

(When) Do Democracies Repress Less?

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Abstract

Although there is consensus that full democracies are less repressive than other regime types, the establishment of full democracy is not always followed by reduced state repression. Against that background, this paper examines heterogeneity in the relationship between democracy and government violations of human rights. Drawing on arguments from the civil war literature, we develop a simple model that highlights opposing effects of democracy on state repression. Consequently, the net effect of democracy is shown to be ambiguous. Furthermore, the model reveals that pacifying (adverse) effects of democracy are more likely to dominate in countries with higher (lower) income levels. These implications are tested empirically using different methodological approaches, including time-series cross-sectional regressions, event studies, and a recent generalization of the synthetic control method. Our analyses confirm that democracy is related to reduced repression in relatively rich countries, whereas we find no or even adverse effects in poor countries.

JEL classifications: H10, D74, O10

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1 Introduction

The relationship between democracy and government violations of human rights has been analyzed in numerous empirical studies (see, e.g., Davenport, 2007c; Bueno De Mesquita et al., 2005; Fein, 1995; Hill and Jones, 2014; Jones and Lupu, 2018; Poe and Tate, 1994; Regan and Henderson, 2002). Although results are generally heterogeneous, there is consensus that full democracies are less repressive than other regime types. The “domestic democratic peace” (Davenport, 2007a,b) is therefore one of the core findings in the literature on state repression. The difference between full democracies and other countries is clearly reflected in Figure 1a (detailed descriptions of the indicators are provided below). Over the period from 1960 to 2011, the average repression score was consistently lower in full democracies compared to other regimes.

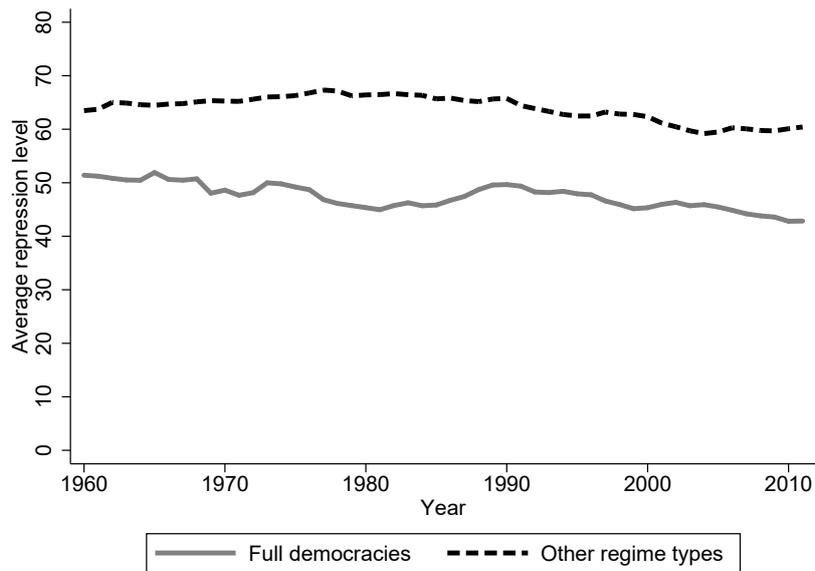
While the comparison of average repression levels reveals persistent differences between regime types, more direct insights into the effect of democracy may be gained by considering the evolution of repression in countries that established full democracy. Figure 1b depicts the changes in state repression for 20 emerging democracies, all of which remained fully democratic for at least 10 years after the regime change. On average, the data indicate an immediate decrease in the level of human rights violations after completed democratization. This trend continues until the end of the depicted time frame. This finding is broadly in line with the notion that democracy increases government respect for human rights. However, there is obvious heterogeneity in the individual patterns of state repression. While there are decreases in repression for most states, the size of the reductions varies considerably. Furthermore, some countries do not show decreased but increased levels of human rights violations directly after the establishment of full democracy. For most of these countries, repression does not return to its initial level within 10 years. In the light of previous evidence on the relationship between democracy and repression, the ambiguity of these patterns is puzzling.

Against that background, this paper examines heterogeneity in the relationship between democracy and government violations of human rights. Drawing on arguments from the civil war literature, we highlight that democracy is not inevitably pacifying but can fuel violent political conflict by enhancing the opportunity of insurgents to organize and coordinate with each other. Incorporating this perspective into a simple formal model shows that the effect of democracy on state repression is ambiguous. Furthermore, the model implicates that the relationship between democracy and repression is moderated by income. Democracy is found to be more likely to decrease repression in countries with higher income levels. In countries with low income levels, the adverse effects of democracy may dominate. The implications of the theoretical model are confirmed empirically using different methodological approaches, including time-series cross-sectional regressions, event studies, and a recent generalization of the synthetic control method (Xu, 2017).

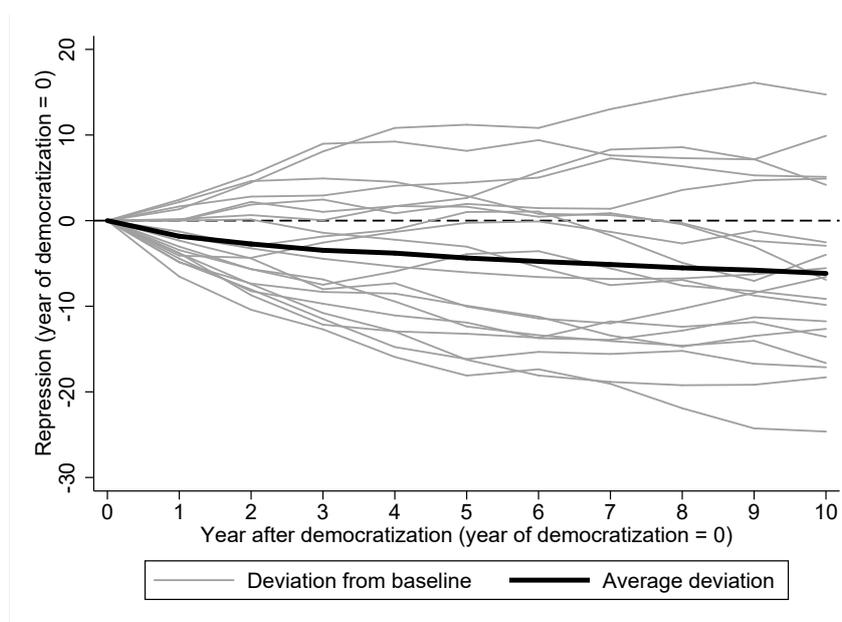
2 Related Literature

Democratic governments are generally considered to be more responsive to the demands of their population than autocratic governments. By promoting bargaining and compromise, democratic political processes may reduce conflict and limit the use of repression by the executive. In line with this perspective, early studies find a negative relationship between democracy and government violations of human rights (see, e.g., Henderson, 1991; Mitchell and Mc-

Figure 1: Repression by full democracy status and after establishment of full democracy



(a) Average repression levels in full democracies and other regime types



(b) Evolution of repression after establishment of full democracy for 20 countries

Repression is measured by the reversed and 0-100-normalized latent human rights scores of Fariss (2014). Data on democracy is from Marshall and Gurr (2016). Full democracy is defined by an “X-Polity” score (Vreeland, 2008) of 6 or higher.

Cormick, 1988; Poe and Tate, 1994). However, the greater freedom associated with democracy may also fuel the expression of opposition and, hence, the level of threat perceived by the political leaders. Given that the latter may respond with repression if conflict is not enclosed by political institutions, some authors argue that anocracies, i.e. regimes characterized by a mix of democratic and autocratic institutions, tend to be most repressive (Fein, 1995; Regan and Henderson, 2002). Drawing on a similar line of reasoning, multiple studies additionally indicate that anocracies face a higher risk of civil war (see, e.g., Fearon and Laitin, 2003; Hegre, 2001).

These findings of increased political violence in countries at intermediate levels of democracy gave rise to the hypothesis that there is “more murder in the middle” (Fein, 1995).

With respect to human rights, several studies have challenged the finding that anocracies are more repressive than full autocracies and full democracies. Often, these studies point to a threshold effect, indicating that only full democracy is associated with reduced repression whereas there are no systematic differences between countries at lower levels of democracy (see, e.g., Davenport and Armstrong, 2004; Bueno De Mesquita et al., 2005). Moreover, some authors highlight that the statistical relationship between democracy and political conflict may be flawed by measurement issues. In this respect, Vreeland (2008) points to conceptual overlaps between frequently used democracy measures like the Polity scores (Marshall and Gurr, 2016) and indicators of violent conflict. These overlaps particularly stem from components of democracy measures capturing violence in political competition. With the “X-Polity” scores, Vreeland (2008) introduces a variant of the Polity scores that excludes these potentially contaminated components. His analysis shows that the inverted-U shaped relationship between democracy and civil war disappears when the X-Polity scores are employed. With respect to state repression, conceptual overlaps with indicators of democracy have recently been stressed by Hill (2016). Nonetheless, the result that full democracies are less repressive than other regime types has remained robust against the exclusion of problematic components from democracy scores (see, e.g., Jones and Lupu, 2018).

Several papers emphasize different roles of specific political institutions (see, e.g., Cingranelli and Filippov, 2010; Conrad et al., 2018; Bueno De Mesquita et al., 2005; Lupu, 2015) or focus on heterogeneous effects of democracy on different forms of repression (see, e.g., Hill, 2016; Jackson et al., 2018). Other studies examine the impact of democracy by considering changes in the political regime. In this regard, Zanger (2000) finds heterogeneous effects on life integrity violations. While changes towards democracy decrease repression, a change from democracy to anocracy is related to higher levels of human rights violations. Similarly, Davenport (1999) presents evidence that countries which become democratic show immediate repressive withdrawals whereas changes towards autocracy increases human rights violations. Cingranelli and Richards (1999) focus on democratizing countries and human rights practices after the end of the Cold War. Their results indicate that countries which became more democratic improved human rights practices with respect to political imprisonment. However, the authors also note that some of the post-Cold-War democratization cases cast doubt on a positive relationship between democracy and government respect for human rights. In a later study, Davenport (2004) reveals diverging effects of democracy and democratization. While democracy generally reduces repression, the process of democratization is associated with increased political restrictions.

In summary, the results of previous studies on the relationship between democracy and repression are broadly in line with the descriptive evidence from Figures 1a and 1b. While there is support for the hypothesis that full democracies are generally less repressive than other types of political regimes, the establishment of full democracy is not necessarily followed by a reduction of repression. These inconclusive results give reason to suspect that the relationship between democracy and state repression may depend on contextual factors. Since the literature has outlined both pacifying and adverse impacts of democracy, there may be conditions inducing the dominance of either positive or negative effects on state repression. Identifying these conditions may help to explain the observed diverse patterns of human rights violations.

For closer examination, the following section presents a simple formal model of political

regimes and state repression. Following arguments from Gleditsch et al. (2009) the model distinguishes between opposing effects of democracy on the motivation and the opportunity for rebellion. In this way, different channels through which democratic political regimes alter the use of repression by governments are highlighted.

3 The Model

We consider a continuum of citizens with mass normalized to unity. The citizens form two equally sized groups $i = 1, 2$, which are characterized by policy preferences $x_i \in [0, 1]$. These preferences may relate to an arbitrary field (e.g. health, education, foreign affairs, etc.) or may reflect ideological positions and therefore are not further specified. We only impose that the preferences of the two groups are represented by different points on the policy line, such that $x_1 < x_2$.

The population is ruled by a government $G \in \{A, D\}$. The type of the government depends on the political regime, which is either autocratic A or democratic D . In our model, these types of government differ with regard to how their citizens' preferences are represented. A democratic political regime ensures proportional representation of the two societal groups, resulting in equal share in government. In contrast, an autocratic political regime induces the dominance of one policy preference, e.g. due to group membership of the ruling dictator.

As will be outlined in detail below, the government makes two choices: First, it implements a policy $x \in [0, 1]$. Second, it chooses a certain level of repression $r \geq 0$ to counteract the threat of being overthrown by insurgents. The strength of the latter crucially depends on the citizens' (dis)satisfaction, which is determined in the following.

3.1 Model Setup

Given the citizens' policy preferences x_i and the policy implemented by the government x , we can define $\Delta x_i = |x_i - x|$ as the deviation of the actual policy from the preferred policy of group i . Naturally, an increasing gap between the preferred and the implemented policy diminishes the citizens' political satisfaction. In addition, utility increases in economic satisfaction, which is determined by income y . Moreover, although targeted at those individuals trying to overthrow the government, repression r is likely to negatively affect the utility of all citizens, e.g. by reducing individual freedoms and increasing insecurity. Accordingly, the citizens' utility function is specified as

$$U_i = u(y) \cdot z(\Delta x_i) - r, \quad (1)$$

where $u' > 0$, $u'' < 0$, $z' < 0$, and $z'' < 0$. While a higher income level increases the citizens' utility at a decreasing rate, the marginal reduction of utility due to a larger deviation of the actual from the preferred policy increases (in absolute terms) in the magnitude of this deviation. Further deviations from their policy preferences thus are increasingly harmful to the citizens. The multiplicative formulation of the first term on the right hand side of (1) implies that the marginal utility of a "better" policy increases in income and vice versa. Hence, there is complementarity between political and economic satisfaction.¹ Finally, to reflect disutility from repression, r enters (1) with a negative sign.

¹Note that the assumption of complementarity between political and economic satisfaction could be relaxed without altering the main implications of the theoretical model.

The utility of a citizen is directly related to her attitudes towards the government. Individuals with a lower status-quo utility are more likely to be dissatisfied and willing to remove the current political leaders. To derive the mass of those insurgents n , we assume that a citizen is dissatisfied and aims to overthrow the government if her utility (1) falls below an individual-specific threshold level. With these threshold levels being uniformly distributed over $[-\zeta, \zeta]$, where $\zeta > 0$ reflects the degree of heterogeneity in thresholds, the mass of insurgents is²

$$n = \frac{1}{2} - \delta \cdot u(y) \cdot [z(x - x_1) + z(x_2 - x)] + 2\delta r. \quad (2)$$

For notational convenience, we define $\delta = 1/(4\zeta)$. Note that (2) uses the assumption that the government is formed by one or both groups of citizens. The government therefore has no incentive to choose a policy outside of $x \in [x_1, x_2]$. Hence, $\Delta x_1 = x - x_1$ and $\Delta x_2 = x_2 - x$. According to (2), the mass of insurgents increases in the level of repression as the latter diminishes the citizens' utility.³ Furthermore, n is differently affected by income and policy changes. A higher income level unambiguously increases the citizens' utility and, thus, decreases the mass of insurgents. In contrast, the effect of a policy change is ambiguous as shifting the policy closer to the preference of one group of citizens simultaneously increases the deviation from the preference of the other group.

Given these opposing effects, there is a policy x^* that minimizes⁴ the mass of insurgents. Formally, x^* is determined by

$$z'(x^* - x_1) = z'(x_2 - x^*) \quad (3)$$

and can be written explicitly as $x^* = (x_1 + x_2)/2$. As shown by (3), minimization of the mass of insurgents is achieved by minimizing aggregate political dissatisfaction and entails equal marginal disutility for both groups of citizens due to deviation of the implemented policy from their preferred policy. Thus, x^* is the mean of x_1 and x_2 on the policy line. We will therefore refer to x^* as the "fair" policy.

Even under a fair policy, there generally remain some individuals aiming to overthrow the government. We describe the corresponding threat posed to the survival of the government by the insurgents' activity level a . This activity level in turn is strongly related to the insurgents' opportunity to organize and coordinate with each other. As outlined by Gleditsch et al. (2009), democracy increases this opportunity due to greater openness and more liberal political practices. In particular, democratic political regimes provide the opportunity to legally form political organizations, which can facilitate the coordination between the dissatisfied. This opportunity is often not, or at least to a lesser extent, provided by autocratic political regimes. Hence, for a given mass of insurgents, we expect the activity level to be higher under democracy compared to autocracy.

To capture the essence of this argument while keeping notation as parsimonious as possible, we use the following formalization. We assume that there are $\rho > 1$ possible places of the country where an insurgent can operate. We further specify the activity level a as the maximum number of active insurgents at a given place. Under democracy, all dissatisfied citizens can coordinate their actions through a political organization and therefore become active at the

²Note that we only consider interior solutions, i.e. $U_i \in]-\zeta, \zeta[$.

³We impose that $\partial n / \partial r = 2\delta < 1$, which ensures that repression is effective in counteracting the insurgents' attempt to overthrow the government. If this condition was not assumed to hold, the government would be removed from office regardless of its choice of r and x .

⁴ x^* minimizes (2) since $\partial^2 n / \partial x^2 = -\delta \cdot u(y) \cdot [z''(x^* - x_1) + z''(x_2 - x^*)] > 0$.

same location. The activity level under democracy thus is

$$a^D = n^D, \quad (4)$$

where n^D is the mass of insurgents under democracy. Under autocracy, political organization and, hence, the opportunity for coordination are absent. In this case, the probability that an insurgent becomes active at a certain place is $\varphi = 1/\rho$. The probability of reaching an activity level similar to democracy therefore is $\varphi^n < 1$, which reflects the disadvantages faced by insurgents when operating under an autocratic political regime. For comparative static analysis, we focus on the average activity level under autocracy, which is given by

$$a^A = \varphi \cdot n^A, \quad (5)$$

where n^A is the mass of insurgents under autocracy. This stylized formulation is sufficient to capture the presumed adverse effect of democracy on domestic conflict: If $n^A = n^D$, it follows that $a^A < a^D$, which implies that the level of threat is higher for a democratic compared to an autocratic government when facing the same mass of dissatisfied citizens. However, as shown by (2), the mass of insurgents n depends on the policy choice x , which may differ between the political regimes.

In the following, we therefore derive the policies implemented under autocracy and democracy, respectively. For this purpose, we assume that the objective function of the government is represented by the weighted mean of the utilities of the two societal groups:

$$U_G = \theta_G \cdot U_1 + (1 - \theta_G) \cdot U_2, \quad (6)$$

with $\theta_G \in [0, 1]$ being the weight the government assigns to group 1, whereas $1 - \theta_G$ is the weight for group 2. As outlined below, θ_G therefore reflects differences in the composition of the government under autocracy and democracy. Note that the government obtains (6) only if it is not overthrown by the insurgents. This requires that the level of repression r is at least as high as the activity level a , i.e. $r \geq a$. If $r < a$, the level of repression is too low to withstand the insurgents' effort and the government is replaced. Taking this condition into account, we next describe the behavior of the democratic and the autocratic government with regard to repression r and policy x .

3.2 Democratic Government

The composition of the government under a democratic political regime is assumed to be representative of the population. Since the citizens form two equally sized societal groups, this implies that they have equal share in government. Accordingly, both groups have the same weight in the objective function (6), i.e. $\theta_D = 1/2$. Taking into account that the government stays in office only if the level of repression outweighs the activity level of the insurgents, the democratic government's problem is

$$\max_{r,x} U_D = \frac{1}{2} \cdot u(y) \cdot [z(x - x_1) + z(x_2 - x)] - r \quad \text{s.t.} \quad r \geq a^D, \quad (7)$$

where a^D is given by (4). From (7) follows that the level of repression r^D and the policy x^D under democracy are described by

$$r^D = a^D, \quad (8)$$

$$z'(x^D - x_1) = z'(x_2 - x^D). \quad (9)$$

As shown by (8), the democratic government chooses the minimum level of repression required to stay in office in order to minimize social costs. Furthermore, (9) reveals that the democratic policy is characterized by equal marginal disutility of the two groups of citizens. Recall that this condition was already stated by (3). Hence, it holds that $x^D = x^* = (x_1 + x_2)/2$, implying that the democratic policy, *ceteris paribus*, minimizes the mass of insurgents. This result is directly related to the composition of the government. Since the preferences of the citizens are proportionally represented under democracy, the democratic policy is a compromise that generates some dissatisfaction in both groups but keeps aggregate political dissatisfaction at a minimum.

3.3 Autocratic Government

The autocratic government is characterized by the dominance of one policy preference, i.e. $\theta_A \neq 1/2$. For simplicity and without loss of generality, we consider the extreme case of $\theta_A = 1$, which implies that the autocratic government promotes only the interest of group 1. The objective of the government thus becomes

$$\max_{r,x} U_A = u(y) \cdot z(x - x_1) - r \quad \text{s.t.} \quad r \geq a^A, \quad (10)$$

where a^A is given by (5). The resulting level of repression r^A and the policy x^A under autocracy are given by

$$r^A = a^A, \quad (11)$$

$$z'(x^A - x_1) = \frac{\gamma}{1 + \gamma} \cdot z'(x_2 - x^A), \quad (12)$$

where $\gamma = (\varphi\delta)/(1 - 2\varphi\delta) > 0$. According to (11), the autocratic government chooses a level of repression that just outweighs the insurgents' activity level. Similar to the democratic government, the autocratic government thus aims to keep the disutility induced by repression at a minimum. However, the two types of government differ with regard to their policy choice. Contrary to the first order condition of the democratic policy (9), the equation describing the autocratic policy (12) weights the disutility of group 2 by the factor $\gamma/(1 + \gamma) < 1$. Since $z(\cdot)$ is concave, this implies that $x^A < x^D$. This result has an intuitive interpretation. Like the democratic government, the autocratic government takes the effect of its policy choice on the dissatisfaction of the citizens into account. However, the political dominance of group 1 induces a policy that is closer to x_1 .

3.4 Implications for Repression

The different policies under democracy and autocracy have implications for the mass of insurgents and, hence, for the level of repression. Recall that the democratic policy x^D was found to minimize political dissatisfaction. Since $x^A \neq x^D$, it follows that political dissatisfaction is higher under autocracy. In other words, democracy has a pacifying effect because of a better

representation of the citizens' preferences. However, this pacifying effect is counteracted by the enhanced opportunity of the insurgents to organize and coordinate with each other. In this way, democracy increases the insurgents' activity level, which induces a higher level of repression. This higher level of repression, in turn, diminishes the citizens' utility and thus increases the mass of insurgents. Hence, the relation between n^A and n^D is ambiguous. For closer examination of the equilibrium levels of repression under autocracy and democracy, we define

$$\Delta r = r^A - r^D = \varphi \cdot n^A - n^D \quad (13)$$

as the difference in the repression levels under the two political regimes. Due to the ambiguity of the relation between n^A and n^D , the sign of (13) is also ambiguous. Generally, a change from autocracy to democracy therefore cannot be expected to reduce repression. However, using (2), the model reveals an interaction between democracy and income y . In particular, it can be shown that

$$\frac{d\Delta r}{dy} > 0 \iff \underbrace{z \left(\frac{\Delta x_1^A + \Delta x_2^A}{2} \right)}_{E3} > \underbrace{\varphi}_{E1} \cdot \underbrace{\left(\frac{1 - \partial n / \partial r}{1 - \varphi \cdot \partial n / \partial r} \right)}_{E2} \cdot \underbrace{\frac{z(\Delta x_1^A) + z(\Delta x_2^A)}{2}}_{E3}, \quad (14)$$

where $\partial n / \partial r = 2\delta$ is the marginal effect of repression on the mass of insurgents and $\Delta x_i^A = |x_i - x^A|$ is the deviation of the implemented policy under autocracy from the preference of group i . (14) holds by the virtue of Jensen's inequality and the fact that $\varphi < 1$. Thus, the difference in repression levels between autocracy and democracy increases in income. This implies that democratization is more likely to reduce repression in countries with higher income levels.

This interaction between democracy and income can be decomposed into three effects, which are represented by the three factors on the right hand side of (14). All of these effects work in the same direction: E1) Due to enhanced opportunities for coordination under democracy, the insurgents' activity level reacts more sensitive to changes in the mass of insurgents. Since the latter is affected by the economic satisfaction of the population, changes in income have a stronger impact on the level of repression under democracy. E2) Since repression enters the citizens' utility function (1) negatively, the stronger reduction of repression induced by a rise in income additionally induces a stronger decline in the mass of insurgents under democracy, which reinforces the effect described in 1). E3) Due to the complementarity between political and economic satisfaction in the citizens' utility function, the marginal utility of a "better" policy increases in income. Since the democratic policy minimizes aggregate political dissatisfaction, this pacifying effect becomes more pronounced at high income levels.

Given these theoretical implications, we formulate the following hypothesis for empirical examination: *Democracy reduces (increases) repression in countries with high (low) income levels.*

4 Data

To test the implication of our theoretical model empirically, we draw on multiple indicators of state repression. These and other indicators which we use within the framework of our analyses are described in more detail below. In addition, we discuss the measurement of democracy and the identification of democratizations against the backdrop of conceptual overlaps between indicators of repression and democracy. Based on these data, we pursue two empirical strategies. First, we test our hypothesis by exploiting differences between regime types in

time-series cross-sectional data. Second, we focus on the evolution of repression in countries that established full democracy.

4.1 Measuring State Repression

We draw on four different indicators of government violations of human rights, which constitute our dependent variables. 1) We use data on government respect for human rights provided by Fariss (2014). Applying item response theory (IRT) models to indicators of repression from different sources, Fariss estimates government respect for human rights as a continuous latent variable. In addition to the synthesis of information from multiple datasets, this approach offers the advantage of improved country and time coverage compared to the individual indicators included in the measurement model. However, there is debate on the accuracy of the modeling strategy applied in Fariss (2014). The critique particularly relates to Fariss' diagnosis of a "changing standard of accountability" inherent to indicators of state repression (see, e.g., Cingranelli and Filippov, 2018; Fariss, 2018). While we take an agnostic standpoint with respect to this discussion, we provide evidence in the online appendix that our results are not driven by the assumption of a changing accountability standard. 2) As another measure of repression, we take the physical integrity rights index (PIR) provided by the CIRI Human Rights Data Project (Cingranelli et al., 2014). The PIR index captures torture, extrajudicial killing, political imprisonment, and disappearance on a scale ranging from 0 (no government respect for the related rights) to 8 (full government respect for the related rights). Finally, we draw on the Political Terror Scale (PTS) project (Gibney et al., 2017), which assesses repression based on country reports of Amnesty International and the US State Department. Accordingly, the PTS provides two indicators, which we both employ as dependent variables: 3) the Amnesty scores and 4) the State Department scores. Both indicators code repression levels on a scale ranging from 1 (lowest level of repression) to 5 (highest level of repression). To harmonize the interpretation of our results, the signs of the latent human rights scores of Fariss (2014) and the PIR index are reversed in order to measure repression. Furthermore, we normalize all dependent variables between 0 and 100.⁵ To provide evidence that our results are not driven by implicit coder bias or a changing standard of accountability (Fariss, 2014), the online appendix additionally shows that our results remain stable when using event-based repression data instead of the standards-based CIRI and PTS data or the combined latent variable from Fariss (2014).

4.2 Measuring Democracy

To measure democracy, we draw on the Polity IV Project (Marshall and Gurr, 2016), which provides data on democratic and autocratic characteristics of political regimes. However, as mentioned above, measuring democracy is not straightforward in our context due to conceptual overlaps with indicators of state repression. These conceptual overlaps particularly concern physical integrity rights violations due to violent suppression of opposition groups and components of free political competition included in measures of democracy (Hill, 2016). Hence, employing the Polity scores or other frequently used democracy indicators may yield misleading results.

To mitigate the problem of tautological links between measures of democracy and political violence, Vreeland (2008) introduces the X-Polity scores, which remove the suspicious compo-

⁵Note that this normalization does not affect the results of the ordered logit models presented below.

nents from the Polity index. While the Polity scores range from -10 to 10, Vreeland's X-Polity scores range from -6 to 7, with higher values indicating higher levels of democracy. Since their introduction, the X-Polity scores have been used in multiple studies to assess the relationship between democracy and violent conflict, including state repression (see, e.g., Jones and Lupu, 2018). We therefore choose the X-Polity scores as our basic measure of democracy. Since the only consensual finding in the literature on democracy and state repression is that countries at the highest levels of democracy show low levels of repression, we specifically focus on fully democratic political regimes. For this purpose, we define a full democracy as a political regime with an X-Polity score ≥ 6 . In the online appendix, we provide evidence that our results are robust with respect to the measurement of democracy.⁶

4.3 Identifying Democratizations

The establishment of full democracy in a country could be identified by a change from an X-Polity score < 6 to an X-Polity score ≥ 6 in successive years. However, this simple approach has several drawbacks as it does not account for all of the following issues: First, the Polity IV Project assigns the special codes -66 (interruption), -77 (interregnum), and -88 (transition) to some country-years. A democratization involving one of these transition patterns could not be identified with the definition outlined above. Second, to ensure that changes in the political regime are sufficiently large-scaled to alter the level of repression, should consider only substantial changes in a country's institutional structure. Third, to further facilitate the identification of the effects of democracy, a substantial change in the political regime should occur within a reasonably short time period. Fourth, to avoid that our results are driven by countries with highly volatile political regimes, the included countries should show a minimum level of institutional stability.

To take these aspects into account, we propose a modified definition of regime transitions used in the Polity IV Project (see Marshall and Gurr, 2016). According to our definition, a country established full democracy if:

1. The country reached an X-Polity score ≥ 6 (full democracy).
2. There was either an associated three-point increase in the X-Polity scores within three years or less, or a four-point increase within four years or less, and so on.
3. There was no negative change in the X-Polity scores during the transition period. In this respect, the Polity codes -66 (interruption), -77 (interregnum), and -88 (transition) are ignored.
4. The country had been nondemocratic for at least 10 years before the regime change.
5. The country remained democratic for at least 5 years after the regime change.

While the first condition requires that a country reaches full democracy, the second condition ensures that the change in the political regime as measured by the X-Polity scores is sufficiently large and rapid. The third condition excludes countries with adverse regime changes during the transition period while avoiding to exclude countries with short "specially coded" periods. While the fourth condition excludes countries which experienced only a short history

⁶Robustness checks include the use of the binary democracy indicators provided Cheibub et al. (2010) and Acemoglu et al. (2019) as well as alternative definitions of sufficiently large-scaled democratizations. The results are consistent with the evidence presented in this paper.

Table 1: Democratizations

Country	Year	Country	Year	Country	Year
Argentina	1983	Guatemala	1996	Peru	1980
Bolivia	1982	Hungary	1990	Philippines	1987
Brazil	1988	Kenya	2002	Poland	1991
Bulgaria	1990	Macedonia	2002	Portugal	1976
Cape Verde	1991	Madagascar	1992	Senegal	2000
Chile	1989	Mongolia	1992	Spain	1978
Comoros	2006	Pakistan	1988	Thailand	1992
Ecuador	1979	Panama	1989	Turkey	1961
Ghana	2004	Paraguay	1992	Uruguay	1985

The table shows the countries that experienced a democratization according to the definition outlined above. The specified years are the first years of full democracy ($X\text{-Polity} \geq 6$).

of autocratic rule, the fifth condition requires that the emerging democratic regime showed at least some durability. In combination, the latter two conditions exclude countries with highly volatile political regimes.

Based on this definition, 27 democratizations were identified. The countries and years of democratization are shown in Table 1. The values of GDP per capita for these countries in the year of democratization are shown in the appendix (Figure A1). In the online appendix, we show that the results are robust to the use of alternative GDP indicators.

4.4 Moderator and Control Variables

Since our theoretical model predicts that the relationship between democracy and state repression is moderated by income, our empirical analyses include *GDP per capita* (in 2005 US\$, PPP) as a proxy for the countries' income levels. This indicator is taken from the updated version 6.0 of Gleditsch (2002).

In addition, we account for other core determinants of state repression identified in the literature (see Davenport, 2007a; Hill and Jones, 2014). Since a larger *Population* is consistently found to be associated with higher levels of repression, we use data on the countries' number of inhabitants from Gleditsch (2002). Another strong predictor of state repression is *Intrastate conflict*, which is represented by a dummy variable taking on the value of 1 if a country experienced an internal armed conflict as defined by the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al., 2002; Pettersson and Eck, 2018) and the value of 0 otherwise. Following Nordås and Davenport (2013), we control for *Youth bulges* by using the share of the population aged between 15 and 24 relative to the population aged 15 or older. Data on age groups is provided by the United Nations Population Division (2018). Finally, our models include *Trade openness* as measured by the sum of imports and exports relative to GDP (World Bank, 2018). To account for their highly skewed distributions, *GDP per capita* and *Population* enter the analyses in logarithmic form.

Our final dataset covers 166 countries of which 27 democratized in the period from 1960 to 2011. Note that the repression indicators differ in time coverage. While the Fariss scores cover the whole sample period, data on PIR and PTS are available only from 1981 and 1976 onwards, respectively. Our identification of countries in the international system at a given year follows the Quality of Government (QoG) Institute (Teorell et al., 2018). Summary statistics for all dependent and independent variables are provided in the appendix (Table A1).

5 Results

Based on the data described above, we test the implication of our theoretical model by utilizing different methodological approaches. First, we adopt the standard approach in the literature and estimate time-series cross-sectional regressions relating levels of repression to levels of democracy. Second, we analyze the evolution of repression in countries that established full democracy within an event study framework. Third, we analyze the data on these countries using the generalized synthetic control method.

5.1 Time-series Cross-sectional Regressions

In the first step of our empirical analysis, we use time-series cross-sectional data for more than 160 countries in the period from 1960 to 2011. Our model specifications closely follow previous studies on the relationship between democracy and state repression.

Using the continuous reversed latent human rights scores of Fariss (2014), we model the expected level of repression for country i in year t as

$$E[r_{it}|D_{it}, y_{it}, \mathbf{x}_{it}, r_{i,t-1}] = \beta_0 + \beta_1 D_{it} + \beta_2 y_{it} + \beta_3 D_{it} \times y_{it} + \mathbf{x}'_{it} \boldsymbol{\gamma} + \rho \cdot r_{i,t-1}, \quad (15)$$

where r is repression, D is democracy, y is logged GDP per capita, and \mathbf{x} represents a set of control variables. $\beta_0, \beta_1, \beta_2, \beta_3, \boldsymbol{\gamma}$, and ρ denote regression coefficients. Note that (15) includes a lag of the dependent variable to account for the persistence of repressive practices. Furthermore, the model includes a multiplicative interaction term between democracy and logged GDP per capita. This allows the marginal effect of democracy to vary with the level of income. According to the implications of our theoretical model, we expect that the negative relationship between repression and democracy is more pronounced in countries with higher income levels, i.e. $\beta_3 < 0$. In addition, we normalize logged GDP per capita between 0 (lowest sample income) and 1 (highest sample income). Hence, the marginal effect of democracy on state repression is given by β_1 for a country with the lowest sample income, whereas it is given by $\beta_1 + \beta_3$ for a country with the highest sample income.

Linear models such as (15) are also often estimated for the (reversed) PIR index, the Amnesty scores, and the State Department scores (see, e.g., Danneman and Ritter, 2014; Poe and Tate, 1994; Regan and Henderson, 2002). However, for comparability with most of the recent time-series cross-sectional studies, we take the ordinal nature of these indicators into account (see, e.g., Bueno De Mesquita et al., 2005; Hill, 2016; Nordås and Davenport, 2013).⁷ We therefore apply ordered logistic regression models, specifying the cumulative probabilities of the $j = 1, 2, \dots, J$ categories of these repression indicators as

$$P(r_{it} \leq j | D_{it}, y_{it}, \mathbf{x}_{it}, r_{i,t-1}) = F(\kappa_j - \beta_0 - \beta_1 D_{it} - \beta_2 y_{it} - \beta_3 D_{it} \times y_{it} - \mathbf{x}'_{it} \boldsymbol{\gamma} - \rho \cdot r_{i,t-1}), \quad (16)$$

where $F(\cdot)$ is the cumulative logistic distribution function and κ_j are threshold parameters. Note that (16) includes the same regressors as (15). Likewise, a positive (negative) sign of a regression coefficient indicates a positive (negative) relationship between the regressor and the dependent variable. However, the nonlinear formulation of (16) has the drawback that β_3 generally does not correspond to the interaction effect of democracy and logged GDP per capita. In extreme cases, the interaction effect may even be of opposite sign (Ai and Norton, 2003). To

⁷Fitting linear models for these dependent variables yields qualitatively similar results.

account for this issue, we additionally calculate average marginal effects of democracy on the probabilities of the lowest and the highest scores of the repression indicators for different levels of income. We use logged *Population*, *Intrastate Conflict*, *Youth bulges*, and *Trade* as control variables. Furthermore, we follow the literature by including time dummies in all models.

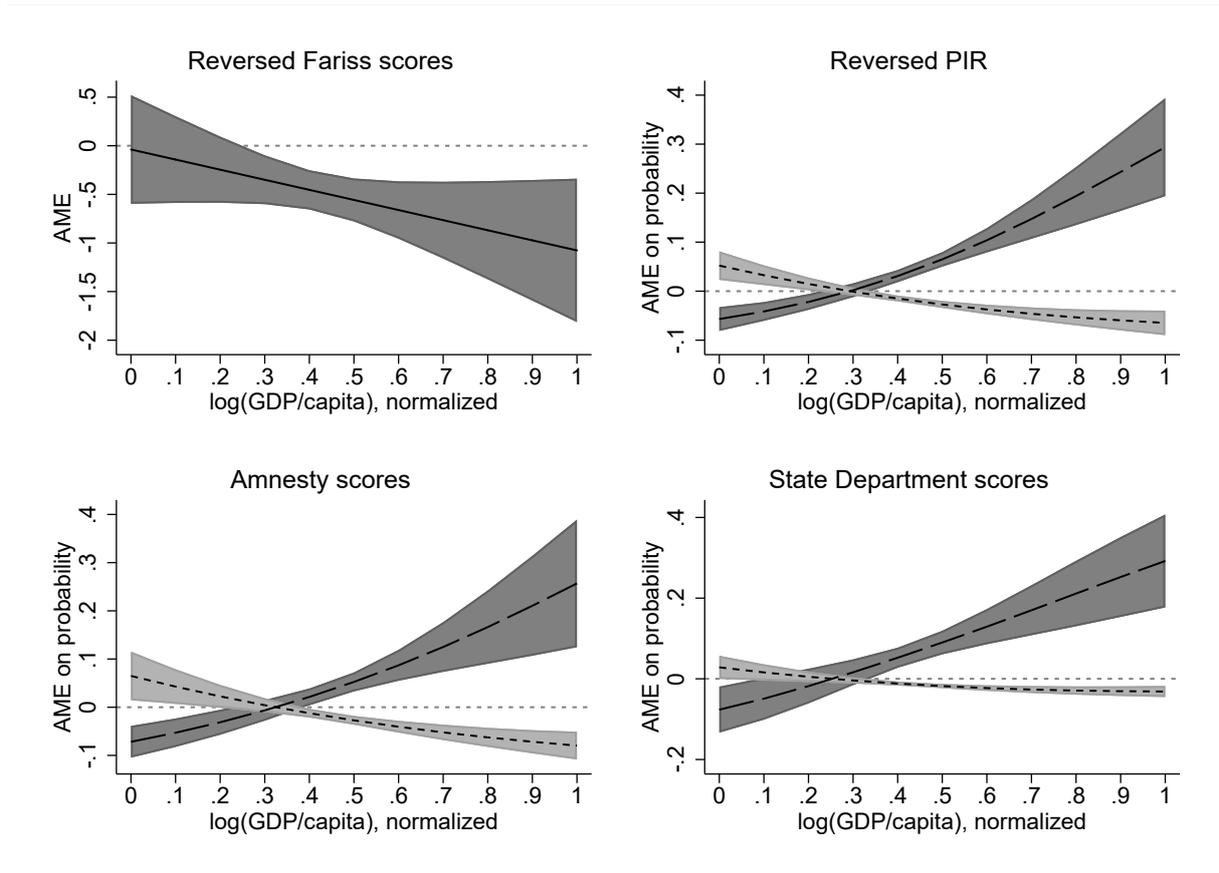
The estimation results are shown in Table 2. For reference, each of the models is first estimated without the interaction term between democracy and logged GDP per capita (regressions (1), (3), (5), and (7)). The results obtained with these specifications are in line with those of previous studies. Across all repression indicators, the estimated effect of democracy is negative and statistically significant, indicating that full democracies are less repressive than other regime types. Including the interaction term between democracy and logged GDP per capita changes the results drastically. In line with the implications of the theoretical model, the coefficient of the interaction term is negative and significant for all repression indicators. Furthermore, the coefficient of *Democracy* turns insignificant in regression (2) and positive and significant in the remaining interaction models (4), (6), and (8). These findings suggest that democracy may have no or even adverse effects on repression at low income levels.

The marginal effect plots shown in Figure 2 support this interpretation. For the reversed Fariss scores, we find no evidence for effects of democracy on repression at low levels of income. Significant negative effects are revealed at higher values of GDP per capita only. With respect to the reversed PIR index, the Amnesty scores, and the State Department scores, the ordinal logistic regressions indicate adverse effects of democracy in relatively poor countries. For all of these measures of repression, the average marginal effect of democracy on the lowest repression level is significantly negative at low values of GDP per capita and significantly positive at higher values of per capita income. This implies that democracy is associated with a higher (lower) probability of reaching the lowest repression level in countries with higher (lower) income levels. In accordance with this result, we find significant positive (negative) average marginal effects of democracy on the highest level of repression at low (high) income levels. Thus, poor democracies are predicted to have a higher probability of showing extensive human rights violations than other regime types. This relationship is reversed at higher income levels.

With respect to the control variables, our results are in line with findings reported in the literature. Across all regressions, a larger population, the presence of intrastate conflict, and larger youth bulges are associated with higher levels of repression. For international trade, evidence is less conclusive as most of the estimated effects are insignificant.

In summary, the results of the time-series cross-sectional regressions support the implications of the theoretical model. While democracy is related to lower repression at relatively high income levels, there is evidence for adverse effects of democracy at low values of per capita income. However, the results are subject to limitations. First, the regressions presented in this section do not exploit within-country changes of repression levels. Second, they do not account for the stability of political regimes. Hence, one concern regarding these results may be that the adverse effects of democracy at low income levels are driven by short-lived democracies. To address these issues, the next section turns to the analysis of repression in countries that established full democracy within an event study framework.

Figure 2: Average marginal effects (AME) of democracy by income level



The subfigures depict the estimated average marginal effects (AME) of democracy on each repression indicator for different levels of income with 95% confidence intervals. Income is measured by the logarithm of GDP per capita and is normalized between 0 (lowest sample income) and 1 (highest sample income). For the reversed Fariss scores, the solid line represents the estimated AME derived from (15). For the reversed PIR, the Amnesty scores, and the State Department scores, AMEs are derived from (16). The long-dashed lines represent the AME on the lowest level of repression (i.e. the lowest score of the repression indicator) whereas the short-dashed lines represent the AME on the highest level of repression (i.e. the highest score of the repression indicator).

Table 2: Linear and ordered logistic regressions for indicators of state repression

Dependent variable Model	Reversed Fariss scores linear	Reversed PIR ordered logit	Amnesty scores ordered logit	State Department scores ordered logit				
Regression No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democracy	-0.484*** (0.100)	-0.038 (0.283)	-0.706*** (0.112)	1.521*** (0.355)	-0.544*** (0.127)	1.543*** (0.477)	-0.722*** (0.126)	1.035** (0.459)
log(GDP/capita)	0.003 (0.305)	0.196 (0.319)	-0.423 (0.538)	0.835 (0.559)	-0.049 (0.505)	0.959* (0.522)	-1.264*** (0.478)	-0.500 (0.524)
Democracy \times log(GDP/capita)		-1.039* (0.624)		-5.190*** (0.838)		-4.756*** (1.043)		-4.083*** (1.020)
log(Population)	0.091*** (0.027)	0.093*** (0.028)	0.257*** (0.036)	0.257*** (0.033)	0.175*** (0.039)	0.163*** (0.042)	0.233*** (0.035)	0.228*** (0.040)
Intrastate conflict	0.819*** (0.127)	0.836*** (0.128)	1.345*** (0.151)	1.416*** (0.158)	1.333*** (0.147)	1.372*** (0.150)	1.624*** (0.160)	1.645*** (0.164)
Youth bulges	2.416*** (0.725)	2.051** (0.808)	4.452*** (1.093)	2.620** (1.055)	4.878*** (1.074)	3.537*** (1.034)	4.328*** (1.127)	2.823** (1.120)
Trade openness	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002** (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.000 (0.001)	-0.001 (0.001)
lagged DV	0.972*** (0.003)	0.971*** (0.003)	1.100*** (0.042)	1.066*** (0.041)	2.180*** (0.088)	2.130*** (0.088)	2.575*** (0.089)	2.531*** (0.089)
Observations	6,069	6,069	3,899	3,899	3,628	3,628	4,414	4,414
Countries	166	166	161	161	163	163	162	162

All regression include year dummies. Standard error estimators are clustered by country. Estimated standard errors are shown in parentheses. Significance levels: *10%, **5%, ***1%. Estimated intercepts and threshold parameters for ordinal logistic regressions are not shown in the table.

5.2 Event Studies

Event studies have been a popular tool for the analysis of financial market data for decades (see, e.g., MacKinlay, 1997). More recently, variants of this method have also been applied in other fields like public finance and development studies (see, e.g., Hoynes et al., 2011; Hoynes and Schanzenbach, 2012; Huang, 2010). Event studies aim to assess systematic changes in an outcome variable before and after a specific event of interest. The focus of these analyses therefore is not on calendar years t but on event years τ . In our event study, $\tau = 0$ is defined as the year of the completed regime change, i.e. the first calendar year, in which a previously nondemocratic country reached a X-Polity score of 6 or 7. To examine the dynamics of repression around this event, we choose a time frame of 10 years before and after democratization ($\tau = -10, -9, \dots, 10$). In addition to dynamics, the second issue addressed within the event study framework is the stability of democracy. To avoid that our results are driven by highly unstable political regimes, we focus on the 27 countries shown in Table 1.

The event study models specify the expected level of repression for country i in event year τ and corresponding calendar year t as

$$E[r_{it\tau} | \mathbf{Z}_\tau, y_{it\tau}, \mathbf{x}_{it\tau}] = \sum_{\substack{\tau=-10 \\ \tau \neq -2}}^{10} \alpha_\tau \cdot Z_\tau + \sum_{\substack{\tau=-10 \\ \tau \neq -2}}^{10} \beta_\tau \cdot Z_\tau \times y_{it\tau} + \eta \cdot y_{it\tau} + \mathbf{x}'_{it\tau} \boldsymbol{\gamma}, \quad (17)$$

where Z_τ denotes event year dummies, which are equal to 1 for event year τ and 0 otherwise. Note that the coefficients α_τ of these dummies can vary over event years. Thus, they capture systematic temporal changes in repression within the considered time frame. Given that our theoretical model predicts that repression decreases after establishment of democracy in relatively rich countries whereas there may be no or even adverse effects in poor countries, the second term on the right hand side of (17) introduces interactions between the event year dummies and logged GDP per capita with regression coefficients β_τ . In this way, the estimated level of repression at a specific event year may vary by income. Based on this specification, we consider the evolution of repression over event years for the lowest and the highest GDP per capita in the sample of democratizing countries. All time effects are estimated relative to a baseline event year. Given that there may be anticipatory effects, we choose two years before the establishment of full democracy ($\tau = -2$) as reference.⁸ The event study models include the same set of control variables that has been used in the time-series cross-sectional regressions described above. All estimations include calendar year dummies.

The results of the event studies are visualized in Figure 3. The subfigures on the left hand side depict the results of event studies for the four repression indicators without the interaction terms between the event year dummies and logged GDP per capita. The subfigures on the right hand side show the results obtained from the interaction models. For the reversed Fariss scores, the event study without interaction terms indicates a roughly constant repression level before the baseline event year. One year before the establishment of full democracy, repression starts to decrease. This trend continues for four to five years. In the remaining observation period, the estimated level of repression then stabilizes at a lower level compared to the pre-democratization period. These results suggest that the establishment of democracy is, on average, associated with immediate and persistent repressive withdrawals. Including

⁸Note that the choice of the baseline year does not affect results from a statistical point of view since choosing a different baseline year results in an equivalent statistical model.

interactions between the event years and logged GDP per capita reveals considerable heterogeneity between countries. While there is little evidence for systematic deviations in the period before the baseline event year, there is divergence between poor and rich countries after establishment of full democracy. In line with the implications of the theoretical model, we estimate a strong reduction of repression as measured by the Fariss scores for a country with the highest per capita income in our sample. In contrast, the estimated pattern for a country with the lowest GDP per capita indicates that repression does not change significantly or may even increase. Qualitatively similar results are obtained from the event studies for the other repression indicators.⁹

Although the event study analyses complement the previously presented time-series cross-sectional regressions by overcoming some of their shortcomings, a main drawback of the event study approach is its exclusive focus on countries which became fully democratic. The exclusion of all other countries from the analysis entails a loss of potentially useful information.

5.3 Generalized Synthetic Control Estimations

The evolution of repression in nondemocratic countries may help to assess how repression levels would have evolved in countries which became democratic if the regime changes had not happened. The estimation of such “counterfactuals” is at the heart of the synthetic control method introduced by Abadie and Gardeazabal (2003) and Abadie et al. (2010, 2015). In its basic version, this method considers one unit which experienced the event (or the intervention) and a group of units (the “control group”) in which the event did not occur. Using data on the outcome and selected covariates prior to the event, a “synthetic control unit” is constructed as a weighted average of the control group units. This synthetic control unit should provide a good approximation of the event-unit in the pre-event period. In the post-event period, the evolution of the outcome of this synthetic control unit is regarded as the counterfactual for the event-unit. The differences in the post-event outcome values between the event-unit and the (synthetic) counterfactual then serve as effect estimates.

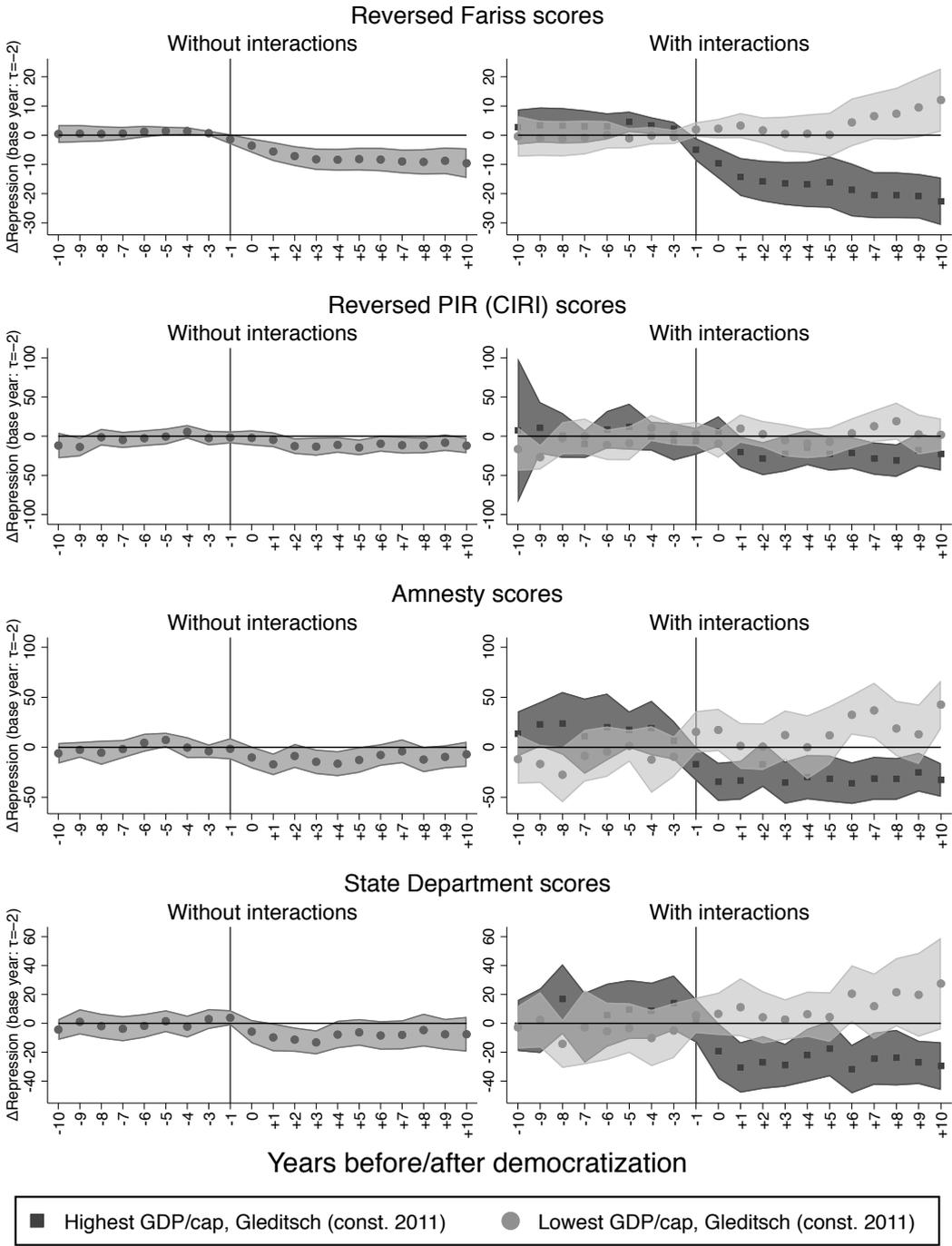
With respect to our setting, this basic version of the synthetic control method has the disadvantage of permitting only one country which established full democracy. Hence, utilizing information provided by data on multiple countries within the framework of one analysis is not possible. Fortunately, a generalization of the synthetic control method which allows for multiple target countries has recently been proposed by Xu (2017). This “generalized synthetic control method” offers additional advantages over its predecessor. First, it assesses the uncertainty of effect estimates by using a bootstrap procedure. Second, it relies on an interactive fixed effects model which is robust against correlation between the event of interest and unobserved unit and time heterogeneities. For our analysis of democracy and repression, the model underlying the generalized synthetic control estimations can be written as

$$r_{it} = \delta_{it} \cdot d_{it} + \mathbf{x}'_{it\tau} \boldsymbol{\gamma} + \boldsymbol{\lambda}'_i \mathbf{f}_t + \varepsilon_{it}, \quad (18)$$

where d_{it} equals 1 if country i became democratic before year t and equals 0 otherwise. Note that the coefficient δ_{it} of this dummy can vary over countries and years. In particular, this allows the effect of democracy to evolve over time. Our main quantity of interest is the average effect of democracy at a given year after the establishment of full democracy. This quantity is

⁹Note that the confidence intervals of the interaction effects are larger due to the analysis of smaller subgroups. For all repression indicators, the interaction terms are jointly significant.

Figure 3: Results of event studies with and without interactions between event years and logged GDP per capita



The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the countries included in the sample. All figures show 90% confidence intervals.

estimated by the mean of the estimated δ_{it} across all countries. The model (18) further includes a vector of unobserved common factors f_t with loadings stored in the vector λ_i . These factors are assumed to underly both the group of democratizing countries and the group of “control” countries. Again, all estimations presented in this section include the same covariates x that have already been used in the previous analyses. The model is completed by an error term ε_{it} .

The generalized synthetic control estimation proceeds in three steps. First, (18) without the dummy d_{it} is estimated using only control group data to obtain estimates of regression coefficients γ , unobserved common factors f_t , and factor loadings λ_i^{cc} for the control group countries (*cc*). Second, using the estimated regression coefficients and common factors from the first step, the factors loadings λ_i^{dc} for the democratizing countries (*dc*) are estimated by minimizing the mean squared error of the predicted repression levels in the pre-democratization period. Third, given these estimates for γ , f_t , and λ_i^{dc} , counterfactuals for the democratizing countries in the period after democratization are constructed. Similar to the basic version of the synthetic control group, the differences between the counterfactuals and the observed repression levels then serve as estimates for the effects of democracy δ_{it} .

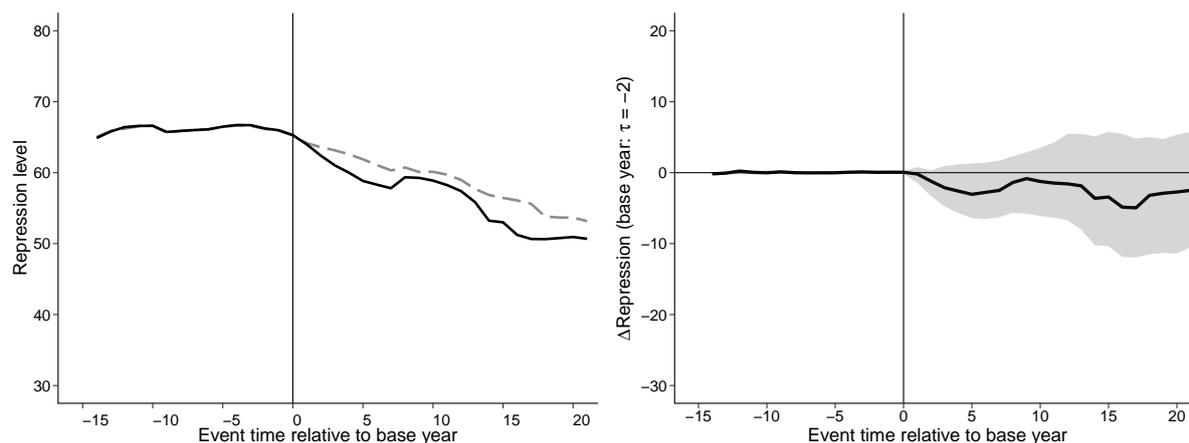
A limitation we face when applying the generalized synthetic control method is that the PIR index, the Amnesty scores, and the State Department scores are discrete in nature. Averaging other countries’ scores to generate a synthetic control therefore would generally result in estimates which are outside the set of values these indicators can take on. While the only suitable repression indicator for the following analysis therefore is given by the continuous reversed human rights scores of Fariss (2014), we show in the online appendix that using data from Cingranelli and Filippov (2018), which differ from Fariss’ data with respect to the underlying measurement model, leads to similar results.

To define the group of countries that established full democracy, we rely on the same conditions that have previously been used for the event studies. However, missing values in covariates result in a poor coverage of the pre-democracy period for 6 of these 27 democratizing states. Since the pre-democracy period is essential for the construction of a synthetic control estimate, these countries had to be dropped from the analyses.¹⁰ The control group sample for these countries consists of all country-years characterized by an X-Polity score < 6 (no full democracy). To separate event and control group units, nondemocratic time periods of the democratizing countries are not included in the control group sample. Similar to the event studies, we take anticipatory effects of institutional changes into account and choose two years before the establishment of full democracy ($\tau = -2$) as our base year.

The results of the generalized synthetic control estimation including all democratizing countries are shown in Figure 4. The solid line in the subfigure on the left hand side shows the evolution of the average repression level of the democratizing countries. The dashed line depicts the evolution of the average repression level of the synthetic control units. The synthetic control units provide a good approximation of the democratizing countries in terms of repression in the pre-event years. After the base year, the patterns start to diverge. While repression is estimated to decrease in both groups, this reduction is more pronounced for the group of countries which established full democracy. Thus, the results of the synthetic control estimation suggest a negative effect of democracy on government violations of human rights. However, given that

¹⁰Namely: Bulgaria, Hungary, Macedonia, Paraguay, Poland, and Turkey were dropped from the analyses. For these countries, missing values particularly arise in the variable *Trade openness*. As we show in the online appendix, excluding this covariate from the analysis increases the number of included democratizing countries to 26 and yields similar results. In case of Macedonia, there is a lack of pre-democracy data for all covariates, which generally prevents the inclusion of this country.

Figure 4: Generalized synthetic control estimates



Repression is measured by the reversed and 0-100-normalized latent human rights scores of Fariss (2014). The subfigure on the left hand side shows the average repression level of the democratizing countries (solid line) and the average repression level of the synthetic control group (dashed line). The subfigure on the right hand side depicts the differences between democratizing and control group countries with bootstrapped 90% confidence intervals.

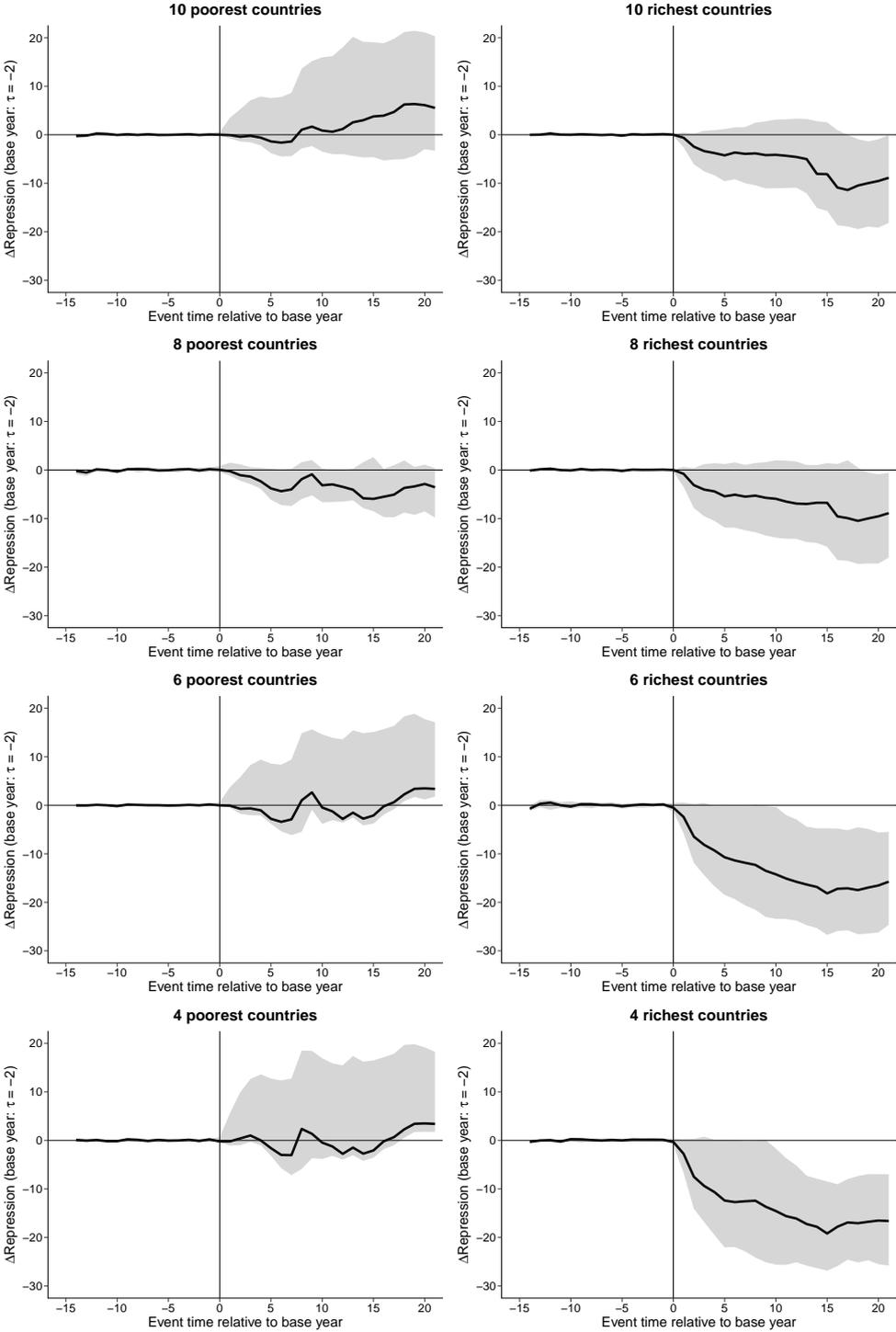
the dependent variable is normalized between 0 and 100, this effect is relatively small in magnitude. The subfigure on the right hand side provides a more effect-oriented visualization by showing the differences between the average repression levels in the groups of democratizing and synthetic control countries. Here, the estimated pacifying effect of democracy is reflected by the slightly negative evolution of the solid line after the base year. However, the depicted bootstrapped confidence interval indicates that the estimated negative effect is insignificant for the whole observation period subsequent to the base year. On the whole, these results do not provide evidence for relevant and significant reductions of repression after establishment of democracy. This finding is not surprising if the predictions of the theoretical model are correct. While we expect pacifying effects of democracy in countries with relatively high income levels, there may be no or even adverse effects in poor countries.

To test these more specific hypotheses, Figure 5 shows generalized synthetic control estimates for different income groups.¹¹ While the subfigures on the left hand side show the effect plots for groups of poor countries, the subfigures on the right hand side illustrate the estimated effects for groups of rich countries. The plots in the first row depict estimation results for the ten poorest and the ten richest countries, respectively. While we find negative, though insignificant, effects of democracy on repression for the ten richest countries, we estimate positive but also insignificant effects for the ten poorest countries. Restricting the sets of considered units to the eight poorest and richest countries again reveals insignificant effects for the countries with the lowest income levels. In contrast, the synthetic control estimates indicate negative and significant reductions of repression after democratization for the eight richest countries. Considering more extreme income groups further accentuates these diverging patterns. While the estimations for the six and the four poorest countries do not indicate reductions of repression after establishment of full democracy, the pacifying effects found for countries with higher income levels become more pronounced when the group of rich countries is further restricted. The reductions of repression occur immediately after the base year and persist until the end of the depicted time frame. Considering the four richest instead of the eight richest democratizing

¹¹ An overview of the countries' income levels in the year of democratization is given in the appendix (Figure A1).

countries approximately doubles the estimated “long-run” effect of democracy. These findings provide further support for the hypothesis derived from the theoretical model.

Figure 5: Generalized synthetic control estimates for different income groups



The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

6 Conclusion

The relationship between democracy and state repression has been examined extensively in the empirical literature. While studies generally agree that full democracies are less repressive than other regime types, the patterns of state repression in countries that established full democracy differ substantially. The objective of this paper was to examine heterogeneity in the relationship between democracy and government violations of human rights. In line with arguments from the civil war literature, we highlighted that democracy may not be inevitably pacifying but may fuel violent conflict due to enhanced opportunities of insurgents to organize and coordinate with each other. By incorporating this perspective into a simple formal model, we derived opposing effects of democracy on state repression. While democratic political regimes are shown to reduce conflict and repression because of a better representation of the citizens' preferences, the enhanced coordination opportunities of insurgents result in increased levels of repression. Consequently, the net effect of democracy is found to be ambiguous. However, the model reveals that the relative strength of the opposing effects of democracy depends on the level of income. Democracy is found to be more likely to reduce repression in countries with higher income levels. In poor countries, the adverse effects of democracy may dominate.

To test these implications of the theoretical model empirically, we used different methodological approaches. First, we estimated cross-sectional time-series regressions for a large number of countries. Second, we analyzed the evolution of repression in countries that established full democracy within an event study framework. Third, we analyzed data on these countries using a recent generalization of the synthetic control method (Xu, 2017). All of these analyses consistently indicate that democracy is likely to reduce government violations of human rights in countries with high income levels. In contrast, democracy may have no or even adverse effects on state repression in relatively poor countries.

By offering insights into heterogeneous effects of democracy, our analyses may help to explain some of the observed differences between countries with respect to the evolution of repression. In addition, our results indicate that the "domestic democratic peace" (Davenport, 2007a,b) may be a "conditional domestic democratic peace" as the pacifying effects of democracy are found to dominate in countries with relatively high income levels only.

Of course, our findings are subject to limitations. While we highlighted the role of income levels, there may be other contextual factors which moderate the effect of democracy on state repression. Identifying such factors would further contribute to a better understanding of the relationship between democracy and government violations of human rights. Furthermore, we did not consider the interrelations between economic development and democracy. In addition to the link from income to democracy established by modernization theory (see Lipset, 1959), there may also be effects of democracy on income. If democracy does cause growth (Acemoglu et al., 2019), the populations of initially poor countries may also benefit from democracy in terms of human rights in the long run. Another interesting route for future research therefore could be the analysis of dynamic relationships between income, democracy, and state repression.

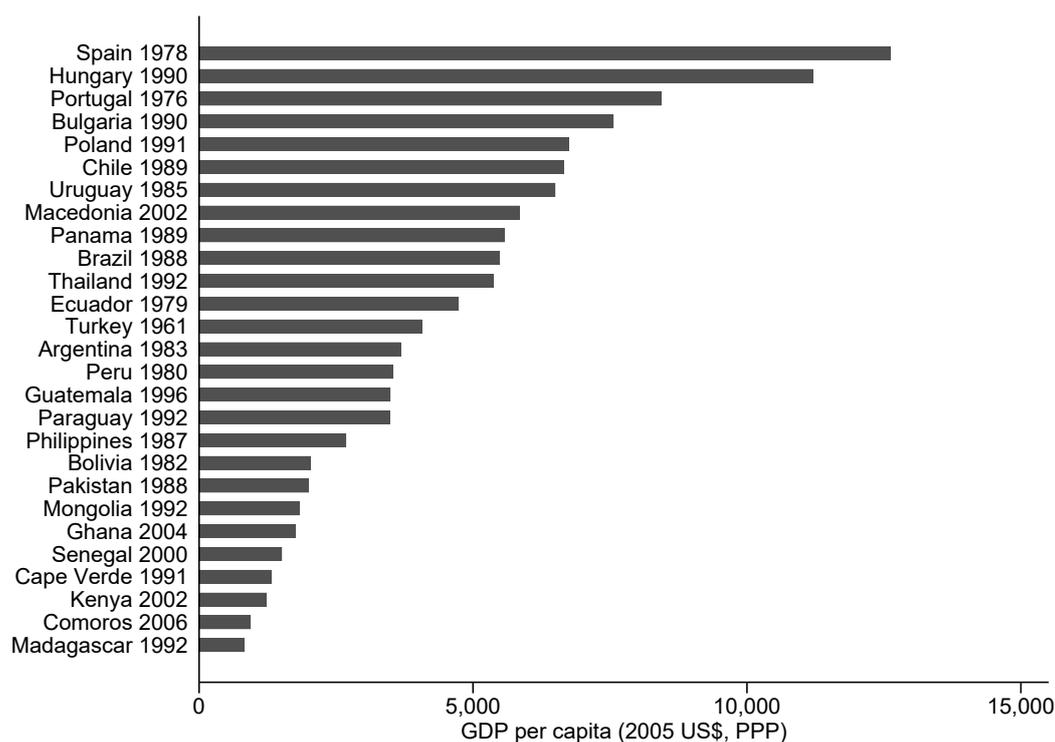
Appendix

Table A1: Summary statistics

Variable	N	Mean	Std. Dev.	Min	Max
Latent human rights scores	8,562	0.29	1.39	-3.11	4.71
PIR (CIRI)	4,884	4.93	2.34	0	8
Amnesty scores	4,846	2.73	1.11	1	5
State Department scores	5,834	2.40	1.16	1	5
X-Polity	7,283	1.18	4.92	-6	7
Full democracy	7,283	0.34	0.47	0	1
GDP/capita (2005 US\$, PPP)	8,446	9,128.79	19,252.38	132.82	632,239.50
Population (in 1,000)	8,446	30,129.99	109,417.50	9.00	1,324,353.00
Youth bulges	8,238	29.28	7.03	11.37	43.81
Trade openness	6,892	74.13	48.15	0.02	531.74

The table shows summary statistics for the variables included in our analyses. Note that some of these variables are transformed before entering the models as described in the text.

Figure A1: Income levels in the year of democratization



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Online Appendix:

(When) Do Democracies Repress Less?

Martin Roessler* Jonathan D. Old† Patrick Zwerschke‡

November 2019

This online appendix presents robustness checks of the empirical results shown in the paper. The following analyses mainly focus on the measurement of democracy. In addition, the robustness of our results against the use of alternative indicators of state repression and income is assessed.

Section S1 presents the results of time-series cross-sectional regressions using alternative democracy indicators. For the democratizing countries identified by the use of these indicators, event studies are conducted in section S2. In another event study analysis, presented in section S3, we investigate different threshold conditions with respect to the minimum increase in the X-Polity score required for a sufficiently large-scaled democratization. Section S4 shows the results of generalized synthetic control estimations based on alternative democracy indicators. Section S5 assesses the stability of the results of generalized synthetic control estimations against the exclusion of trade openness as a covariate. Section S6 shows the results of event studies and generalized synthetic control estimations using an indicator of state repression generated by Cingranelli and Filippov (2018). Section S7 presents results using an event-based repression indicator from the Social, Political and Economic Event Database Project (SPEED) (Nardulli, Althaus, and Hayes, 2015). Finally, section S8 assesses the robustness of our results against the use of alternative GDP data sources.

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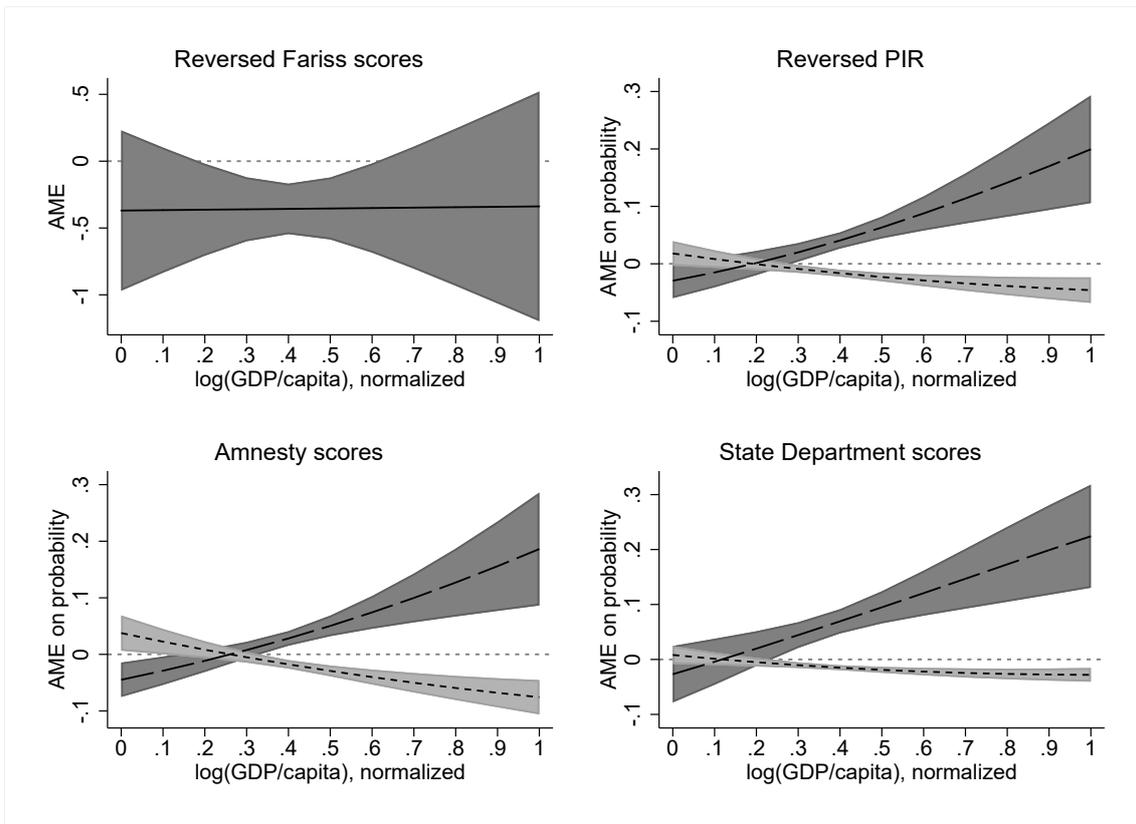
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S1 Time-series cross-sectional regressions using alternative democracy indicators

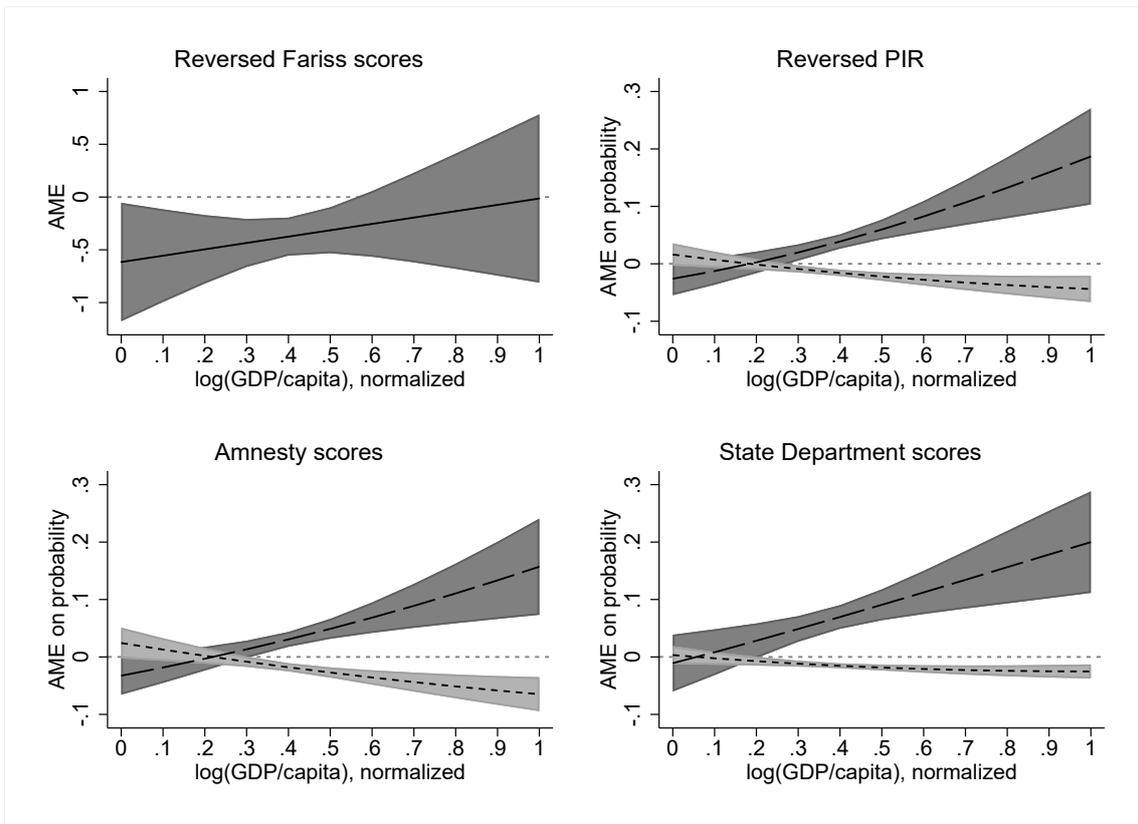
This section presents the results of time-series cross-sectional regressions where the X-Polity-based democracy measure is replaced by democracy indicators from Cheibub, Gandhi, and Vreeland (2010) (CGV) and Acemoglu et al. (2019) (ANRR), respectively. Both indicators are binary and only distinguish between autocracies (coded as 0) and democracies (coded as 1). The results obtained by using the CGV democracy indicator are shown in Table S1 whereas the results obtained by using the ANRR democracy indicator are presented in Table S2. For both indicators, we find significant negative interactions with logged GDP per capita when using the reversed PIR index, the Amnesty scores, and the State Department scores as dependent variables. We do not find interaction effects when using the reversed human rights scores of Fariss (2014). The estimated marginal effects of democracy are depicted by Figures S1 and S2, respectively. On the whole, these results are broadly in line with the hypothesis that democracy is associated with lower levels of repression in relatively rich countries whereas it may have no or even adverse effects in poorer countries.

Figure S1: Average marginal effects (AME) of democracy as measured by CGV by income level



Note: The subfigures depict the estimated average marginal effects (AME) of democracy on each repression indicator for different levels of income with 95% confidence intervals. Income is measured by the logarithm of GDP per capita and is normalized between 0 (lowest sample income) and 1 (highest sample income). For the reversed Fariss scores, the solid line represents the estimated AME. For the reversed PIR, the Amnesty scores, and the State Department scores the long-dashed lines represent the AME on the lowest level of repression (i.e. the lowest score of the repression indicator) whereas the short-dashed lines represent the AME on the highest level of repression (i.e. the highest score of the repression indicator).

Figure S2: Average marginal effects (AME) of democracy as measured by ANNR by income level



Note: The subfigures depict the estimated average marginal effects (AME) of democracy on each repression indicator for different levels of income with 95% confidence intervals. Income is measured by the logarithm of GDP per capita and is normalized between 0 (lowest sample income) and 1 (highest sample income). For the reversed Fariss scores, the solid line represents the estimated AME. For the reversed PIR, the Amnesty scores, and the State Department scores the long-dashed lines represent the AME on the lowest level of repression (i.e. the lowest score of the repression indicator) whereas the short-dashed lines represent the AME on the highest level of repression (i.e. the highest score of the repression indicator).

Table S1: Linear and ordered logistic regressions for indicators of state repression using the CGV democracy indicator

Dependent variable Model	Reversed Fariss scores linear	Reversed PIR ordered logit	Amnesty scores ordered logit	State Department scores ordered logit				
Regression No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CGV	-0.357*** (0.096)	-0.370 (0.304)	-0.557*** (0.103)	0.552* (0.319)	-0.421*** (0.102)	0.884*** (0.337)	-0.708*** (0.109)	0.312 (0.310)
log(GDP/capita)	-0.249 (0.360)	-0.259 (0.413)	-0.971* (0.524)	0.170 (0.567)	-0.521 (0.507)	0.750 (0.527)	-1.846*** (0.487)	-0.951* (0.510)
CGV × log(GDP/capita)		0.031 (0.714)	-2.876*** (0.804)			-3.387*** (0.834)		-2.645*** (0.761)
log(Population)	0.096*** (0.027)	0.096*** (0.027)	0.257*** (0.033)	0.255*** (0.031)	0.168*** (0.037)	0.165*** (0.038)	0.244*** (0.031)	0.243*** (0.032)
Intrastate conflict	0.849*** (0.125)	0.849*** (0.126)	1.352*** (0.155)	1.389*** (0.158)	1.335*** (0.147)	1.369*** (0.150)	1.715*** (0.170)	1.727*** (0.172)
Youth bulges	2.691*** (0.857)	2.705*** (0.923)	4.862*** (1.163)	3.557*** (1.182)	4.804*** (1.079)	3.633*** (1.068)	4.149*** (1.166)	2.958** (1.201)
Trade	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.002 (0.001)	-0.000 (0.001)	-0.002 (0.001)	-0.000 (0.001)	-0.001 (0.001)
lagged DV	0.973*** (0.003)	0.973*** (0.004)	1.063*** (0.043)	1.049*** (0.042)	2.102*** (0.085)	2.061*** (0.084)	2.530*** (0.087)	2.501*** (0.087)
Observations	6218	6218	3659	3659	3425	3425	4417	4417

Note: All regression include year dummies. Standard error estimators are clustered by country. Estimated standard errors are shown in parentheses. Significance levels: *10%, **5%, ***1%. Estimated intercepts and threshold parameters for ordinal logistic regressions are not shown in the table.

Table S2: Linear and ordered logistic regressions for indicators of state repression using the ANRR democracy indicator

Dependent variable Model	Reversed Fariss scores linear	Reversed PIR ordered logit	Amnesty scores ordered logit	State Department scores ordered logit				
Regression No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ANRR	-0.385*** (0.094)	-0.616** (0.284)	-0.553*** (0.099)	0.509* (0.302)	-0.438*** (0.101)	0.590* (0.317)	-0.721*** (0.105)	0.127 (0.299)
log(GDP/capita)	-0.315 (0.349)	-0.530 (0.413)	-1.162** (0.512)	0.125 (0.606)	-0.634 (0.493)	0.530 (0.547)	-1.998*** (0.481)	-1.097** (0.532)
ANRR × log(GDP/capita)		0.602 (0.663)		-2.760*** (0.777)		-2.693*** (0.765)		-2.212*** (0.726)
log(Population)	0.093*** (0.026)	0.092*** (0.026)	0.254*** (0.033)	0.254*** (0.032)	0.173*** (0.035)	0.172*** (0.036)	0.239*** (0.031)	0.239*** (0.032)
Intrastate conflict	0.808*** (0.121)	0.796*** (0.122)	1.287*** (0.155)	1.338*** (0.154)	1.305*** (0.144)	1.341*** (0.146)	1.654*** (0.163)	1.672*** (0.164)
Youth bulges	2.525*** (0.824)	2.785*** (0.884)	4.471*** (1.080)	3.373*** (1.083)	4.635*** (1.020)	3.727*** (1.018)	3.988*** (1.089)	3.094*** (1.106)
Trade	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)
lagged DV	0.973*** (0.003)	0.974*** (0.003)	1.103*** (0.043)	1.088*** (0.042)	2.144*** (0.086)	2.114*** (0.085)	2.529*** (0.083)	2.507*** (0.083)
Observations	6218	6218	3659	3659	3425	3425	4417	4417

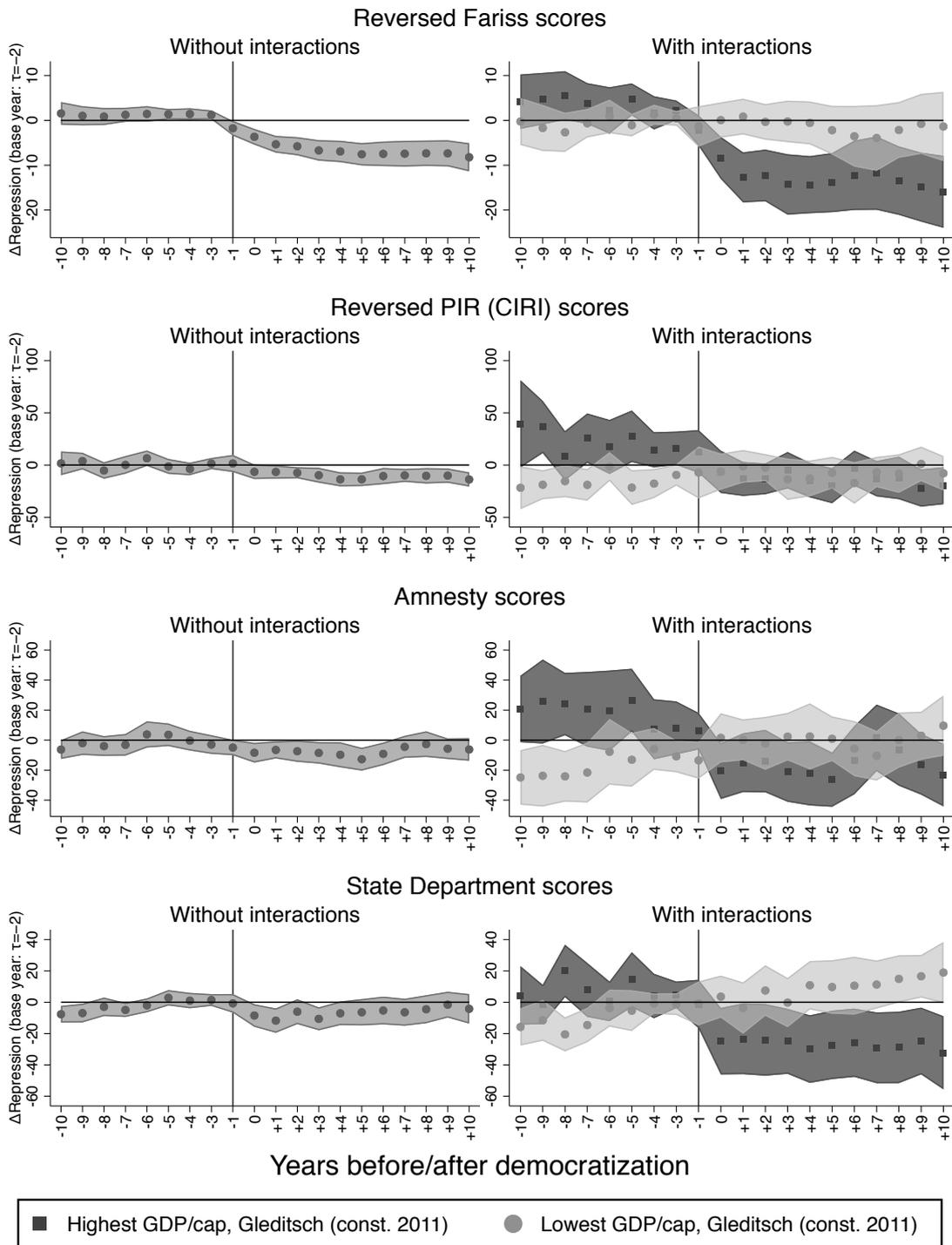
Note: All regression include year dummies. Standard error estimators are clustered by country. Estimated standard errors are shown in parentheses. Significance levels: *10%, **5%, ***1%. Estimated intercepts and threshold parameters for ordinal logistic regressions are not shown in the table.

S2 Event studies using alternative democracy indicators

In the following, we present the results of events studies based on democratizations identified using the CGV and the ANRR democracy indicator, respectively. Since both indicators are binary, a democratization is defined as a change in the respective indicator from 0 (autocracy) to 1 (democracy). The countries and years of democratization are shown in Tables S3 (CGV) and S4 (ANRR). Note that we excluded countries with multiple democratizations from our analyses to avoid that our results are distorted by adverse regime changes and time overlaps.

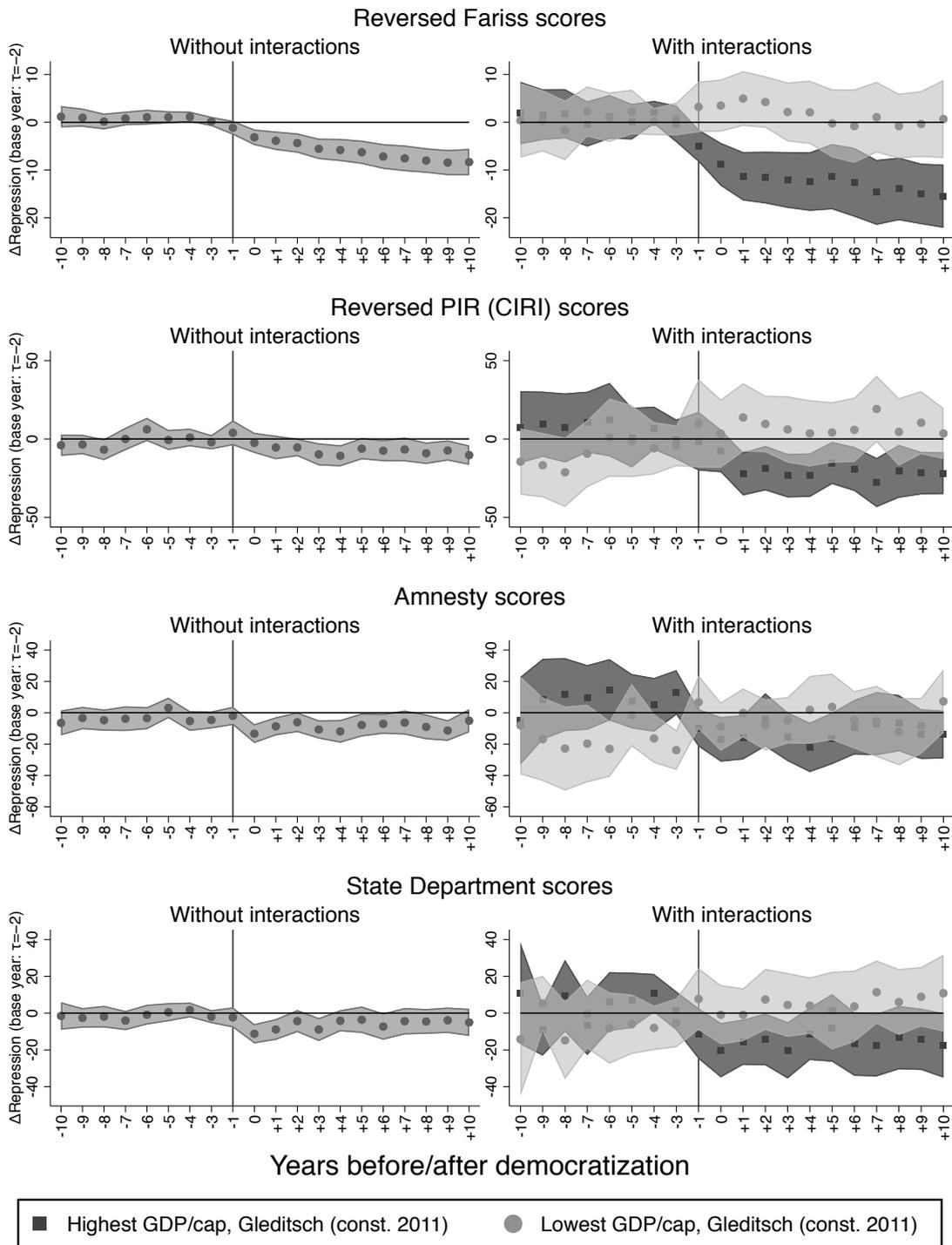
Figure S3 and Figure S4 depict the results based on the CGV and the ANRR indicator, respectively. For the reversed Fariss scores and the reversed PIR index, we find significant reductions of repression after democratization at the highest GDP per capita in the event sample, whereas there are no significant effects at the lowest sample value of per capita income. With respect to the Amnesty and the State Department scores, results are qualitatively similar, although the estimated negative effects at the highest value of GDP per capita are insignificant for some of the event years after democratization. On the whole, these results are in line with those shown in the paper.

Figure S3: Results of event studies with and without interactions between event years and logged GDP per capita using the CGV democracy indicator



Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Figure S4: Results of event studies with and without interactions between event years and logged GDP per capita using the ANRR democracy indicator



Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Table S3: Democratization events identified based on the CGV democracy indicator

Country	Year	Country	Year	Country	Year
Albania	1991	Ghana	1993	Panama	1989
Bangladesh	1986	Honduras	1982	Paraguay	1989
Benin	1991	Hungary	1990	Philippines	1986
Brazil	1985	Indonesia	1999	Poland	1989
Bulgaria	1990	Kenya	1998	Portugal	1976
Cape Verde	1990	Korea, South	1988	Romania	1990
Central African Republic	1993	Madagascar	1993	Sao Tome and Principe	1991
Chile	1990	Malawi	1994	Senegal	2000
Comoros	1990	Mali	1992	Spain	1977
Congo, Republic of	1992	Mexico	2000	Sri Lanka	1989
Dominican Republic	1966	Mongolia	1990	Taiwan	1996
Ecuador	1979	Nepal	1990	Turkey	1961
El Salvador	1984	Nicaragua	1984	Uganda	1980
Fiji	1992	Nigeria	1999	Uruguay	1985
Georgia	2004	Pakistan	1988	Venezuela	1959

Table S4: Democratization events identified based on the ANRR democracy indicator

Country	Year	Country	Year	Country	Year
Bangladesh	1991	Honduras	1982	Panama	1994
Benin	1991	Hungary	1990	Paraguay	1993
Bolivia	1982	Indonesia	1999	Peru	1980
Brazil	1985	Kenya	2002	Philippines	1987
Bulgaria	1991	Korea, South	1988	Poland	1990
Burundi	2003	Lebanon	2005	Portugal	1976
Cape Verde	1991	Lesotho	1993	Romania	1990
Central African Republic	1993	Liberia	2004	Sao Tome and Principe	1991
Chile	1990	Madagascar	1993	Senegal	2000
Comoros	1990	Malawi	1994	South Africa	1994
Congo, Republic of	1992	Mali	1992	Spain	1978
Djibouti	1999	Mexico	1997	Taiwan	1992
Dominican Republic	1978	Mongolia	1993	Uganda	1980
Ecuador	1979	Mozambique	1994	Uruguay	1985
El Salvador	1982	Nepal	1991	Zambia	1991
Ghana	1996	Nicaragua	1990	Zimbabwe	1978
Guatemala	1986	Niger	1991		
Guyana	1992	Pakistan	1988		

S3 Event studies based on different regime change threshold values for the identification of democratizations

In the paper, we defined a country to have experienced a democratization if:

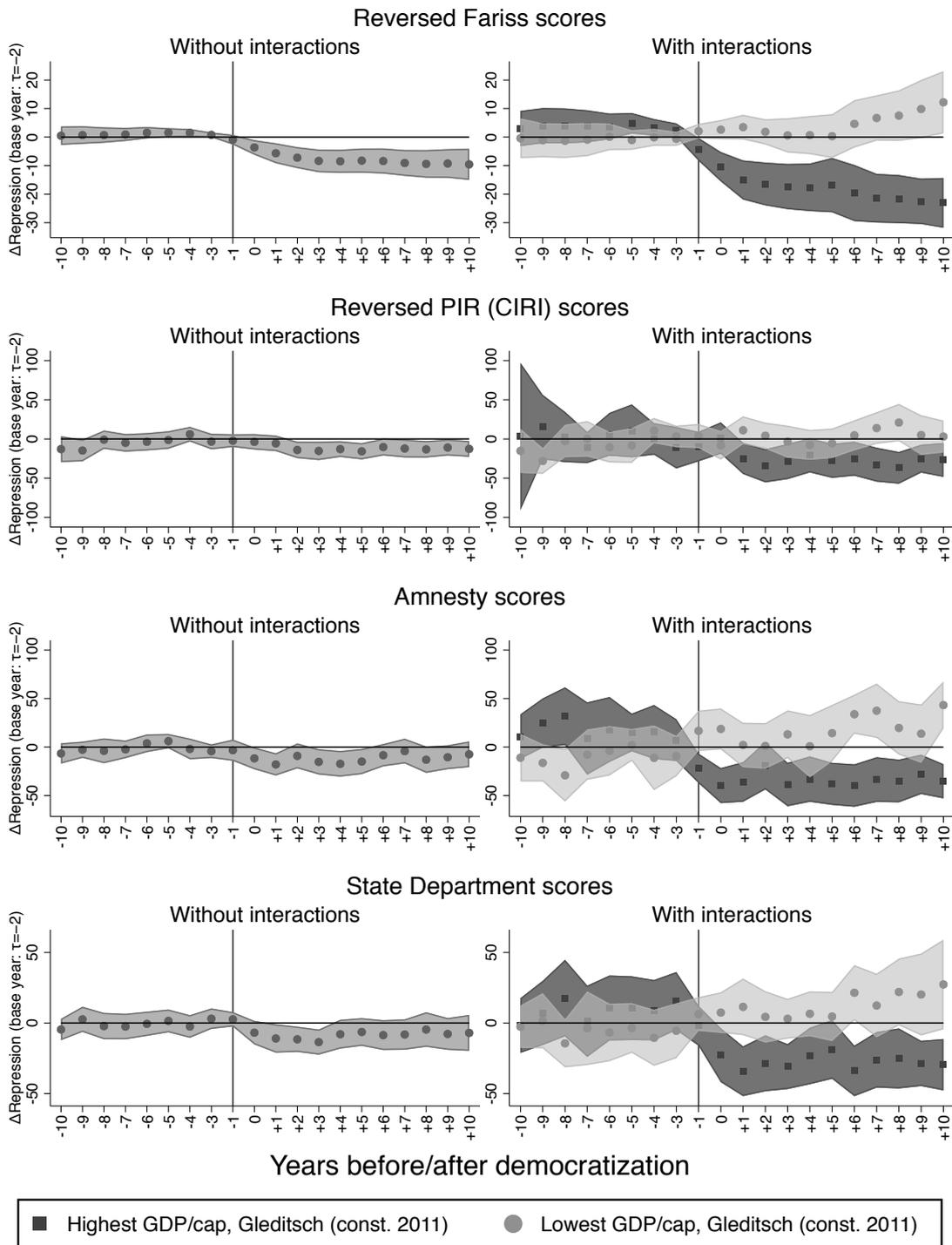
1. The country reached an X-Polity score ≥ 6 (full democracy).
2. There was either an associated three-point increase in the X-Polity scores within three years or less, or a four-point increase within four years or less, and so on.
3. There was no negative change in the X-Polity scores during the transition period. In this respect, the Polity codes -66 (interruption), -77 (interregnum), and -88 (transition) are ignored.
4. The country had been non-democratic for at least 10 years before the regime change.
5. The country remained democratic for at least 5 years after the regime change.

Condition 2. was imposed to ensure that the regime change is sufficiently rapid and large-scaled to be reflected in changes in the level of state repression. In the following, we present results of event studies obtained by replacing condition 2. by:

- 2a. *More restrictive condition:* There was either an associated four-point increase in the X-Polity scores within three years or less, or a five-point increase within four years or less, and so on.
- 2b. *Less restrictive condition:* There was either an associated two-point increase in the X-Polity scores within three years or less, or a three-point increase within four years or less, and so on.

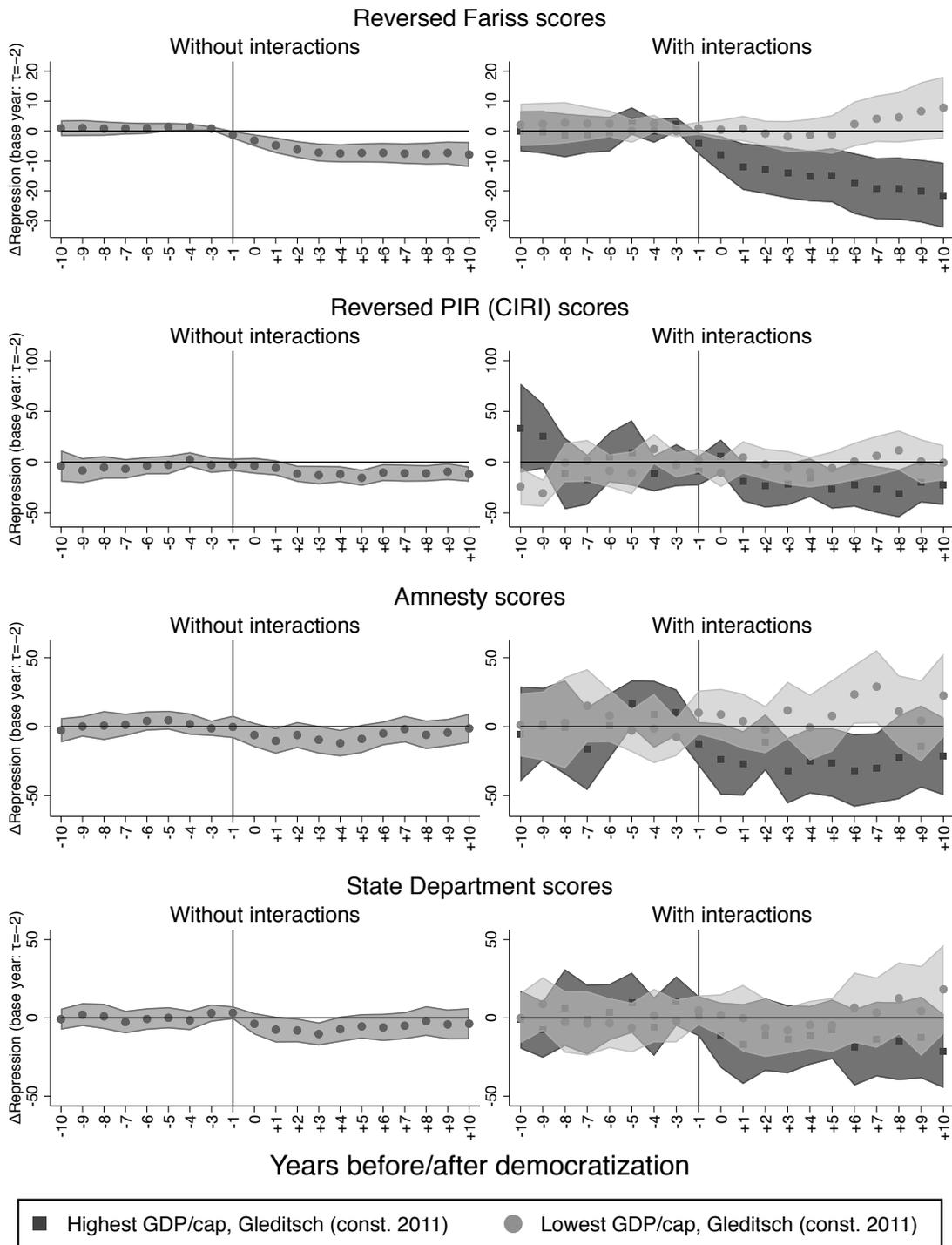
The results based on the more restrictive condition 2a. are shown in Figure S5. Compared to the results presented in the paper, the negative effects of democratization for relatively rich countries become more pronounced when the required magnitude of the change in the X-Polity scores is increased. This finding is in line with the notion that larger changes in the institutional structure of a country are reflected in stronger changes in state repression. Figure S6 depicts the results of the event studies based on the less restrictive condition 2b. The inclusion of countries which experienced less sizable changes in the political regime yields (in absolute terms) smaller point estimates and larger confidence intervals. These findings provide some evidence that imposing more restrictive conditions on the significance of the regime change promotes the identification of effects of democratization. On the whole, the event studies shown in this section provide further evidence for different patterns of state repression in the course of democratizations in countries with different income levels.

Figure S5: Results of event studies with and without interactions between event years and logged GDP per capita based on the more restrictive condition 2a.



Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Figure S6: Results of event studies with and without interactions between event years and logged GDP per capita based on the less restrictive condition 2b.

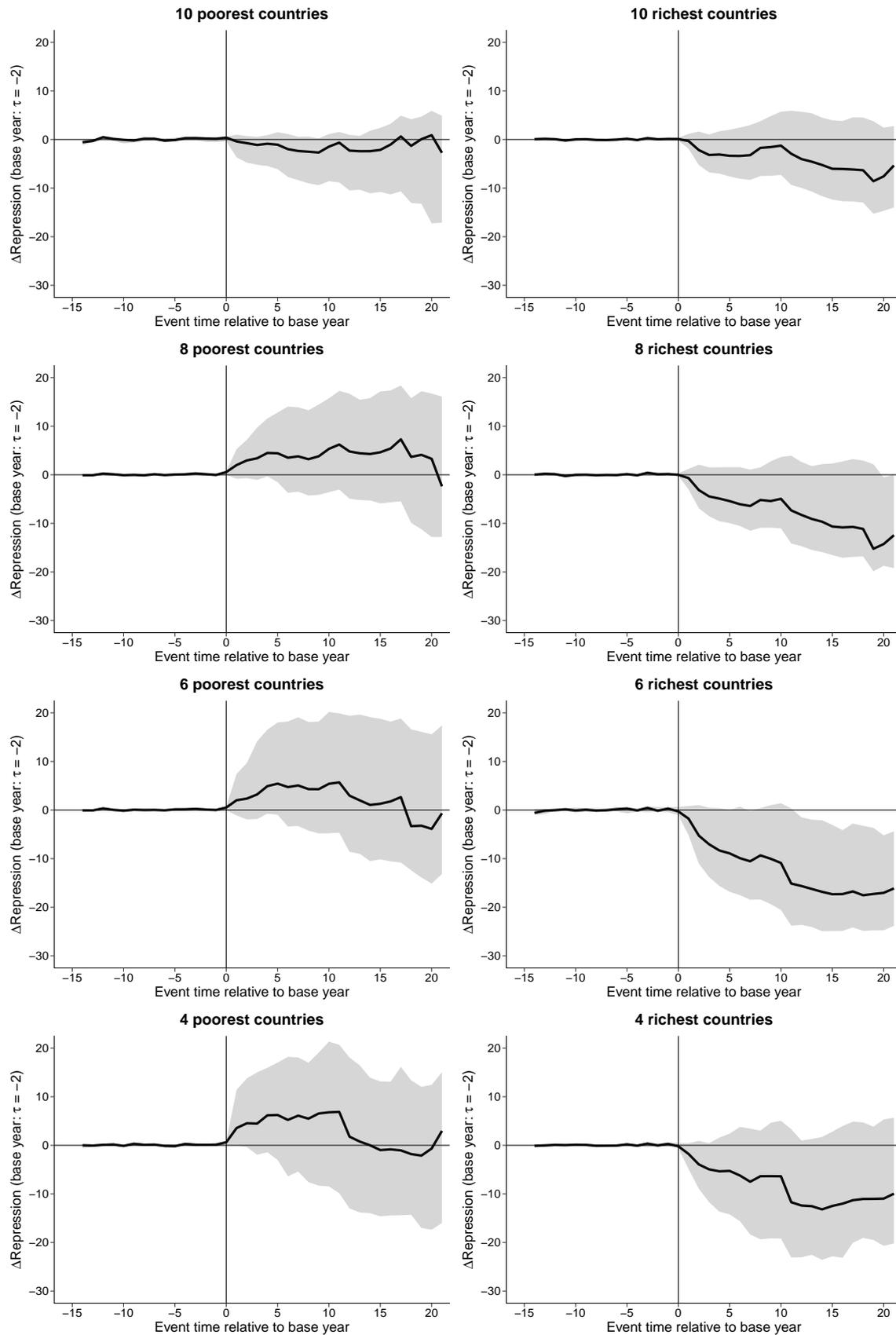


Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

S4 Generalized synthetic control estimations using alternative democracy indicators

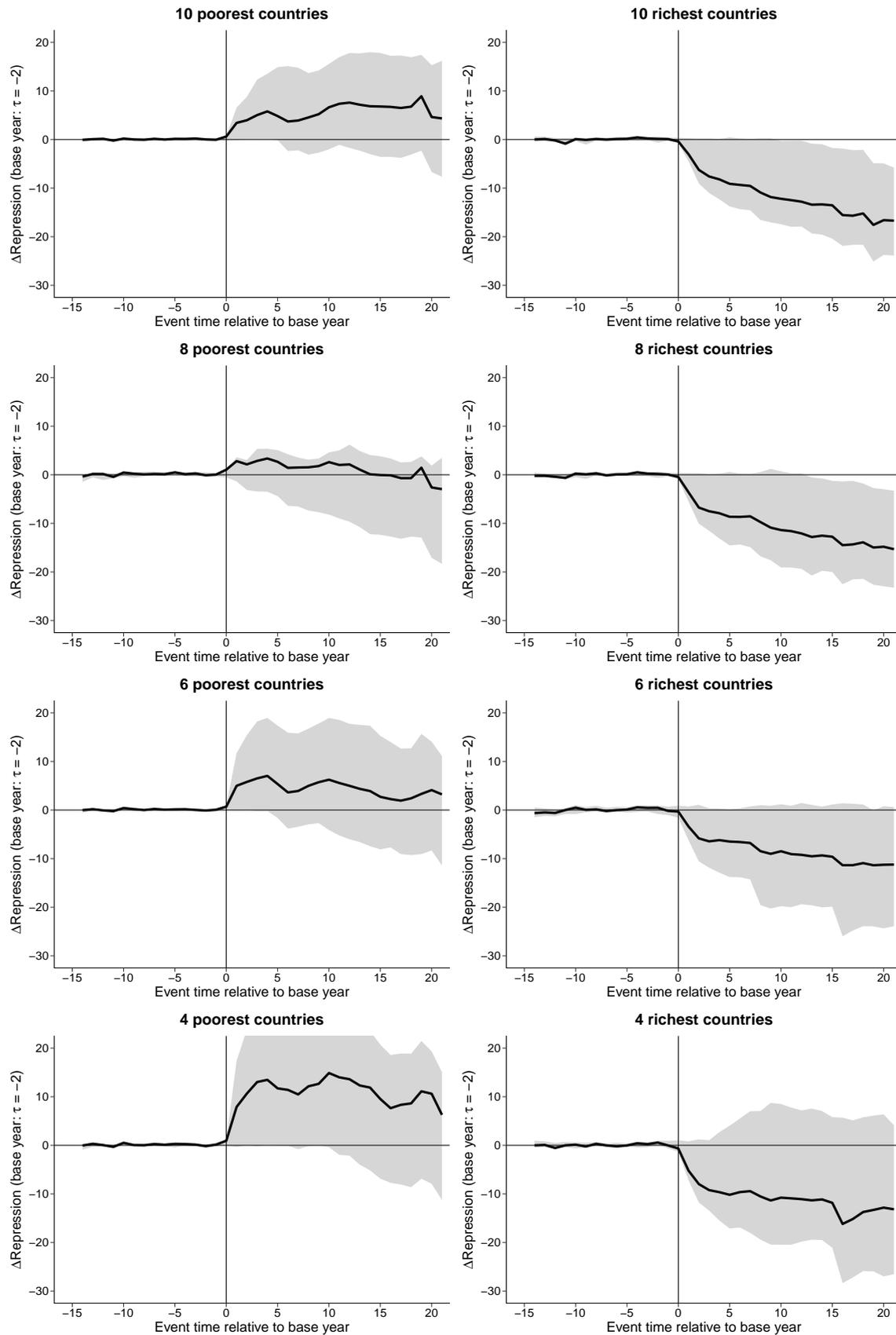
This section presents generalized synthetic control estimations (Xu, 2017) using the CGV and the ANRR democracy indicator, respectively. While Figure S7 shows the results obtained with the CGV democracy indicator, Figure S8 presents the results obtained with the ANRR democracy indicator. According to the point estimates, we find evidence for positive or only slightly negative effects of democratization on state repression in relatively poor countries. In contrast, we find more pronounced reductions of repression after democratization in relatively rich countries. These results support the implications of the theoretical model. The confidence intervals indicate a relatively high degree of uncertainty of the point estimates, which may likely reflect the fact that we cannot impose conditions ensuring that only countries with substantial changes in the political regime enter our analyses when using the CGV and the ANRR democracy (see section S3 for the relevance of related threshold conditions).

Figure S7: Generalized synthetic control estimates for different income groups using the CGV democracy indicator



Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

Figure S8: Generalized synthetic control estimates for different income groups using the ANRR democracy indicator

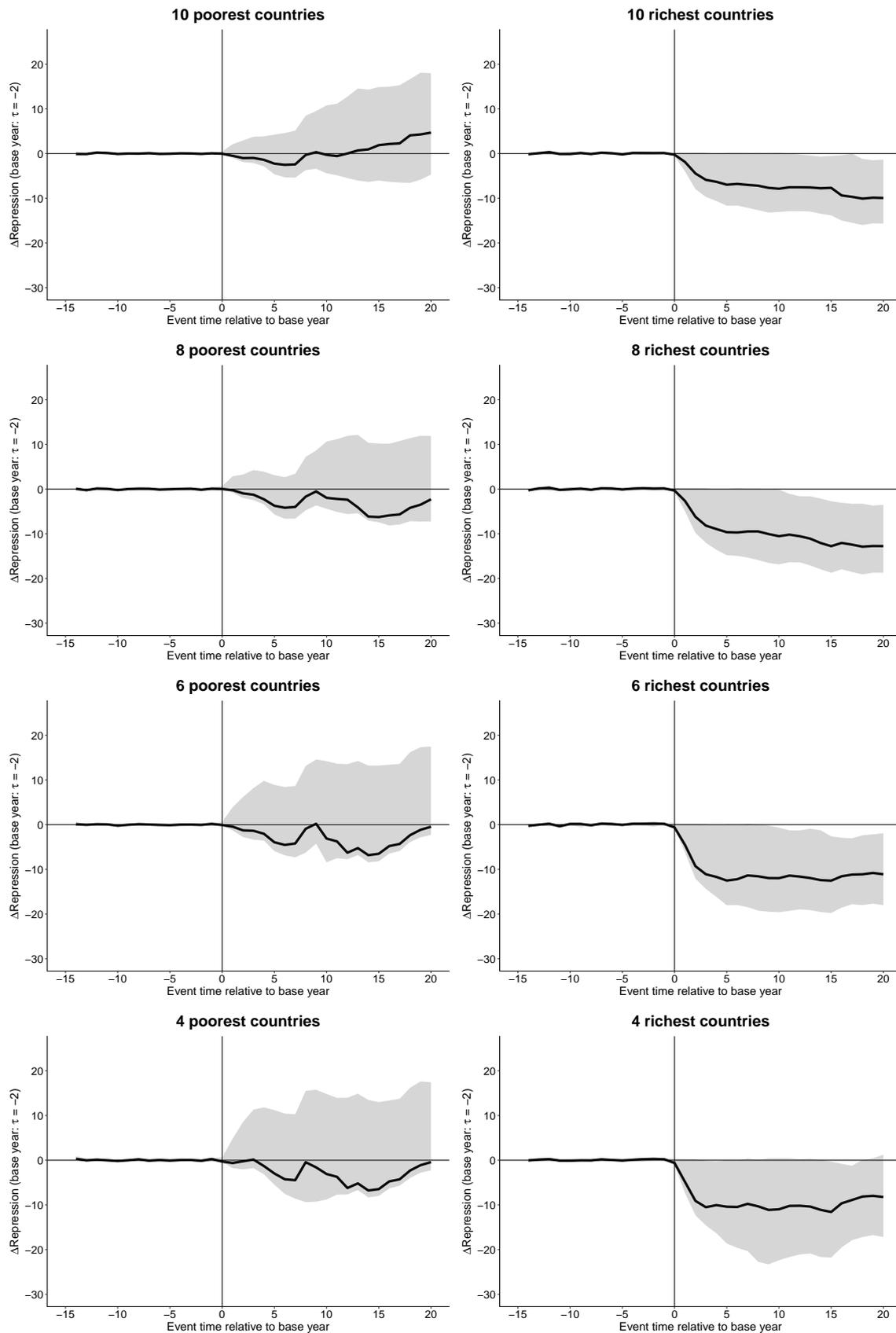


Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

S5 Generalized synthetic control estimations without trade openness as covariate

The results of the generalized synthetic control estimations presented in the paper are based on data for only 21 of the 27 identified democratizing countries. This reduction in the number of countries was particularly due to a low pre-democratization coverage of the variable *trade openness*. In this section, we present results of generalized synthetic control estimations excluding *trade openness* from the econometric model, which increases the number of included countries to 26. As shown by Figure S9, our results remain robust against these changes. While we find significant negative effects of democratization on repression in groups of relatively rich countries, we do not find significant decreases in government violations of human rights in groups of relatively poor countries.

Figure S9: Generalized synthetic control estimates without trade openness as covariate



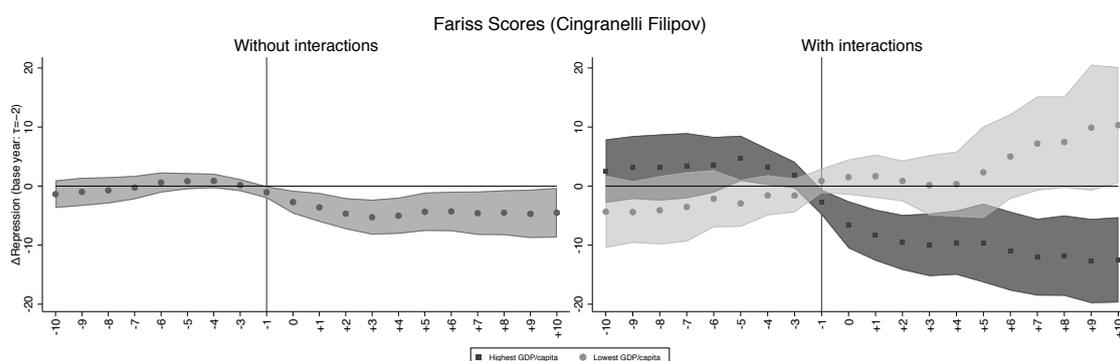
Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

S6 Event study and generalized synthetic control estimations based on human rights data from Cingranelli and Filippov (2018)

The latent human rights scores provided by Fariss (2014) have been criticized, particularly due to the underlying assumption of a changing standard of accountability (see Cingranelli and Filippov, 2018). In this section, we use data from Cingranelli and Filippov (2018) who use an alternative measurement model that was used to challenge Fariss' diagnosis of improving human rights practices over time. We conduct event studies and generalized synthetic control estimations to provide evidence that our results are robust against the use of this alternative indicator. Analogous to Fariss' scores, the human rights scores generated by Cingranelli and Filippov (2018) are reversed to measure repression and normalized between 0 and 100.

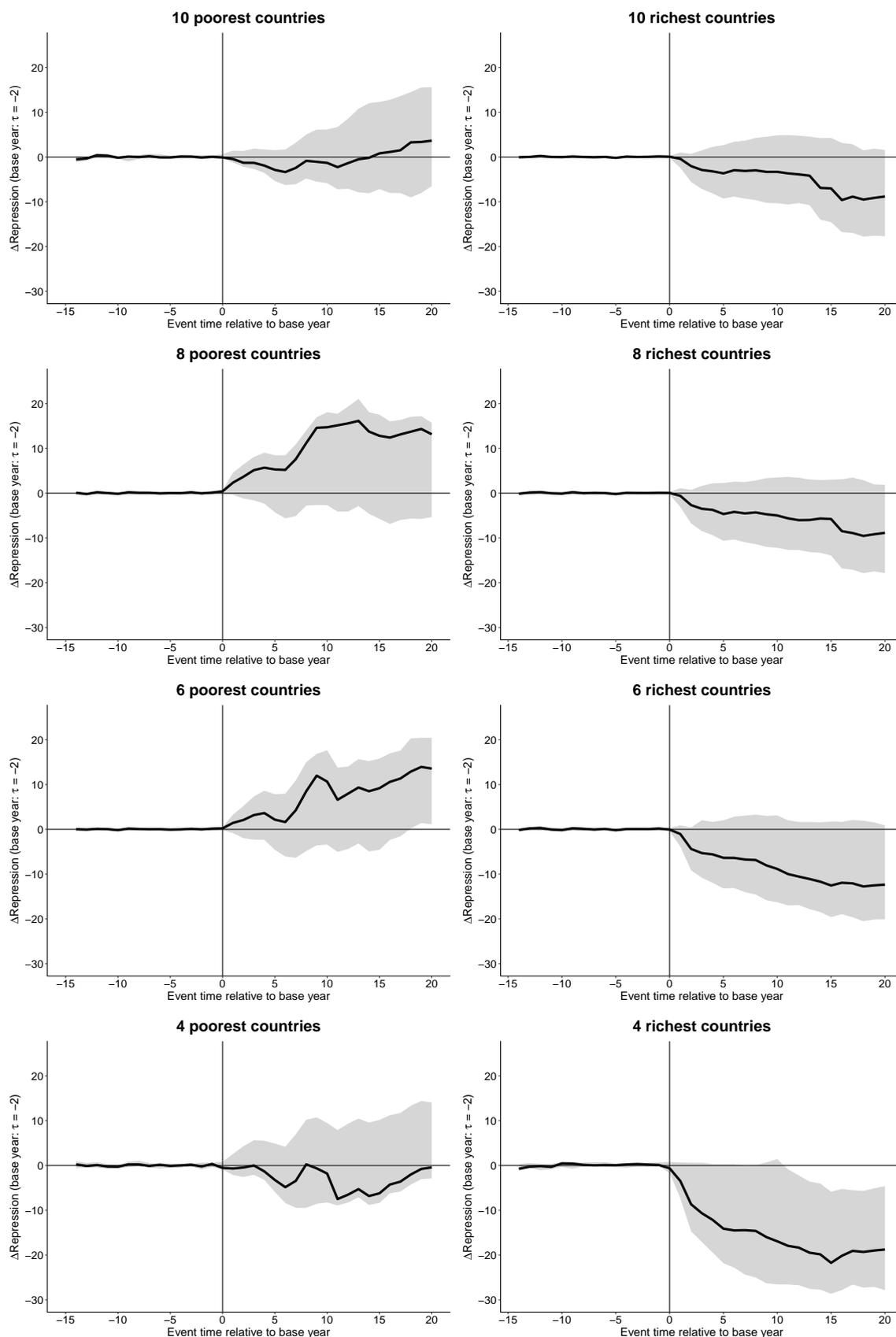
While the results of the event studies are shown by Figure S10, the results of the generalized synthetic control estimations are shown by Figure S11. In line with the evidence obtained from the latent human rights scores of Fariss (2014), both analyses indicate that democratization is followed by reductions of state repression in relatively rich countries whereas we find no or even adverse effects in poor countries.

Figure S10: Results of event studies with and without interactions between event years and logged GDP per capita based on human rights data from Cingranelli and Filippov (2018).



Note: The subfigure on the left hand side shows the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigure on the right hand side is based on models including interaction terms between the event years and logged GDP per capita. For this model, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Figure S11: Generalized synthetic control estimates with the reversed latent human rights scores as estimated in Cingranelli and Filippov (2018) as dependent variable



Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

S7 Event-based repression data

The analyses presented in the paper rely on “standards-based” repression indicators generated by human coders or a mixture of standards-based and event-based data (Fariss, 2014). This section uses data from the Social, Political and Economic Event Database Project (SPEED) (Nardulli, Althaus, and Hayes, 2015) to test whether our results are robust to the use of a fully event-based repression indicator.

The SPEED dataset contains social, political, and economic events related to societal (in)stability. These events are extracted from around 40 million news reports that are sorted and classified by a human coders and a machine learning algorithm. The publicly available data contains events from 1949 through 2005. In our analysis, we only consider events of government repression. We classify such an event by several conditions:

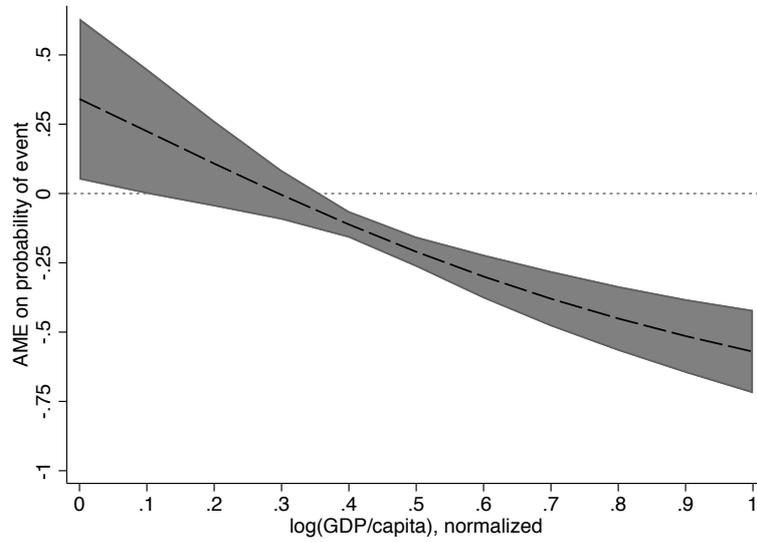
- The initiator of the event must be a government or quasi-government.
- The event must be either belonging to the category of *Political Attacks* or *Disruptive State Acts*.
- The target must not be a geo-political identity.
- The state act must qualify as an event of repression, including events of censorship, banning of civil society groups, imposing martial law, threat to use violence, abuse of police powers, abuse of legal discretion, forced relocations, exile, confiscation of property, riots, assassinations, other coercive state acts.

Applying these conditions yields a dataset of 15,085 events in 187 countries in the period 1949-2005. For our analysis, we use a dichotomous variable indicating whether a relevant repression event occurred in a specific country-year.

The average marginal effects of democracy on the probability of repressive events obtained from the time-series cross-sectional regressions are shown in Figure S12. In line with the results from the other repression indicators, we find evidence that democracy is positively related to the probability of repressive events at low income levels whereas there is a negative relationship at higher income levels.

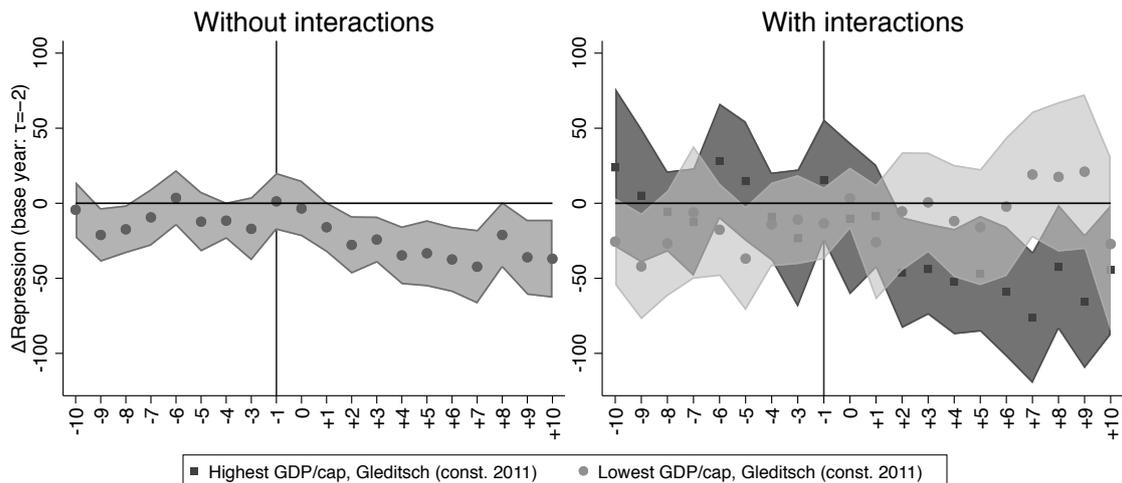
The event study results using the SPEED data are illustrated in Figure S13. While we find significant decreased probabilities of repressive events after establishment of democracy at the highest income level, there is no evidence for significant changes at the lowest income level.

Figure S12: Average marginal effects (AME) of democracy on the occurrence of repression events based on data from SPEED (Nardulli, Althaus, and Hayes, 2015)



Note: The figure depicts the estimated average marginal effect (AME) of democracy for different levels of income with 95% confidence intervals. Income is measured by the logarithm of GDP per capita and is normalized between 0 (lowest sample income) and 1 (highest sample income).

Figure S13: Results of event studies with and without interactions between event years and logged GDP per capita based on repression event data from SPEED (Nardulli, Althaus, and Hayes, 2015).



Note: The subfigure on the left hand side shows the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigure on the right hand side is based on models including interaction terms between the event years and logged GDP per capita. For this model, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

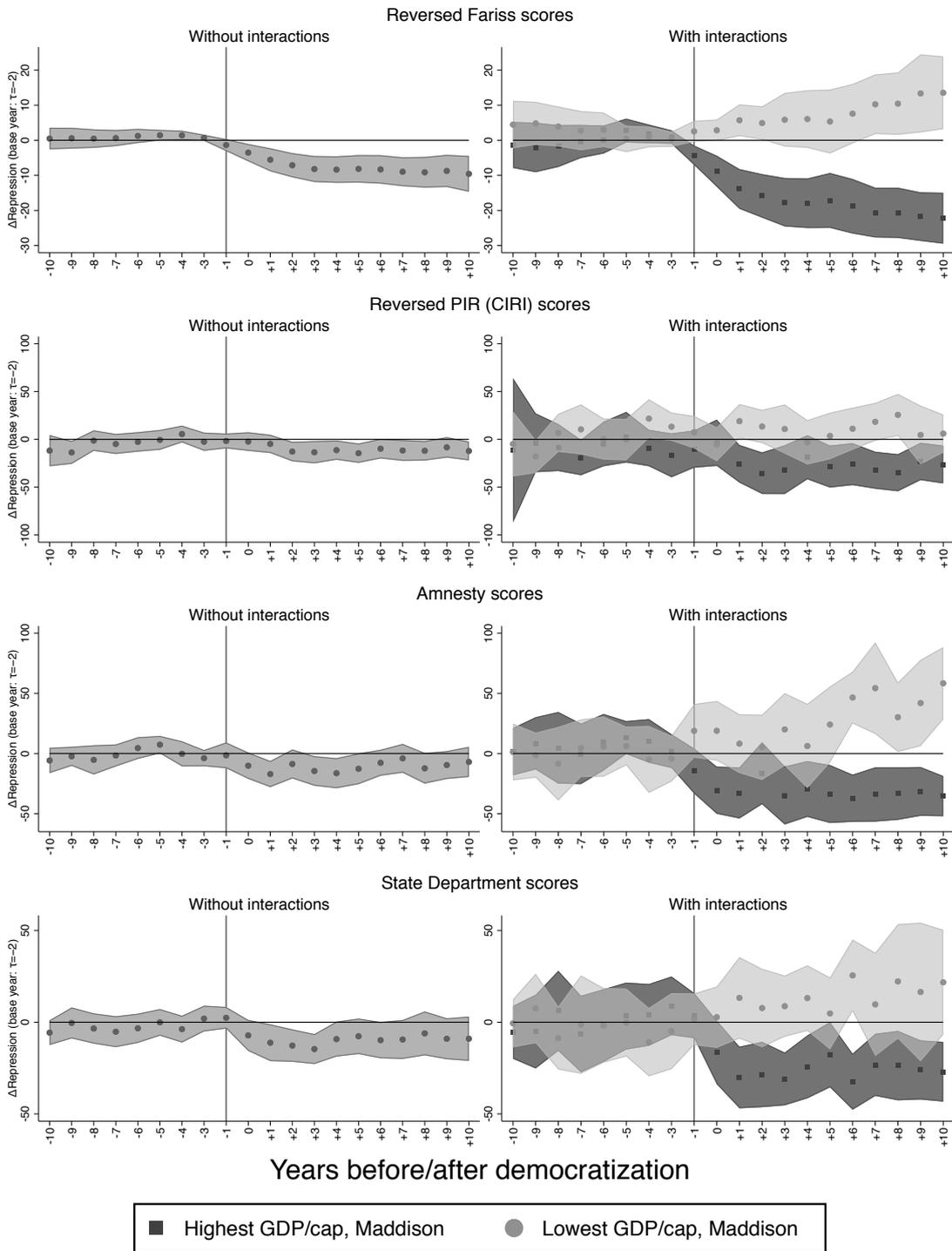
S8 Event study and generalized synthetic control estimations using alternative GDP indicators

To investigate whether our results are robust to alternative sources of income data, we use data on GDP per capita from the Maddison Project database (Bolt et al., 2018) and the Penn World Table (Feenstra, Inklaar, and Timmer, 2015), respectively. GDP data from the Maddison Project database are in 2011 US\$. The Penn World Table provides expenditure-side real GDP at chained PPPs (in mil. 2011 US\$).

The results of the event study and generalized synthetic control estimates based on Maddison Project data are shown in Figures S14 and S15, respectively. In both analyses, our results remain robust against the use of this alternative GDP indicator.

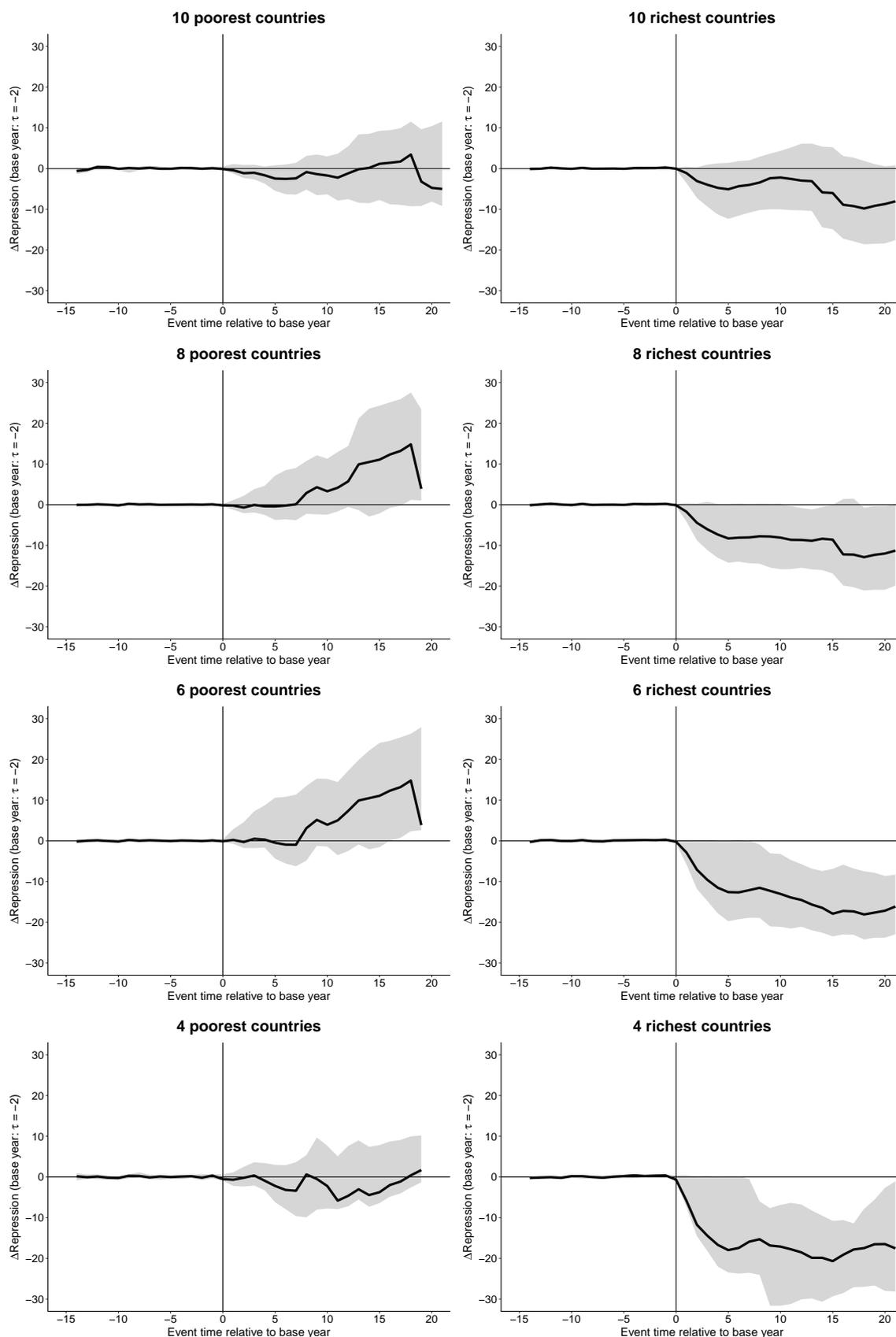
Similar evidence is obtained from the Penn World Table GDP indicator. The results of the event study (Figure S16) and the generalized synthetic control estimations (Figure S17) do not deviate qualitatively from those presented in the paper.

Figure S14: Results of event studies with and without interactions between event years and logged GDP per capita from the Maddison Project Database (Bolt et al., 2018).



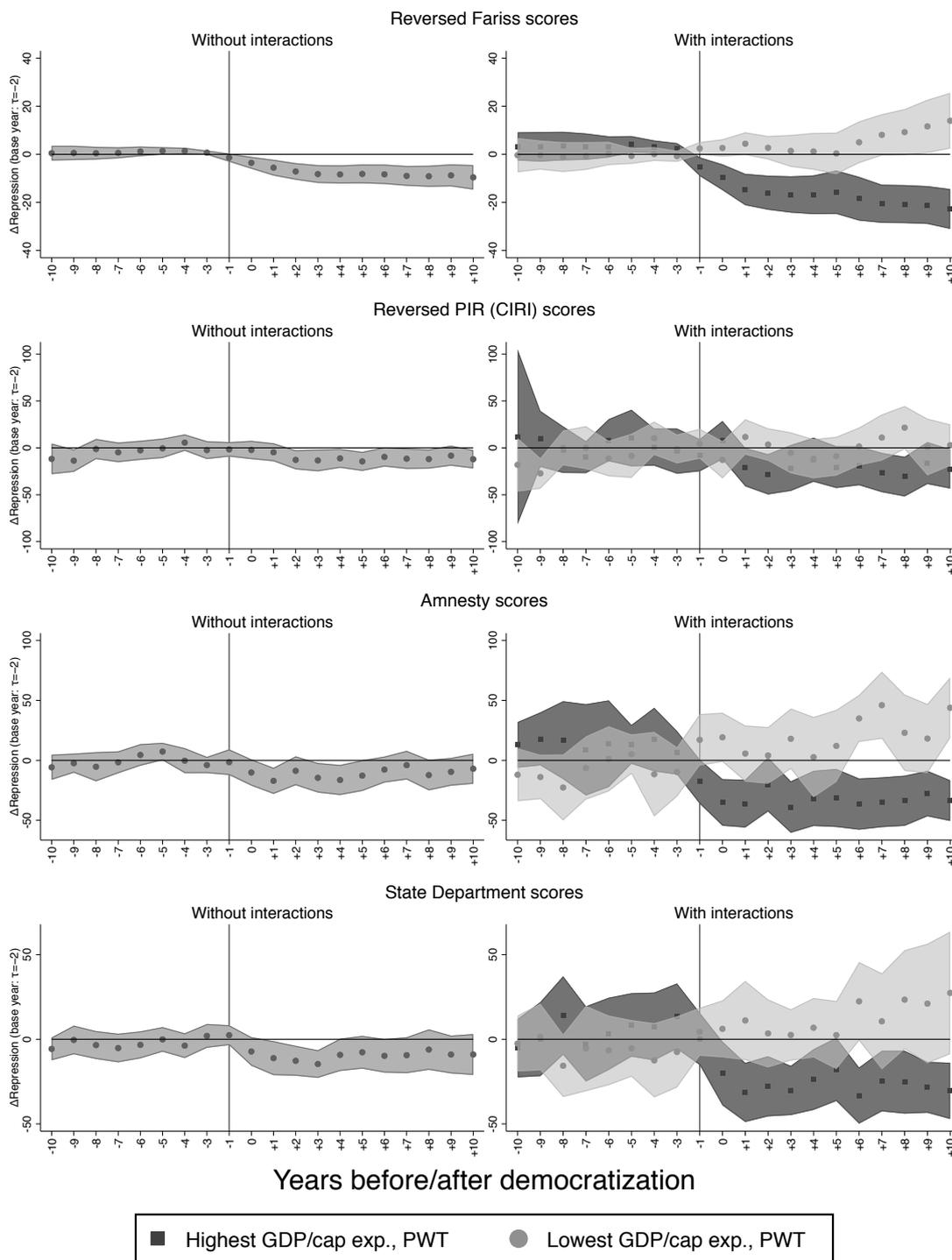
Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Figure S15: Generalized synthetic control estimates using GDP data from the Maddison project database (Bolt et al., 2018)



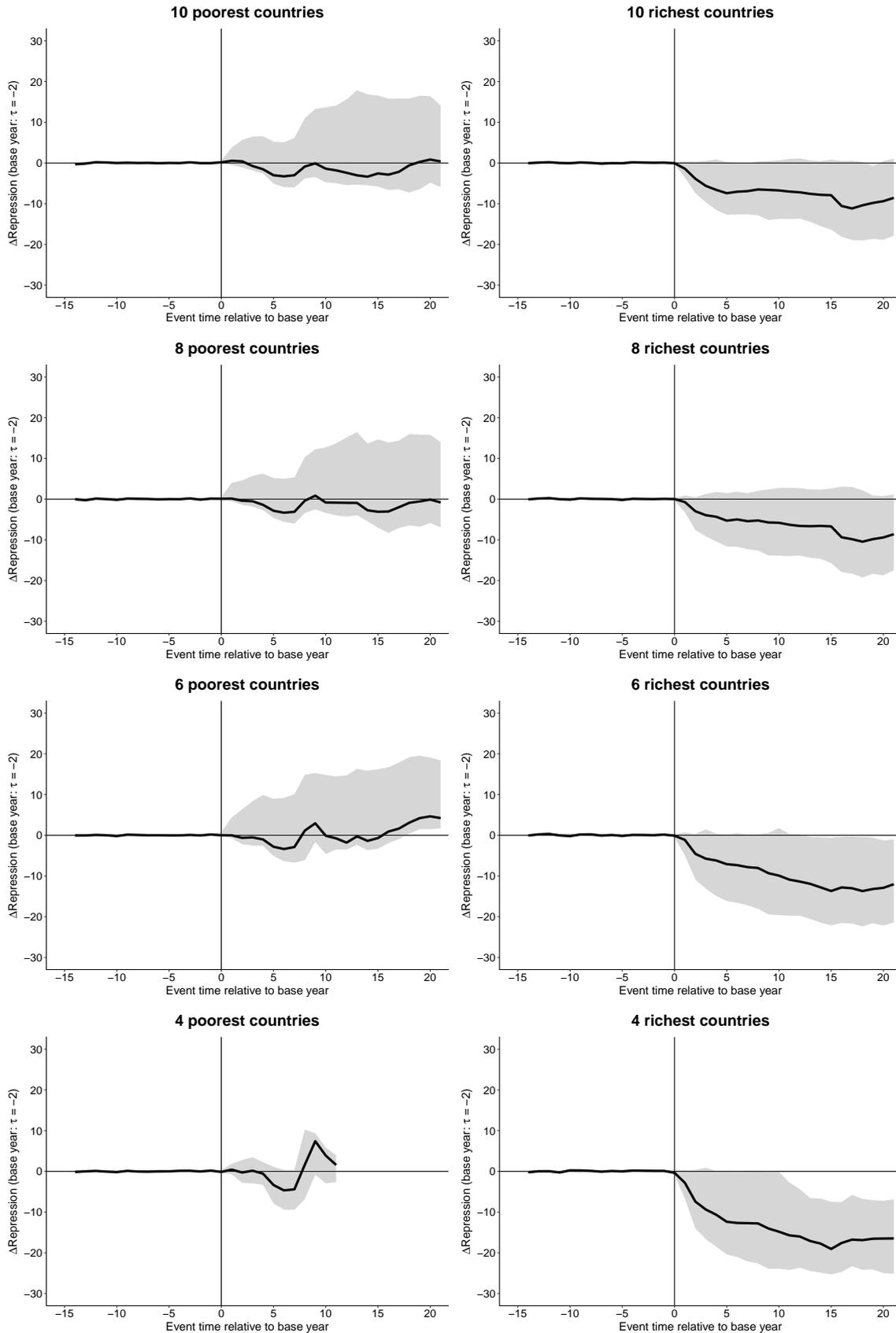
Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

Figure S16: Results of event studies with and without interactions between event years and logged GDP per capita from the Penn World Table (Feenstra, Inklaar, and Timmer, 2015).



Note: The subfigures on the left hand side show the estimated level of repression relative to the baseline year ($\tau = -2$) without interactions with logged GDP per capita. The subfigures on the right hand side are based on models including interaction terms between the event years and logged GDP per capita. For these models, the estimated event-year effects are evaluated at the lowest and the highest income of the democratizing countries included in the sample. All figures show 90% confidence intervals.

Figure S17: Generalized synthetic control estimates using GDP data from the Penn World Table (Feenstra, Inklaar, and Timmer, 2015)



Note: The subfigures show generalized synthetic control estimates for different groups of countries which are defined via their income level at the year of completed democratization. All subfigures show 90% bootstrap confidence intervals.

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