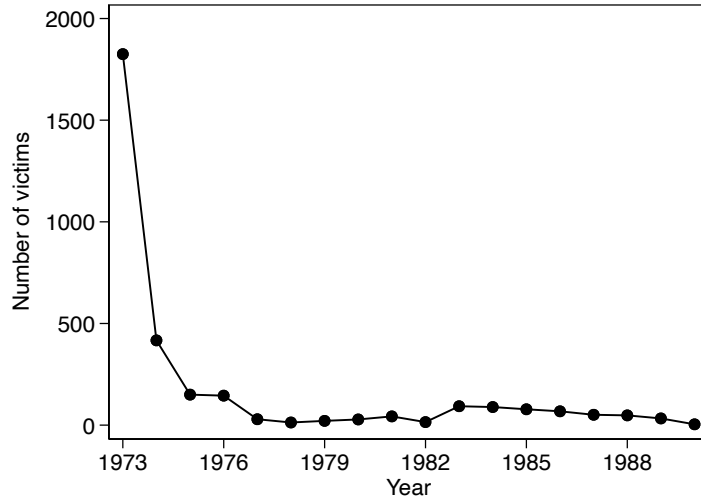
**Table B1: Descriptive statistics**

	Unweighted	Weighted		Min	Max
	Mean	Mean	St. Dev		
	(1)	(2)	(3)	(4)	(5)
<b>A: Main variables</b>					
Indicator military presence	0.13	0.34	0.48	0.00	1.00
Voter registration in 1988	72.50	71.16	25.20	20.61	146.19
“NO” vote share in 1988	48.44	54.82	9.49	3.26	76.77
Victims per 10,000 inh.	1.38	2.31	2.01	0.00	11.89
<b>B: Baseline controls</b>					
Vote share Alessandri in 1970	34.86	34.09	8.79	7.80	67.86
Vote share Allende in 1970	35.04	37.17	10.84	4.17	76.78
ln Distance to Santiago	5.52	4.72	1.92	0.94	8.23
ln Distance to regional capital	3.87	2.80	1.65	0.00	8.21
Rural share in 1970	0.53	0.26	0.29	0.00	1
Population in 1970	0.29			0.00	3.21

Notes: Descriptive statistics for 276 counties in Chile. Baseline controls are included in most regressions below. The statistics in columns 2 and 3 are weighted by county population in 1970, except for “Population in 1970” (expressed per 100,000). We construct electoral outcomes from administrative data kept at Chile’s Electoral Service. The number of victims by county comes from the Rettig report. “No” vote share is defined as a percentage of the total number of votes counted (i.e. not blank or null) in the 1988 plebiscite on Pinochet’s continuation in power. Registration is constructed as number of people who registered to vote in the 1988 plebiscite over the total number of inhabitants in 1970. Population in 1970 comes from the housing census. All distances are calculated from a county’s centroid.

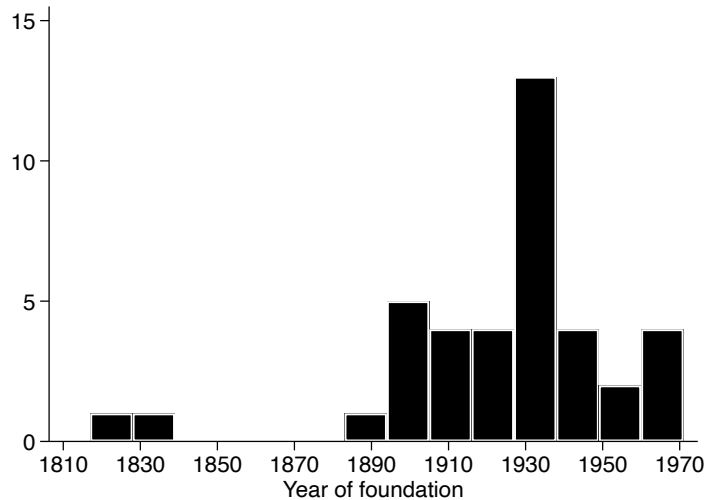
## Appendix C Additional Figures and Tables

**Figure C1:** Number of dictatorship victims by year



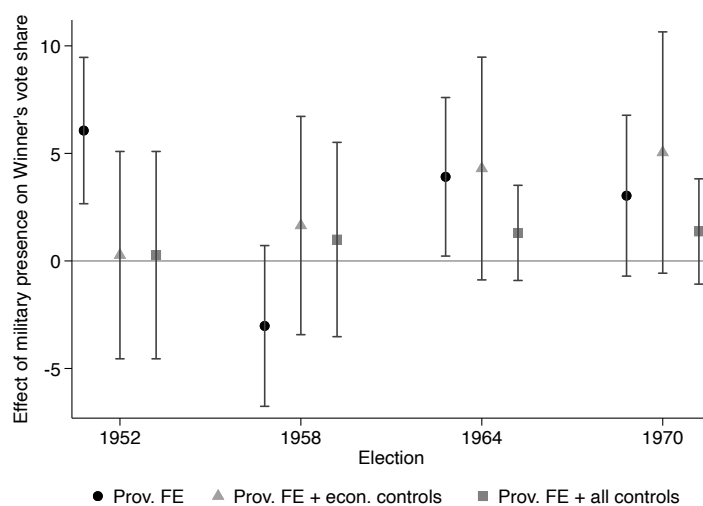
Notes: This figure shows the number of deaths (killings or disappearances) attributed to the military regime per year.

**Figure C2:** Number of new military bases per year

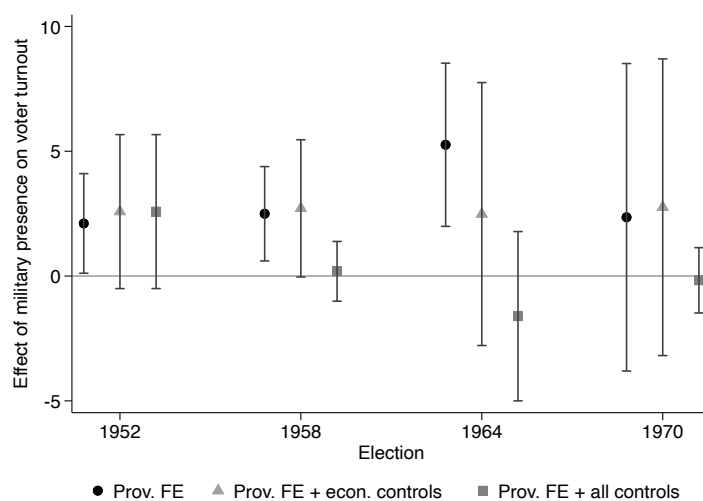


Notes: This figure shows the distribution of foundation years for military bases. We display the earliest year in which a county had a military base that we observe in 1970.

**Figure C3: Military presence and additional electoral outcomes before 1973**



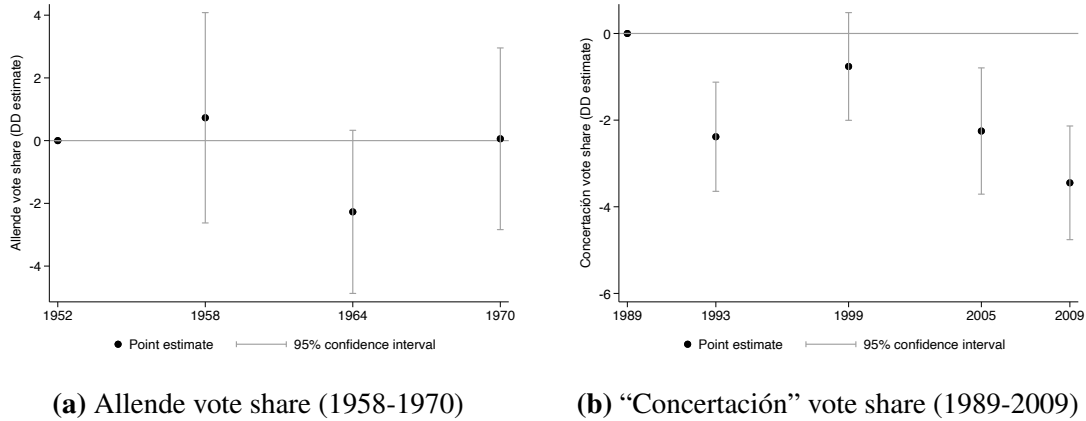
**(a) Winner's vote share**



**(b) Voter turnout**

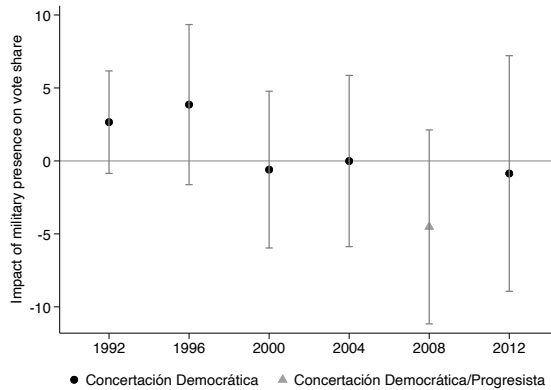
Notes: Graphs show point estimates and 95% confidence intervals of the effect of military presence from independent regressions. In panel (a), the dependent variable is the vote share for the winner or runner-up in each presidential election between 1952 and 1970: Ibanez in 1952, Alessandri in 1958, Frei in 1964, Alessandri in 1970. In panel (b), the dependent variable is voter turnout, normalized by population in 1970. Different markers correspond to specifications with varying controls. Circle: province fixed effects; Triangle: Province fixed effects plus distance to Santiago and to the corresponding regional capital, population in 1970, and the share of rural population in 1970. Square: same as triangle plus the vote shares for Allende and the winner in the previous election (panel a) or voter turnout in the previous election (panel b). Regressions are weighted by population in 1970. Robust standard errors.

**Figure C4: Difference-in-difference estimations (Military presence)**



Notes: In this figure we provide difference-in-difference estimates of the evolution of the vote share in presidential elections for (a) Salvador Allende between 1958-1970 and (b) "Concertación" coalition between 1989-2009, in counties with military presence. Regressions include county and year fixed effects. Robust standard errors clustered by county.

**Figure C5: Military presence and "Concertación" vote share in local elections**



Notes: Graph shows point estimates and 95% confidence intervals from independent regressions of the "Concertación" coalition's vote share in the local council election in the x-axis on the indicator for military presence. These are all the elections in which "Concertación" presented unified lists of candidates. In 2008, two separate sub-coalitions called "Concertación Democrática" and "Concertación Progresista" presented separate lists of candidates. All regressions control for the vote shares for Salvador Allende and Jorge Alessandri in the presidential election of 1970, the distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970 and province fixed effects. Regressions are weighted by population in 1970. Robust standard errors.

**Table C1: Impact of military presence on repression by year**

	Victims / pop. 1970			
	1973-1974	1975-1990	1973-1974	1975-1990
	(1)	(2)	(3)	(4)
Indicator military presence	1.50*** (0.45)	0.60*** (0.21)		
In distance closest military base			-0.46*** (0.14)	-0.16*** (0.05)
Observations	276	276	276	276
R-squared	0.479	0.607	0.475	0.591
Province fixed effects	x	x	x	x
Controls	x	x	x	x
DV mean	1.539	0.724	1.539	0.724

Notes: This table shows the relationship between military presence and repression. Dependent variable in column 1 and 3 is the total number of victims in 1973 and 1974 over the 1970 population, while in column 2 and 4 is the total number of victims in between 1975 and 1990 over the 1970 population. All regressions include province fixed effects and control for Allende and Alessandri vote share in 1970, distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970. Regressions weighted by population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table C2: Impact of repression on the 1988 plebiscite: OLS vs IV**

Dependent variable:	OLS		2SLS	
	Voter registration	“NO” vote share	Voter registration	“NO” vote share
	(1)	(2)	(3)	(4)
Victims per 10,000 inh.	1.61 (0.87)	0.41** (0.19)	4.44** (2.08)	1.08** (0.49)
Observations	276	276	276	276
R-squared	0.663	0.823		
Province fixed effects	x	x	x	x
Controls	x	x	x	x
Kleibergen Paap F-stat.	-	-	26.27	26.27

Notes: Columns 1 and 2 provide OLS estimates of the impact of repression, as proxied by the civilian victimization rate, on voter registration and the “NO” vote share. Columns 3 and 4 provide the corresponding IV estimates, using the indicator for military presence as an excluded instrument for the civilian victimization rate. Voter registration is constructed as the number of people who registered to vote in the 1988 plebiscite over the total number of inhabitants in 1970. The “NO” vote share is defined as the percentage of people who voted No in the plebiscite over the total number of valid votes. All regressions control for the vote shares for Salvador Allende and Jorge Alessandri in the presidential election of 1970, the distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970 and province fixed effects. Regressions are weighted by population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table C3: Validity tests for military presence instrument**

	Huber and Mellace [2015]	Kitagawa [2015]
Registration	0.96	0.38
Vote share NO	0.76	0.63

Notes: This table presents the p-values for validity tests based on Huber and Mellace [2015] and Kitagawa [2015]. We use a discrete version of our endogenous variable, corresponding to a civilian victimization rate above the 75th percentile, to be able to apply the tests. The null hypothesis in both tests is that the main assumptions behind LATE estimation (unconfoundness, mean exclusion restriction, and monotonicity) hold in the data. For Kitagawa [2015], we use a trimming constant of 0.07, which is the range suggested by the author that reaches highest power. This test captures a necessary, but not sufficient, condition for instrument validity. Not rejecting the null does not fully rule out violations of the LATE assumptions.

### *Characterization of the complier counties*

In any instrumental variables design, the sub-population induced to take (or not to take) the treatment because of the variation in the instrument is referred to as the set of “compliers.” In our case, the compliers are the counties that were exposed to different amounts of repression because of their proximity to (or distance from) military bases. Following the technique proposed by Abadie et al. [2002], we can characterize this set of counties. This exercise allows us to evaluate the external validity of our estimates and also provides insights about the variation we are exploiting.

To facilitate the interpretation, we focus on a binary treatment and a binary instrument. Regarding repression, we use a dummy equal to one if the number of victims per 10,000 inhabitants in the county is in the top quartile of the distribution. The average number of victims per 10,000 inhabitants in the top quartile is 4.3. We refer to these counties as experiencing “high” repression. Regarding military bases, we focus on the indicator for presence. We define as “treated compliers” those counties with bases and high repression, while counties without bases and without high repression are called “untreated compliers.” We then estimate the following regression:

$$Y_{i,t} = \mu R_{i,t \in [1973, 1988]} + \tau X_{i,t \leq 1970} + \lambda_p + \varepsilon_{ip} \quad (2)$$

where  $Y_{i,t}$  is a variable we use to characterize compliers and  $R_{i,t \in [1973, 1988]}$  is the indicator for high repression. The parameter  $\mu$  measures the average characteristic among treated compliers. We can replace  $R_{i,t \in [1973, 1988]}$  by  $1 - R_{i,t \in [1973, 1988]}$  to characterize untreated compliers.

Panel A in Table C4 speaks to the external validity of our estimates. Columns 1-3 show that the average characteristics of complier counties are similar to those of the average county, with the exception that compliers voted relatively more for the left-wing candidate in 1970. Thus, our instrumental variables estimates capture the effect of repression on counties with similar wealth and inequality than the average county but with different political preferences. Moreover, the comparison between columns 1 and 2 confirms the *internal* validity of our econometric design because treated and untreated complier counties were similar before 1973.

Panel B studies county characteristics after 1973. The difference between treated and untreated compliers is equivalent to the local average treatment effect. Reassuringly, the “Plebiscite” sub-panel shows that the estimate we obtained when using the “high” repression indicator is similar to what we obtained using the continuous treatment. Moreover, the “Repression year” sub-panel suggests that our first stage is stronger in counties that experienced violence at the beginning of the dictatorship. This result is consistent with historical details provided in online appendix A, where we document how the repressive apparatus changed after 1974, with DINA becoming mostly responsible. Finally, the “Profession” and “Age categories” sub-panels show that victims in complier counties were more likely to have been middle-age laborers or farmers affiliated to a political party.

**Table C4: Characterization of compliers**

	Treated Compliers	Untreated Compliers	Full sample
	(1)	(2)	(3)
<b>A. Pre-1973 characteristics:</b>			
Houses per capita in 1970	0.19	0.22	0.20
Land inequality 1965 (Gini)	0.85	0.80	0.85
Agrarian reform intensity	0.10	0.24	0.20
Vote share Allende 1970	0.61	0.63	0.27
Vote share Alessandri 1970	-0.19	0.31	0.20
<b>B. Post-1973 characteristics:</b>			
Plebiscite:			
Registration	116.18	89.36	71.16
Vote share “No”	58.79	52.29	54.82
Repression year:			
In 1973	0.66	0.33	0.44
In 1974	0.13	0.14	0.11
≥1975	0.25	0.30	0.33
Profession:			
Laborer	0.44	0.19	0.25
Farmer	0.16	-0.08	0.09
Military	0.09	0.06	0.07
Bureaucrat	0.10	0.06	0.07
Student	0.03	0.04	0.10
Affiliated to political party	0.36	0.31	0.39
Age categories:			
∈ [18, 25]	0.39	0.31	0.33
∈ [25, 60]	0.62	0.39	0.50
≥ 60	-0.01	0.08	0.02

Notes: This table presents an empirical characterization of the complier counties. Panel A shows that compliers were relatively similar to the average county in the full sample. Panel B describes counties that experienced repression because of the presence of military bases. See Abadie et al. [2002] for details. The treatment in this exercise is an indicator that takes the value one if the share of victims is in the top quartile of the empirical distribution.



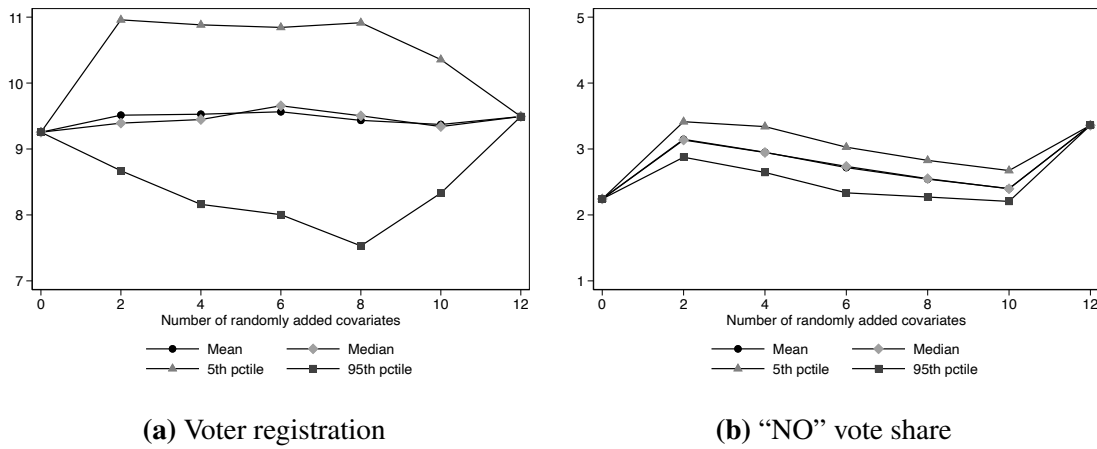
## Appendix D Robustness checks

Table D1 shows that the results are unaffected if we introduce all the possible pre-1970 control variables from Table 1 or if we use a machine-learning algorithm to determine the optimal combination of controls [Belloni et al., 2014]. We complement this analysis by re-estimating the regressions using randomly-selected subsets of these control variables following Card et al. [2019]. Figure D1 shows that, for any number of control variables, the average and the median point estimate across randomizations is greater than or equal to our baseline estimate for both outcomes. Our results are also robust to the inclusion of additional spatial controls. Table D2 replicates the analysis when we add (i) polynomials of latitude and longitude, (ii) population-weighted average distance from a county's centroid to all other counties or (iii) Moran eigenvectors with positive eigenvalues.

Table D3 shows results from an enlarged specification including an additional indicator for other large facilities or political institutions (i.e. provincial or regional capital). The  $\beta_1$  estimates are remarkably robust. Additionally, no other facility or institution appears to be systematically correlated with both of the 1988 outcomes. Hence, our baseline results are driven by a feature specific to counties with military presence. Figure D3 shows the distributions of coefficients from Equation (1) when we randomly assign military bases among counties nationwide or within a province. This permutation test provides us with a distribution-free estimate of the probability that our coefficient arises by chance. Our estimated coefficient is above the 99th percentile for both outcomes. In Figure D4 we pursue a more agnostic approach and follow Oster [2019] in estimating the potential bias arising from selection on unobservables. Our estimated impact of military presence on the "No" vote share is hardly affected, while the effect on voter registration is more sensitive. However, both remain within the 95% confidence interval.

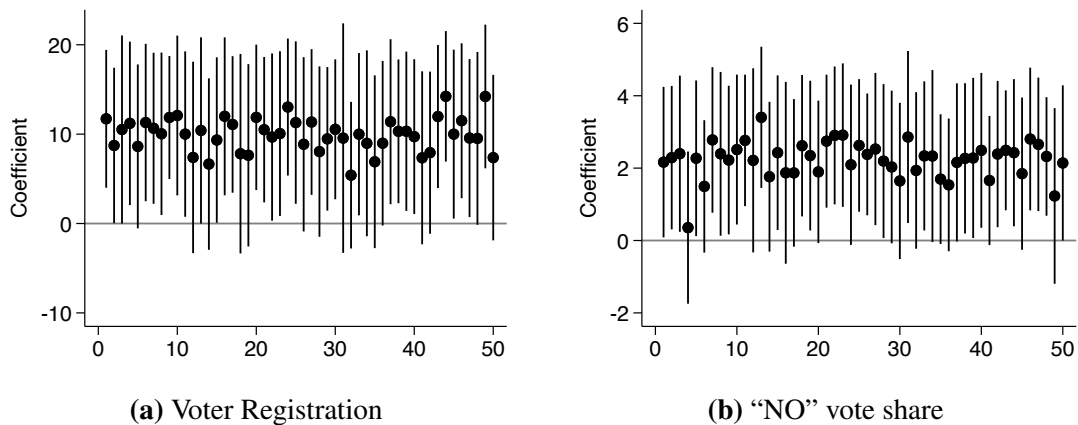
Our results are also robust to changes in the way we measure military presence. Arguably, the location of military bases is more likely to be uncorrelated with local conditions at the time of the 1973 coup for those bases that were built many years or decades before it took place. In Table D4 we show that the results are very similar if we exclude bases built after 1960, 1950 or 1940. We next examine the sensitivity of our results to the composition of the sample. Figure D2 shows that the results are unaffected if we drop randomly-chosen groups of counties. Table D5 similarly shows that our results are stronger if we use the full sample including the 13 outliers in the civilian victimization rate. Table D6 further shows that the results remain largely unaffected, but become less precise, if we exclude the population weights.

**Figure D1: Coefficient stability to randomly added controls**



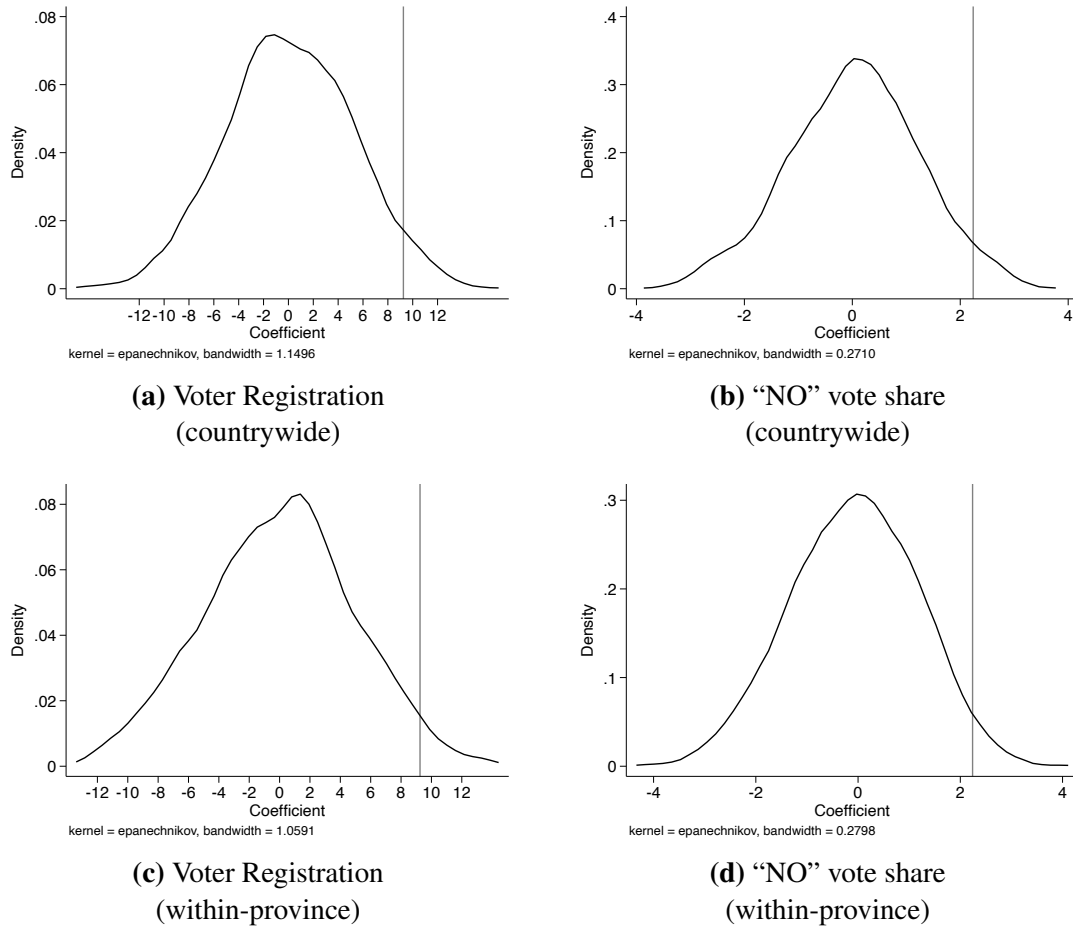
Notes: In this figure we randomly add subsets of the full set of control variables. We carry out 150 random draws of controls. We always include the baseline set of controls and we randomize over the other 12 controls. The point estimate from the baseline specification corresponds to 0 in the x-axis and the one with all the controls to 12 in the x-axis.

**Figure D2: Robustness of results to exclusion of random counties**



Notes: The y-axis represents the value of the coefficient associated to the indicator for presence of military bases. The x-axis corresponds to 50 different samples of counties, where we exclude 10% (27) randomly chosen counties each time. Markers show point estimates, while bars indicate 95% confidence intervals. All regressions control for the vote shares for Salvador Allende and Jorge Alessandri in the presidential election of 1970, the distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970 and province fixed effects. Regressions are weighted by population in 1970. Robust standard errors.

**Figure D3: Random assignment of military bases**



Notes: This figure presents the distribution of point estimates from a series of regressions in which military bases are randomly assigned across counties. Panels (a)-(b) randomly assign 36 indicators among all counties in the country (countrywide). Panels (c)-(d) randomly assign the original indicator for military bases within the same original province. We perform each set of randomizations 1,000 times. The dependent variable in panels (a) and (c) is voter registration, while in panels (b) and (d) it is the “No” vote share. Voter registration is defined as the number of people who registered to vote in the 1988 plebiscite over the total number of inhabitants in 1970. The “No” vote share is defined as the percentage of people who voted “No” over the total number of valid votes. All regressions control for the vote shares for Salvador Allende and Jorge Alessandri in the presidential election of 1970, the distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970 and province fixed effects. Regressions are weighted by population in 1970. Robust standard errors. The red line shows the point estimates from columns 1 and 3 in Table 3.

**Table D1: Robustness of results to different sets of controls**

	First stage	Reduced form		2SLS	
	<i>Victims per 10,000 inh.</i>	<i>Registration</i>	<i>Vote share NO</i>	<i>Registration</i>	<i>Vote share NO</i>
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: All controls</b>					
Victims per 10,000 inh.				4.39** (2.05)	1.50*** (0.44)
Indicator military presence	2.25*** (0.43)	9.86** (4.76)	3.37*** (0.92)		
<b>Panel B: LASSO controls</b>					
Victims per 10,000 inh.				4.31** (2.12)	1.20** (0.50)
Indicator military presence	2.07*** (0.41)	8.91 (4.57)	2.49** (0.98)		
Counties	276	276	276	276	276
Province fixed effects	x	x	x	x	x
R-squared (A)	0.593	0.707	0.846		
R-squared (B)	0.564	0.665	0.830		
Kleibergen-Paap <i>F</i> -statistic (A)	27.06			27.20	27.20
Kleibergen-Paap <i>F</i> -statistic (B)				25.14	25.14

Notes: This table checks the robustness of results to the inclusion of controls selected using LASSO. All regressions are weighted by county population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table D2: Robustness of results to spatial controls**

	First stage	Reduced form		2SLS	
	<i>Victims per 10,000 inh.</i>	<i>Registration</i>	<i>Vote share NO</i>	<i>Registration</i>	<i>Vote share NO</i>
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Latitude/longitude polynomial</b>					
Victims per 10,000 inh.				4.47** (2.10)	1.16** (0.52)
Indicator military presence	2.06*** (0.41)	9.21** (4.41)	2.39** (1.05)		
<b>Panel B: Centrality</b>					
Victims per 10,000 inh.				4.09** (2.01)	0.88 (0.46)
Indicator military presence	2.16*** (0.40)	8.85** (4.49)	1.90 (1.02)		
<b>Panel C: Moran eigenvectors</b>					
Victims per 10,000 inh.				3.76 (2.14)	0.87 (0.49)
Indicator military presence	2.07*** (0.43)	7.77 (4.72)	1.80 (1.08)		
Counties	276	276	276	276	276
Province fixed effects	x	x	x	x	x
R-squared (A)	0.588	0.669	0.829		
R-squared (B)	0.572	0.668	0.831		
R-squared (C)	0.595	0.687	0.849		
Kleibergen-Paap <i>F</i> -statistic (A)				24.96	24.96
Kleibergen-Paap <i>F</i> -statistic (B)				28.73	28.73
Kleibergen-Paap <i>F</i> -statistic (C)				23.28	23.28

Notes: This table checks the robustness of results to the inclusion of spatial variables that capture a potential effect of the geographic location of counties. Panel A includes second degree polynomials of latitude and longitude, panel B includes the logarithm of the average distance to all other counties, and panel C includes Moran eigenvectors with positive eigenvalues as controls. All regressions are weighted by county population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table D3: Robustness: Military presence and other facilities/institutions**

	Additional control for other institution:							
	Baseline	Maritime port	Airport	Terrestrial entry point	Power plant	Provincial capital	Regional capital	Churches per capita
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A: Voter registration (1988):</b>								
Indicator military presence	9.25** (4.38)	10.76*** (3.92)	8.91** (4.28)	9.08** (4.46)	9.77** (4.48)	9.96** (4.66)	10.15** (4.19)	9.34** (4.40)
Indicator other institution		13.10** (5.30)	1.50 (6.07)	2.24 (4.94)	7.86 (8.98)	-2.04 (5.32)	-13.54 (12.01)	15.62 (13.87)
<b>B: “NO” vote share (1988):</b>								
Indicator military presence	2.24** (1.01)	2.16** (1.01)	1.85 (1.04)	2.31** (1.03)	2.32** (1.02)	2.02 (1.08)	2.07** (1.04)	2.24** (1.02)
Indicator other institution		-0.74 (0.73)	1.72** (0.84)	-0.91 (1.10)	1.22 (1.44)	0.64 (1.15)	2.60 (1.89)	-1.38 (3.71)
<b>C: Victimization rate:</b>								
Indicator military presence	2.09*** (0.41)	2.10*** (0.41)	2.02*** (0.44)	2.10*** (0.41)	2.13*** (0.41)	2.36*** (0.44)	2.11*** (0.42)	2.09*** (0.41)
Indicator other institution		0.15 (0.31)	0.31 (0.45)	-0.12 (0.42)	0.69 (0.38)	-0.79 (0.50)	-0.33 (0.76)	0.79 (1.11)
Observations	276	276	276	276	276	276	276	276
R-squared (panel A)	0.667	0.689	0.667	0.667	0.671	0.667	0.671	0.668
R-squared (panel B)	0.824	0.825	0.826	0.825	0.825	0.824	0.825	0.824
R-squared (panel C)	0.565	0.566	0.566	0.565	0.570	0.572	0.565	0.566
Province fixed effects	x	x	x	x	x	x	x	x
Controls	x	x	x	x	x	x	x	x

Notes: This Table shows our baseline estimates of the effects of military presence (column 1), as well as results from expanded specifications that control for presence of other institutions or county characteristics. The dependent variable in panel A is the voter registration rate, constructed as the number of people who registered to vote in the plebiscite over the total number of inhabitants in 1970. In panel B, the dependent variable is the “NO” vote share, defined as the percentage of people who voted No over the total number of valid votes. The dependent variable in panel C is the civilian victimization rate, defined as the number of victims of the dictatorship divided by population in 1970. All additional controls in columns 2-7 are binary indicators. In column 2, presence of maritime ports. In column 3, presence of airports. In column 4, presence of terrestrial points of entry into the country. In column 5, presence of power plants in 1970. Column 6 includes an indicator for counties that were capitals of their respective province in 1970, while column 7 includes a dummy for counties that became regional capitals in 1975. Column 8 includes the number of churches per capita in 1962. All regressions control for the vote shares for Salvador Allende and Jorge Alessandri in the presidential election of 1970, the distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970 and province fixed effects. Regressions are weighted by population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Table D4: Robustness to different cut-off years for military base construction**

	First stage	Reduced form		2SLS	
	<i>Victims per 10,000 inh.</i>	<i>Registration</i>	<i>Vote share NO</i>	<i>Registration</i>	<i>Vote share NO</i>
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: pre-1960</b>					
Indicator military presence	1.97*** (0.43)	7.43 (4.56)	2.07** (1.01)		
Victims per 10,000 inh.				3.77 (2.20)	1.05** (0.52)
<b>Panel B: pre-1950</b>					
Indicator military presence	1.96*** (0.43)	9.03** (4.51)	1.94** (0.98)		
Victims per 10,000 inh.				4.60** (2.30)	0.99 (0.51)
<b>Panel C: pre-1940</b>					
Indicator military presence	1.83*** (0.49)	9.76 (5.22)	2.81*** (0.83)		
Victims per 10,000 inh.				5.34 (2.93)	1.54*** (0.59)
Observations	276	276	276		
R-squared (panel A)	0.550	0.662	0.823		
R-squared (panel B)	0.549	0.665	0.823		
R-squared (panel C)	0.530	0.666	0.826		
Kleibergen Paap F-stat. (panel A)				20.71	20.71
Kleibergen Paap F-stat. (panel B)				20.92	20.92
Kleibergen Paap F-stat. (panel C)				14.15	14.15
Province fixed effects	x	x	x	x	x
Controls	x	x	x	x	x

Notes: This table replicates the main analysis using only military bases constructed before 1960, 1950 and 1940. All regressions include province fixed effects and the following controls: Allende and Alessandri vote share in 1970, distance to Santiago and to the corresponding regional capital, population in 1970, share of rural population in 1970. All regressions are weighted by county population in 1970. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

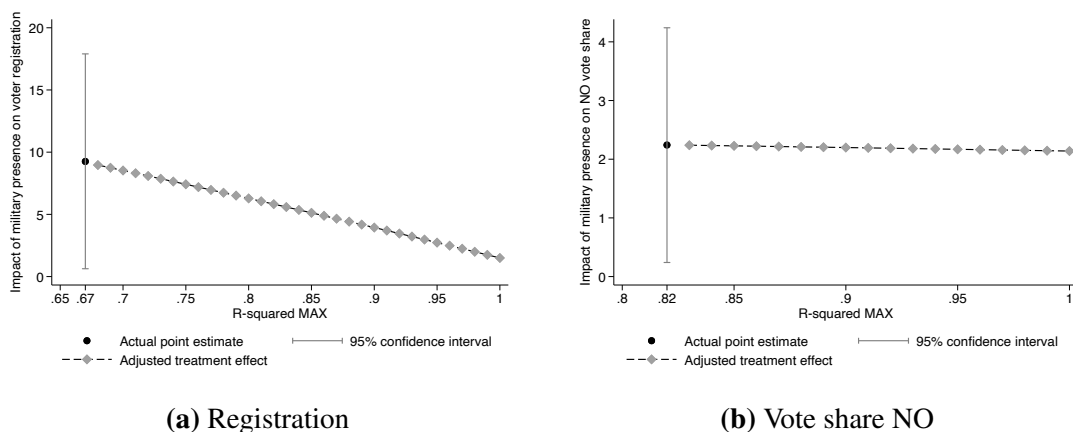
**Table D5: Robustness of results to inclusion of outliers**

	First stage	Reduced form		2SLS	
	<i>Victims per 10,000 inh.</i>	<i>Registration</i>	<i>Vote share NO</i>	<i>Registration</i>	<i>Vote share NO</i>
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: All observations</b>					
Indicator military presence	3.34*** (0.72)	17.43*** (4.83)	2.20** (1.12)		
Victims per 10,000 inh.				5.21*** (1.29)	0.66 (0.36)
<b>Panel B: Winsorize victimization</b>					
Indicator military presence	2.89*** (0.53)	17.43*** (4.83)	2.20** (1.12)		
Victims per 10,000 inh.				6.04*** (1.48)	0.76 (0.40)
<b>Panel B: Add a dummy for outliers</b>					
Indicator military presence	1.39*** (0.52)	13.28*** (4.30)	2.38** (1.03)		
Victims per 10,000 inh.				9.53** (4.50)	1.71 (0.89)
Counties	289	289	289	289	289
Province fixed effects	x	x	x	x	x
Controls	x	x	x	x	x
R-squared (A)	0.472	0.656	0.825		
R-squared (B)	0.628	0.656	0.825		
R-squared (C)	0.723	0.689	0.826		
Kleibergen-Paap <i>F</i> -statistic (A)				21.47	21.47
Kleibergen Paap <i>F</i> -stat. (B)				30.09	30.09
Kleibergen Paap <i>F</i> -stat. (C)				7.182	7.182

Notes: This table checks the robustness of results to inclusion of the 13 counties with abnormally high civilian victimization rates. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .



**Figure D4: Potential bias from selection on unobservables**



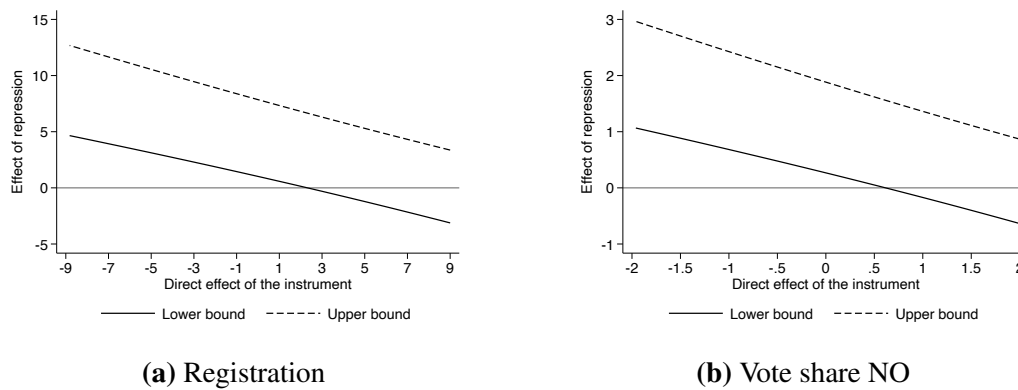
Notes: These figures present estimates of the effect of military presence on voter registration (panel a) and “No” vote share (panel B), once we adjust for potential selection on unobservables following Oster [2019]. In each plot, we steadily increase the R-squared from a hypothetical regression of the outcome on military presence and both observed and unobserved controls, starting at the R-squared of our actual specification. Observed controls correspond to the province fixed effects and the baseline set of controls. For these exercises, we assume equal selection on observables and unobservables ( $\delta = 1$ ). Plot also includes our actual point estimate and 95% confidence interval (i.e. Table 3.)

**Table D6: Robustness of results to exclusion of population weights**

	First stage	Reduced form		IV	
	<i>Victims per 10,000 inh.</i>	<i>Registration</i>	<i>Vote share NO</i>	<i>Registration</i>	<i>Vote share NO</i>
	(1)	(2)	(3)	(4)	(5)
Victims per 10,000 inh.				6.33 (3.28)	1.14 (0.76)
Indicator military presence	1.67*** (0.51)	10.56** (4.34)	1.90 (1.29)		
Counties	276	276	276	276	276
Province fixed effects	x	x	x	x	x
Controls	x	x	x	x	x
R-squared	0.356	0.384	0.739		
Kleibergen-Paap <i>F</i> -statistic				10.55	10.55

Notes: This table checks the robustness of results to not using population weights. Robust standard errors in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

**Figure D5: Relaxing the exogeneity assumption**



Notes: These figures present results from a bounding exercise of our 2SLS estimates, in which we allow military bases to affect outcomes directly. The  $x$ -axis measures (theoretical) direct effects of military bases on (a) voter registration and (b) the “NO” vote share. The  $y$ -axis measures the corresponding effect of repression. Overall, we find that to make the effect of repression non-different from zero we need the direct effect of bases to be 2.3 and 0.6 in panels A and B, equivalent to 25% ( $2.3/9.25$ ) and 28% ( $0.62/2.24$ ) of the reduced form effect. See Conley et al. [2012] for details.

## Appendix E Political ideology in Latinobarómetro

We now turn to survey data from the post-democratization period to examine whether exposure to the military coup had long-lasting effects on political preferences. For this purpose, we use data from several waves of the “Latinobarómetro” survey between 1997 and 2017. Taken together, these surveys contain information about the political attitudes and preferences of almost 20,000 Chileans living in almost 190 counties. For this part of the analysis, we exploit the fact that the survey includes responses by people born as early as 1902 and as late as 1999 and allow the effect of military presence to vary across cohorts depending on their exposure to the military coup. We estimate the following regression:

$$S_{i,c,y,t} = \delta_1 \mathbb{1}(\text{Military base})_c \times \mathbb{1}(\text{Exposed to coup})_y + \phi_c + \phi_t + \phi_y + \varepsilon_{i,c,y,t}, \quad (3)$$

where  $S_{i,c,y,t}$  is an outcome based on responses in the Latinobarómetro survey from year  $t$  by person  $i$  in county  $c$  from birth-cohort  $y$ . As in our main specification,  $\mathbb{1}(\text{Military base})_c$  is an indicator variable for the presence of a military base in county  $c$  in 1970.  $\mathbb{1}(\text{Exposed to coup})_y$  is an indicator variable for birth-cohorts exposed to the military coup. We use 1963 as the cut-off birth-year for exposure to the coup (i.e., age 10 or more at the time).  $\phi_c$ ,  $\phi_y$  and  $\phi_t$  are county, birth-year and survey-wave (year) fixed effects. The error term  $\varepsilon_{i,c,y,t}$  is clustered at the county level. The coefficient of interest is  $\delta_1$ , which captures the differential effect of military presence on the outcome for the cohorts that were exposed to the coup. The county fixed effects,  $\phi_c$ , capture all fixed differences between counties and absorb the indicator for military presence and the baseline controls.

We construct variables measuring political preferences using the following question: “In politics, people normally speak of “left” and “right”. On a scale where 0 is left and 10 is right, where would you place yourself?” Respondents may also indicate that they do not have political leanings. We use the answer to this question to construct various outcomes on political preferences and tests for persistent effects on expressed political ideology. Table E1 shows the results. The outcome in column 1 is an indicator for those respondents that do not describe themselves as politically-aligned, the outcome in columns 2, 3, and 4 in Table E1 are different binary variables for respondents that classify themselves as having political views consistent with the political left, center or right. Finally, the outcome in column 5 is a continuous index (0-10), with larger values indicating more right-wing views. Overall, we do not observe any systematic effect of exposure to the coup on any of these political affiliations, echoing the findings from the electoral results after 1988.

**Table E1: Impact of exposure to the military coup on political attitudes**

	Point estimate	Standard error	Mean Dep Var	Observations
	(1)	(2)	(3)	(4)
<b>Panel A: Attitudes towards democracy (agrees with)</b>				
Democracy is preferable to any other kind of government	-0.010	(0.020)	0.566	19641
Under some circumstances, authoritarianism is preferable	0.013	(0.012)	0.151	19641
Democracy is still the best form of government	0.001	(0.020)	0.749	14885
Democracy solves problems	0.000	(0.036)	0.474	4787
Without political parties there can be no democracy	0.032	(0.018)	0.582	11890
Would not support a military government	0.029	(0.025)	0.687	5953
<b>Panel B: Political ideology</b>				
Indicator non-aligned	0.006	(0.012)	0.195	19641
Indicator left	0.001	(0.007)	0.074	19641
Indicator center	0.010	(0.014)	0.540	19641
Indicator right	0.005	(0.009)	0.096	19641
Political ideology index (excludes non-aligned)	0.042	(0.073)	5.029	13944

Notes: This table shows results from regressions of survey responses in Latinobarómetro on the interaction between the indicator for military presence and an indicator for cohorts exposed to the military coup. Indicator for military presence equals one if there was a military base in the county in 1970. Indicator exposed to coup equals 1 if respondent's birth year is less than or equal to 1963. All regressions include county, survey year, birth year, and gender fixed effects. Robust standard errors clustered at the county level in parenthesis. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

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