Democratic Values and Institutions[*]

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Abstract

This paper attempts to bridge two literatures: one in political science and sociology that sees democratic values as a crucial requisite for democratic institutions, and one in economics that sees democratic institutions as the result of strategic decisions by elites or other groups. To do so, it suggests a framework for analyzing the two-way interplay between democratic values and democratic institutions. A group of citizens hold values that make them willing to rebel so as to preserve either strong executive constraints or open access to power. The share of these concerned citizens is evolving over time. Our model suggests a natural complementarity such that cultural dynamics reinforce institutional choices. We argue that the model can help to explain variation in democratic values and the history of political institutions across countries and over time, in terms of country-level heterogeneity. The model can also be used to consider the impact of foreign intervention on values and institutions.

"(I)f a political system is not characterized by a value system allowing the peaceful "play" of power ... there can be no stable democracy." Semour Martin Lipset (1959, page 71)

1   Introduction

A look at any of the standard data sets on the history of political institutions reveals some distinct patterns. First, in some countries we see long-standing commitments to open elections and constraints on executive authority – the hallmarks of democratic institutions. These arrangements go largely unchallenged and the policies/rulers chosen through these institutions are accepted with little or no protest. Second, in some countries at the other end of the spectrum, elections are at best a fig leaf to give dictators and single-party structures a veneer of legitimacy and the powers of incumbents remain unchecked by legal and parliamentary institutions. Third, some countries occupy a middle ground where progress towards democracy or autocracy is punctuated by protests and institutional reversals – we see periodic struggles to embed institutional change, but occasionally a country breaks out onto a new path that leads it into one of the more stable groupings.[1]

What drives democratic development is very much an open question. A long-standing tradition in sociology and political science sees the roots of democracy in the dynamics of culture, where democratic values underpin democratic forms of government. A more recent economics literature instead focuses on how institutional change is the product of strategic investments, including costly decisions to fight by those who would gain or lose from institutional reversals.[2]

The main objective of this paper is to build a bridge between the cultural and strategic approaches to the change in democratic institutions. One key feature of our combined approach is that neither institutions nor culture have an upper hand in the causal process of democratic change – the two evolve together in an interdependent way. Specifically, we use a model of cultural evolution that drives the dynamics of democratic values, which figure prominently in the strategic choices of democratic institutions, which in turn feed back to the change in democratic values. A second feature of the approach is that it isolates factors that shape the tension between different interest

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[1]Fact 2 in Section 3 below gives a graphical interpretation of these patterns.

[2]Section 2 below reviews some of the key ideas in these existing literatures.

groups in society, in particular between elites and citizens. A third aspect is that we depart from most existing approaches by not allowing current incumbents to commit future rulers to a certain institution, not even for a single period. A fourth feature is that we consider separately two key aspects of democratic institutions, namely open recruitment of political leaders (the franchise) as well as restrictions on the power of these leaders once they are in place (executive constraints).

The resulting model allows us to interpret the broad patterns we observe in the data within a common framework. This common framework is also consistent with a number of seemingly separate ideas and findings in the existing literature. For example, it suggests a mechanism behind a long-lived effect of historical institutions, like the colonial-origins hypothesis of Acemoglu, Johnson, and Robinson (2001). It also suggests why accumulated values, like social or democratic capital, may underpin consolidated sustained change, as in Putnam (1993) and Persson and Tabellini (2009). It provides a new perspective on the resource curse as a source of political violence (Mehlum, Moene, and Torvik 2006). It gives a theoretical underpinning to the role of critical junctures in history and subsequent institutional paths, as emphasized by Acemoglu and Robinson (2012). The theory also allows for different types of reforms of political institutions. Our dynamic equilibria thus entail reforms that are "defensive" – a ruling elite voluntarily relinquishing political control given the expected costs of trying to hold on to it (Acemoglu and Robinson 2000, 2006) – as well as more traditional "offensive" reforms resulting from citizens ousting incumbent elites from power in order to bring about institutional change (Marx and Engels 1848, Kuran 1995).

The paper is organized as follows. In the next section, we give a short selective overview of the cultural and strategic approaches to the dynamics of political institutions. Section 3 gives three background facts concerning the dispersion of democratic institutions and values over countries and time. Section 4 lays out a basic version of our model. To simplify the exposition of the main ideas, the basic model has only one endogenous democratic institution, namely constraints on the executive. Section 5 extends the model, by allowing for endogenous open contests for power as well as constraints on the executive. Section 6 sketches how the model may shed light on active or passive influence by foreign powers on the paths of values and institutions. Section 7 gets back to the data and discusses how we can use the model laid out in Sections 4-6 to think about the background facts laid out in Section

3. Section 8 concludes. An Appendix collects some proofs and additional material.

2 Background

The idea of a cultural basis for democracy goes back, at least, to Aristotle. But the *locus classicus* is perhaps found in Montesquieu (1748), which spells out how factors like geography and climate interact with different cultures to produce different "spirits" that shape the working of alternative political institutions, including the separation of powers. In modern political science, the work of Almond and Verba (1963) stands out in its study how political culture matters crucially for democracy. One strand of this literature focuses on the importance of education in supporting civic values. These ideas have been taken up, with a global focus on measurable attitudes, in the work of Inglehart (1997) and Inglehart and Welzel (2005). The latter argues that pro-democratic attitudes can be interpreted as a measure of the demand for democratic change.

In line with the mechanism in our model, Welzel (2007) argues that emancipative mass attitudes measured by answers to questions in the World Values Survey demonstrate citizens' to struggle for democracy.[3] We use such measured values when enumerating some facts in the next section and when returning to them in Section 7. Also related is Gorodnichenko and Roland (2015), who take cultures as given in their theoretical and empirical analysis of why individualistic rather than collectivistic cultures are more likely to underpin democratizations.

Although suspicious of cultural explanations as potentially circular, Moore (1966) recognizes that if culture matters it does so in a dynamic fashion. He notes that "to take values as the starting point of sociological explanation makes it very difficult to understand the obvious fact that values change in response to circumstance" (page 487). In the same vein, our approach in this paper focuses on the importance of changing values.

Almond and Verba (1963, page 367) discuss the importance of the socialization process that shapes civic culture, which "includes training in many social institutions – family, peer group, school, work place, as well as in the political system itself". A crucial driver of the dynamics in our approach

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[3]See also Welzel, Inglehart and Kruse (2015).

is a model of cultural evolution, which is inspired by earlier research in anthropology beginning with Cavalli-Sforza and Feldman (1981) and Boyd and Richerson (1985).

In economics, research on how culture might shape individual behavior has spread in the last ten to fifteen years – this body of work is surveyed and discussed in Bisin and Verdier (2011). We model cultural change through the dynamics of preferences or values (rather than dynamics of behavior or beliefs) of a specific group in society. In that sense, we follow the lead of Güth and Yaari (1992). Unlike the earlier economics literature, we focus on the preferences that govern political behavior, rather than economic or social behavior.

Our modelling to some extent parallels the theory in the literature on franchise extension, particularly the theoretical work by Acemoglu and Robinson (2000, 2006), who also offer insightful case-study evidence. These authors emphasize the role of political instability, particularly due to the threat of a revolution. The franchise is used as a commitment device by the elite to guarantee the masses more favorable treatment. Aidt and Jensen (2014) find some econometric evidence in support of this view.

Our modelling is also related to that in Lizzeri and Persico (2004), where a ruling group voluntarily extends the franchise in order to shift spending from targeted transfers to small groups to broad-based programs. This resembles a classic argument, first made by Rokkan (1970) then extended by Boix (1999), that fears of electoral losses explain the move from plurality to proportional representation to protect the center-right from a labor electoral landslide in such countries in early 20th-century Europe where landed and industrial elites had not forged their interests.

In a different vein, Lagunoff (2001) develops a dynamic game between two groups, in which greater political turnover leads to greater constitutional support for civil liberties. Congleton (2007) discusses forces that promoted the introduction of parliamentary oversight on royal power, focusing on instability due to preference shocks to the monarch.

By emphasizing constraints on the executive (as well as the franchise), our research relates to that in Acemoglu, Robinson and Torvik (2011), who propose a model of endogenous checks and balances stressing the way that these change the ability of special interests to influence policy. Building on the ideas in Besley and Persson (2011), Besley, Persson, and Reynal-Querol (2016) analyze theoretically and empirically how the resilience of incumbent leaders may rub off on their motives to undertake reforms towards stronger

executive constraints. One key idea in these papers is the need to contrast the motives to create open elections with the motives to constrain incumbents. This is also at the heart of Mukand and Rodrik (2015), who draw a distinction between electoral and liberal democracy.

Closest to our approach is the important unpublished paper by Ticchi, Verdier and Vindigni (2013). Although the modeling details are rather different, they also model the interaction between value formation through socialization and reforms to political institutions, when democratic values shape citizens' willingness to defend democracy. Persson and Tabellini (2009) study the interactions between political reforms and economic growth in a context where people are more prone to support democracy at higher levels of democratic capital, which is passively accumulated depending on the incidence of democracy in a country's past history or in nearby geography. Besley (2015) analyzes the dynamic interactions between income inequality, redistribution, and individual aspiration levels in a model where young people obtain their aspirations from active socialization by their parents.

The mechanism we propose for sustaining institutional change builds on the idea that values create a credible threat to protest against institutions which create unfair outcomes relative to a reference point. As such, it is related to Passarelli and Tabellini (2016) who consider how values underpin the willingness to protest in the wake of policies which citizens regard as unfair.

Finally, our paper is related to a few recent studies of the two-way interaction between belief formation (rather than value formation) and formal institutions. One example is Benabou (2008) who studies the interactions between the size of government and people's beliefs (ideologies) about the relative efficiency of state vs. market solutions. Another is the recent paper by Levy and Razin (2016) who analyze the interactions between segregation in private and public school choices and polarization of beliefs about the relative merits of these types of schools.

3   Facts on Political Change and Values

To motivate the modelling structure that we use in this paper, we will look at some broad patterns in the data using the Polity IV data and the World Values Survey. Below, we will show that our model offers an interpretation of these patterns in terms of evolving democratic values and institutions. Three

main facts motivate the model we use. The first fact is:

Fact 1: *At a world scale, open executive recruitments and strong executive constraints have both become more widespread over the past two centuries, but with executive constraints lagging behind openness. Each decade of the last century has seen reforms in both directions but these are heterogeneous over time: the 1920s, 30s, 60s and 70s display more transitions into weak executive constraints and closed recruitment, while other decades display more transitions into strong executive constraints and open recruitments. In a four-way typology of political regimes, the shares of each type have also changed over time.*

This is illustrated in Figures 1-4. In Figure 1, we use two variables from the PolityIV (PIV) data set. Executive constraints are measured on a seven-point scale and – anticipating our model where the choice of executive constraints is binary – we plot the fraction of countries which have the highest score in each year. Openness of executive recruitment is measured on a four-point scale and we plot the fraction of countries with the highest openness score, which is reserved for regimes where the top executive is directly elected or appointed. The left-hand panel holds the sample constant at the 50 countries that all appear in the PIV data already in 1875. The right hand panel instead displays all countries in this data base for each given year. In particular, it includes countries that enter the data base in the post-war period, during which many countries became independent of their previous colonial masters.

Figures 2 and 3 display reforms by decade from 1900 to 2011 using the same dummy variables as in Figure 1. An upward (downward) movement in executive constraints or openness is a move from 0 to 1 (from 1 to 0). The two panels in the figure shows the average number of upward and downward movements in each decade. Again, we do so for the 50 countries in the data from 1875 (left-hand panel), as well as for all countries in the data in a given decade (right-hand panel), with broadly similar patterns in the two samples. While every decade has a mixture of upward and downward movements, these figures clearly recap a feature of both panels in Figure 1, namely a reversal for both aspects of democracy during the interwar period.

How about the relations between the two aspects of democracy? Our simple bivariate way of classifying each aspect of democratic institutions leads to four distinct regime types. In Figure 4, we classify each country according to whether it has open or closed elections and strong or weak executive

constraints. We do this for the PIV sample of 50 countries which existed in 1875 and track the distribution across the four types over decades from 1900 to 2011. The proportion of countries which are both open and strong has been increasing over time, while the fraction of open and weak countries has been fairly stable. Countries which are strong but closed disappear from the sample quite early in the 20th century, and there has also been a decline in those which are closed and weak. This figure underpins the need to work with a theory that considers separate dimensions of politico-institutional change rather than a single dimension.

Using the same data, we offer the following classification of country political histories:

Fact 2: *Histories of reforms to executive constraints are heterogenous across countries and can be classified into three broad forms: permanent transitions into strong or weak executive constraints, or churning between the two, with the churning group being the most prevalent one. Most countries tend to introduce open executive recruitment before acquiring strong executive constraints.*

Table 1 illustrates this fact for the 50 countries with PIV data from 1875. It classifies each country according to its history for executive constraints. The left-most column shows just how long-standing transitions into permanent autocracy tend to be. Similarly, the top of the right-most column show a striking longevity of democratic traditions in countries that have democratic institutions from the outset (or from 1800). That said, transitions to democracy have taken place much less recently in countries at the bottom panel of the right-most column, with the exception of Costa Rica and Sweden. The middle column contains the largest part of the sample, which display transitions in both directions. For some of these countries, however, this was due to strong external influence – e.g., German occupation in World War II. We return to such episodes below.

Another pattern in the data is the general tendency for countries to institute open elections ahead of strong executive constraints. Table 2 provides a window on this for the same sample of countries as in Table 1. The table spells out the year when the country first introduces openness and strong executive constraints. As we know from Table 1, this is only a partial picture as several countries have one or multiple reversals. However, the table still illustrates that far and away the most common historical pattern has been to

introduce open elections ahead of strong executive constraints. It is interesting to note the exceptions to the general pattern: Belgium, Ethiopia, Japan, Netherlands, Norway, Portugal, Spain, and the UK. All of these started out with a strongly entrenched aristocratic system and a strong monarch, whose powers were gradually curtailed by courts and legislatures. Our comprehensive model presented in Section 5 will try to offer some insights into how mixed regimes may arise.

Fact 3: *Support for democracy varies across individuals, as well as countries, and is systematically correlated with political histories, with the strongest (weakest) support among those that have experienced long (short) histories of democracy.*

This fact relies on individual data from waves 5 and 6 of the World Values Survey (WVS). These micro data collect the answers to a range of attitudinal questions. We focus on a question asking people to rate the importance of democracy on a ten-point scale. To anticipate the theoretical approach developed below, we adopt a bivariate measure where we classify a citizen as supportive of democracy if she gives democracy a grade above 8 on this scale. The mean of this variable is about 0.6. In Figure 5, the left-hand panel plots the country averages, as deviations from the sample mean, against the fraction of years that a country has had high openness as well as strong executive constraints. The figure shows a positive relationship between the two variables. The right-hand panel in Figure 5 shows a similar relation, when we use residual support for democracy, after holding constant each individual's gender, education, age and income.[4]

Finally, Figure 6 illustrates the systematic relation between democratic values and political histories as spelled out in Fact 2. It relies on the individual data in the three groups of countries defined in Table 1, given that they appear in waves 5 and 6 of the WVS. The figure shows the average support for democracy across individuals belonging to each of the three groups. It shows that the support for democracy is strongest among citizens in countries with long-standing democratic traditions, weakest among those with long-standing autocratic traditions, and in the middle among those with mixed histories.

Together, Figures 5 and 6 illustrate Fact 3.

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[4]We estimate a linear probability model at the individual level with the dummy for democratic support on the left-hand side and also including on the right-hand side controls for gender, ten dummies for income groups, three for education groups, and three age bands. To construct the figure, we average the residuals at the country level.

4   The Core Model

In this section, we spell out our basic framework with only one endogenous institution, namely executive constraints. This is to make our argument as simple and transparent as possible. Section 5 adds a second institutional feature, namely open elections. Our basic framework is fully dynamic. In each period, an incumbent leader chooses whether to impose strong executive constraints on herself, which limit her capacity to earn rents from holding office. There is no commitment whereby future incumbents have to abide by the institutions they inherit. Strong executive constraints may still be chosen as they eliminate the need for an incumbent ruler to spend resources on curtailing protests by "concerned" citizens who believe in strong institutions. The only dynamic element in the model is the proportion of such citizens. This proportion evolves endogenously along the equilibrium path in response to the relative payoff of being a concerned rather than a passive citizen, which in turn reflects the executive constraints in place.

Group structure, policy, and leaders   The polity has $M + 1$ groups of equal size, normalized to unity. These groups are labelled $m = i, 1, ..., M$, where group i denotes the incumbent elite. To simplify the notation, we let $\mathcal{M}$ be the set of groups, with $\mathcal{M}_{-k}$ denoting all groups except group k.

The policy problem is to distribute per-capita public revenue with value y_t. In each period, this value is drawn at random on $\left[\underline{y}, \overline{y}\right]$ from a distribution with c.d.f. $H\left(\cdot\right)$ and $\underline{y} > 0$. We will primarily think about period-to period shocks to revenue as reflecting fluctuations in the value of natural resources. The share of the pie that goes to group m is denoted by $s_{m,t}$ giving it a total and per-capita payoff of $s_{m,t} y_t$.

At the beginning of each period a member of the incumbent elite i is chosen to be the leader. The leader must choose the shares of revenue to give each citizen and how much formal authority to give them.

Executive constraints   The authority given to citizens is denoted by $X_t \in \{0, 1\}$. Under weak executive constraints, $X_t = 0$, the incumbent leader just freely picks an allocation without any constraints. But if executive constraints are strong, $X_t = 1$, the representatives of the citizens get to approve the allocation. We assume a simple two-stage legislative bargaining model as follows. At stage 1, the leader proposes a set of shares $S_t = \left\{s_{i,t}, .., s_{M,t}\right\}$.

Then the legislature votes, using majority rule. If a majority accepts the allocation, it is implemented. If not, another group is picked at random to make a proposal at the second stage.

It is natural to think about the vote on the stage-1 proposal under strong executive constraints as a "vote of confidence" on the incumbent's proposal. The question is who gets to make a new proposal at stage 2 if that confidence vote fails. We assume that this is parametrically given as part of the institution. Specifically, incumbent group i is picked again with probability $q < 1$ and each of the other groups is picked with probability $(1 - q)/M$. The new agenda setter then proposes an allocation. If that proposal is not accepted, then we assume a breakdown default outcome, where nobody gets anything.

In this setting, a higher value of parameter q means that the incumbent group is more powerful. If we did allow $q = 1$, then executive constraints would have no effect at all, since the incumbent has all the power. Conversely, if $q = 0$, this represents the case where an incumbent has least the least power when constraints are in place.

Types of citizens, protests, and losses from injustice All citizens get utility from transfers and their utility is linear in money. Citizens are of two types. A fraction $1 - \mu_t$ are standard economic agents: they are *passive* and never protest. Their utility is equal to their private consumption at date t and is simply $s_{m,t} y_t$ if they are a member of group m. We assume that these citizens do not care about democratic values but just their own private utility and never join in any protests.

The second group are *concerned* citizens, who make up a civil-society movement. We assume that concerned citizens are equally distributed across all groups in society.[5] Concerned citizens care about their private consumption $s_{m,t} y_t$. However, they also have an intrinsic preference for seeing strong executive constraints in place. This intrinsic benefit is equal to a material utility of β. Moreover, concerned citizens always join in any protest to protect these constraints whenever they have the opportunity of doing so. In this regard, they are behavioral rather than strategic.

Finally, concerned citizens feel a sense of collective injustice when there

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[5]For simplicity we assume that this applies also to the ruling group. This assumption also seem to have support in history where some elite members have frequently seen injustice in institutional arrangements even if those favor their own group.

are no executive constraints. The value of this injustice depends on the *aggregate* loss that the lack of strong executive constraints imposes on all citizens who are not in power, i.e., members of groups $1, ..., M$. Specifically, if we let $\{\hat{s}_{1,t}, .., \hat{s}_{M,t}\}$ be the "reference point", i.e., the vector of shares that these groups would receive with strong executive constraints in place, then the loss compared to the actual allocation $\{s_{1,t}, .., s_{M,t}\}$ is:

$$y_t \left[\sum_{j=1}^{M} \max\left\{ \hat{s}_{j,t} - s_{j,t}, 0 \right\} \right] \tag{1}$$

This way of capturing injustices relative to a given reference point is quite specific. However, it enables us to combine in a simple way the two ideas that (i) concerned citizens experience a loss when their protests are unsuccessful and (ii) the institutional arrangement they prefer provides a reference point for that injustice.

It should be clear from this formulation what we mean by values, as distinct from standard preferences. The payoffs for concerned citizens depend on the institutions in place and the sense of injustice based on societal losses relative to a benchmark. Thus, they embody "sociotropic" views of citizens about the kind of society they would wish to live in, rather than their own material payoffs.

Repression and fighting by the incumbent The incumbent can respond to anticipated protest by setting aside some resources, to be spent on repressing the citizens or on fighting against the protests. (We do not allow the incumbent to buy off protestors.) To model this in a simple way, let f_t denote per-capita resources set aside by the ruling group for repression and fighting in period t.[6] In each period, concerned citizens will have an opportunity to join the protests in a rebellion against the incumbent group with exogenous and constant probability ρ. We denote the event of a rebellion with $r = 1$ and no rebellion with $r = 0$. If there is a rebellion in period t and a fraction ϕ_t of all citizens participates, the probability of unseating the incumbent group is given by $p(\phi_t, f_t)$. This probability is increasing in ϕ,

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[6] If f_t is the size of the labor force devoted to repression then the cost should be multiplied by the wage. Increases in wages would then make the cost of repression higher.

and decreasing and convex in f and satisfies:

$$p_\phi - \frac{p_f p_{\phi f}}{p_{ff}} \geq 0 \text{ for all } \mu \in [0,1] \text{ and all } f \geq 0$$

$$\text{and} \tag{2}$$

$$\lim_{\phi \to 0} p(\phi, f) \rightarrow 0 \text{ for all } f$$

The first condition guarantees that $p(\cdot)$ is increasing in ϕ, even when the leadership chooses to optimally fight a rebellion. The second one implies that the incumbent will put no resources into fighting when nobody participates in a rebellion.

Population structure We consider a sequential-generations model. The only substantive overlap between generations is that parents endow their children with values, as in Besley (2015). Children have two parents and – to keep the population balanced – all parent pairs have two children. We do not model marriage matching explicitly. But we assume that a fraction α of matching is assortative, meaning that individuals match with their own citizen type (concerned or non-concerned). The remaining fraction $1 - \alpha$ matches randomly. As we will see, the assortative-matching fraction only affects the speed of convergence but not the steady state, as long as $\alpha < 1$ – i.e., as long as there is some random matching. Although a crude model, we can think of α as the rigidity of social structures in the sense that assortative matching entrenches the intertemporal transmission of preference. As we shall see, such rigidity makes a society less dynamic.

Socialization Children inherit their type and hence their values. Two parents of the same type simply pass along the values associated with their common type. However, children with parents of different types become concerned, depending on the expected utility of being a concerned type rather than a non-concerned type. Specifically let $\Delta(\mu)$ be the expected utility difference between these types, when the proportion of concerned individuals in the population is μ. Moreover, let $\eta \in (-\infty, \infty)$ be a couple-specific idiosyncratic negative shock to this utility difference. Then, a child with mixed parentage becomes concerned if and only if $\eta \leq \Delta$.

We assume that η has a symmetric single-peaked distribution with c.d.f. G and p.d.f. g. This implies that the probability that a child in a mixed marriage becomes concerned at utility difference $\Delta(\mu)$ is $G(\Delta(\mu))$. By the

12

law of large numbers, this will also be the concerned proportion among those with mixed parentage. By definition, $G(\cdot)$ is monotonically increasing, and by symmetry $G(0) = 1/2$.

Cultural evolution   Using the notation introduced so far, we can write the evolution of the concerned-citizen share:

$$\mu_{t+1} = \alpha\mu_t + (1-\alpha)\left[\mu_t^2 + 2\mu_t(1-\mu_t)G(\Delta(\mu_t))\right].$$

To interpret this expression, note that assortative matching preserves the proportion of concerned citizens at α. Among the share $(1-\alpha)$ who are randomly matched, a fraction μ_t^2 are matched with other concerned citizens (whose children all become concerned) while the fraction of mixed parent households is $2\mu_t(1-\mu_t)$ (whose children become concerned with probability $G(\Delta(\mu_t))$). Manipulating this expression, we can write the change in the concerned-citizen proportion over time as:

$$\mu_{t+1} - \mu_t = (1-\alpha)\left[\mu_t(1-\mu_t)\left[2G(\Delta(\mu_t)) - 1\right]\right]. \qquad (3)$$

It is easy to see that μ is going up (down) whenever $\Delta(\mu)$ is positive (negative). This is the key dynamic equation in the model.

In this approach, the evolution of values is grounded in the payoffs different types receive. The link between $\Delta(\mu_t)$ and the dynamics of values is a "positive selection effect" that drives the model over time. Non-random matching may promote cultural change if it exposes a wider group of children to democratic values. However, whether this raises or reduces the share of concerned type, depends on the relative payoffs of concerned and non-concerned citizens. It follows from (3), that the sign of $\Delta_\mu(\mu)$ will be crucial to the equilibrium dynamics – we return to this issue below.

Our emphasis on relative fitness contrasts with a model where pure numerical supremacy of types drives the evolutionary process. However, our general approach and our main results are consistent with several alternative types of cultural evolution. In the Appendix, we explore three features which could enrich the cultural dynamics. First, we consider what would happen if cultural dynamics had a strategic element as in Bisin and Verdier (2001). Second, we allow for cultural dynamics to evolve through social learning as specified by Boyd and Richerson (1985). Finally, we discuss a richer approach to social influence within lifetimes through a broader range of "cultural parents". But in each of these cases, a full formal treatment is beyond the scope of the paper.

Timing The timing within a generation has the following four steps:

1. A leader in generation t is selected at random from the incumbent elite and y_t is realized

2. This leader chooses X_t and f_t.

3. If $X_t = 1$, at stage 1 of the legislative-bargaining game, the leader proposes an allocation S_t and the other groups vote whether to accept or reject it. If a majority rejects it, legislative bargaining goes on to stage 2 as described in the text.

3´. If $X_t = 0$, (concerned) citizens get an opportunity to protest with probability ρ. If the protests are unsuccessful, $s_i = 1$ and $s_m = 0$ for $\mathcal{M}_{-i_t}$. If they are successful, $s_i = 0$, and $s_m = \frac{1}{M}$ for $\mathcal{M}_{-i_t}$.

4. Payoffs are realized, a new generation is born and socialized by their parents. Parents die. Whichever group m that made the last allocation proposal becomes the incumbent i in period $t + 1$.

Before studying the details of socialization at step 4, we solve the rest of the generational equilibrium backwards.

Protests – step 3´ Since concerned citizens are atomistic, they do not internalize that they might change the probability of protest being successful. We assume that they always rebel, given the opportunity to do so. Hence, the fraction of rebellious citizens ϕ_t is given by the fraction of concerned citizens μ_t and the probability of overriding the incumbent becomes $p(\mu_t, f_t)$. In our framework, protest is thus not strategic even though the success of the group depends on it.

The model could be extended following the approach of Persson and Tabellini (2009) to model rebellions in global game, where the concerned citizens receive a payoff from rebelling. In that case ϕ_t and μ_t may diverge. However, as long as there are strategic complementarities of the kind proposed by Persson and Tabellini, the equilibrium fraction of concerned citizens who rebel will be increasing in μ. The qualitative properties of the extended model will be similar to what we have here, but the strategic choice of participation will tend to magnify the effects we obtain here.

No executive constraints – step 3´ Consider first the situation with weak executive constraints: $X_t = 0$. The payoff to the incumbent leader without this institution is

$$\widetilde{V}(y, \mu, f) = [1 - rp(\mu_t, f_t)]\, y_t - f_t.$$

This payoff takes into account whether an uprise event arises, $r = 1$, or not, $r = 0$, as well as f, the amount of resources set aside for repression and fighting by the incumbent leader at step 2.

Executive constraints – step 3 Suppose instead that strong executive constraints are in place: $X_t = 1$. Then, it is straightforward to solve for the legislative-bargaining outcome. At stage 2 of bargaining, any group will accept a very small amount which can be set to zero. Hence the expected payoff for groups $1, .., M+1$, from rejecting the stage-1 proposal is $(1 - q)\,/M$. Knowing this continuation value, to get a proposal approved the stage-1 leader from group i needs only offer $s_{m,t} = (1 - q)\,/M$ to $M/2$ groups. The share of y_t captured by the leader's group, $s_{i,t}$, is

$$1 - \frac{(1 - q)}{2} = \frac{1 + q}{2}.$$

We can write the payoff to the incumbent leader in this case as

$$\widetilde{U}(y_t, q, f) = y_t\,(1 + q)\,/2 - f_t.$$

The *ex ante* payoff of any citizen outside of group i is $E(y_t s_m) = y_t\,(1 - q)\,/2M$.

Evidently, q measures the advantage of the incumbent leader's group in democratic bargaining. Given the leader's proposal power, the worst outcome it can get by adopting strong executive constraints, i.e. with $q = 0$, is half the revenue y.

Choice of f – step 2 It is immediate from the definition of $\widetilde{U}(y_t, q, f)$ that it does not pay to repress the population when the leader chooses to bind herself with executive constraints, since repression would have only costs and no benefits. Given this, we can write the equilibrium expected payoff to $X_t = 1$ as

$$U(y_t, q) = \text{Max}_f \widetilde{U}(y_t, q, f) = y_t\,(1 + q)\,/2.$$

When $X_t = 0$, however, the leader does face a trade-off, as spending more resources f on repression decreases the probability of a successful rebellion,

should an uprising occur (which will happen with probability ρ). We can write the equilibrium expected payoff to $X_t = 0$ as

$$V\left(y_t, \mu_t\right) = \operatorname{Max}_f \widetilde{V}\left(y, \mu, f\right) = \left[1 - \rho p(\mu_t, f^*\left(y_t, \mu_t\right))\right] y_t - f^*\left(y_t, \mu_t\right) \quad (4)$$

where $f^*\left(y, \mu\right)$ is the optimal choice of repression. The envelope theorem implies that $V\left(\cdot\right)$ is increasing in y and decreasing in μ. We postulate that

$$\lim_{\mu \to 1} \rho p\left(\mu, f^*\left(\overline{y}, \mu\right)\right) > \frac{1-q}{2} . \quad (5)$$

This is a convenient "end-point" condition. Assuming that the probability of a protest opportunity ρ exceeds one half, a sufficient condition is that the incumbent loses a rebellion for sure if every citizen is concerned (and hence participates), even if the incumbent puts in the optimal amount of resources into repression to capture the maximal amount of revenue. Note also that by (5) and (2) $dp\left(\mu, f^*\left(\mu, y\right)\right)/d\mu > 0$ – i.e., a larger share of concerned citizens raises the probability of a successful rebellion even though the incumbent is fighting optimally to stay in power.

Choice of institutions – step 2 To make the institutional choice of executive constraints at step 2, the incumbent leader compares $V\left(y_t, \mu_t\right)$ and $U(y_t, q)$. This comparison depends on how strong executive constraints work, μ, on the realization of revenues, y_t, and on the strength of civil society as represented by μ_t. The following results gives conditions for strong executive constraints to be chosen.

Proposition 1 *There exist $\left\{\mu^L\left(q\right), \mu^H\left(q\right)\right\}$ with $\mu^L\left(q\right) < \mu^H\left(q\right)$ such that for*

1. *$\mu \leq \mu^L\left(q\right)$, $X\left(\mu, y, q\right) = 0$ for all $y \in \left[\underline{y}, \overline{y}\right]$;*

2. *$\mu \geq \mu^H\left(q\right)$, $X\left(\mu, y, q\right) = 1$ for all $y \in \left[\underline{y}, \overline{y}\right]$ and*

3. *$\mu \in \left[\mu^L\left(q\right), \mu^H\left(q\right)\right]$ there exists $\widehat{y}\left(\mu, q\right) \in \left[\underline{y}, \overline{y}\right]$ such that $X\left(\mu, y, q\right) = 0$ if and only $y \geq \widehat{y}\left(\mu, q\right)$.*

Moreover, $\left\{\mu^L\left(q\right), \mu^H\left(q\right), \widehat{y}\left(\mu, q\right)\right\}$ are all decreasing in q.

The proof of Proposition 1 appears in the Appendix. Its results make intuitive sense. With very weak democratic values, citizens are unlikely to win any rebellion against the government and the incumbent leader can safely abandon strong constraints, exert a moderate amount of repression, and face the consequences. When democratic values are very strong, the leader will lose out with high enough probability in any rebellion. Hence, whatever the level of public revenues, strong executive constraints are preserved. Since any resources put into repression are essentially wasted, it is better to save them and accept to uphold executive constraints. At the top and bottom of democratic values, these statements are true independently of resources y_t. But in an intermediate region, the choice of institutions does depend on the realization of y_t. If revenues are high, the leader abandons executive constraints, but otherwise he adheres to them.

The leader's optimal strategy also depends on the fairness of legislative representation as captured by q. In general, a high value of q gives leaders an advantage and thus encourages them to uphold and respect strong executive constraints. The flip side is that a legislative system where proposal power is less in control of the existing leader, namely a lower q, makes executive constraints harder to sustain. One implication of this is that one may have to build stronger democratic values to sustain executive constraints if the legislative process is less favorable to the incumbent.

Evolution of values – step 5 The evolution of democratic values is governed by the "evolutionary fitness" of different citizen types, which hinges on their expected utility as perceived at date t. Passive citizens are assumed not care at all about political institutions and hence get their consumption-based utility of

$$\int_{\underline{y}}^{\overline{y}} [X(\mu, y, q) + [1 - X(\mu, y, q)] \rho p(\mu, f^*(\mu, y))] \frac{y(1-q)}{2M} dH(y) \qquad (6)$$

Concerned citizens get the same consumption utility as given by (6). However, they also get intrinsic utility β in states of the world when strong executive constraints are in place. Moreover, with weak executive constraints they suffer a utility loss due to their sense of injustice given by the expression in (1). Using the analysis above, where non-incumbent citizens got $(1-q)/2M$ when strong executive constraints are present, we can show that for given μ

and y, the expected loss from weak executive constraints is:

$$L\left(\mu,y\right)=\frac{1-q}{2}\left[1-\rho p\left(\mu,f^{*}\left(\mu,y\right)\right)\right]y. \tag{7}$$

Following (1), this adds up the shortfall across all M non-incumbent groups. Experiencing this loss gives a concerned citizen a negative utility of weak executive constraints, because she uses the strong-executive-constraints outcome as a benchmark when evaluating the loss from weak executive constraints where $s_{m,t}=0$ for all $m=1,...,M$.

Cultural dynamics   The cultural dynamics are driven by the difference in utility between being a concerned and passive citizen. We know from (3) that $\mu_{t+1}-\mu_{t}>(<)\,0$ whenever $\Delta\left(\mu_{t}\right)>(<)\,0$. Using the results in Proposition 1 and the arguments just made, we can write the expression for $\Delta\left(\mu_{t}\right)$ as:

$$\Delta\left(\mu\right)=\begin{cases} \beta & \mu\geq\mu^{H}\left(q\right)\\ H\left(\widehat{y}\left(\mu,q\right)\right)\beta-\int_{\widehat{y}\left(\mu,q\right)}^{\overline{y}}L\left(\mu,y\right)dH\left(y\right) & \mu\in\left[\mu^{L}\left(q\right),\mu^{H}\left(q\right)\right]\\ -\int_{\underline{y}}^{\overline{y}}L\left(\mu,y\right)dH\left(y\right) & \mu\leq\mu^{L}\left(q\right). \end{cases} \tag{8}$$

There are three cases in 8). In the top row, the share of concerned citizens holding democratic values have evolved to a point where incumbents always choose strong executive constraints and there are no protests and rebellions. Concerned citizens get positive utility of β from such institutions, so the share of concerned citizens is growing over time.

In the bottom row, executive constraints are always weak for any realization of y and the few concerned citizens around feel a perpetual sense of injustice which reduces their utility. As a result, the share of concerned citizens is shrinking.

In the middle row, the realization of revenue matters for the incumbents institutional choice and, following Proposition 1, we get strong constraints only for $y\leq\widehat{y}\left(\mu,q\right)$. Otherwise, incumbent leaders choose weak executive constraints, which is met by protest with probability ρ, and the protest succeeds to unseat the incumbent group with probability $p\left(\mu,f^{*}\left(\mu,y\right)\right)$. The share of concerned citizens is either increasing or decreasing depending on whether the realization of y falls short of threshold $\widehat{y}\left(\mu,q\right)$ or not.

Dynamic complementarities   The loss from being a concerned citizen is higher when y is high and the probability of unseating the incumbent in a

rebellion is low. This will be the case when μ is low, since then $p(\mu, f^*(\mu, y))$ is close to zero. At the other extreme, the loss is low when the probability of a rebellion is low, which is the case where the incumbent would be almost certain to lose a rebellion because $p(\mu, f^*(\mu, y))$ is close to one. This logic suggests a natural complementarity between having more concerned citizens around and the expected utility of being a concerned citizen, which rubs off on the cultural dynamics.

To investigate this complementarity further, note that (7) implies:

$$
\Delta_\mu(\mu) = \begin{cases} 0 & \mu \geq \mu^H(q) \\ \rho\frac{1-q}{2}\int_{\widehat{y}(\mu,q)}^{\overline{y}}\frac{dp(\mu,f^*(\mu,y))}{d\mu}ydH(y) + & \\ [\beta + L(\mu,\widehat{y}(\mu,q))]h(\widehat{y}(\mu,q))\frac{\partial\widehat{y}(\mu,q)}{\partial\mu} & \mu \in [\mu^L(q),\mu^H(q)] \\ \rho\frac{1-q}{2}\int_{\underline{y}}^{\overline{y}}\frac{dp(\mu,f^*(\mu,y))}{d\mu}ydH(y) & \mu \leq \mu^L(q). \end{cases}
$$

$$(9)$$

That is to say, we get $\Delta_\mu(\mu) \geq 0$ for all $\mu \in [0,1]$ after observing that

$$
\frac{\partial\widehat{y}(\mu,q)}{\partial\mu} = \frac{f^*(\mu,\widehat{y}(\mu,q))}{\frac{\partial p(\mu,f^*(\mu,\widehat{y}(\mu,q)))}{\partial\mu}\widehat{y}(\mu,q)} > 0.
$$

Steady states The possible steady states are described in the following result:

Proposition 2 *There exists a critical value $\hat{\mu}$ defined by*

$$
H(\widehat{y}(\hat{\mu},q))\beta = \frac{1-q}{2}\int_{\widehat{y}(\mu,q)}^{\overline{y}}[1 - \rho p(\hat{\mu},f^*(\hat{\mu},y))]ydH(y)
$$

such that if $\mu_0 \geq \hat{\mu}$, then the polity converges to $\mu = 1$. However, for $\mu < \hat{\mu}$, the polity converges to $\mu = 0$.

To see why this is true, the key thing to note is that $\Delta(0) < 0$ and $\Delta(1) > 0$. Because $\Delta(\mu)$ is (weakly) monotonically increasing, there must exist a unique value of $\hat{\mu}$ such that $\Delta(\hat{\mu}) = 0$. Moreover, this interior point is unstable, meaning that the dynamics described in (3) will converge to either of two extremes.

According to Proposition 2, a society with an initially low value of μ will not evolve a democratic culture (a sufficient share of concerned citizens) to support strong executive constraints. The proposition also gives some insight

19

into how the critical value $\hat{\mu}$ is determined. Specifically, any parameter shift that raises the loss experienced from no executive constraints increases $\hat{\mu}$ and hence increases the range of initial μ values from which there is no convergence to stable democratic values. Specifically:

Corollary 1: *All else equal, a polity is less likely to evolve democratic values, in the form of a cumulative increase in μ, if:*

1. *expected revenues are higher – a first-order stochastic dominating shift in y,*

2. *executive constraints are more demanding – a lower value of q,*

3. *the incumbent has a more powerful fighting technology – a lower value of $p(\hat{\mu}, f^*(\mu, y))$.*

In each case, the proposed comparative static on $\hat{\mu}$, increases the expected loss from not having strong executive constraints, which makes it more likely that the share of concerned citizens are declining over time. This result is consistent with the general observation in psychology that people rather adapt to their circumstances than face repeated disappointment.

According to the second line of Corollary 1, having strong executive constraints more binding on the incumbent (lower q) raises the expected loss, because the reference point associated with strong constraints is higher (with a corresponding larger utility loss from not having them). By the third line, an incumbent better at resisting protest – perhaps because it receives foreign support or finds a technological advantage, like an ability to eavesdrop on its opponents – raises the loss from being a concerned citizen because one is less likely to be successful in mounting protests.

The resource curse, economic growth, and violence We can get a sharper insight into the impact of economic growth and the role of natural resources if we suppose that $y_t = \tau w_t + R_t$ where w_t is the per-capita wage, τ is the (constant) tax rate and R_t is per-capita natural resource rent accruing to the government. It is then natural to suppose that f is measured in labor units so that the cost of fighting is $w_t f$. Then the the first-order condition for maximizing the analog of (4) with regard to f_t becomes

$$\rho p_f(\mu_t, f_t) \left[\tau + \frac{R_t}{w_t} \right] = 1.$$

Hence the decision to fight a rebellion now depends on $\tau + R_t/w_t$. It is thus the share of national income which comes from natural resources that matters.

The finding on the first line of Corollary 1, can be thought of as higher expected resource revenues, R_t That this will create headwinds for democracy, is reminiscent of the standard view that resource dependence is conducive to violence especially in the absence of good governance (Mehlum, Moene, and Torvik 2006). However, the mechanism here is novel. All else equal, citizens in such countries will be more resentful of bad governance, which tends to reduce the fitness of concerned types, while passive citizens accept their fate more readily. As long as there are concerned citizens, these will protest against the infringements on democracy when given the opportunity of doing so. But they will not often be successful, partly due to repression by the incumbent leader to protect the resources captured by his group. This way, our model suggests that the state-dependent correlation of violence and bad governance may reflect a joint dependence of bad institutions and violence on resources, rather than bad institutions mapping resource dependence into violence.

This discussion also makes clear how growth which increases w_t may be conducive to sustaining democratic institutions. A growing wage reduces resource dependence while increasing revenues from standard forms of taxation and the cost of fighting proportionately. Hence, the model predicts that economic growth is conducive to democratic institutions and also to democratic values by lowering $\hat{\mu}$.[7]

Critical junctures Our model can make sense of the idea, championed by Acemoglu and Robinson (2012), that there are important points of time – so-called critical junctures – in national political history, which are of crucial importance to subsequent developments. To see that, recall the finding in Proposition 2 of a critical value of $\hat{\mu}$ for the long-run dynamics. This implies that countries with similar initial levels of μ just above and below $\hat{\mu}$ can have radically different trajectories. Moreover, if a country has a (permanent) shock to its environment at such a point in its history like a shock to y or the repression technology, then this can flip the country to the opposite side of $\hat{\mu}$, something that will have drastic long-run consequences for its democratic

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[7]It would be interesting, following Besley and Persson (2009), to make fiscal capacity endogenous, in this case the determination of τ.

values and institutions, as shown by Proposition 2 and Corollary 1.

5   Open Elections

In this section, we add a second dimension to institutional choice – the degree of openness in executive recruitment. We add this dimension because it is a realistic feature of institutional practice. Distinguishing the incentives to create open executive recruitment from the incentives to create strong executive constraints adds value, because some of the considerations are different. Our framework highlights the likelihood that a leader will survive in power if she chooses to subject herself to an open recruitment, versus the likelihood of a successful protest should she abstain from introducing openness modulo her own costly fighting efforts. As with executive constraints, we show that the dynamic evolution of μ helps shape the time path of openness. We believe that there are good reasons to see μ as a common variable that drives both dimensions of democratic institutions.

In modeling open executive recruitment, we stay with our basic successive-generations structure. This allows us to keep the evolution of values as the only state variable that links generations directly. As before, we assume that generations have no ability to commit the offspring generation to an institutional arrangement.

Modelling openness   So far, we have modeled the institutional dynamics of executive constraints, i.e., the legroom of an incumbent who already holds political power. We now endogenize a second aspect of democratic institutions, by also allowing a decision about the system for executive recruitment.

Specifically, the second dimension of institutions is captured by $O_t \in \{0, 1\}$. A value of 0 means that political entry is closed, while a value of 1 means that it is open. With open executive recruitment, we assume that the incumbent group will secure power in an open contest with a probability $z \in [\underline{z}, \overline{z}]$ which is drawn from a distribution with c.d.f. $Q(z)$. If $z = 1/(M+1)$, there is a fair lottery over groups, while if $z = 1$ the incumbent group is overwhelming popular. With closed recruitment, whichever group holds power at the end of $t-1$ remains in power in t (as in the basic model).

Protest   Analogous to the basic model, citizens in each generation can fight to protect not only strong executive constraints but also open executive re-

cruitment. There are now two potential rebellion stages. For simplicity, we assume that the chance of rebelling is the same at both stages of the model and given by probability ρ. We assume that if the protest against non-open recruitment is successful, the leader is removed from power for sure and a leader is chosen at random from among the remaining M non-incumbent groups.

Let F_t denote per-capita resources devoted to fighting by a ruling group in period t when there is a rebellion by concerned citizens, and let let $P(\phi, F)$ be the probability of unseating this group when a fraction ϕ of the citizens protest. As above, this probability is increasing in ϕ and decreasing in F. We assume that $P(\cdot)$ is decreasing and convex in F and satisfies:

$$
\begin{aligned}
P_\phi - \frac{P_F P_{\phi F}}{P_{FF}} &\geq 0 \text{ for all } \phi \in [0, 1] \text{ and all } F \geq 0 \\
&\text{and} \\
\lim_{\phi \to 0} P(\phi, F) &\rightarrow 0 \text{ for all } F
\end{aligned}
\tag{10}
$$

As above, the first of these guarantees that $P(\cdot)$ is increasing in μ, even when the leadership chooses to fight a rebellion, while the second guarantees that the incumbent will put no resources into fighting if there is no rebellion.

New timing In the extended model, each generation goes through the following 6 steps.

1. An interim leader from generation t is chosen from the ruling group at $t - 1$. The popularity shock of the incumbent group z_t is realized.

2. The interim leader chooses O_t and F_t.

3. If $O_t = 1$, the interim leader is confirmed in power with probability z_t and a leader from each one of the other groups is selected with probability $(1 - z_t)/M$.

3´. If $O_t = 0$, (concerned) citizens get an opportunity to protest with probability ρ. If the protest is unsuccessful then the interim leader is confirmed in power. If the process is successful, then the interim leader is removed from power and a leader is selected at random from one of the other groups.

4. The revenue shock, y_t, is realized and the leader chooses X_t and f_t

5. If $X_t = 1$, at stage 1 of the legislative bargaining game the leader proposes an allocation S_t and the other groups vote whether to accept or reject it. If a majority rejects it, the legislative bargaining game goes on to stage 2 as described in the text.

5´. If $X_t = 0$, (concerned) citizens get an opportunity to protest with probability ρ. If the protest is unsuccessful, then $s_i = 1$ and $s_m = 0$ for $\mathcal{M}_{-i_t}$. If it is successful, then $s_i = 0$, and $s_m = \frac{1}{M}$ for $\mathcal{M}_{-i_t}$.

6. Payoffs are realized, a new generation is born and socialized by their parents. Parents die.

As before, we solve the model in period t backwards.

The value of open institutions Using the equilibrium choices of executive constraints $X(\mu, y, q)$ spelled out in Proposition 1, we can summarize the payoffs associated with having an open or closed executive recruitment at stage 2. Let

$$\tilde{Y}^0(\mu, q) = \int_{\underline{y}}^{\bar{y}} X(\mu, y, q) \, y \left[\frac{1+q}{2}\right] + [1 - X(\mu, y, q)] \, V(\mu, y) \, dH(y).$$

be the payoff of an interim leader under $O_t = 0$. Similarly, let

$$\tilde{Y}^1(\mu, z, q) = z\tilde{Y}^0(\mu, q) + (1 - z) \int_{\underline{y}}^{\bar{y}} x(\mu, y, q) \, y \left[\frac{1-q}{2}\right] dH(y)$$

be the expected utility of an interim leader with survival probability z under $O_t = 1$, where $x(\mu, y, q) = X(\mu, y, q) + [1 - X(\mu, y, q)] \rho p(\mu, f^*(\mu, y))$ is the ex ante probability of strong executive constraints.

When executive recruitment is open, the probability for the leader to remain in power is given by z. When executive recruitment is closed and a leader fights to remain in power, this probability is given by $1 - \rho P(\mu, F)$. The payoff from retaining closed recruitment, allowing for resources put into fighting, is

$$W(\mu, q) = \max_{F \geq 0} \left[\tilde{Y}^1(\mu, 1 - \rho P(\mu, F), q) - F\right].$$

Let $F^*(\mu)$ be the optimal resources devoted to repressing or fighting concerned citizens who protest to maintain open recruitment.

The choice of openness – stage 2   We now study when the interim leader will decide to subject herself to an open contest for power. Similarly to the case of executive constraints, we show that open recruitment is more likely at a higher value of μ_t. Let $O(\mu, z, q)$ denote the interim leader's equilibrium choice of executive recruitment. This choice depends on z, since this parameter determines the payoff of the leader, in the event she allows for an open contest. As in the case of executive constraints, we make an end-point assumption:

$$\underline{z} > \lim_{\mu \to 1} \left[1 - \rho P\left(\mu, F^*(\mu)\right) \right]. \tag{11}$$

This condition says that that, as the proportion of concerned citizens goes to one, the probability of retaining power under optimal fighting is lower than the worst popularity realization under an open competition for power. We also note that the second assumption in (10) implies $\lim_{\mu \to 0} \left[1 - \rho P\left(\mu, F^*(\mu)\right) \right] > \overline{z}$ – with very few concerned citizens, the probability of retaining power with optimal fighting when executive recruitment is closed is always higher than it would be for any popularity draw under open recruitment.

Under these conditions, we obtain a parallel result to Proposition 1, but for the choice of executive recruitment:

Proposition 3 *There exist $\left\{ \tilde{\mu}^L(q), \tilde{\mu}^H(q) \right\}$ with $\tilde{\mu}^L(q) < \tilde{\mu}^H(q)$ such that for*

1. *when $\mu \leq \tilde{\mu}_L(q)$, $O(\mu, z, q) = 0$ for all $z \in [\underline{z}, \overline{z}]$;*

2. *when $\mu \geq \tilde{\mu}^H(q)$, $O(\mu, z, q) = 1$ for all $z \in [\underline{z}, \overline{z}]$ and*

3. *when $\mu \in \left[\tilde{\mu}^L(q), \tilde{\mu}^H(q) \right]$ there exists $\widehat{z}(\mu, q) \in [\underline{z}, \overline{z}]$ such that $O(\mu, z, q) = 1$ if and only $z \geq \widehat{z}(\mu, q)$.*

   Moreover, $\left\{ \tilde{\mu}^L(q), \tilde{\mu}^H(q), \widehat{z}(\mu, q) \right\}$ are all increasing in q.

The proof is found in the Appendix. For high enough democratic values μ, even the least popular leader chooses open recruitment. Because the prospect of surviving in power after fighting a protest is very low, any interim leader concedes defeat and allows the leader to be picked based on a open contest. For very low democratic values μ, the opposite is true. Even very popular leaders prefer to keep political entry closed and to fight any rebellion, rather than taking a chance on losing a contest for power. In an intermediate range,

the size of the popularity shock can dictate the interim leader's preferences for recruitment institutions. A popular leader will pick open recruitment and an unpopular leader will chose to keep recruitment closed and fight any protest that arises.

This result has a similar flavor as Proposition 1, albeit with some variation. It suggests that if institutional change is being driven by a common change in values, reforms of executive recruitment and executive constraints should be broadly correlated. However, the correlation will not be perfect, which opens up the possibility of "mixed regimes", which will have one feature of democratic institutions but not the other.

Mixed regimes The careful reader will already have noticed that the threshold in Proposition 3 at which open executive recruitment is introduced, depends on parameter q in the opposite way to the threshold for strong executive constraints described in Proposition 1 (i.e., the thresholds $\tilde{\mu}$ are decreasing in q, whereas the thresholds μ are increasing in q). That is to say, a lower q, where executive constraints are less favorable to the incumbent group, now gives a stronger case for pursuing open recruitment. This is because opening access to power is the only way to gain a larger share of the rents from government. Hence, all else equal, low q environments will be less conducive to strong executive constraints but more conducive to open executive recruitment.

Another implication of Proposition 2 is that, in the intermediate region between $\tilde{\mu}^L(q)$ and $\tilde{\mu}^H(q)$, the likelihood of observing open elections is increasing in the popularity of the current leadership z. We also recall from Proposition 1 that, in the intermediate range between $\mu^L(q)$ and $\mu^H(q)$, the likelihood of observing strong executive constraints is decreasing in resource income y. Collecting these observations together, we have the following:

Corollary 2: *All else equal, a polity is more likely to have a mixed regime with open (closed) executive recruitment and weak (strong) executive constraints, if:*

1. *executive constraints are more (less) demanding – a lower (higher) value of q,*

2. *the incumbent is more (less) popular – a higher (lower) value of z,*

3. *expected revenues are higher (lower) – a first-order stochastic dominating rightward (leftward) shift in* y.

Cultural dynamics in the extended model To study the cultural dynamics in the extended model, we again will take the perspective of the M groups of non-elite citizens. Under fully democratic institutions, with both strong executive constraints and open executive recruitment, their total utility for a random draw of $\{z, y\}$ is

$$\left[z \left(\frac{1-q}{2} \right) + (1-z) \left[\left(\frac{1+q}{2} \right) + \left[1 - \frac{1}{M} \right] \left(\frac{1-q}{2} \right) \right] \right] y.$$

This expression recognizes that in an open contest any group can win power with probability $1/M$. We now take this institution to define the reference point for concerned citizens. Their loss $\ell(y, z : X, O)$ relative to this value becomes:

$$\ell(y, z : 1, 1) = 0$$
$$\ell(y, z : 1, 0) = (1-z) \left[\frac{1+q}{2} - \frac{1-q}{2M} \right] y$$
$$\ell(y, z : 0, 1) = \max \left\{ \left(2z - 1 + (1-z) \left[1 - \frac{1}{M} \right] \right) \left(\frac{1-q}{2} \right), 0 \right\} y$$
$$\ell(y, z : 0, 0) = \left[z \left(\frac{1-q}{2} \right) + (1-z) \left[\left(\frac{1+q}{2} \right) + \left[1 - \frac{1}{M} \right] \left(\frac{1-q}{2} \right) \right] \right] y$$

If z is low enough, there is no loss whenever $O = 1$ because the possibility of taking power has a high return, especially when executive constraints are weak. The ex ante probability of open recruitment is now $o(\mu, z, q) = O(\mu, z, q) + [1 - O(\mu, z, q)] P(\mu, F^*(\mu, F^*(\mu)))$. Moreover, the ex ante expected loss $\bar{\ell}(\mu)$ is

$$\int_{\underline{z}}^{\overline{z}} \{ [1 - o(\mu, z, q)] \int_{\underline{y}}^{\overline{y}} [x(\mu, y, q) \ell(y, z : 1, 0) + [1 - x(\mu, y, q)] \times$$

$$\ell(y, z : 0, 0)] dH(y) + o(\mu, z, q) \int_{\underline{y}}^{\overline{y}} [1 - x(\mu, y, q)] \ell(y, z : 0, 1) dH(y) \} dQ(z).$$

The dynamics of values is still given by (3), but with $\Delta(\mu)$ given by:

$$\Delta(\mu) = \begin{cases} \beta & \text{for } \mu \geq \max \left\{ \tilde{\mu}^H(q), \mu^H(q) \right\} \\ \left[\int_{\underline{z}}^{\overline{z}} o(\mu, z, q) dQ(z) \int_{\underline{y}}^{\overline{y}} x(\mu, y, q) dH(y) \right] \beta - \bar{\ell}(\mu) \\ \quad \text{for } \mu \in \left[\min \left\{ \tilde{\mu}^L(q), \mu^L(q) \right\}, \max \left\{ \tilde{\mu}^H(q), \mu^H(q) \right\} \right] \\ -\bar{\ell}(\mu) & \text{for } \mu \leq \min \left\{ \tilde{\mu}^L(q), \mu^L(q) \right\}. \end{cases}$$

It is clear from this expression that the earlier one-dimensional logic basically carries over to the two-dimensional institutional setting. Thus, we have a lower bound on μ below which democratic values decline to zero, and an upper bound on μ above which they increase until becoming fully established. In those cases, for $\mu \geq \max\left\{\tilde{\mu}^H(q), \mu^H(q)\right\}$ and $\mu < \min\left\{\tilde{\mu}^L(q), \mu^L(q)\right\}$, $\Delta_\mu(\mu) > 0$, so the complementarity between values and institutions continue to hold.

However, there is no guarantee on the sign of $\Delta_\mu(\mu)$ otherwise. This is because open executive recruitment is potentially a good thing good for the citizens, when executive constraints are weak. This feature of the model introduces the possibility of an interior stable steady state for some parameter values. In the special case, when $\overline{z} \leq 1/2$ and $M = 1$, i.e., with just two groups, $\Delta_\mu(\mu) > 0$ globally, however.

6   Foreign Influence

In the model considered so far, values and institutions coevolve in reflection of a polity's own history. But institutional arrangements may also be imposed from the outside. History is replete with examples where the interdependence of nations affects the economies and polities of others.

Colonial origins   One important example of foreign influence is colonialism: colonial powers established governance rules, which varied in the extent to which they allowed open executive recruitments and strong executive constraints.

Consider what happens when an outside colonial (or occupying) power imposes weak executive constraints $X_t = 0$ for a period of time. Proposition 2 suggests that this will lead to declining democratic values. This illustrates why foreign imposition of political institutions can have a long-run effect on democratic culture. Alternatively, a colonial ruler that imposes $X_t = 1$ will indirectly build democratic values over time.

These remarks have important implications for what might happen at the end of colonialism. In particular, our simple model provides a theoretical underpinning for the empirical argument in Acemoglu, Johnson and Robinson (2001) that the nature of colonialism, with extractive or inclusive institutions, can have a persistent effect on performance – by shaping the democratic

values at the end of colonialism, colonial institutions may influence the post-colonial time path of institutions.

Foreign interventions or occupations A less direct form of influence occurs when a foreign power gives military support with the aim of strengthening a ruling elite's capacity to fight rebellions – in the model this could be represented as a reduction of $p(\cdot)$ or $P(\cdot)$. Examples include the puppet regime in Vichy France or Quisling's leadership in Norway during World War II. Such interventions directly affect institutions, by changing the probability of a successful rebellion to change institutions. More interestingly, however, in our framework they may also affect the time path of democratic values, potentially with long-term consequences, as noted in Corollary 1 to Proposition 2. When μ is close to its critical value $\hat{\mu}$, this kind of foreign intervention could possibly tilt the time path of μ in an opposite direction and hence the long-run design of institutions.

Installing or removing democratic institutions, when countries are subjugated following an external conflict, is a frequent historical occurrence. The experience of Europe during World War II or the influence of the USSR during the cold war are interesting examples in history of repressed democratic institutions. On the other side of the cold war, we have the experiences of Japan and West Germany, where the victorious Western allies imposed democratic institutions. Our model suggest that this may be a hazardous exercise. While political institutions can be imposed to some degree, democratic values cannot be so easily controlled and this can create an unstable set of institutions until values and institutions are aligned.

Migration Other forms of foreign contacts can also help shape democratic values as captured by the dynamics of μ. One potential channel would be when internationally migrating individuals bringing along democratic or non-democratic values to their new location. Proposition 2 says that such migrations will mostly have a temporary effect by shifting the value of μ. But it can also have a long-run effect if it pushes democratic values above or below $\hat{\mu}$. Thus, an influx of a large enough number of concerned citizens migrating into an autocratic country from democratic countries could help foster long-run institutional change.

This raises the possibility of endogenous migration. One driver of migration might be that concerned citizens living in an autocratic country simply

leaves rather than waiting for a possibility to stand up against the ruling elite – to use the language of Hirschman (1970), people would choose "exit" rather than "voice". This would decrease the share of concerned citizens in autocracies, but raise it in democracies, which in turn would speed up the dynamics in the single-polity model considered in this paper.

One could also imagine external influences, which act in other ways on μ. One example, stressed by Spilimbergo (2009), is the role of foreign education in changing people's democratic values. Another is the possibility is through cultural and media influence. Our model can help us understand how such activities might alter the short-run or long-run paths of institutions if they are sufficient powerful. However, for them to change the direction of a country rather than speeding up or slowing down its existing trajectory would require a significant enough shift in μ relative to the distance $\mu_t - \hat{\mu}$. Countries where such influence could have the largest long-run impact is precisely those which are close to $\hat{\mu}$. But even if that is not the case, the impact is likely to be heterogenous, depending on μ_t.

Cross-border spillovers Another interesting mechanism is the possibility of cross-border cultural influence. Persson and Tabellini (2009) and Acemoglu et al (2015) have exploited the fact that democracy in one country is systematically related to democracy in its neighbors or in its regional surroundings. This could reflect direct social interactions or media influence across borders. A simple way to incorporate such interactions into our framework would be to consider two countries A and B and suppose that in country A, democratic values evolve as

$$\tilde{\Delta}\left(\mu_A, \mu_B\right) = \lambda \Delta^A\left(\mu_A\right) + \left(1 - \lambda\right) \Delta^B\left(\mu_B\right),$$

where λ is a spillover parameter. Suppose now that $\Delta^J\left(\mu_J\right)$ is increasing in both countries. Then, we may obtain a two-dimensional evolution of democratic cultures with cross-country complementarities. In this case, growth in democratic values in one location would tend to reinforce the same patterns in other locations. This could help explain the worldwide trend towards strong executive constraints documented in Fact 1.

7   Empirical Implications

In this section, we show that the modeling framework developed here is useful in making sense of some empirical regularities. In the first subsection, we discuss the consistency of the model with the broad patterns in the PIV and WVS data on political institutions and values, as described by the three facts of Section 3. We then look at some correlations between values country features which are motivated by our model, particularly its focus on value formation.

7.1   Back to the Three Facts

Interpreting Fact 1   Our model can be used to interpret the observation in Fact 1 that there has been a growing prevalence of strong executive constraints and open executive recruitments over the past two hundred years. We would attribute this to the evolution of democratic values (represented in the model as growing share of concerned citizens) which has taken place across a majority of older polities. This trend is reinforced by the complementarity behind the increasing $\Delta(\mu)$ function that we identified in Section 4. This historical pattern is explained by many countries finding themselves with sufficient democratic values, above the critical value for $\hat{\mu}$, at a critical point in their histories. This, in turn, has lead to a consolidation of strong executive constraints.

While in the core model, the values of each generation are simply learned from the previous generation, another possible driver behind the increasing share of countries with strong executive constraints could be that these values are – actively or passively – influenced by events in other countries, which could create cross-country complementarities reinforcing the patterns in the data. This additional channel of influence for democratic values was emphasized in Section 6.

The model also generates insights into another aspect of Fact 1, namely that reforms towards strong executive constraints have generally lagged behind those towards open executive recruitment. Moreover, regimes with open recruitment and weak constraints have been more or less constant over time while those with strong executive constraints and closed recruitment have more or less died out. The extended model in Section 5 can be used to interpret this as reflecting the changing drivers for the two aspects of institutions in countries in the middle region where we would expect some churning of

institutions until values allow institutional arrangements to be consolidated. Despite differences in timing, the common driver of changes in μ does suggest a broadly common direction of travel for open executive recruitments and strong executive constraints.

Fact 1 also emphasizes that there can positive reforms and reversals. In terms of the model, this can be interpreted as different countries starting out on different sides of their critical value of $\hat{\mu}$, which we expect to be country specific, and thus having their equilibrium share of concerned citizens evolving in different directions. Some countries may have crossed their upper threshold to achieve a permanent democratic reform, while others have crossed their lower threshold towards permanent autocracy while others remain in their churning region, where reforms in both directions are possible in the wake of shocks to leader popularity and resource revenues (see further below).

Interpreting Fact 2 The model can also explain reversals in executive constraints (and electoral openness) documented in Fact 2. Observing a country with strong executive constraints would often suggest that this polity is on a path towards consolidation. But the model suggests why this path need not be deterministic. Even a country with $\mu < \hat{\mu}$ could have fleeting episodes with strong executive constraints along its downward trajectory, e.g., due to negative temporary resource shocks to public revenue y. Similarly, a positive permanent shock to public revenues could change the long-run path of a country which finds itself closely above $\hat{\mu}$. More generally, current or past reversals among the countries in the middle group defined in Table 1 can be interpreted as a result of democratic values in the range $\mu \in \left[\mu^L\left(q\right), \mu^H\left(q\right) \right]$.

The observation in Fact 2 that political histories are heterogenous across countries can be interpreted in terms of the model by supposing that they have different starting points and that the initial, or evolving values, of key parameter that shape the evolution of democratic values vary. This provides a link to developments in the economy such as increases in wages and/or resources rents.

The model also allows us to make sense of the trajectories of specific countries which have made a long-lasting transitions to strong or weak institutions. A case in point is Sweden, which achieved the highest executive-constraints score in 1917. Its path of democratic reforms began with the 1809 Instrument of Government, which established the separation of powers

between the King (executive branch) and the Riksdag of the Estates (legislative branch). However, the King retained the unilateral power to choose government members. This was becoming weaker in practice, especially as political parties started to pay a major role after the creation of the new Riksdag in 1866. But the King still kept his powers until 1917, after which government choices required direct or indirect support from a majority of the Riksdag. In terms of the model, we would explain this reform path by emerging democratic values. We note that Sweden has one of the strongest levels of support for democracy in Figure 7, consistent with its robust democratic tradition.

Corollary 2 can be used to generate insights into the underlying determinants of the mixed regimes documented in Table 2. For example, the table showed that a number of old monarchies (most of these in Western Europe) introduced strong executive constraints before going to open executive recruitment more than a hundred years ago. The model suggests that this might reflect a combination of unpopular rulers and meagre government resources (low values of z and y). It also showed that many new nations in Africa and Asia – and Latin America before them – introduced open executive recruitment, but stuck with weak executive constraints. This may reflect the existence of popular and/or charismatic leaders from dominant ruling groups – often tied to liberation movements – along with considerable rents to distribute due to plentiful natural resources (high values of z and y). This short discussion suggests that the model could be useful in structuring specific case studies which delve into the details of country circumstances and history.

Interpreting Fact 3 The model also provides a an underpinning for the observation in Fact 3 that countries which never make a transition into strong executive constraints have low levels of democratic support. A case in point is Russia, with a very short history of strong executive constraints and low support for democracy according to WVS. Up to 1990, the Soviet state was effectively repressing any nascent movement towards democratic reform. Our model suggests that over time, this would have weakened democratic values. The latter could have played a role in undermining a democratic reform such as that attempted by Boris Yeltsin, and there would be little chance, therefore, of this becoming permanent. Instead the model would predict a reversal towards a regime with weak executive constraints, especially in the

wake of high resource rents. The model suggests that a different trajectory for such a country would require a change in fundamentals or some kind of exogenous shock to μ. A regime could be weakened by a lower willingness to repress, which would raise the prospective influence of citizens holding democratic values. This could be because the state collapses so that y is persistently low. But it could also be a falling capacity of the state to repress. That said, one would also need a very high value of β for this to have any chance of switching to a democratic regime if μ has fallen to a low value.

Some countries, like the UK and the US, have made once-and-for-all stable transitions to strong executive constraints. In terms of our model, these transitions would be interpreted as passing the critical threshold $\mu^H(q)$ of values which permanently sustain such institutions. According to Fact 3, the support for democracy appears strong in such countries, consistent with the view that democratic values and strong institutions are complements. This is the pattern, we documented in the right-most column of Table 1 for countries where strong executive constraints have been consolidated.

Fact 3 also documents a positive correlation between a long tradition of strong executive constraints *cum* open executive recruitment and a strong support for democratic institutions. This observation was also made by Persson and Tabellini (2009), who take it as evidence for what they label democratic capital. Our model suggests a micro-foundation for this empirical pattern in terms of evolving democratic values in a share μ being concerned citizens. These values will also manifest themselves in greater realized experience with democratic institutions. Hence it is not the past institutional patterns which cause persistence but an omitted variable in the form of democratic values. Hence, causality is running in both directions, requiring care in interpreting a correlation between democratic values and institutions.

Dependence on parameters Apart from permitting these broad interpretations of the three core facts, the model generates some further implications on the influence of different parameters. We have already noted the dependence on the size of the budget in our discussion of the resource curse. But other parameters matter as well.

For example, the model suggests that a higher value of q – a larger recognition probability for incumbents after a failed confidence vote in the legislative bargaining – will work in favor of building democratic values. Because incumbents get more out of democracy, they are more likely to introduce strong

executive constraints, which as we have seen leads to a gradual building of democratic values that helps consolidate the strong executive constraints due to the complementarities discussed above. This fits the history of England and Sweden, where Parliaments gained power precisely at a time when elites maintained control over Parliamentary representation. Representation was only liberalized in reform acts of the 19th century (in the UK) and early 20th century (in Sweden). By then, however, democratic values may have been entrenched enough that the reversion risk was low.

At the other end of the spectrum, countries which gives large powers to parliament early in their history make it harder for themselves to build effective executive constraints. For instance, some of the post-colonial regimes in Africa – like those in Nigeria, Sudan, Somalia, and Uganda – started out with strong executive constraints giving substantial powers of the legislature (a low q). But these were repealed within a decade, perhaps because of a lack of democratic values that could sustain broad protests against these political reforms.

7.2   Correlates of Values

A distinctive feature of the approach in this paper is that values and institutions coevolve. In this subsection, we draw out three implications from the model to see whether the cross-country pattern of values is consistent with the theoretical predictions. We start by looking at countries with strong oil revenues and then explore two episodes from 20th century history to look at the effect of foreign occupations or dominance.

Natural resources   Our model provides a new perspective on the relationship between natural resource dependence and the adoption of strong executive constraints. All else equal, the model predicts that countries with high levels of public revenues (in the form of natural resources) will require high democratic values to enter onto a path towards strong executive constraints. This suggests that the timing of resource discoveries in history may become critical.

Countries with rich natural resources and strong executive constraints are rare. However, Norway provides an interesting counterexample with its exceptionally strong support for democracy in the WVS and strong executive constraints in place. We note that Norway experienced its major oil discovery

late in its democratic history. This may explain why oil richness was not sufficient to undermine established democratic institutions.

From the World Bank website, we take a list of countries that each have oil rents (revenues less production costs) exceeding 10% of GDP. The 15 countries in this category, which also appear in the 2011 WVS, are Algeria, Azerbaijan, Bahrain, Ecuador, Iran, Iraq, Kazahkstan, Kuwait, Libya, Nigeria, Russia, Qatar, Trinidad and Tobago, Venezuela and Yemen. Of these, only Ecuador and Trinidad and Tobago have strong executive constraints. In terms of the model, we would say that many of these countries show little sign of reform towards strong constraints because they are all below $\hat{\mu}$.

Columns (1) and (2) of Table 3 look at the relationship between natural resources and democratic support in the WVS waves 5 and 6. The table reports estimates from a linear probability model where the left-hand side variable is the dummy for a score for the support of 9 or 10 (on the 10-point scale). We control for gender, ten dummies for income groups, three dummies for education groups, and three age bands (standard errors adjust for clustering at the country level). We also control for three country-level variables: human capital from Barro-Lee, income per capita from the Penn World Tables, and the history of strong executive constraints from PIV.

Column (1) is for the countries in Table 1 which have data in waves 5 and 6 of WVS. It shows a negative and significant negative correlation between high dependence on oil rents and support for democracy. Specifically, living in a resource dependent country is associated with a reduction in the probability of supporting democracy of 0.17. Column (2) shows that this result is weaker when we look at all countries in PIV, although we cannot reject the result being the same in the two columns.

While it is well-known that oil-rich countries are less likely to have strong executive constraints, it is less well-known that they also exhibit low levels of democratic support. Our theory links these correlations together.

USSR near occupation after WWII A second interesting episode is the postwar influence of the USSR, which was much more long-term and widespread than the German war-time occupation. Some countries were absorbed into the USSR, such as the Baltic states, while others became satellite countries in Eastern Europe, e.g., Bulgaria, Hungary, and Romania. We would expect the Soviet influence to have weakened not only executive constraints but also democratic values. Again, we look at this in the waves

5 and 6 of the WVS microdata with the results appearing in columns (3) through (5) of Table 3. Again we estimate a linear probability model at the individual level, where strong support for democracy is the left-hand side variable, and individual and country-level controls appear on the right-hand side together with a dummy for Soviet postwar influence.

We find a negative and significant correlation between Soviet influence and low support for democracy. The coefficient is particularly large in column (3) for the sample of countries in Table 1, but it continues to be significant in the larger sample in column (4). Moreover, it holds up when, as in column (5), we also include the natural resources dummy variable. The negative correlation suggests that the long-term Soviet influence not only repressed institutions but also democratic values as would expect in our theoretical framework.

German occupation during WWII We look at the implications of German occupation in World War II. Some countries in the middle churning category of Table 1 had achieved strong executive constraints prior to the war and their only reversal of the democratic path is due to German influence or occupation. These countries are Austria, Belgium, Denmark, Netherlands and Norway. Seen through the lens of our model, the fact that they had strong executive constraints suggests that their μ might have been relatively high. We thus expect that they may have resumed their "natural state" of strong constraints once external influence ended, which is exactly what happened following the war. This implies that the occupied countries should have stronger democratic values today than other countries in the middle column of Table 1, all else equal.

To explore this empirically, we create a dummy variable for countries that dropped strong executive constraints only due to World War II. We then regress the individual dummy representing high support for democracy – among countries with a mixed history of executive constraints – on this dummy, also including the individual and country control variables. The estimates in column (6) are only for countries in Table 1 and show that among those with a mixed history, countries whose only reversal was due to German occupation have higher support for democracy according to the WVS. The result holds up when we widen the sample to include all countries with mixed histories according to PIV.

This finding is consistent with the idea that countries that had acquired

37

strong executive constraints prior to German occupation did so because they had strong democratic values and that this persisted through the relative short interruption. And this explains why the returned to strong constraints following this interruption. This differentiates this subset of countries from those which have also experience reversals and are plausibly in the range $\mu \in \left[\mu^{L}(q), \mu^{H}(q)\right]$ where values may still be building but they reached a consolidation point after those countries which suffered Nazi occupation.

Settler mortality   As already discussed at the end of Section 4, Acemoglu et al (2001) have emphasized historical factors in shaping institutions. Our approach suggests a conduit for this through influencing democratic values. We look at this in our data by exploiting the intersection between their data set and waves 5 and 6 of the WVS (only 12 countries). Specifically, we include their measure of settler mortality in an individual-level regression for support of democracy along with our standard individual-level and country-level controls. The result appears in column (8) of Table 3 and shows a negative and significant relationship between high support for democracy and settler mortality. As we are controlling for the institutional history, our result suggests a persistent effect, which supports the core idea of Acemoglu et al (2001) although it may operate via endogenous democratic values.

Summary   Although only correlations, these data breathe life into the theory and fuel the notion of a link between democratic values and structural features of countries and their political histories. This underpins the idea, long championed in other branches of the social sciences, that the empirical study of value determination needs to be integrated with more standard considerations in an attempt to understand institutional development.

8   Concluding Comments

We have developed a framework to study changing democratic values, a model which entails a two-way interaction between coevolving values and institutions. The single state variable in this model is the proportion of citizens who hold strong enough democratic values that they are willing to defend democratic institutions. The fact that these citizens care makes them susceptible to resent non-democratic institutions and this resentment helps propagate democratic values in the pool of citizens. Because the fitness of

citizen types (in terms of payoffs) drives evolutionary change, citizens whose hopes are repeatedly disappointed have less fitness. This leads to a complementarity between values and institutions which shapes the model dynamics.

The main aim of the paper is to reorient analysis and debate on the political economics of institutional change to a new set of issues. We try to do so by building an analytical bridge between the cultural and strategic approaches to democratization. This way, our framework suggests that it is natural to see democratization as a process, in which the formation of democratic values and the experience with democratic institutions reinforce each other. The resulting dynamics can hopefully help us better understand the real-world persistence and change of political institutions across countries and time.

Clearly, the paper merely scratches the surface of a wide range of issues. More narrowly, the model as it stands has a number of empirical implications which we have not yet explored. One implication concerns the determinants of mixed democratic regimes with open executive recruitment without strong executive constraints, or vice versa. A second concerns the within-country inter-generational distribution of democratic values, conditional on the country's political history. Another issue is to explore more in depth (than we have already done in the Appendix) the robustness of our results on democratic institutions to different specific models of the process whereby democratic values change.

More broadly, it is only recently that economists and other social scientists have begun to think seriously about the mutual interplay between formal institutions and cultural values (informal institutions). Because our model has but a single state variable, it is relatively easy to analyze, which opens the door to many other applications than democratization. We believe that more research along similar lines should follow.

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A Proofs

Proof of Proposition 1. First define

$$\Gamma\left(\mu, y, q\right) = V\left(\mu, y\right) - U\left(y, q\right)$$

as the utility difference between the two institutions. Hence, $X\left(\mu, y, q\right) = 1$ if and only if $\Gamma\left(\mu, y, q\right) \le 0$. Now observe that $\Gamma\left(1, \overline{y}, q\right) < 0$ and $\Gamma\left(0, \underline{y}, q\right) > 0$ using (5). Since $\Gamma\left(\mu, y, q\right)$ is continuous and decreasing in $\mu \in [0, 1]$, the intermediate-value theorem implies that there exists $\mu^H\left(q\right)$ such that

$$\Gamma\left(\mu^H\left(q\right), \overline{y}, q\right) = 0.$$

Note also that

$$\frac{\partial \mu^H\left(q\right)}{\partial q} = -\frac{\overline{y}/2}{\frac{d\left(p\left(\mu, f^*\left(\mu, y\right)\right)\right)}{d\mu}} < 0$$

as claimed. Next define $\mu^L\left(q\right)$ from

$$\Gamma\left(\mu^L\left(q\right), \underline{y}, q\right) = 0$$

and observe that

$$\frac{\partial \mu^L\left(q\right)}{\partial q} = -\frac{\underline{y}/2}{\frac{d\left(p\left(\mu, f^*\left(\mu, \underline{y}\right)\right)\right)}{d\mu}} < 0$$

also as claimed. Since $\Gamma\left(\mu, y, q\right)$ is decreasing in μ, it follows that for $\mu \in \left[\mu^L\left(q\right), \mu^H\left(q\right)\right]$, there exists a critical value $\widehat{y}\left(q\right) \in \left[\underline{y}, \overline{y}\right]$ such that

$$\Gamma\left(\mu, \widehat{y}\left(\mu, q\right), q\right) = 0.$$

Finally, we note that

$$\frac{\partial \widehat{y}\left(\mu, q\right)}{\partial q} = \frac{\widehat{y}\left(\mu, q\right)/2}{\Gamma_y\left(\mu, y, q\right)},$$

where

$$\Gamma_y\left(\mu, y, q\right) = \frac{1-q}{2} - \rho p\left(\mu, f^*\left(\mu, y\right)\right).$$

Because $\Gamma_y\left(\mu, y, q\right) < 0$ whenever $\Gamma\left(\mu, y, q\right) = 0$, $\frac{\partial \widehat{y}\left(\mu, q\right)}{\partial q} < 0$ as claimed. $\blacksquare$

Proof of Propostition 3. Let

$$\psi\left(\mu, y, q\right) = \left[V\left(\mu, y\right) - \rho p\left(\mu, f^*\left(\mu, y\right)\right) \frac{(1-q)}{2} y\right]$$

which is positive whenever $X\left(\mu, y, q\right) = 0$, i.e. if $V\left(\mu, y\right) \geq \left(1 + q\right) y/2$. Using Proposition 1, the interim leader will chose openness if and only if

$$K\left(\mu, z, q\right) = \left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] \left[\int_{\underline{y}}^{\bar{y}} X\left(\mu, y, q\right) qy + \left[1 - X\left(\mu, y, q\right)\right] \psi\left(\mu, y, q\right) dH\left(y\right)\right]$$
$$- F^*\left(\mu, z\right) \geq 0. \tag{A.1}$$

An interim leader chooses openness if and only $K\left(\mu, z, q\right) \geq 0$. Note that $\left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] > 0$ whenever $K\left(\mu, z, q\right) = 0$ if $F^*\left(\mu, z\right) > 0$. Observe now that

$$K_z\left(\mu, z, q\right) = -\left[\int_{\underline{y}}^{\bar{y}} X\left(\mu, y, q\right) qy + \left[1 - X\left(\mu, y, q\right)\right] \psi\left(\mu, y, q\right) dH\left(y\right)\right] < 0, \tag{A.2}$$

$$K_\mu\left(\mu, z, q\right) = -\rho P_\mu\left(\mu, F^*\left(\mu, z\right)\right) \left[\int_{\underline{y}}^{\bar{y}} X\left(\mu, y, q\right) qy + \left[1 - X\left(\mu, y, q\right)\right] \psi\left(\mu, y, q\right) dH\left(y\right)\right] \tag{A.3}$$

$$- \left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] \int_{\underline{y}}^{\bar{y}} \left[1 - X\left(\mu, y, q\right)\right] \left[\rho \frac{dp\left(\mu, f^*\left(\mu, y\right)\right)}{d\mu} \cdot \frac{(1-q)}{2}\right] dH\left(y\right) < 0$$
$$\text{whenever } \left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] \geq 0. \tag{A.4}$$

and

$$K_q\left(\mu, z, q\right) = \left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] \times \tag{A.5}$$
$$\left(\int_{\underline{y}}^{\bar{y}} X\left(\mu, y, q\right) y dH\left(y\right) + \left[1 - X\left(\mu, y, q\right)\right] \frac{y \rho p\left(\mu, f^*\left(\mu, y\right)\right)}{2}\right) > 0$$
$$\text{whenever } \left[1 - \rho P\left(\mu, F^*\left(\mu, z\right)\right) - z\right] \geq 0,$$

after using the envelope theorem.

To show the result, recall that $F^*\left(0, z\right) = 0$ and $K\left(0, z, q\right) > 0$ for all $z < 1$ after using (11). As $\mu \to 1$, $K\left(1, z, q\right) < 0$ for all z also using

(11). Since $K(\mu, z, q)$ is continuous and decreasing in z on $\mu \in [0,1]$, the intermediate value theorem implies that there exists $\tilde{\mu}^H(q)$ such that

$$K\left(\tilde{\mu}^H(q), \overline{z}, q\right) = 0.$$

Observe also that

$$\frac{\partial \tilde{\mu}^H(q)}{\partial q} = -\frac{K_q\left(\tilde{\mu}^H(q), \overline{z}, q\right)}{K_\mu\left(\tilde{\mu}^H(q), \overline{z}, q\right)} > 0 \tag{A.6}$$

as claimed since $K_\mu\left(\tilde{\mu}^H(q), \overline{z}, q\right) < 0$ and $K_q\left(\tilde{\mu}^H(q), \overline{z}, q\right) > 0$ which follow from (A.3) and (A.5) by observing that $K\left(\tilde{\mu}^H(q), \overline{z}, q\right) = 0$ implies that $\left[1 - \rho P\left(\tilde{\mu}^H(q), F^*\left(\tilde{\mu}^H(q), z\right)\right) - z\right] > 0$. Now define

$$K\left(\tilde{\mu}^L(q), \underline{\phi}, q\right) = 0 \tag{A.7}$$

and observe that

$$\frac{\partial \tilde{\mu}^L(q)}{\partial q} = -\frac{K_q\left(\tilde{\mu}^L(q), \underline{z}, q\right)}{K_\mu\left(\tilde{\mu}^L(q), \underline{z}, q\right)} > 0. \tag{A.8}$$

as claimed since $K_\mu\left(\tilde{\mu}^L(q), \underline{z}, q\right) < 0$ and $K_q\left(\tilde{\mu}^L(q), \underline{z}, q\right) > 0$ which follow from (A.3) and (A.5) by observing that $K\left(\tilde{\mu}^L(q), \overline{z}, q\right) = 0$ implies that $\left[1 - \rho P\left(\tilde{\mu}^L(q), F^*\left(\tilde{\mu}^L(q), z\right)\right) - z\right] > 0$. Since $K(\mu, r, q)$ is increasing in μ, we can now observe that for $\mu \in \left[\tilde{\mu}^L(q), \tilde{\mu}^H(q)\right]$, there exists there exists $\hat{z}(\mu, q) \in [\underline{z}, \overline{z}]$ such that

$$K\left(\mu, \hat{z}(\mu, q), q\right) = 0. \tag{A.9}$$

Now note that

$$\frac{\partial \hat{z}(\mu, q)}{\partial q} = -\frac{K_q\left(\mu, \hat{z}(\mu, q), q\right)}{K_\sigma\left(\mu, \hat{z}(\mu, q), q\right)} > 0 \tag{A.10}$$

which follows from (A.5) since $K\left(\mu, \hat{z}(\mu, q), q\right) = 0$ implies that $K_q\left(\mu, \hat{z}(\mu, q), q\right) > 0$. ∎

B Alternative Cultural Dynamics

In this part of the appendix, we explore three features which can enrich the cultural dynamics of our basic model in Section 4. First, we consider

what would happen if cultural dynamics had a strategic element as in Bisin and Verdier (2001). Second, we allow for cultural dynamics to evolve through social learning as specified by Boyd and Richerson (1985). Finally, we discuss a richer approach to social influence within lifetimes through a broader range of cultural parents. In each of these cases, a full formal treatment is beyond the scope of the paper, however.

A strategic approach to cultural evolution   Our basic model supposes that socialization is non-strategic. It could be reinterpreted as a strategic choice in mixed households, if those base their decision on the expected utility of each type with the cost η capturing a random net cost of socialization. However, in a forward-looking model, it would be less defensible to suppose – as we have done – that homogenous households do not socialize their children to be another type even if this would lead to a gain in expected utility.

A simple generalization of our model would be to suppose that *all* households can socialize their children to be either type but that there is an intrinsic gain γ of bringing up a child of their own common type. In this case, the probability of two concerned citizens having a child who is also concerned is now $G\left(\Delta\left(\mu\right)+\gamma\right)$ and the probability of two passive citizens having a concerned child is $G\left(\Delta\left(\mu\right)-\gamma\right)$. The basic model can be thought of as the special case when $\gamma \to \infty$.

The cultural dynamics in this extended model is governed by:

$$\begin{aligned}
\mu_{t+1} & = & \left[\alpha\mu_t + (1-\alpha)\mu_t^2\right] G\left(\Delta\left(\mu_t\right)+\gamma\right) \quad\quad\quad\quad\quad\quad\quad\quad \text{(B.11)} \\
& & + \left[\alpha\left(1-\mu_t\right) + (1-\alpha)\left(1-\mu_t\right)^2\right] G\left(\Delta\left(\mu_t\right)-\gamma\right) + (1-\alpha)2\mu_t\left(1-\mu_t\right)G\left(\Delta\left(\mu_t\right)\right).
\end{aligned}$$

This is quite complicated to understanding so we study some special cases:

(i) $\gamma = 0$ In this case, we have:

$$\mu_{t+1} = G\left(\Delta\left(\mu_t\right)\right).$$

There is no friction in the model so the model jumps to a steady state outcome and the initial condition does not matter. Define

$$\tilde{\mu} = G\left(\Delta\left(\tilde{\mu}\right)\right).$$

Observe that $G\left(\Delta\left(0\right)\right) > 0$ so all solutions have $\tilde{\mu} > 0$. If $\mu^H\left(q\right) \leq G\left(\beta\right)$, then $\tilde{\mu} = G\left(\beta\right)$ is the solution. If so, there is a unique solution with $1 > \tilde{\mu} >$

$\mu^{H}(q)$ to which the economy jumps and there are always strong executive constraints. Instead, suppose that $\mu^{H}(q) > G(\beta)$. Then, we have at least one interior stable solution with $\tilde{\mu} < \mu^{H}(q)$, where the economy does not always have strong executive constraints. If $G\left(\Delta\left(\mu^{L}(q)\right)\right) < \mu^{L}(q)$, then $\tilde{\mu} < \mu^{L}(q)$ and there are always executive constraints.

(ii) $\alpha = 1$ Now, any interior steady state will solve:

$$\hat{\mu} = \frac{G(\Delta(\hat{\mu}) - \gamma)}{1 - G(\Delta(\hat{\mu}) + \gamma) + G(\Delta(\hat{\mu}) - \gamma)}. \tag{B.12}$$

Although whether an interior steady state is stable requires investigation. Note also that

$$\mu_{t+1} - \mu_{t} = G(\Delta(\mu_{t}) - \gamma) - \mu_{t}[1 - G(\Delta(\mu_{t}) + \gamma) + G(\Delta(\mu_{t}) - \gamma)]. \tag{B.13}$$

Suppose that $G(\cdot)$ is uniform on $[-G, G]$ and that $b < G$, then this becomes

$$\mu_{t+1} - \mu_{t} = \frac{(\Delta(\mu_{t}) + (G - \gamma)[1 - 2\mu_{t}])}{2G} \tag{B.14}$$

An interior steady-state is stable if

$$1 > \frac{\Delta_{\mu}(\hat{\mu})}{2(G - \gamma)}$$

The dynamics are easiest to study if we assume that $\Delta_{\mu\mu}(\mu) \leq 0$. This implies that any stable interior steady-state will be unique. So the sufficient conditions for a globally stable interior steady state are:

$$1 > \frac{(\beta - (G - \gamma))}{2G} \text{ and } \Delta\left(\hat{\mu}^{L}(q)\right) + (G - \gamma) > 0,$$

which both hold for high enough G. One of these conditions has to fail for an extreme solution. So if $\Delta\left(\hat{\mu}^{L}(q)\right) + (G - \gamma)\left[1 - 2\hat{\mu}^{L}(q)\right] < 0$, then for $\mu_{0} < \hat{\mu}^{L}(q)$, the economy will converge to $\mu = 0$. Likewise if

$$1 < \frac{(\beta - (G - \gamma))}{2G},$$

an economy that starts at $\mu \geq \hat{\mu}^{H}(q)$ will converge globally to $\mu = 1$. Moreover, any interior steady state must now be unstable.

(iii) $\alpha = 0$ In this case, we can have two steady states but they are bounded away from $\mu = 0$ and $\mu = 1$.   Let

$$\Gamma(\mu, \gamma) = [2G(\Delta(\bar{\mu})) - G(\Delta(\bar{\mu}) + \gamma) - G(\Delta(\bar{\mu}) - \gamma)]$$

and

$$\Omega(\mu, \gamma) = -[2G(\Delta(\bar{\mu})) - 1 - 2G(\Delta(\bar{\mu}) - \gamma)].$$

Observe that as $\gamma \to \infty$, then $\Gamma(\mu, \gamma) = -\Omega(\mu, \gamma)$. Sufficient conditions for high and low steady states are given in:

Lemma: *For large enough γ, there exists a high steady state $\bar{\mu}$*

$$\bar{\mu} = \frac{-\Omega(\bar{\mu}, \gamma) + \sqrt{\Omega(\bar{\mu}, \gamma)^2 + 4G(\Delta(\bar{\mu}, \gamma) - \gamma)\Gamma(\bar{\mu}, \gamma)}}{2\Gamma(\bar{\mu}, \gamma)} < 1 \quad (\text{B.15})$$

and a low steady state $\underline{\mu} > 0$.

Proof: To see this, not that steady states are characterized by the zeros of the following equation:

$$\mu^2 \Gamma(\mu, \gamma) + \mu\Omega(\mu, \gamma) - G(\Delta(\bar{\mu}) - \gamma).$$

Solving this for μ yields yields (B.15) as one solution. We need to show that $\bar{\mu} < 1$. Suppose that $\Gamma(\bar{\mu}, \gamma) > 0$, then $\bar{\mu} < 1$ since

$$\Gamma(\mu, \gamma) + \Omega(\mu, \gamma) = 1 - G(\Delta(\bar{\mu}) + \gamma) + G(\Delta(\bar{\mu}) - \gamma) > G(\Delta(\bar{\mu}) - \gamma).$$

Observe that $\lim_{\gamma \to \infty} \bar{\mu} = 1$ and therefore $\lim_{\gamma \to \infty} \Gamma(\bar{\mu}, \gamma) = 2G(\Delta(1)) - 1 > 0$. By continuity there must exist γ such that $\bar{\mu} < 1$. Consider

$$\underline{\mu} = \frac{-\Omega(\underline{\mu}, \gamma) - \sqrt{\Omega(\underline{\mu}, \gamma)^2 + 4G(\Delta(\underline{\mu}, \gamma) - \gamma)\Gamma(\underline{\mu}, \gamma)}}{2\Gamma(\underline{\mu}, \gamma)}.$$

We note that $\lim_{\gamma \to \infty} \underline{\mu} = 0$ and therefore $\lim_{\gamma \to \infty} \Gamma(\underline{\mu}, \gamma) = 2G(\Delta(0)) - 1 < 0$. Therefore, $\underline{\mu} > 0$ since

$$4G(\Delta(\underline{\mu}, \gamma) - \gamma)\Gamma(\underline{\mu}, \gamma) < 2\Omega(\underline{\mu}, \gamma)^2.$$

Hence, there exists γ such that $\underline{\mu} > 0$. ∎

Social learning and imitation A different route would be to follow the approach that has dominated the anthropological literature on cultural evolution, where the main mechanism is social learning as in Boyd and Richerson (1985). There are different ways of modeling this, but an easy extension of the current framework is to allow for imitation of the more numerous type. One simple way of doing so is to use the model of popularity weighting suggested by Ellison and Fudenberg (1993).

Specifically, suppose that in the mixed households, a child becomes a concerned citizen if

$$(1 - \omega) \Delta (\mu_t) \geq \omega (1 - 2\mu_t) + \eta \qquad (B.16)$$

where η as above is a zero-mean random variable with distribution function $G(\cdot)$ and where $\omega \in [0, 1]$ is the weight put on payoffs versus popularity. Intuitively, (B.16) says that there exists a critical threshold for η, which depends on whether μ_t is above or below one half. Now, the cultural dynamics are given by:

$$\mu_{t+1} - \mu_t = (1 - \alpha) \{\mu_t (1 - \mu_t) [2G ((1 - \omega) \Delta (\mu_t) + \omega (2\mu_t - 1)) - 1]\}. \qquad (B.17)$$

In this simple form, the dynamic complementarity of the core model is preserved. However, as ω approaches 1, $\hat{\mu} = 1$ and payoffs do not matter at all. Then, whichever is the more numerous type will determine whether or not democratic values evolve.

Another way to introduce social learning is to suppose that the socialization process is purely backward looking. In this case, the realized period t gain – rather than the expected gain – to the concerned citizens that matter. This gain is β with strong executive constraints and $-L(\mu_t, y_t)$ with weak constraints. Using this logic, the process governing cultural dynamics is:

$$\mu_{t+1} = \begin{cases} \alpha\mu_t + (1 - \alpha) [\mu_t^2 + 2 (1 - \mu_t) \mu_t G (\beta)] & \text{if } X_t = 1 \\ \alpha\mu_t + (1 - \alpha) [\mu_t^2 + 2 (1 - \mu_t) \mu_t G (-L (\mu_t, y_t))] & \text{if } X_t = 0 \,. \end{cases} \qquad (B.18)$$

As in the core model, there are two absorbing states: $\mu_t > \mu^H(q)$ with convergence to $\mu = 1$, and $\mu < \mu^L(q)$ with convergence to $\mu = 0$. For democratic values between those thresholds, there is a stochastic path which depends on the realization of y_t.

A wider perspective on peer influence One feature of our approach is its focus on inter-generational transmission of values. Although this is a po-

tentially important channel of influence, a whole range of cultural parents – teachers, friends and work colleagues – can influence values in society, something that is stressed in the anthropological literature on cultural evolution. Some cultural parents may reflect vertical relationships such as teachers influencing their students, bosses influencing their workers or group leaders influencing their followers. However, others may reflect peer-to-peer contacts. Exploring this in detail would require a richer model of social structure, which would be interesting to develop in future applications not the least to generate empirical implications of different structures. This could provide a join between the literature on cultural evolution and the formation of social networks.

Clearly, the spillover effects from people in other countries discussed under soft powers in Section 6 could also reflect contemporaneous rather than inter-generational contacts.

In a formal treatment, we could suppose that people live for T periods. Socialization would occur on an ongoing basis depending on social interactions. These interactions could be part of deeper social structures, which in turn could be relatively fixed or evolving because of the way people select into specific groups. One would also have to specify whether people anticipated the socialization consequences of their group selection or whether socialization would simply be a by-product of more fundamental choices. Given the sorting into different groups, one could use the same approach to determine the relative fitness of each type so as to pin down the evolution of democratic values. We would expect societies with more diverse mixing of types to be more fluid in terms of cultural dynamics, analogous to the dependency of the cultural dynamics on within-group matching parameter α discussed in Section 4.
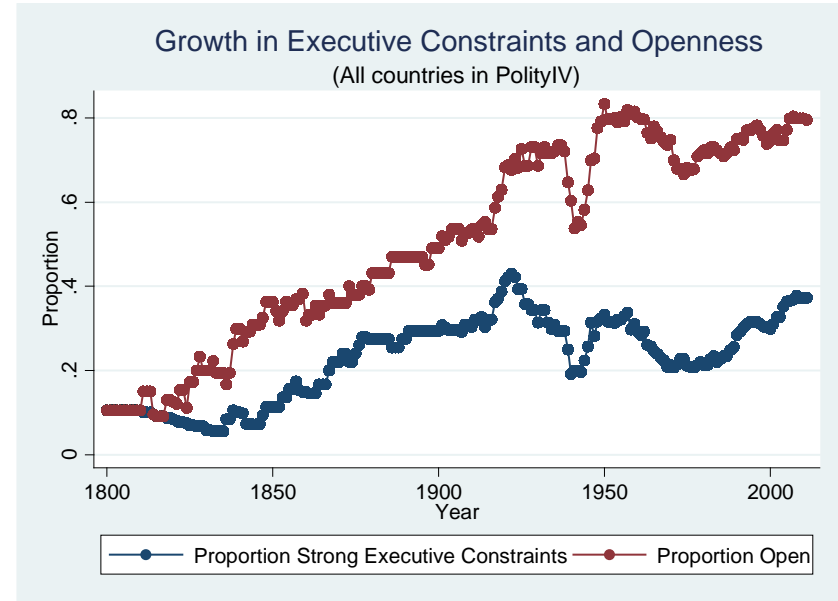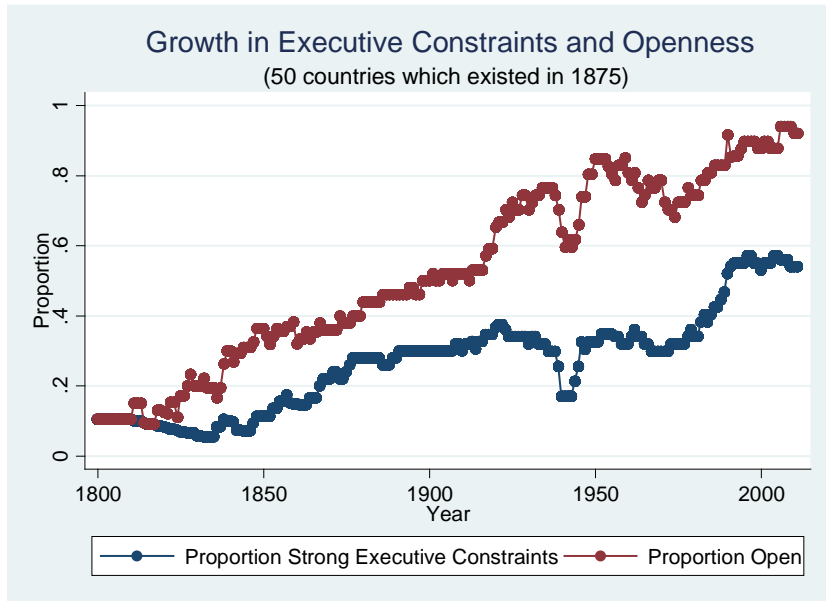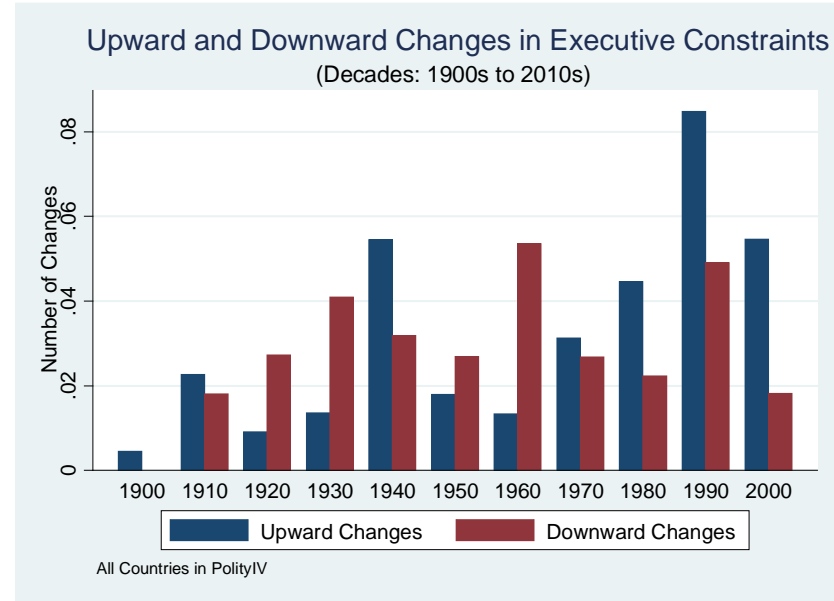
Figure 1

Growth in Executive Constraints and Openness
(50 countries which existed in 1875)

Proportion Strong Executive Constraints — Proportion Open

Growth in Executive Constraints and Openness
(All countries in PolityIV)

Proportion Strong Executive Constraints — Proportion Open

Figure 2

Upward and Downward Changes in Executive Constraints
(Decades: 1900s to 2010s)

50 Countries that existed in PolityIV in 1875

Upward and Downward Changes in Executive Constraints
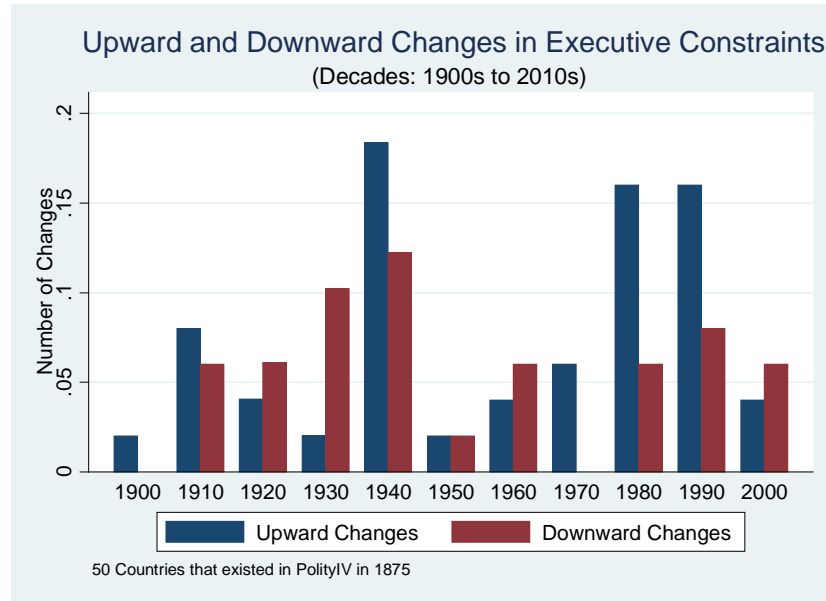(Decades: 1900s to 2010s)

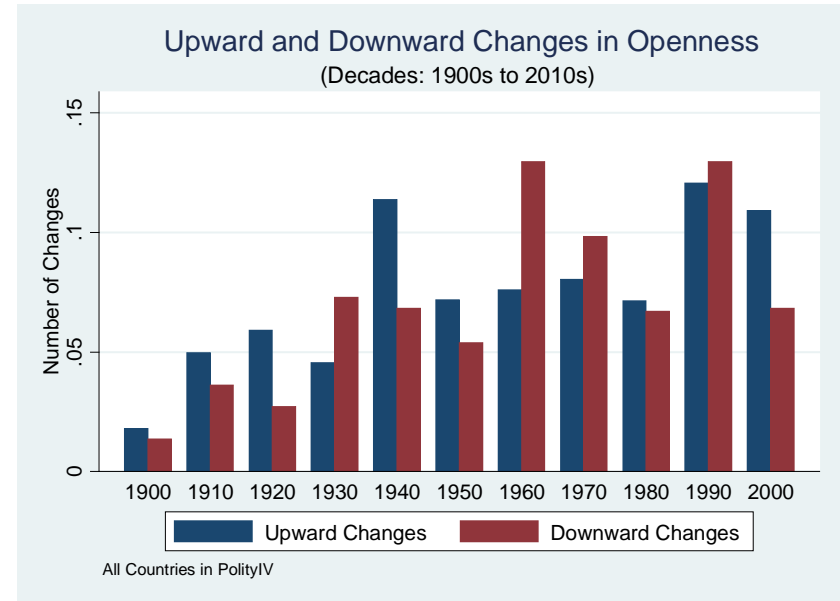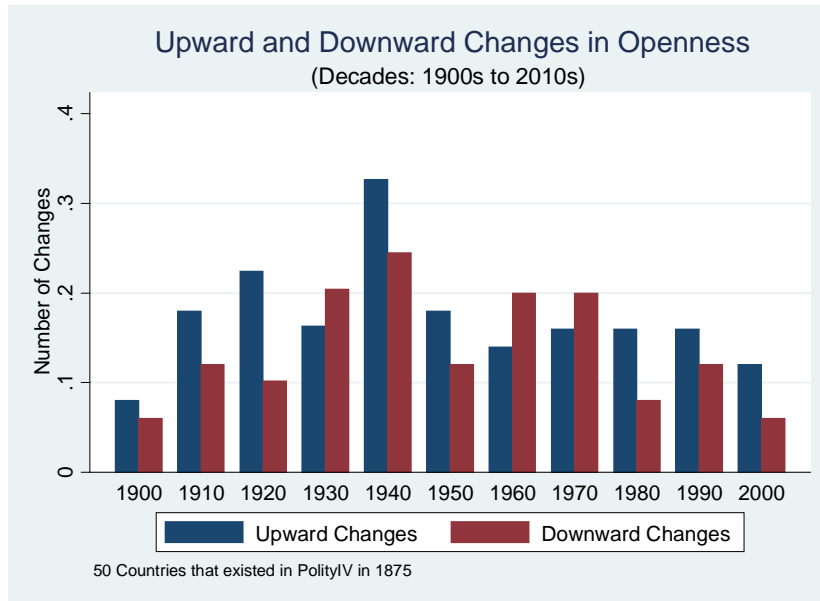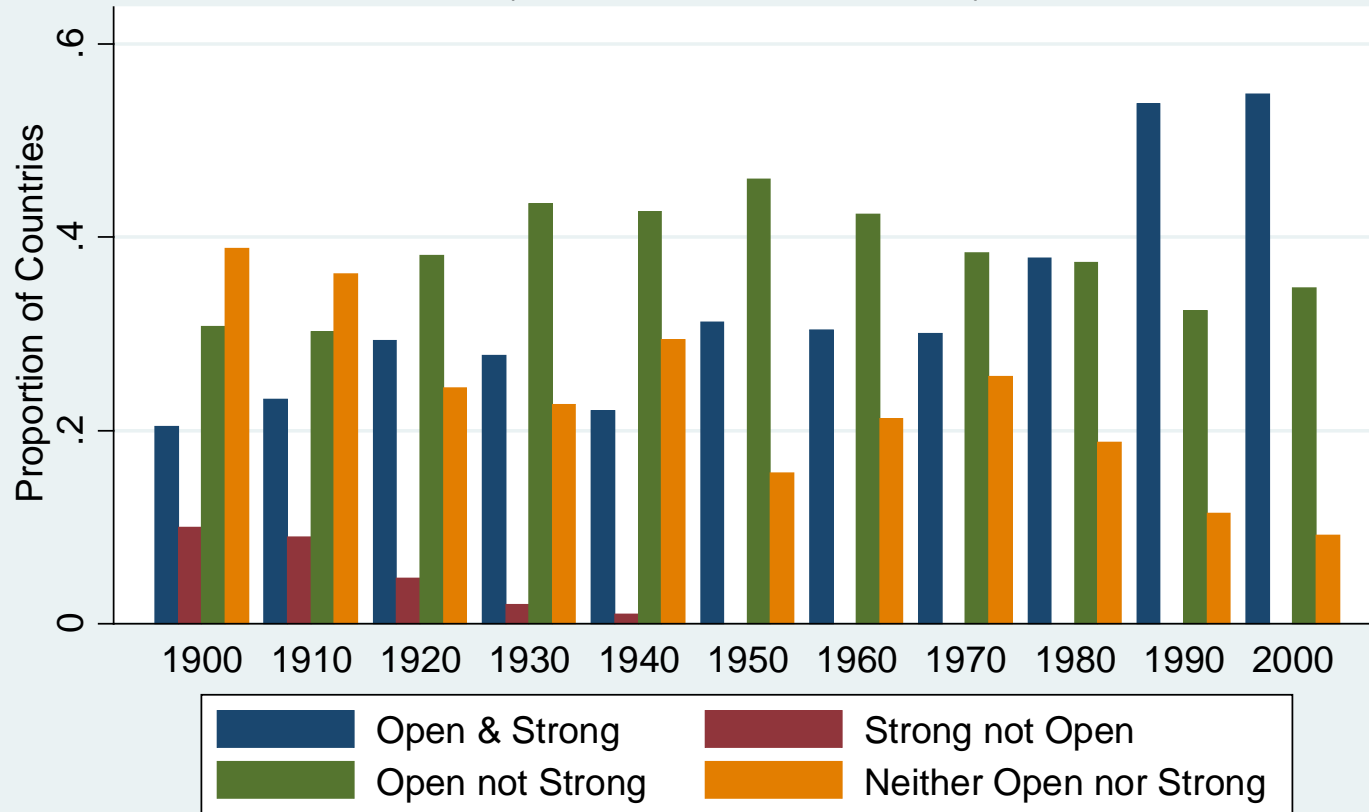All Countries in PolityIV

Figure 3

Figure 4

Openness and Executive Constraints: Regime Types
(Decades: 1900s to 2000s)

50 Countries that existed in PolityIV in 1875

Figure 5

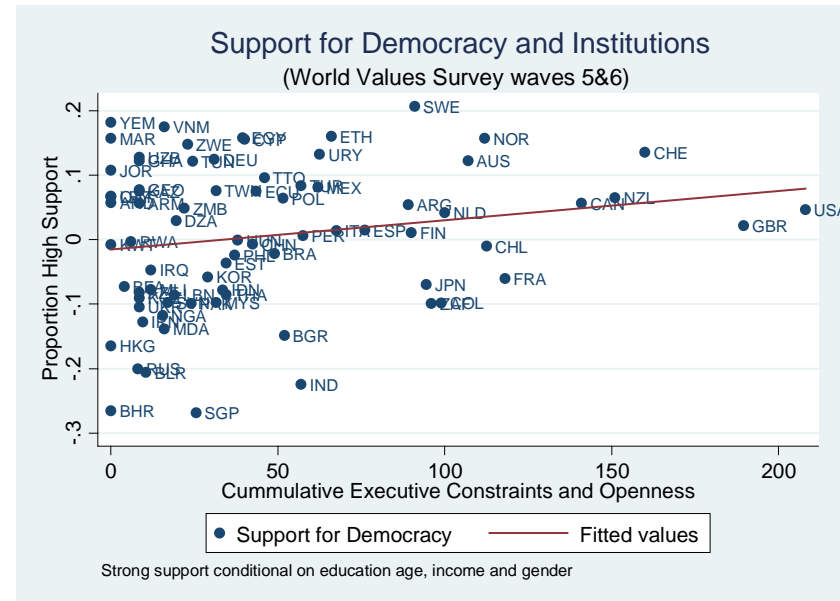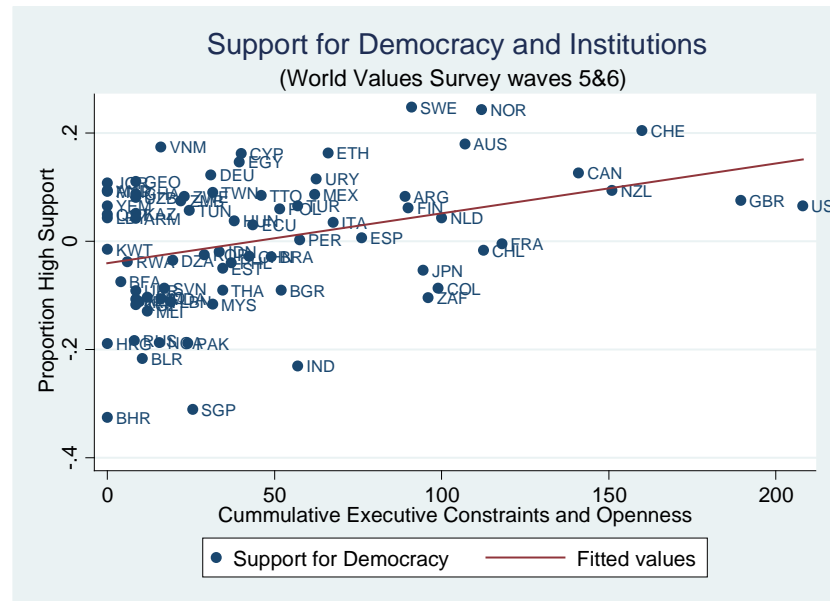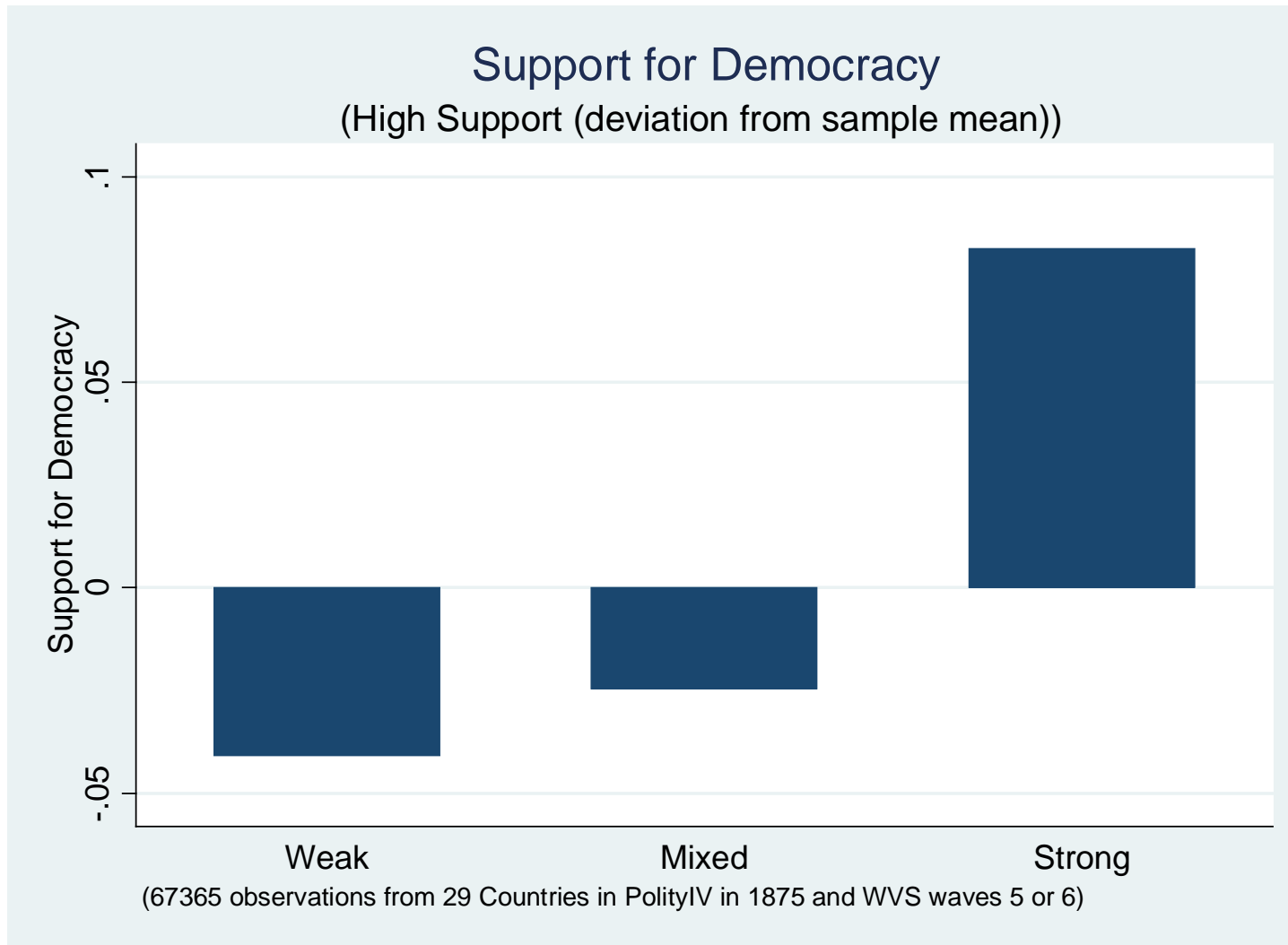Figure 6

Support for Democracy
(High Support (deviation from sample mean))

(67365 observations from 29 Countries in PolityIV in 1875 and WVS waves 5 or 6)

Table 1: Classification of Countries

Weak	Mixed	Strong
Always Weak Executive Constraints (Year of Entering Data)	Multiple Changes (Number of Upward Changes, Number of Downward Changes)	Always Strong Executive Constraints (Year of Entering Data)
Afghanistan (1800)	Argentina*† (1,1)	Canada*† (1867)
China*† (1800)	Austria (2,1)	New Zealand† (1857)
El Salvador (1841)	Belgium (3,2)	Switzerland* (1848)
Guatemala (1839)	Bolivia (1,1)	United Kingdom*† (1800)
Honduras (1839)	Brazil*† (1,1)	United States*† (1800)
Iran*† (1800)	Chile*† (2,1)	
Mexico*† (1822)	Colombia*† (2,2)	
Morocco*† (1800)	Denmark (2,1)	
Nepal (1800)	Dominican Republic (1,1)	
Russia*† (1800)	Ecuador† (2,2)	
Venezuela (1830)	France* (2,2)	
Permanent Switch to Weak Executive Constraints (Year of Entering Data, Year of Switch)	Greece (4,3)	Permanent Switch to Strong Executive Constraints (Year of Entering Data, Year of Switch)
	Haiti (1,1)	
	Japan*† (2,1)	
	Netherlands*† (2,1)	
Ethiopia*† (1855, 1930)	Norway* (2,1)	Costa Rica (1838, 1875)
Liberia (1847, 1884)	Peru*† (2,1)	Germany*† (1800, 1990)
	Portugal (4,3)	Hungary* (1867, 1990)
	Paraguay (2,1)	Italy* (1861, 1948)
	Serbia* (1,1)	Nicaragua (1838, 1995)
	Spain*† (4,3)	Romania (1859, 2004)
	Thailand*† (1,1)	Sweden*† (1800, 1917)
	Turkey*† (3,2)	Uruguay* (1830, 1985)

Notes: Sample is 50 countries which appear in the PolityIV data base as independent countries in 1875. The data base covers the period 1800 to 2011. Data for Germany are for unified Germany; West Germany had strong executive constraints from 1950 onwards. A * denotes a country in wave 5 and a † denotes a country in the wave 6 of World Values Survey.

Table 2: Timing of Institutional Changes

Country	Year First in Data	First Year Open	First Year Strong	Country	Year First in Data	First Year Open	First Year Strong
Afghanistan	1800	1989	-	Japan	1800	1952	1868
Argentina	1825	1825	1983	Liberia	1847	1847	1847
Austria	1800	1920	1946	Mexico	1822	1867	-
Belgium	1830	1919	1853	Morocco	1800	-	-
Bolivia	1825	1825	1982	Nepal	1800	2006	-
Brazil	1824	1894	1946	Netherlands	1815	1917	1889
Canada	1867	1867	1867	New Zealand	1857	1857	1857
Chile	1818	1818	1891	Nicaragua	1838	1838	1995
China	1800	1914	-	Norway	1814	1898	1884
Colombia	1832	1832	1867	Oman	1800	-	-
Costa Rica	1838	1838	1875	Paraguay	1811	1811	1992
Denmark	1800	1915	1915	Peru	1821	1822	1990
Dominican Republic	1844	1844	1962	Portugal	1800	1911	1836
Ecuador	1830	1901	1979	Romania	1859	1859	2004
El Salvador	1841	1903	-	Russia	1800	1992	-
Ethiopia	1855	1946	1855	Serbia	1830	1838	1838
France	1800	1800	1877	Spain	1800	1873	1871
Germany	1800	1919	1990	Sweden	1800	1917	1917
Greece	1827	1827	1864	Switzerland	1848	1848	1848
Guatemala	1839	1876	-	Thailand	1800	1935	1992
Haiti	1820	1918	-	Turkey	1800	1923	1961
Honduras	1839	1839	-	United Kingdom	1800	1837	1800
Hungary	1867	1948	1990	United States	1800	1800	1800
Iran	1800	1982	-	Uruguay	1830	1904	1985
Italy	1861	1928	1948	Venezuela	1830	1830	-

Notes: Sample is 50 countries which appear in the PolityIV data base as independent countries in 1875. The data base covers the period 1800 to 2011. Data for Germany are for unified Germany; West Germany had strong executive constraints from 1950 onwards.

Table 3: Determinants of Values

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Major Oil Producer	-0.166*** (0.059)	-0.073 (0.053)			-0.089* (0.051)			
Soviet Influence			-0.270*** (0.079)	-0.148** (0.065)	-0.196** (0.084)			
German Occupation						0.087** (0.0411)	0.085** (0.032)	
Settler Mortality								-0.005** (0.002)
Individual & country controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Countries	28	62	28	62	28	14	26	12
Sample	Countries in Table 1 and in WVS wave 5 or 6	All Countries in WVS wave 5 or 6 and PIV	Countries in Table 1 and in WVS wave 5 or 6	All Countries in WVS wave 5 or 6 and PIV	Countries in Table 1 and in WVS wave 5 or 6	Countries in Mixed Category in Table 1 in WVS wave 5 or 6	All Countries in Mixed Category in WVS wave 5 or 6	All Countries in Mixed Category in WVS wave 5 or 6
Observations	57690	117133	57690	117133	57690	30956	55834	25298
R²	0.037	0.025	0.039	0.027	0.041	0.030	0.032	0.033

Notes: Dependent Variable is a dummy variable which equals one if Support for Democracy (on a 10 point Scale) is 9 or 10. Major oil producer is a dummy variable which is equal to one if a country has a oil rents in excess of 10% of GDP according to the World Bank. Individual controls are ten dummies for income group, three for education group, gender and three age bands. Country level controls are for GDP, human capital and the cumulative history of executive constraints. Standard errors are adjusted for clustering at the country level. German occupation is equal to one if the country was occupied n WWII and had a prior history of strong executive constraints A "*" denotes significant at 10%, a "**" significant at 5% and "***" significant at 1%.