

Resilient Leaders and Institutional Reform: Theory and Evidence*

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Abstract

Strengthening executive constraints is one of the key means of improving political governance. This paper argues that resilient leaders who face a lower probability of being replaced are less likely to reform institutions which constrain their power. We test this idea empirically using data on leaders since 1875 using two proxies of resilience: whether a leader survives to die in office and whether there are recent natural disasters during the leader's tenure. We show that both are associated with lower rates of leader turnover and a lower probability of a transition to strong executive constraints. This effect is robust across a wide range of specifications. Moreover, in line with the theory, it is specific to strengthening executive constraints rather than generalized political reform.

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1 Introduction

Creating stable systems of government where citizens enjoy political rights and rulers are constrained has been a major achievement in human history. Figure 1 gives a birds’ eye view of this achievement by plotting the worldwide prevalence of strong executive constraints, which circumscribe the power of leaders in office, using data from Polity IV.¹ The red line illustrates this evolution across the 50 countries for which we have uninterrupted data from 1875 to 2004. The main variations broadly follow Huntington’s three waves of democratization (Huntington, 1991). They reflect reforms in Europe at the beginning of the past century, a setback in the interwar period, followed by a return of strong constraints after World War II, and then a surge of institutional reforms in Latin America and the former Communist block from the 1980s onward. The blue line shows the prevalence for *all* countries with available data.² Although the proportion of countries with strong executive constraints is considerably lower at the end of the sample in this larger group, the pattern looks broadly similar with the exception of an additional dip from 1960 to 1975 driven by a number of newly established countries (mainly former colonies).

The reasons for the adoption of such constraints are not well understood. However, leaders who are secure in their hold on power will typically have weak motives to pursue reforms that limit their discretionary authority. This pattern has indeed been common among monarchs and autocrats with few or no formal checks on their power. In one of the most famous historical examples, King John felt compelled to sign Magna Carta in 1215, but only when his power was threatened by the barons on whom he relied for support. This seems to suggest a more general and compelling argument: leaders with strong survival prospects are less likely to accept reforms which constrain executive authority. We refer to such leaders as having high *resilience*.

Against this background, our paper studies how resilient leaders may constitute a barrier to reform towards strong executive constraints theoretically and empirically. We formulate a simple model, which predicts that *leader* resilience reduces the incentive to adopt strong executive constraints by reducing the prospect that a ruling *group* loses office.³ This component from the theory receives support from a first pass at the data. Raw leadership turnover is positively correlated with the adoption of stronger executive constraints. Conditional on country and year fixed effects, such reforms are about 9 percentage points more likely in the five years after a leadership transition than in the five years before the transition, a difference which is statistically significant. But more satisfactory evidence for our general idea requires exogenous measures of leader resilience.

We consider two different measures of leader resilience. The first comes from observing which leaders die in office from natural causes. Arguably, leaders who hold on to power until they die are inherently more resilient in the sense of our model. Moreover, we show that the tenure of such leaders is much longer than for other leaders – in our full sample, they stay in office four years longer.⁴ Institutional reform when a resilient leader leaves office is then motivated by the difficulty that an incumbent elite group may have in finding an equally resilient successor to the deceased leader, a difficulty that reduces its probability of remaining in power.

Our second measure of leader resilience is based on events during the leader’s tenure. It

¹The precise data and measure underlying the figure is discussed in Section 4.1.

²This lessens the possibility of “survivorship” bias, i.e. looking only at countries that have been around for long time.

³This argument applies specifically to this aspect of institutional reform rather than to the change in overall democracy score which typically includes openness of access to power.

⁴Using this source of variation to study outcomes follows Jones and Olken (2005), but the interpretation is different; in this paper leaders who die in office are viewed as having a specific trait – resilience – consistent with their longer average tenure. It is not their death per se that matters, but the fact that the new leader (or the leader previous to the one dying in office) may not be equally resilient.

is motivated by the famous "rally-around-the-flag effect", which is often associated with wars and domestic emergencies. Famous examples in recent history include how Margaret Thatcher turned around extremely negative polling figures when she resisted Argentina's invasion of the Falkland/Malvinas Islands and how George W. Bush gained popularity following the 9/11 attacks. Arguably, natural disasters provide more generic, measurable and empirically robust examples of this effect, as they cannot be manipulated in the same way as foreign conflicts. Indeed, a key finding of the paper is that natural disasters are robustly negatively correlated with political turnover. That is, leaders in office after such events tend to survive longer, which means they become more resilient in the wake of such events.

Our paper speaks to debates about the link between democracy and development. Early studies were influenced by the modernization hypothesis of Lipset (1959), with more recent incarnations being Przeworski et al (2000) and Bueno de Mesquita et al (2003). However, the hypothesis that income drives democracy receives weak empirical support with, at best, ambiguous evidence – see, for example, Barro (1999), Acemoglu et al (2008), and Bruckner and Ciccione (2011). This finding is consistent with our approach. The timing of political change is often idiosyncratic and linked to political circumstance rather than to slow moving variables like income or education, even though these variables may shape the wider context and citizens' aspirations.

By focusing on characteristics of leaders, our approach is distinct from a strand of literature on how social and cultural factors may promote democracy. This includes the ideas that having a strong and effective middle class or plentiful social capital may be important, as hypothesized, for example, by Almond and Verba (1963), Moore (1966), and Putnam (1993). In this general vein, Persson and Tabellini (2009) introduce the concept of democratic capital and find empirically that this consolidates rather than promotes transitions into democracy.

The ambition of our paper is to study a specific dimension of political reform. Although we focus on strengthening executive constraints, it has most in common with the literature on franchise extension, particularly the work by Acemoglu and Robinson (2000, 2006), who offer insightful case-study evidence. They also emphasize the role of political instability, particularly due to the threat of a revolution. Franchise extension is used a commitment device by the elite to guarantee more favorable treatment of the masses. Aidt and Jensen (2010) find econometric evidence in support of this view. Below, we show that having a leader who dies in office does not predict changes in the franchise nor other moves towards greater openness.

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

In a different vein, Lagunoff (2001) develops a model with a dynamic game between two groups, in which greater political turnover leads to greater constitutional support for civil liberties. Congleton (2007) discusses forces that promote the introduction of parliamentary oversight on royal power, focusing on instability due to preference shocks to the monarch. Acemoglu, Robinson and Torvik (2011) develop a model of endogenous checks and balances, stressing the way that these change the ability of special interests to influence policy. Jones and Olken (2009) exploits the difference between successful and unsuccessful assassination attempts to show that random leadership change leads to democratic reform, as measured by a broad democracy index.

In summary, our approach is one where institutional reform is "defensive" and undertaken when a leader and/or his group anticipates losing political power. This is different from the

Acemoglu-Robinson approach, where institutional reforms are also defensive, but the incumbent group gives up political power in order to secure economic power. Our approach also differs from those based on revolutionary change, where institutional change is “offensive” and an incumbent is removed from power as a means of securing change. Of course, all these approaches have their counterparts in the real world. Our aim is to explore the theoretical and empirical validity of one particular approach, rather than trying to provide a general account of all aspects of institutional change.

In the next section of the paper, we set the stage by providing a case-study account of Spain under Franco and the political reforms that followed after his death.

Section 3 develops a simple infinite-horizon model, where an incumbent group that faces high expected turnover may choose to reform by putting in place more binding executive constraints. Given that leaders have different survival probabilities, the model makes a specific empirical prediction: leaders with greater resilience – and hence lower expected turnover – are less likely to carry out reforms towards stronger executive constraints.

In Section 4, we discuss how to take the model to the data. The model suggests a reduced-form relation, where the probability of a transitions to/from weak executive constraints depends on leader resilience. As mentioned above, we measure resilience in two ways: whether a leader (eventually) dies in office from natural causes, and whether s/he experiences a natural disaster while in office. Underlying this reduced form, is a more structural Instrumental Variables (IV) approach in line with the model. In the first stage, our two measures of resilience are used to instrument for expected leader turnover, conditional on leader age and tenure. In the second stage, higher predicted turnover induces a greater probability of higher constraints on the executive.

Section 5 presents our empirical results. Our baseline estimates are consistent with the predictions of the model. They suggest that having a leader who later dies in office and/or has experienced a natural disaster in the last two years in office lowers the probability of a transition from weak to strong executive constraints by about 3-5 percentage points per year. While we see similar reductions in turnover with more resilient leaders in countries which already have strong executive constraints, there is no relation between lower turnover and switches towards weak executive constraints – i.e., our main finding is asymmetric. We show that these results are robust to a number of concerns about the exclusion restriction that underlies our IV-approach. For example, the results hold up when we control for a number of personal characteristics of leaders, as well as the economic and political context at the time the leader entered into office.

Section 6 relates this paper to wider forms of democratic reform, specifically increases in openness – like extensions of the franchise – that create more contestable power structures. We show how the model can be extended to encompass this aspect of reform. But, empirically, leader resilience does not seem to predict reforms towards greater openness. Thus, our results are specific to reforms of executive constraints and not driven by general democratizations.

Section 7 concludes the paper. Some details of the theory and the data are relegated to an Appendix.

2 Motivating Case Study: Francisco Franco⁵

Francisco Franco was an archetypal example of a resilient leader in terms of our theory. A victorious war hero, he ruled Spain under unchecked authoritarian rule after the end of the civil war. According to the Law of Succession from 1947, Spain would return to monarchy, but Franco would rule for life and himself appoint the next King. The unelected Spanish pseudo-parliament,

⁵This subsection is based on Conversi (2002), Encyclopedia Britannica (2012), Fishman (1990), Linz (1990), Linz and Stepan (1996), Polity IV (2012), Rosenfeld (1997), Share (1987), and Solsten and Meditz (1988).

the Cortes, was at best an advisory body with no right to initiate legislation or oppose the government. It was dominated by the so-called National Movement – the *Movimiento* – which constituted the political elite. The *Movimiento* comprised a collection of right-wing families and was the only recognized forum for political participation. No elections were held during the Franco period.

Some modest reforms in 1966 separated the functions of head of state and head of government, but the authoritarian character of the regime remained intact. The hard-line Admiral Luis Carrero Blanco was appointed the first prime minister and was also widely expected to become Franco's successor, even though Franco had already appointed Juan Carlos as the next head of state in 1969. Juan Carlos, the son of Spain's legitimate monarch Juan of Bourbon, was generally considered an insider of the ruling elite, by which he had been educated and groomed. As a *quid pro quo* for the appointment, Juan Carlos swore to be faithful to the National Movement. Thus, he publicly supported the regime and took part in ceremonial functions together with Franco.

From the late 1960s, the regime saw increasing challenges from an emerging political opposition, including regional-autonomy movements in the Basque country, Catalonia, and (less so) Galicia. In particular, ETA – the Basque revolutionary liberation army – started to systematically implement the theory of action/terror/action to further its independence cause; most significantly, ETA assassinated Carrero Blanco in December 1973. The regime countered the opposition with higher levels of repression. Meanwhile, the ailing Franco replaced Carrero Blanco as Prime Minister with another hardliner, Arias Navarro. Despite the mounting opposition, there was little to suggest an end to the unchecked authoritarian regime. For the postwar period up until the year of 1974, Polity IV sets the executive constraints variable for Spain at the bottom score of 1 (on a scale from 1 to 7).

In November of 1975, Franco died in office of heart disease. At this time, no similarly resilient leader was waiting to take over. Although the Cortes proclaimed Juan Carlos King of Spain, it reaffirmed Navarro as prime minister. The latter made vague proposals of limited reforms. When these were met with public demonstrations, strikes and increased regional terrorist acts, the regime responded with increased repression. Following discontent with Navarro's handling of the situation, the King asked for him to step down in the summer of 1976. He replaced Navarro with another leading figure from the *Movimiento*, its general secretary and former Franco minister, Adolfo Suarez Gonzales.

Despite expectations to the contrary, Suarez – with outright support of the King – saw the need for more far-reaching reforms, to avoid descent into a spiral of repression and violence. He soon announced plans for a comprehensive package of political reform, which would put in place a constitutional monarchy based on parliamentary democracy with a bicameral legislature. In the fall of 1976, he managed to convince the *Movimiento* members of the Cortes that the only way forward was to accept this reform package, which effectively would dismantle the institution itself. Later in that fall, the Spanish people approved the plans with a majority of 88% in a national referendum. New laws permitting political parties, including the Communist Party, were passed by the Cortes in the spring of 1977, and general elections to a new legislature were held in the summer of the same year, using proportional representation.

In these elections, Suarez ran as the party leader of the newly founded UCD at the conservative-center of politics, which emerged as the largest party followed by the PSOE (the Socialist Party). The most polarized parties, the *Alianza Popular* (on the far right, picking up the heritage from the dissolved *Movimiento*) and the Communist Party, each polled at about 10%. The new parliament elected a seven-member constitutional committee representing all major parties to draft Spain's new constitution. The committee's proposal was amended and eventually passed by parliament in October 1978, and approved in a general referendum in December of the same year. After this,

Suarez dissolved the parliament and called for new elections under the new constitution.

A mere three years after Franco's death, Suarez and Juan Carlos, two members of the former ruling elite, had thus led the country through a remarkably peaceful democratic transition. In this process, Spain adopted a constitution with a number of horizontal checks and balances, as well as provisions for regional autonomy. The new political regime has endured since those days – its resilience was tested most dramatically in a failed coup attempt in February 1981 by Colonel Antonio Tejero, who together with 200 armed members of the paramilitary police (the Guardia Civil) stormed into the Chamber of Deputies to interrupt its election of the new prime minister. From the year of 1978, Polity IV codes Spain's executive constraints with the top score of 7 (on the 1 to 7 scale).

The example of Spain illustrates two key points relevant to the paper. First, Franco faced no effective opposition while alive – the fact that he died in office is indicative of his resilience as a leader. Second, following his departure, no comparable resilient leader was waiting in the wings to take over. The fact that subsequent leaders of the ruling group were likely to face a more contestable position led to a move towards cohesive institutions.

3 Model

Our model is a threefold extension of the two-period, two-group, one-actor model sketched in Besley and Persson (2011a, Ch. 7) to an infinite-horizon, multiple-group setting, which explicitly distinguishes groups and their leaders. The incumbent government in power decides how to deploy a fixed tax revenue between transfers and public goods, being more or less constrained by current political institutions. In view of their prospect of surviving in office, incumbent groups choose the cohesiveness of political institutions (executive constraints) for the next period.

Basics and groups There is an infinite horizon with time periods denoted by $t = 1, 2, \dots$. The population is normalized to unity and divided into $\frac{1}{e}$ equal-sized groups indexed by J . The incumbent government in period t belongs to one of these groups, which is denoted by I_t . The other groups are in opposition and are indexed by the list O_t^J . If the incumbent government is thrown out at the end of period t , one of the previous opposition groups is randomly chosen (with equal probability) to be in power in period $t + 1$. All decisions on behalf of the incumbent group are taken by a leader, with characteristics described below

Income, preferences, and private consumption All individuals have an equal, exogenous and constant (net of tax) income y . The utility function of a member of group J in period t is linear in private and public goods

$$u_t^J = \alpha g_t + x_t^J .$$

Variable g_t is the provision of public goods by the incumbent. The value of public goods is given by α , with $1 < \alpha < \frac{1}{e}$.

Variable x_t^J denotes private consumption, which depends on the status of a group. For all opposition groups, it is given by

$$x_t^J = y + s_t^J , \quad J \in O_t^J ,$$

where s_t^J is a *per-capita* transfer payment to all group J members. For simplicity, we work with the case $s_t^J = s_t$, so that all non-governing groups are treated in the same way. Any member of the incumbent group, including the leader, has private consumption

$$x_t^J = y + b_t , \quad J = I_t ,$$

where b_t are the *per-capita* rents, extracted by the period- t leader on behalf of his group – these rents could be generated endogenously through predatory activities, as in Besley and Persson (2011a, Ch. 3). Thus, all members of the incumbent group get the same share of rents.

Everybody discounts the future with discount factor $\delta \in (0, 1)$. There are no savings in the model.

Government budget constraint The incumbent leader has access to some exogenous revenue of size T . This income can be spent on three items: public goods g_t , transfers to members of all other groups s_t , and transfers to members of the incumbent group b_t .

The government budget constraint is therefore

$$T = g_t + s_t(1 - e) + eb_t .$$

Within-group leader turnover In each period t , the incumbent group I_t starts out with a specific leader in power. We use $r_{t-1} \in [r_L, r_H]$ to denote a leader’s “resilience”. In the data, we will use two variables to represent this (i) leaders that will eventually die in office and (ii) leaders that have recently experienced a natural disaster; we show that these variables predict lower turnover. Higher resilience positively affects two things: (i) the likelihood that the leader will remain as the leader of the incumbent group, and (ii) the incumbent group’s probability of staying in power.

Let $z(r_{t-1}, \nu_t) \in \{0, 1\}$ denote the event that a leader with resilience r_{t-1} survives as leader of the incumbent group in period t , where ν is a random shock including death. We assume that $z(r_{t-1}, \nu_t)$ is increasing in r , i.e., more resilient leaders are less likely to lose the leadership of their group.

If a leader is replaced within the incumbent group, there is a random draw from the pool of potential leaders with mean resilience \bar{r} . Thus, the evolution of expected leader resilience conditional on ν is given by:

$$E(r_t) = \begin{cases} r_{t-1} & \text{if } z(r_{t-1}, \nu_t) = 1 \\ \bar{r} & \text{otherwise .} \end{cases}$$

We use $\bar{z}(r) = E_\nu \{z(r, \nu)\}$ to denote expected within-group turnover for a leader of resilience r .

Turnover between groups The probability that the incumbent group remains in power until the next period also depends on its current leader. Denoting this ex post (conditional) probability by q_t , we assume that it is simply equal to its leader’s resilience:

$$q_t = r_t .$$

Before the realization of the random shock ν_t , the ex ante (unconditional) probability that the incumbent *group* survives in power when the resilience of the leader is r_{t-1} is given by

$$Q_t = Q(r_{t-1}) = \bar{z}(r_{t-1})r_{t-1} + [1 - \bar{z}(r_{t-1})]\bar{r} , \tag{1}$$

which we assume is increasing in r .⁶

⁶A sufficient condition for this is that:

$$1 > \frac{E\{z_r(r, \nu)\}[\bar{r} - r]}{E\{z(r, \nu)\}}$$

for all $r \in [r_L, \bar{r}]$.

Once the random shock, ν_t , is realized and the resilience of the leader is determined, then the probability that the period- t incumbent group loses his/her power at the end of the period is thus $1 - q_t = 1 - r_t$. If the incumbent group loses power, each opposition group has an equal probability to take over. If a new group enters into power, the leader of that group (with resilience drawn at random) becomes the new leader of the country.

Political institutions Political institutions can be more or less cohesive and are modeled as a constraint on how badly an incumbent group can treat the other groups in the population. In terms of the model, this constrains the rents that an incumbent group can extract at the expense of others in society. Thus, we assume that the incumbent leader must give a fixed share, $0 \leq \theta_t \leq 1$, to every other citizen, for any unit of rents collected by members of its own group:

$$s_t \geq \theta_t b_t .$$

The parameter θ_t indexes cohesiveness with a higher value of θ representing tighter executive constraints on the incumbent government, i.e., a form of institutional commitment. Concretely, this could represent stronger constitutional provisions limiting executive powers, which are enforced by a legislature and/or an independent judiciary.

To model the process of political reform, we follow the existing literature (e.g., Acemoglu and Robinson, 2006) in assuming limited commitment, with political institutions chosen at time t being binding on decisions at $t + 1$ (see further discussion below).

Timing To summarize the model laid out above, each period has the following timing:

1. The polity starts period t with an inherited incumbent group I_t , whose leader has resilience r_{t-1} , and inherited institutions θ_t , which bind for that period.
2. The incumbent leader chooses policy $\{g_t, s_t, b_t\}$ for the current period, and political institutions, θ_{t+1} , for the next period.
3. Nature determines the period- t political stability shock ν_t . If the incumbent-group leader survives, then his resilience stays constant. If not, then a fresh draw from a pool of leaders determines r_t .
4. Group I_t is replaced with probability $1 - r_t$. Each opposition group have an equal probability of taking over the executive, namely $\frac{(1-r_t)(e-1)}{e}$. If a new group takes power, the resilience of its leader is chosen at random.

The model is recursive, which allows us to first study period t , $\{g_t, s_t, b_t\}$, taking θ_t as given. We then study the choice of political regime θ_{t+1} , a more involved problem. We look for a Markov-perfect equilibrium where the state variables are $\{r_{t-1}, \theta_t\}$. Given our structure, we show that the decision over future institutions does not depend on θ_t .⁷

Policy Beginning with public spending, the leader of the incumbent group in period t sets policy to maximize the group's own utility

$$u_t^I = \alpha_t g_t + y + b_t , \tag{2}$$

⁷In effect, the problem will reduce to a static comparison of the effect of θ . The focus on Markov perfection rules out history-dependent strategies.

subject to the constraints on rents and transfers, and the government budget constraint. Policies do not depend on ξ and hence we write them solely as a function of θ . This recursive separability is key to the identification strategy that we pursue below, i.e., it is key that leader characteristics associated with political survival are uncorrelated with policy preferences.

It is easy to see that the two constraints will all be satisfied with equality: in particular, transfers to opposition group citizens are set to a minimum $s_t = \theta_t b_t$. The remaining choice is how much to spend on public goods and how much to spend on rents. As utility is linear, the incumbent will always choose a “bang-bang” solution

$$\begin{aligned}\hat{g}(\theta) &= \begin{cases} T & \text{if } \alpha \geq \frac{1}{\theta + (1-\theta)e} \\ 0 & \text{otherwise,} \end{cases} \\ \hat{b}(\theta) &= \left[\frac{1}{\theta + (1-\theta)e} \right] (T - \hat{g}(\theta)), \text{ and} \\ \hat{s}(\theta) &= \left[\frac{\theta}{\theta + (1-\theta)e} \right] (T - \hat{g}(\theta)).\end{aligned}$$

The incumbent leader either spends all available funds on public goods, or on rents to his own group (and necessary transfers to opposition groups), depending on the executive constraints he faces. Since $1 < \alpha < \frac{1}{e}$, by assumption, all residual spending is on public goods (rents) when θ is above (below) $\frac{1-\alpha e}{\alpha(1-e)}$. Cohesive institutions, or high executive constraints – i.e., $\theta \in [\frac{1-\alpha e}{\alpha(1-e)}, 1]$ – induce equality in outcomes in each period by guaranteeing that all spending is on public goods rather than transfers.

Choice of institutions The choice of institutions depends on ex-ante political stability, which is fully captured by the resilience of the leader of the incumbent group, r . We can now state the following result, which is proved in the Appendix:

Proposition 1 *The choice of executive constraints depends on the probability that the incumbent group retains power as follows:*

$$\hat{\theta}(r) = \begin{cases} \frac{1-\alpha e}{\alpha(1-e)} & \text{if } Q(r) \leq \alpha e \\ 0 & \text{otherwise.} \end{cases}$$

Thus more resilient leaders are less likely to pick cohesive institutions.

The prediction in Proposition 1 is symmetric across the initial institutions in place at the beginning of the period. Thus, it predicts transitions into or out of cohesive institutions depending on the current value of leader resilience. This mirrors the reality in the data that constraints on the executive move in both directions.

Even though we have allowed for a continuous choice of θ , the incumbent always pushes the choice of institutions to one corner or another. The value $\frac{1-\alpha e}{\alpha(1-e)}$ represents the point at which it becomes optimal to spend on public goods, i.e., institutions are sufficiently cohesive. The executive constraints needed to achieve this are lower when public goods are more valuable (α is higher) or the incumbent group is larger (e is larger).

Although we have an infinite horizon, the trade-off comes down to comparing the effects of changing θ on the policy in the next period, factoring in the possibility of group turnover. A high probability of losing office leads incumbents to choose strong executive constraints. The choice is governed by a simple comparison of benefits and costs. The cost of strong constraints to the incumbent group are next period’s rents when it remains in office. The benefit is an assurance that

next period’s spending will be on public goods if the incumbent group is ousted. Since expected group turnover $Q(r)$ in our model depends on the leader’s individual resilience, this result ties the characteristics of leaders to the choice of political institutions; a more resilient leader is less likely to choose strong executive constraints.

Discussion of the model The model has several specific features to home in on how leader resilience affects the motive for political reform.

First, we have modeled political control as opportunities for grabbing a disproportionate share of government revenue. But the specific way of discriminating against the rest of society is not essential to the core argument. What we require is some policies on which there is a common agreement, while others have benefits which are particular to specific groups (as in Lizzeri and Persico, 2004). The latter could include non-economic policies, e.g., some kinds of regulations of rights (as in Lagunoff, 2001) or specific kinds of public spending over which preferences diverge. This would be particularly relevant if the model were extended to allow for group heterogeneity in preferences, creating a role for fractionalization and polarization.

Second, the turnover probability could be made endogenous by allowing the incumbent to choose whether to repress opposition groups.⁸ Shocks to repression costs would then provide another influence on political instability as in Acemoglu and Robinson (2006).

Third, the model does not allow for any means of disciplining incumbents beyond changing institutions. Thus, it rules out links between political turnover and incumbent policy choices. In a model with some form of accountability, incumbent groups could develop reputations which make policies more cohesive. Except in extreme cases, however, this would not fully replace the role of institutional constraints.

Fourth, a natural extension of the model would be to allow for costs of changing institutions. The “ink and paper” costs of changing a constitution are probably not significant. The appropriate foundations for costs beyond ink and paper are not self-evident. Perhaps constitutional reforms create stickiness by facilitating changes in informal institutions, changing inertial norms of behavior in the political system. Changes in norms might best be thought of as a further state variable, similar to what Persson and Tabellini (2009) call “democratic capital”. Institutional choices would then be conditioned on this state variable. More generally, sources of state dependence that imply costs of institutional change would make an incumbent group weigh these costs against the benefits of reform, which could create a status-quo bias. Practically, this would result in θ_{t+1} becoming a function of the institutions in place θ_t . Partly to reflect such concerns, we will allow for state dependence in our empirical approach below.

Fifth, and finally, as mentioned in the introduction, reforms are defensive and anticipate the possibility of a group losing power. However, they do not change the probability that a group remains in office. To introduce the latter is another natural extension of the approach and in Section 6 we take a step in this direction by modeling the openness of access to power such as a widening of the franchise. That section also presents empirical results, which suggest that – contrary to the reforms of executive constraints – this other aspect of political reform is not strongly correlated with our two measures of leader resilience.

4 From Theory to Data

To bring the model to the data requires measurement of key variables. In this section, we discuss how to measure these and the resulting summary statistics. We also discuss how to formulate an

⁸A previous version of the paper considered a two-period version with endogenous repression. Besley and Persson (2011a, Ch.7) includes a two-period model that also allows for the possibility of civil war.

econometric structure that reflects the predictions of the model.

4.1 Measurement

Political institutions Our core measure of cohesive political institutions is derived from the executive-constraints variable in the Polity IV data, "xconst". It is available for a large number of countries over a long period of time, essentially since becoming an independent state (or from the start of the data, in 1800). This variable takes on integer values between 1 and 7. As our core measure, we use a binary indicator $\theta_{i,t}$ which is equal to one if country i has a score which is greater than or equal to 5 on this 7 point scale in year t .

We use this cutoff for two reasons. First, plotting the empirical distribution of scores over countries and years, has a distribution with a local minimum at 4. Second, according to the Polity IV codebook, a value of 5 is the lowest at which there are "substantial limitations of executive power", where a "legislature or council often modifies or defeats executive proposals", or "sometimes refused funds to the executive", and "the accountability group makes important appointments to administrative posts" – see Marshall and Jaggers (2010, pp. 24-25). Using this classification, we have 171 reforms in an unbalanced panel of 167 countries with annual observations since 1875. This is the measure that was used to construct Figure 1. The robustness analysis to follow shows that we get similar results when marginally altering the cutoff for the binary indicator.

Leaders Since we do not observe turnover between groups in a large enough group of countries for a long enough time, we instead focus on leader turnover, i.e., exits of leaders from office. We use several data sources for this purpose. The core data set is Archigos (Goemans, Gleditsch and Chiozza, 2009) that documents which leaders are in office at which dates. We highlight a particular subset of leadership transitions, following the death or serious illness of the incumbent leader. Here, we exploit data from Besley et al (2011), who extend the sample of Jones and Olken (2005) with years before the second world war. The main biographical sources are the *Encyclopedia of Heads of States and Governments* (Lentz, 1994, 1999) and the *Encyclopedia Britannica*.

We also measure a number of other personal characteristics of leaders, including their education, occupation, social class, and their mode of entry in power. Education and occupation come from Besley and Reynal-Querol (2011). The sources of the social class and mode of entry variables are given in the Data Appendix.

Resilience In the empirical application, we measure leader resilience in two ways. The first is an *ex post* measure based on whether a leader survives to leave office only due to natural death (or serious illness). Since 1875, 217 leaders – out of a total of 2095 – left office in this way.⁹ The rest of the leaders leave office for other reasons, due to electoral defeats, coups, or assassinations. Since the leaders who die in office have much longer tenure than other leaders, we regard the ability to survive until a natural death as a fixed leader characteristic which proxies for resilience. For the purposes of our analysis it does not matter whether a leader who dies from natural causes in offices is resilient because he or she is deemed to be especially competent or because s/he has an effective means of maintaining office through a powerful personal network. Our first measure of resilience is thus a binary indicator in country i , $p_{i,t-1}$, which is equal to one if the leader that holds office at the beginning of year t is someone who will eventually die in office, and zero otherwise. This indicator is positively related to $r_{i,t-1}$ in the model. In the following, we refer to this measure as "personal resilience".

⁹For a full description of these specific leadership transitions see Besley et al (2011).

The second measure of leader resilience relies on circumstances of the leader’s tenure due to unforeseen events. Specifically, we use rely on recent natural disasters during the leader’s tenure in office. The underlying idea is that citizens’ crave political stability and continuity in the wake of such disasters, the so-called rally-round-the-flag effect. That citizens rally around leaders in times of national stress is a well-known idea in political science, discussed for example in Kinsella, Russett and Star (2012, page 120). While there is some debate about the basis of this effect – whether a deep-seated psychological response of citizens or rational-choice based need to maintain stability in tough times; the exact interpretation does not matter for our analysis. The key thing that we need for the approach to work is that there is a strong enough *empirical* relationship between the incidence of natural disasters and political stability. Our data on natural disasters measure comes from the EM-DAT data set. Specifically, we define a variable that adds together the number of such events in a given country and year.¹⁰ We believe that these events are material enough in all cases to have affected significant fractions of the population. Having created the number of events, we create a dummy variable which is equal to one if there is any disaster in a given country and year denoted as $f_{i,t}$. We will work with lagged values specifically $f_{i,t-1}$ and $f_{i,t-2}$ which we refer to as “rallying-around-the-flag resilience” or “flag resilience” for short. We postulate that these variables are positively related to $r_{i,t-1}$ in the model.

4.2 Summary statistics

Table 1 presents some summary statistics for the period 1875 to 2004. Six columns compare mean outcomes (by country-year) in the strong and weak executive constraints samples. We will also break it down according to whether leaders die from natural causes in office, our proxy for personal resilience.

Row (1) shows that among 13380 country-years for which we have leader data, around two thirds feature weak executive constraints. Row (2) shows that there are more personally resilient leaders in weak-executive constraints country-years. Rows (3) and (4) show that personally leaders on average suffer fewer natural disasters during their term in office. Moreover, row (5) shows that turnover is lower under weak executive constraints. As these differences indicate some unobserved characteristics across the two sub-samples, this is one reason (due to the possibility of state dependence) why we divide the sample according to the initial value of executive constraints throughout the empirical analysis.

A striking fact in row (6) is that countries with personally leaders have longer tenure, something which is particularly pronounced in countries with weak-executive constraints. Tenure is thirteen years on average for personally resilient leaders compared to eight years for personally non-resilient leaders. This strongly motivates using death in office from natural causes as a proxy for resilience. Row (7) shows that there is no marked difference between strong and weak executive constraints or between leaders who are personally resilient and those who are not in terms of the age at which leaders come to power. The longer tenure of leaders who die in office means that they will on average be older making it important to control for age and tenure when looking at whether the process of institutional change is different when a personally resilient leader is in power.

Rows (8) through (12) consider educational attainment. Although there is little difference between strong and weak executive constraints, it does look as if personally resilient leaders are on the whole less educated. In fact, this is the case regardless of educational category. This motivates why we present results below that control for the educational attainment of the leaders.

¹⁰Specifically, we add to together dummy variables denoting whether there was one of the following events in a given country-year: extreme temperature events, floods, slides, tidal-waves, droughts, earthquakes, storms, volcanic eruptions and wildfires.

Although leaders under weak executive constraints are more likely to have a military background; this varies systematically between leaders who do and don't die in office from natural causes (row (13)). Rows (14) through (18) suggest little in the way of occupational differentiation between leaders depending on whether or not they are personally resilient. As expected, row (19) shows that personally resilient leaders are more likely to be monarchs. Moreover, monarchs are more common with weak executive constraints.

Our next measures look at indicators of social class, which – following a common approach in sociology – is measured by the occupation of the leader's father. Specifically, we use a four-way classification to indicate the class of the leader, ranging from "underclass" to "upper class" in rows (20) through (23). These too show little difference across institutions and whether a leader is personally resilient.

Next, we look at the mode of entry into office. As row (24) shows, personally resilient leaders are less likely to have been elected than non-resilient ones. Row (25) shows that personally resilient leaders are more likely to be selected by hereditary succession. But there is no difference (row (26)), in terms of whether they came into power in a (post-) colonial transition. There also appears to be no difference in terms of their being selected through autocratic means, via some oligarchical group as a military junta (row 27)).

Finally, inspecting the country characteristics in rows (28)-(38), there is strong evidence that the history of executive constraints is correlated with contemporary constraints. However, this history does not have any marked correlation with the likelihood that a country has personally resilient leaders. As expected, strong executive constraint countries are richer (relative to the US) than their weak executive-constraint counterparts. But there is little difference in income depending on whether the leader personally resilient, at least under weak executive constraints. Finally, the distribution across geographic regions is reasonably similar across countries in terms of whether or not leaders are personally resilient.

4.3 Econometric specification

Referring to Proposition 1, we do not know how to empirically measure αe in the theory. However, we can postulate that this multiplicative variable has some distribution, with c.d.f. F . The specific timing comes from the theory – institutional transitions ($\theta_{i,t+1}$) take place in period t in response to ex-ante expected (group and leader) turnover (Q_t) in that period, which in turn depends on resilience, as determined by the type of leader and the type of circumstances (natural disaster or not) inherited from the previous period ($r_{i,t-1}$).

Suppose then that country i has a leader with resilience $r_{i,t-1}$ entering period t . Then, the model predicts a reduced-form relation, where the conditional probability (likelihood) of observing strong executive constraints in that country in the next period is given by:

$$P_{i,t} = \text{Prob} \left[\theta = \frac{1 - \alpha e}{\alpha(1 - e)} : r_{i,t-1} \right] = 1 - F(Q(r_{i,t-1})) .$$

Observe that this is decreasing in ξ , i.e., a group with a leader of higher resilience has a lower probability of introducing strong executive constraints. This suggests running a regression:

$$\theta_{i,t+1} = \alpha_i^\theta + \gamma_t^\theta + \tau r_{i,t-1} + \omega^\theta A_{i,t-1} + \varepsilon_{i,t,t} \quad (3)$$

where $\{\alpha_i^\theta, \gamma_t^\theta\}$ and country and year effects and the control vector $A_{i,t}$ contains other characteristics of the leader in office in country i at date t , or (time-varying) characteristics of country i . We expect $\tau < 0$, i.e. a resilient leader implies a negative effect on the reform probability.

This reduced form is made up from two “structural equations”:

$$P_{i,t} = 1 - F(Q_{i,t}) \text{ and } Q_{i,t} = Q(r_{i,t-1}) ,$$

where $Q(\cdot)$ is given by (1). In words, the probability of a reform towards strong executive constraints, $P_{i,t}$, is a function of the probability that the incumbent group is replaced; this, in turn, depends on the leader’s resilience at $t-1$. Thus, to estimate both equations we need separate characteristics of the leader or of circumstances that correlate with resilience and have no direct effect on reform.

Let $q_{i,t}$ be the probability that the leader in place l in country i at date t leaves office.¹¹ We then have the two-equation model given by

$$q_{i,t} = \alpha_i^q + \gamma_t^q + \lambda p_{i,t-1} + \kappa_1 f_{i,t-1} + \kappa_2 f_{i,t-2} + \omega^q A_{i,t-1} + \eta_{i,t} \quad (4)$$

$$\theta_{i,t+1} = \alpha_i^\theta + \gamma_t^\theta + \chi q_{i,t} + \omega^\theta A_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

where $\{\alpha_i^q, \gamma_t^q, \alpha_i^\theta, \gamma_t^\theta\}$ are country and year effects.¹² We will estimate this system to identify parameters λ , κ_1 , κ_2 and χ by instrumental variables with three instruments for turnover: whether the country had a leader with personal resilience, $p_{i,t-1}$, or flag resilience in any of the two past periods, $f_{i,t-1}$ and $f_{i,t-2}$.¹³ We expect $\lambda > 0$ and $\kappa_1 > 0$ and $\kappa_2 > 0$ in the turnover equation, and we expect $\chi > 0$ when in weak executive constraints. The exclusion restriction is thus that our proxies for resilience do not have any direct effect on institutional reform, an assumption that we will scrutinize in the next section.

When estimating the standard errors $\{\varepsilon_{i,t}, \eta_{i,t}\}$, we exploit two approaches. One is to cluster at the country level, allowing for arbitrary correlations over time. Alternatively, we cluster at the regional level (10 regions), allowing for arbitrary correlations over time and within regions.

5 Resilience and Executive Constraints

We begin this section by presenting our baseline regressions results on the relation between leader resilience and reforms of executive constraints. Then we discuss their robustness.

5.1 Baseline results

The baseline results are contained in Table 2. The table reports two sets of standard errors: in round parentheses are those that cluster at the country level, allowing for arbitrary correlations over time while in square brackets we cluster at the regional level (10 regions), allowing for arbitrary correlations over time and within regions.

The first three columns are for country-years under strong executive constraints. Here, we control only for year and country fixed effects as well as the log of the leader’s age at entry and the log of the leader’s tenure. These same variables are included in all the subsequent regressions.

The reduced-form result in Column (1) shows no significant correlation between personally resilient leaders and transitions from strong to weak executive constraints. However, having a

¹¹The sample of leaders comes from Besley and Reynal-Querol (2011). In years with multiple leaders in office, we focus on the leader who has been the longest in office. Thus, a leader who lasts only 2 or 3 months is not included.

¹²To diminish the collinearity of age and tenure, we measure a leader’s age only at his entry to power.

¹³While the IV-approach flows naturally from the theory, it is worth pointing out that it may not deliver unbiased results in the wake of heterogenous effects. The reason is analogous to the familiar LATE point, emphasized by Heckman (1990) and Angrist and Imbens (1994): the personal exits from office and the natural disasters used to identify our instrumental variables estimates induce a specific subset of changes in political instability.

natural disaster in the previous period does seem to increase the probability of a transition to low executive constraints. Column (2) indicates a significant correlation, negative as expected, between personal resilience and the probability of turnover. This corresponds to parameter λ in the first-stage equation (4) in our IV- approach. Likewise, having a recent natural disaster reduces the probability of turnover, i.e. $\kappa_1 < 0$ and $\kappa_2 < 0$. This is evidence of a robust rallying-around-the-flag effect in the data. However, our estimate of parameter χ in the second-stage equation (5) in Column (3) shows no significant correlation between turnover and a transition from strong to weak executive constraints.

Columns (4) through (6) look at the same issues for transitions from weak to strong executive constraints. Here, the reduced-form in Column (4), shows a precisely estimated negative correlation between personal resilience and the introduction of strong executive constraints. Likewise, rallying-around-the-flag resilience reduces the probability of a transition. With a personally resilient leader in place, the likelihood of such reform per year is 1 percentage point lower than with a non-resilient leader, while the effect of a natural disaster is around 1.5-2 percentage points. These are large effects, given the reform activity which took place over the period of our data. To see this, note that there were 88 reforms towards strong executive constraints in our 6,486 country-year observations from 1875 to 2004 – i.e., the unconditional probability of reform is about 0.013%. Our estimated coefficients are thus on the same order of magnitude as this unconditional probability.

The IV-estimates in Columns (5) and (6) unpack this reduced-form effect. Personal resilience raises expected turnover by a around percentage points per year, or by 40% of its average value (0.1 as reported in Row (2) of Table 1). As in column (2), flag resilience reduces turnover. In fact the results in columns (2) and (4) look quite qualitatively similar. The F-statistic on the excluded instruments is over 14, indicating that the instruments are not weak.

Column (6) shows that an increase in expected turnover significantly raises the probability of a reform that introduces strong executive constraints, in line with the theory. The estimated coefficient is quite precisely estimated. Since we have three instruments for one endogenous variable, we can also carry out an over-identification test of (two of) the instruments not being correlated with the residuals from the second-stage regression. The Sargan-Hansen statistic, with a p -value of 0.96, indicates that we are very far from rejecting this hypothesis.¹⁴

In all of the columns in Table 2, the results that we find are robust to either method of clustering; indeed they are almost identical. Hence, for the remainder of the paper, we report only standard errors which cluster at the country level.

Taken together, the results in Table 2 are consistent with a structural interpretation of the evidence in line with our model. A country with weak executive constraints which is ruled by a leader with greater resilience – due to personal characteristics or circumstance – is less likely to introduce strong executive constraints, an effect which is mediated through lower expected turnover.

5.2 Robustness

In this subsection, we explore the robustness of the baseline findings in Table 2, focusing exclusively on the case when we condition on initially having low executive constraints. We will first look at the sensitivity of the results to the exact choice of instrument. Then, we test whether the results are robust to personal characteristics of the leader, and to economic and political conditions. We also break the estimation sample into sub-periods, and change the definition of

¹⁴This statistic is given by NR^2 , where N is the number of observations and R^2 is computed by regressing the residuals in the second stage of the IV-specification on the excluded instruments. It is distributed as chi-2, with (since we have three instruments) two degrees of freedom.

the dependent variable, by varying the cutoff used to divide the sample into strong and weak executive constraints. The results from these robustness checks appear in Tables 3-6.

Choice of instruments Table 3 explores the robustness of our IV results by varying the choice of the instruments. In columns (1)-(3), we use only the personal resilience of the leader. The estimates are very similar to the corresponding specifications in columns (4)-(6) of Table 2. In column (4), we add the two flag-resilience variables to the second stage (and the first stage). Reassuringly, turnover remains positive and significant with a similar magnitude to that in column (3), as well as that in column (6) of Table 2. The flag-resilience variables themselves are not significant, which adds credence to our assumed exclusion restriction. In an analogous exercise, columns (5)-(7) use only the flag-resilience variables as instruments. Again, the estimates are similar to those in columns (4)-(6) in Table 2. Moreover, the magnitude of the turnover coefficient in column (7) is very similar to that in column (3). Finally in column (8), we add personal resilience to the second (and first) stage. This variable is insignificant and does not alter the estimated turnover coefficient. The fact that we obtain the same result on how turnover affects executive-constraints reform with very different instruments for resilience considerably raises the credibility of these estimates. We conclude from this table that our core result does not hinge on choosing a specific (set of) instrument(s).

Leader characteristics and income The validity of our instrumental-variable estimates hinges on the exclusion restriction that having greater leader resilience affects institutional reform *only* through expected turnover. This identifying assumption would be questionable if there were systematic changes in the characteristics of individuals who are selected as leaders following the death (or entry) of personally resilient leaders, if different leaders with different characteristics have different propensities to implement reform. Similarly, it would be problematic if natural disasters were to trigger large changes in the country's relative income with the resultant economic malaise making reforms towards high executive constraints less likely. Table 4 explores these issues.

Columns (1)-(3) of Table 4 focus on the personal resilience of the leader as an instrument, and adds leader characteristics as controls. Specifically, we include educational qualifications (five categories), occupational background (eight categories), and social class (four categories). The choice of these characteristics reflects data availability where we have been able to collect data for a long enough time period. Their means are given in Table 1. Re-estimating the specifications in columns (1)-(3) of Table 3 with these additional controls, we find reduced-form and IV-estimates of a similar magnitude.¹⁵

Columns (4)-(6) focus instead on the flag-resilience instruments for turnover, as measured by recent natural disasters. They show the specifications parallel to those in columns (5)-(7) in Table 3, while also controlling for the country's GDP level relative to the US (from the Maddison data set). The estimates are more or less identical to those in Table 3.

Finally, in columns (7)-(9), we include both the leader characteristics and the relative GDP together with the full set of instruments. In this case, the natural point of comparison is columns (4)-(6) of Table 2. The results from Table 2 remain robust, with the IV coefficient on turnover is even a little larger than before.

Political context Table 5 includes two additional sets of variables to check if our results are robust to political context and political history. In columns (1)-(3), we add categorical variables for the mode of entry of the current leader. Specifically, whether the leader was elected, inherited

¹⁵It is also worth noting that the sample size in this case is lower than in the baseline estimates due to data availability.

his/her position, was imposed on the country by a colonial power, or entered in some other way. If these are systematically different for resilient and non-resilient leaders, and different entry modes are associated with different likelihoods of reform, this would call the IV-estimates into question. However, the pattern of reduced-form and first-stage IV coefficients are very close to their values in earlier tables. The second-stage IV estimate of expected turnover on reform remains strongly significant and has a similar magnitude as in Table 2.

Resilient and non-resilient leaders could conceivably enter at different points in a country's political history. Specifically, suppose that personally resilient leaders are more likely to appear early on, when the country has little or no experience with strong executive constraints, and that such experience promotes future reforms into this regime. This channel – in the spirit of Persson and Tabellini's (2009) analysis of democratic capital – could violate the exclusion restriction and bias the 2nd-stage IV-estimate upwards. However, including the proportion of years with strong executive constraints in a country's history in columns (4)-(6), along with the mode of entry, suggests that this is not the case. Again, the estimates are almost identical to the baseline estimates in Table 2.

Estimation period Table 6 columns (1)-(6) display the results when we estimate the baseline specification, while splitting the sample before and after World War II. The smaller samples naturally tend to increase the standard errors. Nonetheless, we find that our core results hold up in both sub-samples. Indeed, the reduced-form, first-stage and second-stage IV results are very similar in both sub-samples to the baseline results in columns (4)-(6) in Table 2.

Measuring executive constraints Finally, columns (7)-(9) of Table 6 use a different definition of high executive constraints with a less demanding cutoff (a value of 4 rather than 5 on the 7-point scale for the "xconst" variable). Once again, the results from Table 2 remain robust. In particular, the estimated IV-coefficient on turnover in Column (9) is also precisely estimated and of similar magnitude to that in Table 2.

Summary Overall, the findings in Tables 3 through 6 suggest that the baseline results in Table 2 are robust. First they are consistent with a key part of the theoretical mechanism which conjectures that there is a negative effect of leader resilience on expected political turnover. Both of measures proxies for resilience – whether a leader survives to die in office or experiences natural disasters during their tenure – reduce turnover. Second, they allow us to use an instrumental variables approach where we find that expected turnover has an effect on the probability of transition to strong executive constraints. The effect seems robust to both dimensions of instrumentation that we use – using either a leader characteristic or country circumstance to think about sources of resilience. The robustness of the findings to a range of country and leader controls makes it more compelling to interpret the empirical results through the lens of our theoretical model. The effect is not only statistically robust, but quantitatively significant: when a resilient leader is not replaced after having died in office, the annual probability of reform towards strong executive constraints doubles.

6 Leader Resilience and Openness

Our theoretical approach is specific to institutional change in the form of executive constraints and we have therefore maintained a focus on this in the empirical analysis. A good deal of the political economics literature on reform to date, in particular Acemoglu and Robinson (2000,

2006), has focused on the determinants of franchise extension.¹⁶ In our framework, we can think about such an extension as a reform that makes access to power more open and contestable. In this section, we show that leader resilience does not have a clear-cut theoretical prediction for the reforms towards greater openness. Moreover, there is no distinct pattern in the data. Hence, in line with what we expect from the approach, it is specific to a particular dimension of institutional change.

Modeling openness We extend the previous model, allowing incumbents to choose the degree of openness for recruitment to office next period. This affects political stability as it decreases the chance that any particular group will hold onto power. We also add a cost of holding on to power when institutions are not fully open.

Specifically, suppose $\rho \in [0, 1]$ is a choice variable that affects openness, where $\rho = 1$ means complete openness (free and fair elections) and $\rho = 0$ complete closedness (e.g., leaders are only picked from a small, entrenched elite such as in monarchy). Let $\Gamma(r, \rho)$ denote the probability that a group whose leader has resilience r survives as the incumbent, and assume that Γ is increasing in r and that $\Gamma_\rho < 0$ and $\Gamma_{\rho\rho} < 0$, i.e. a more open system reduces the probability that an leader survives. Let $\bar{\Gamma}(\rho)$ be the expected survival value when a new leader is chosen at random. Keeping office recruitment closed, $\rho < 1$, has a cost – e.g., because it requires spending on security or repressing other groups to avoid the risk of a revolution or a coup. For simplicity, this cost is linear in ρ and given by $[1 - \rho]c$.

As before, a within-period political shock ν_t determines if the incumbent leader survives as the leader of his group. Before the realization of this shock, the ex ante (unconditional) probability that the incumbent *group* survives in power is given by

$$Q(r_{t-1}, \rho) = E \left\{ z(r_{t-1}, \nu_t) \Gamma(r_{t-1}, \rho) + [1 - z(r_{t-1}, \nu_t)] \bar{\Gamma}(\rho) \right\} .$$

The revised timing of the model is:

1. The polity starts period t with an an incumbent group I_t and its leader with resilience r_{t-1} , and inherited institutions, $\{\theta_t, \rho_t\}$, where θ_t binds for that period.
2. The incumbent leader chooses policy $\{g_t, s_t, b_t\}$ for the current period, and political institutions, $\{\theta_{t+1}, \rho_{t+1}\}$.
3. Nature determines period- t political stability shock ν_t . If the leader survives, then his resilience remains the same. If not, a fresh draw determines r_t .
4. Group I_t is replaced in power with probability $1 - \Gamma(r_t, \rho_{t+1})$. Each opposition group has an equal probability of taking over the executive, namely $\frac{(1 - \Gamma(r_t, \rho_{t+1}))e}{1 - e}$. If a new group takes power, the resilience of its leader is chosen at random.

Choice of openness We begin by studying the case when θ is fixed but the incumbent can choose the level of openness ρ_{t+1} . In this situation, we can look at how the resilience of the incumbent group's leader affects the degree of openness in the next period. The optimal choice of ρ solves:

$$\rho(r) = \arg \max \left\{ Q(r, \rho) V^I(\theta) + [1 - Q(r, \rho)] V^O(\theta) - c[1 - \rho] \right\}, \quad (6)$$

¹⁶In their framework, the fear of losing power in a revolution leads an incumbent elite to extend the franchise even though this may mean that the elite loses political power.

where $V^K(\theta)$ is the value of entering next period with group status $K = I, O$ and a given value of θ . There is a trade-off between staying in power in future against the costs of repression. The key observation is that $V^I(\theta) - V^O(\theta) > 0$ for all $\theta < \frac{1-\alpha e}{\alpha(1-e)}$, and that this gap is decreasing in θ . The first-order condition for openness, assuming an interior solution, is:

$$c = -Q_\rho(r, \rho) [V^I(\theta) - V^O(\theta)]. \quad (7)$$

How openness depends on shocks to the resilience of the incumbent group's leader is ambiguous and depends on how such shocks affect the *marginal* gain from greater openness. That is, it depends on the sign of $Q_{\rho r}$, which is *a priori* unclear. For example, if $Q_{\rho r} > 0$, then resilience and openness are complements, i.e. $d\rho/dr > 0$. So having a more resilient leader leaving office will tend to reduce openness. This makes sense since having a leader who is more likely to stay in power means that the incumbent group can reduce repression costs by making the political system more open.

This ambiguity in the effect of r on openness is consistent with existing theories of franchise extension which have tended to focus on shocks to repression costs – c in our model – to motivate increased openness. This, for example, is the approach taken to modeling franchise extension in Acemoglu and Robinson (2006). In our model, an increase in c would tend to increase openness unambiguously. The key point to take away from our analysis is that there is no clear-cut theoretical link between the resilience of leaders, in the sense that we have specified, and the decision to increase openness.

Evidence In Table 7, we re-estimate the core specifications from Table 2, but with a different dependent variable. Specifically, we replace the indicator for high executive constraints with three different indicators for open elections. We have defined reforms of electoral institutions by drawing on a variety of data sets. From Polity IV, we use two measures. One is designed to capture the extent to which the chief executive is elected through competitive multi-party elections – the "Executive recruitment" variable. Another is designed to capture whether executive recruitment takes place in a setting where no significant group or groups are regularly excluded from the political process (the "Political Competition" variable). As an alternative variable to capture open contests for power, we use an indicator of the breadth of the franchise from Przeworski (2009), which provides data on suffrage rules for 187 countries between 1919 and 2000. More details on these variables, including precise definitions, can be found in the Appendix.

The nine columns of Table 7 show reduced-form, first-stage and second-stage IV results for these three different measures. To test that our previous results do not capture simultaneous reforms of different dimensions of political institutions, we continue to condition on having weak executive constraints to begin with. As columns (2), (5) and (8) show, a robust first stage remains in all cases. However, looking at Columns (1), (4) and (7), we find no-reduced form correlation between increases in openness and having a resilient leader in office. When we estimate the second stage of the IV, we thus find no robust association between turnover and electoral openness using any of our three outcome measures.

In addition to the specifications reported here, we have tried a large number of alternatives, using the subcomponents of the Polity IV measures, different cutoffs to define open elections, and alternative data sets such as the one by Cheibub et al (2010).¹⁷ In no case, do we find a significant relation between resilient leaders and open elections.

¹⁷This variable is based on Przeworski et al (2000) and seeks to classify political regimes based on the notion that "for a regime to be democratic, both the executive office and the legislative body must be filled by elections". It is available between 1946 and 2008 for 199 countries.

This finding is important in dispelling the idea that we are capturing a generic “democratization effect” due to increases in turnover; there is no particular theoretical reason to expect such an effect and the data do not suggest it either. More generally, the findings here confirm the importance of specificity in studying political change beyond aggregate democracy measures. Most importantly for this paper, it gives credence to the notion that the mechanism behind political reform is the one suggested by our core theory.

7 Concluding Comments

Understanding the forces behind institutional change is a significant challenge in political economics. While the prevalence of strong executive constraints has increased over time, we are not aware of any previous research which develops and tests a specific hypothesis about the driver of this specific dimension of reform. From a theoretical perspective, leaders with a stronghold on power have much weaker motives to reform. Empirically, we find that such resilient leaders are less likely to adopt strong executive constraints, a finding which is robust to a number of different specifications and inclusion of a variety of controls. As we have seen, this effect is quantitatively important.

Our paper has two novel empirical aspects. First, we exploit data on death of leaders from natural causes in a different way than previous studies, such as Jones and Olken (2005). Indeed this calls into question the idea to view the death of a leader as a “natural experiment”. We think of a leader’s death in office as a prospective source of variation in leader resilience, rather than as a random “event”. However, as we have shown, this interpretation yields consistent empirical findings. The basic idea is that leaders who manage to stay on until the grim reaper forces them from power are different, in view of their much longer tenure. That does *not* imply that leader death does not create dislocation (for good or ill) as earlier researchers have argued. However, dying leaders may behave differently throughout their tenure, as a consequence of being more resilient. Whichever way one looks at it, leaders and their personal characteristics do matter for political and economic outcomes.

Second, we have tested and exploited the much conjectured “rally-round-the-flag effect”. We find that leaders who hold office when natural disasters hit are more likely to survive. This is an interesting finding in its own right. However, in the context of our paper it provides an alternative source of exogenous variation in leader resilience, which we can use to explore our proposed theoretical mechanism.

We have independently studied reforms of executive constraints and electoral institutions, but only found an effect of leader resilience on the former. However, an interesting idea for future research is to model explicitly the interplay between electoral openness and executive constraints. Our framework implies a complementarity between stronger executive constraints and greater openness, since openness increases the prospect of a leader leaving office, all else equal.¹⁸ This logic suggests a possible sequencing of institutional reforms, where shocks to expected turnover may initially lead to stronger executive constraints and then to franchise extension. It is interesting that England, the showcase in Acemoglu and Robinson (2000), introduced constraints on executive

¹⁸In terms of our model, a general approach would allow both institutional dimensions θ and ρ to be chosen. There are good reasons to expect a complementarity between stronger executive constraints and greater openness. This can be seen clearly in equations (6) and (7). Stronger executive constraints narrow $V^I(\theta) - V^O(\theta)$, the gap between the values of incumbency and opposition, and hence encourage greater openness, all else equal (since $Q_{\rho\rho} < 0$). Intuitively, as the incumbency-opposition gap diminishes, it becomes less worthwhile to incur the costs of maintaining a closed system of executive recruitment. In the limiting case of full cohesiveness, it is never worthwhile to reduce openness.

(royal) power – through reforms such as Magna Carta and the Glorious Revolution – long before the universal franchise.

Our paper has homed in on a specific aspect of institutional change, as a result of strategic and forward-looking behavior. We are not claiming that a model as simple as ours can capture the full range of complex narratives behind times of reform, as should be clear from the rich narrative of Spain after Franco that we developed above. However, the simple theory suggests an empirical regularity, which also appears in the data. Thus the theory helps us link together what would otherwise appear to be a range of isolated experiences. More generally, the paper emphasizes the need to look at different aspects of institutions rather than studying aggregate democracy scores. However, it is clear that much more needs to be done to explore the sequencing of reforms and complementarities between specific constellations of political institutions.

References

- [1] Acemoglu, Daron, Simon Johnson, James Robinson and Pierre Yared [2008], "Income and Democracy", *American Economic Review*, vol. 98, 808-842.
- [2] Acemoglu, Daron and James Robinson [2000], "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective", *Quarterly Journal of Economics*, vol. 115, 1167-1199.
- [3] Acemoglu, Daron and James Robinson [2006], *Economic Origins of Dictatorship and Democracy*, Cambridge, MA: Cambridge University Press.
- [4] Acemoglu, Daron, James Robinson, and Ragnar Torvik [2011], "Why Do Voters Dismantle Checks and Balances?", mimeo, MIT.
- [5] Aidt, Toke and Peter Jensen [2010], "Workers of the World, Unite! Franchise Extensions and the Threat of Revolution in Europe, 1820-1938", mimeo, Cambridge University.
- [6] Angrist, Joshua and Guido Imbens [1994], "Identification and Estimation of Local Average Treatment Effects", *Econometrica*, vol. 62, 467-475.
- [7] Barro, Robert [1999], "Determinants of Democracy", *Journal of Political Economy*, vol. 107, S158-183.
- [8] Besley, Timothy, José Montalvo, and Marta Reynal-Querol [2011], "Do Educated Leaders Matter?", *Economic Journal*, vol. 121, F205-227.
- [9] Besley, Timothy and Torsten Persson [2011a], *Pillars of Prosperity: The Political Economics of Development Clusters*, Princeton, NJ: Princeton University Press.
- [10] Besley, Timothy and Torsten Persson [2011b], "The Logic of Political Violence", *Quarterly Journal of Economics*, vol. 126, 1411-1445.
- [11] Besley, Timothy and Marta Reynal-Querol [2011], "Do Democracies Select More Educated Leaders?", *American Political Science Review*, vol. 105, 552-566.
- [12] Boix, Carles [1999], "Setting the Rules of the Game: The Choice of Electoral Systems in Advanced Democracies", *American Political Science Review*, vol. 93, 609-624.
- [13] Bruckner, Markus and Antonio Ciccone [2011], "Rain and the Democratic Window of Opportunity", *Econometrica*, vol. 79, 923-947.
- [14] Bueno de Mesquita, Bruce, Alisdair Smith, Randolph Siverson and James Morrow [2003], *The Logic of Political Survival*, Cambridge, MA: MIT Press.
- [15] Chamberlain, Gary [1980], "Analysis of Covariance with Qualitative Data", *Review of Economic Studies*, vol. 47, 225-238.
- [16] Cheibub, José, Jennifer Gandhi, and Raymond Vreeland [2010], "Democracy and Dictatorship Revisited", *Public Choice*, vol. 143, 67-101.
- [17] Congleton, Roger D. [2007], "From Royal to Parliamentary Rule Without Revolution: The Economics of Constitutional Exchange within Divided Government", *European Journal of Political Economy*, vol. 23, 261-284.

- [18] *Britannica Online Encyclopedia*, [2012], Academic Edition (<http://www.britannica.com/>).
- [19] Ferrer-i-Carbonell, Ada, and Paul Frijters [2004], "How Important is Methodology for the Estimates of the Determinants of Happiness?," *Economic Journal*, vol 114, 641–659.
- [20] Goemans, H.E, Kristian Gleditsch, and Giacomo Chiozza [2009], "Introducing Archigos: A Data Set of Political Leaders," *Journal of Peace Research*, vol. 46, 269-283.
- [21] Heckman James. J. [1990], "Varieties of Selection Bias," *American Economic Review*, Papers and Proceedings, vol. 80, 313-338.
- [22] Huntington, Samuel [1991], *Democratization in the Late Twentieth Century*, Norman, OK: University of Oklahoma Press.
- [23] Jones, Benjamin and Benjamin A. Olken [2005], "Do Leaders Matter? National Leadership and Growth Since World War II", *Quarterly Journal of Economics*, vol. 120, 835-864.
- [24] Jones, Benjamin and Benjamin A. Olken [2009], "Hit or Miss? The Effect of Assassinations on Institutions and War", *American Economic Journal Macroeconomics*, vol. 1, 55-87.
- [25] Kinsella, David, Bruce Russett and Harvey Starr, [2012], *World Politics: The Menu for Choice*, Wadsworth Publishing, 10th edition.
- [26] Lagunoff, Roger [2001], "A Theory of Constitutional Standards and Civil Liberty", *Review of Economic Studies*, vol. 68, 109-132.
- [27] Lentz, Harris M. [1994], *Heads of States and Governments: A Worldwide Encyclopedia of over 2,300 Leaders, 1945 through 1992*, Jefferson, NC: McFarland.
- [28] Lentz, Harris M. [1999], *Encyclopedia of Heads of States and Governments: 1900 through 1945*, Jefferson, NC: McFarland.
- [29] Linz, Juan [1990], "Transitions to Democracy", *The Washington Quarterly*, vol. 13, 143-164.
- [30] Linz, Juan and Alfred Stepan [1996], *Problems of Democratic Transition and Consolidation*, Baltimore, MD: Johns Hopkins University Press.
- [31] Lizzeri, Alessandro, and Nicola Persico [2004], "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's Age of Reform", *Quarterly Journal of Economics*, vol. 119, 707-765.
- [32] Ludwig, Arnold M. [2002], *King of the Mountain: The Nature of Political Leadership*, Lexington: University Press of Kentucky.
- [33] Marshall, Monty, Ted Gurr, and Keith Jagers [2010], "Polity IV Project. Polity Regime Characteristics and Transitions, 1800-2009. User's Manual," Center for Systemic Peace (<http://www.systemicpeace.org/inscr/p4manualv2009>).
- [34] Moore, Barrington, [1966], *Social Origins of Dictatorship and Democracy*, Boston, MA: Beacon Press.
- [35] Persson, Torsten and Guido Tabellini [2009], "Democratic Capital: The Nexus of Economic and Political Change", *American Economic Journal Macroeconomics*, vol. 1, 88-126.

- [36] Polity IV Country Reports [2010], Spain, Taiwan, and Nigeria (<http://www.systemicpeace.org/polity/polity06.htm>).
- [37] Przeworski, Adam [2009], "Conquered or Granted? A History of Suffrage Extensions", *British Journal of Political Science*, vol. 39, 291-232.
- [38] Przeworski, Adam, Michael Alvarez, José Cheibub and Fernando Limongi [2000], *Democracy and Development: Political Institutions and Well-Being in the World 1950-1900*, Cambridge, UK: Cambridge University Press.
- [39] Putnam, Robert [1993], *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton, NJ: Princeton University Press.
- [40] Rokkan, Stein [1970], *Citizens, Elections, Politics. Approaches to the Comparative Study of the Processes of Development*, New York, NY: MaKay.
- [41] Rosenfeld, Michael [1997], "Constitution Making, Identity Building, and Peaceful Transition to Democracy: Theoretical Reflections Inspired by the Spanish Example", *Cardozo Law Review*, vol. 19, 1891-1920.
- [42] Share, Donald [1987], "Transitions to Democracy and Transition through Transaction", *Comparative Political Studies*, vol. 19, 525-548.
- [43] Solsten, Eric and Sandra Meditz (eds.) [1988], *Spain: A Country Study*, Washington, DC: GPO for the Library of Congress.
- [44] Spilimbergo, Antonio [2009], "Democracy and Foreign Education", *American Economic Review*, vol. 99, 528-43.
- [45] Tullock, Gordon, [1987], *Autocracy*, Dordrecht: Martinus Nijhoff.
- [46] Wintrobe, Ronald, [1998], *The Political Economy of Dictatorship*, New York: Cambridge University Press.

Appendix

A Proof of Proposition 1

As a provisional step, it is useful to define the indirect utility from public and private goods for the incumbent elite and other groups:

$$v^K(\theta) = \alpha \hat{g}(\theta) + y + \beta^K(\theta)(T - \hat{g}(\theta)) \text{ for } K \in \{I, O\} .$$

where $\beta^I(\theta) = \left[\frac{1}{\theta + (1-\theta)e} \right]$ and $\beta^O(\theta) = \left[\frac{\theta}{\theta + (1-\theta)e} \right]$.

Let $V^K(\theta, r)$ be the stationary value of arriving in any period when institutions are θ and the leader has resilience r where $K = I$ denotes being the incumbent and $K = O$ denotes opposition. Now define:

$$W^I(\theta, r) = rV^I(\theta, r) + (1-r)E\{V^O(\theta, w)\}$$

and

$$W^O(\theta, r) = rV^O(\theta, r) + [1-r] \left(\frac{e}{1-e} E\{V^I(\theta, w)\} + \frac{1-2e}{1-e} E\{V^O(\theta, w)\} \right) .$$

To prove Proposition 1, we want to solve:

$$\hat{\theta}(r) = \arg \max_{\theta \in [0,1]} \{ \bar{z}(r) W^I(\theta, r) + [1 - \bar{z}(r)] E\{W^I(\theta, w)\} \} .$$

Observe that:

$$V^I(\theta, r) = v^I(\theta) + \delta \left[\bar{z}(r) W^I(\hat{\theta}(r), r) + 1 - \bar{z}(r) E\left\{ \left(W^I(\hat{\theta}(r), w) \right) \right\} \right]$$

and

$$V^O(\theta, r) = v^O(\theta) + \delta \left[\bar{z}(r) W^O(\hat{\theta}(r), r) + 1 - \bar{z}(r) E\left\{ \left(W^O(\hat{\theta}(r), z) \right) \right\} \right] .$$

Using the envelope theorem:

$$\frac{\partial \left[\bar{z}(r) W^I(\theta, r) + [1 - \bar{z}(r)] E\{W^I(\theta, w)\} \right]}{\partial \theta} = \begin{cases} 0 & \text{for } \theta \geq \frac{1-\alpha e}{\alpha(1-e)} \\ Q(r) v_\theta^I(\theta) + [1 - Q(r)] v_\theta^O(\theta) & \text{otherwise} . \end{cases}$$

Moreover, $Q(r) v_\theta^I(\theta) + [1 - Q(r)] v_\theta^O(\theta) < 0$ and $Q(r) v_{\theta\theta}^I(\theta) + [1 - Q(r)] v_{\theta\theta}^O(\theta) > 0$ for $e \leq Q(r)$, so we only need to compare $\theta = 0$ and $\theta = \frac{1-\alpha e}{\alpha(1-e)}$ in this case. Moreover, given the recursive structure, we have

$$\bar{z}(r) W^I(0, r) + [1 - \bar{z}(r)] E\{W^O(0, w)\} \geq \bar{z}(r) W^I\left(\frac{1-\alpha e}{\alpha(1-e)}, r\right) + [1 - \bar{z}(r)] E\left\{W^O\left(\frac{1-\alpha e}{\alpha(1-e)}, w\right)\right\}$$

as

$$\frac{TQ(r)}{e} \geq \alpha T .$$

Solving this condition, gives the inequality stated in Proposition 1. Suppose instead that $e > Q(r)$, then $Q(r) v_\theta^I(\theta) + [1 - Q(r)] v_\theta^O(\theta) > 0$. Moreover, this implies that $\alpha e > Q(r)$ so that

$$Q(r) v^I(\theta) + [1 - Q(r)] v^O(\theta) < \alpha T \text{ for all } \theta \in \left[0, \frac{1-\alpha e}{\alpha(1-e)} \right) .$$

Using the recursive structure, we get

$$\begin{aligned} & \bar{z}(r) W^I \left(\frac{1 - \alpha e}{\alpha(1 - e)}, r \right) + [1 - \bar{z}(r)] E \left\{ W^O \left(\frac{1 - \alpha e}{\alpha(1 - e)}, w \right) \right\} \\ & > \bar{z}(r) W^I(\theta, r) + [1 - \bar{z}(r)] E \{ W^O(\theta, w) \} \end{aligned}$$

for all $\theta \in \left[0, \frac{1 - \alpha e}{\alpha(1 - e)} \right)$. Thus, $\hat{\theta}(r) = \frac{1 - \alpha e}{\alpha(1 - e)}$, as required. ■

B Data sources and definitions

Leader Characteristics Education Graduate: A dummy that is equal to one if the leader has a graduate degree. Source: Besley and Reynal-Querol (2011)

Education College: A dummy that has value 1 if the leader has a college degree. Source: Besley and Reynal-Querol (2011)

Education High: A dummy that is equal to 1 if the leader has a high school level education (including a trade school or technical school). Source: Besley and Reynal-Querol (2011)

Education Elementary: A dummy that is equal to 1 if the leader left school after elementary school (or was privately tutored). Source: Besley and Reynal-Querol (2011)

Social Class: A variable that has value a value between 1 and 4 based on the father's job. The description of the 4 levels classification for the social status comes from Ludwig (2002). A value of 1 corresponds to Under-stratum (e.g., unable to keep job, bankrupt, imprisoned, enslaved, disabled, unsteady or seasonal employment, financially dependent on others, etc.). A value of 2 is a Lower-stratum (i.e., work for others without possessing special skills or professional training [e.g., peasants, laborers, seamstresses, blue collar workers, minor civil servants, etc.; work for self without many resources or employees [e.g., small farmer, vendor, small businessman, etc.]); A value of 3 is Middle-stratum ([i.e., special education, training, abilities required] (a) professionals, such as doctors, lawyers, scientists, bankers, business persons, teachers, ministers, and minor politicians, (b) professional creative artists (painters, musicians, writers, actors) (c) business persons or landowners with employees; A value of 4 corresponds to Upper-stratum ([i.e., established wealth, power or social status [e.g., the movers and shakers of society; aristocracy; landed gentry; moguls, upper crust, leaders of nations, major tribes, or political parties, etc.]) We look for leader's father job using the following sources: Lentz. (1994, 1999); Britannica Online Encyclopedia, Academic Edition (<http://www.britannica.com/>); The Statesman's Yearbook Online (<http://www.statesmansyearbook.com/about.html>); Barcelona Center for International Affairs' Political Leaders Biographies (CIDOB) (<http://www.cidob.org/en/documentation/>); and other online sources, as well as individual biographies from Lexis-Nexis.

Occupational dummy variables are from Besley and Reynal-Querol (2011)

Military: A dummy that is equal to 1 if the leader was in the military, before holding office.

Lawyer: A dummy that is equal to 1 if the leader was a Lawyer, before holding office.

Civil Servant: A dummy that is equal to 1 if the leader was a Civil Servant, before holding office.

Professor or Scientist: A dummy that is equal to 1 if the leader was a Professor or Scientist, before holding office.

Unskilled Worker: A dummy that is equal to 1 if the leader was an Unskilled Worker, before holding office.

Business: A dummy that is equal to 1 if the leader was in business immediately before holding office.

Monarch: A dummy that is equal to 1 if the leader is or has been part of the monarchy.

Mode of entry:

Elected: A dummy that is equal to one if the leader was elected to office in the first instance.

Hereditary: A dummy that is equal to one if the leader was selected by hereditary succession

Colonial: A dummy that is equal to one if the leader was colonial/transition selected

Other autocratic modes of entry: A dummy that is equal to one if the leader was selected/appointed by an oligarchy/junta, selected by constitutional succession or by in a military coup.

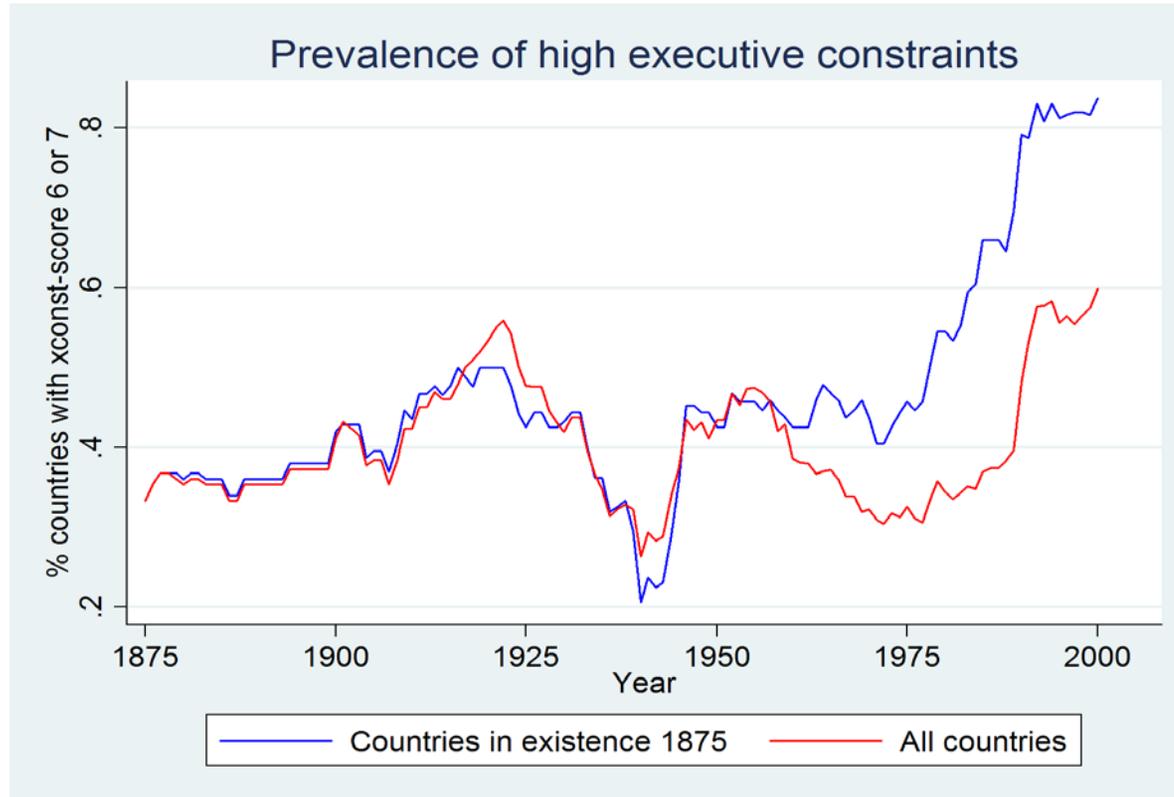
Sources: Lentz. (1994, 1999); Britannica Online Encyclopedia, Academic Edition (<http://www.britannica.com>); The Statesman's Yearbook Online (<http://www.statesmansyearbook.com/about.html>); Barcelona Center for International Affairs' Political Leaders Biographies (CIDOB) (<http://www.cidob.org/en/document>) and other online sources, as well as individual biographies from Lexis-Nexis.

Electoral Institutions To obtain a comparable sample across countries and time to the core results, we first look at two summary indexes in the Polity IV data for executive recruitment and political competition, called "exec" and "polcomp". The Executive Recruitment index has scores between 1 and 8. According to the Polity IV codebook, it is only for a score of 8 that the "chief executive (de facto head of government) is chosen through competitive elections matching two or more candidates from at least two major parties ... the electoral process is transparent and its outcomes are institutionally uncertain" – see Marshall and Jaggers (2010, pp. 64). We therefore define a baseline binary variable for enfranchised institutions, which is one if the "exec" score is equal to 8 and zero otherwise. Using this baseline variable, our panel has 154 reforms since 1875. But we also try different, less demanding cutoff values.

The Political Competition score is coded between 1 and 10. By the codebook, only a score of 10 captures "Relatively stable and enduring political groups regularly compete for political influence with little use of coercion. No significant or substantial groups, issues, or types of conventional political action are regularly excluded from the political process." – see Marshall and Jaggers (2010, pp. 85). Following this coding, we define an alternative baseline binary variable for enfranchised institutions, which is equal to one if the "polcomp" score is equal to 10 and zero otherwise. This way, we obtain 50 reforms since 1875. Again, we try alternative cutoff scores.

Since these alternative Polity IV variables do not perfectly capture extensions of the franchise, we also exploit data from other sources. Przeworski (2009) provides data on suffrage rules for 187 countries from 1919 until 2000, which relies on detailed regional information. A necessary condition for a franchise extension is that elections are held at least once and Przeworski (2009) dates the changes of suffrage rules by the time of the first election under the new rules (not when electoral law was passed). He maps the suffrage (for males) onto a seven-category scale, where a level of 1 means that the franchise permits only estate representation, while a level of 7 means that it excludes only individuals below some minimum age, possibly combined with a residence requirement. Based on these data, we construct a binary indicator which is equal to one when a country has reached level 7 of franchise extension and zero otherwise.

Figure 1
Worldwide Prevalence of Strong Executive Constraints, 1874-2004



Notes: The figure shows how the shares of countries in our data that have high executive constraints, according to the binary measure we define in Section 3, develop over time. The blue curve shows the prevalence for the 50 countries for which we have data from start to end, while the red curve shows the prevalence for all countries for which we have data in a given year.

Table 1: Summary Statistics

		Strong executive Constraints	Weak executive constraints	Weak executive constraints	Weak executive constraints	Strong executive constraints	Strong executive constraints
				Personally resilient leader	Personally non- resilient leader	Personally resilient leader	Personally non- resilient leader
(1)	Strong executive constraints	1 (5034)	0 (8346)	0 (1647)	0 (5099)	1 (512)	1 (4014)
(2)	Personally Resilient Leader	0.11 (4526)	0.24 (6746)	1 (1647)	0 (5099)	1 (512)	0 (4014)
(3)	Flag Resilient t-1	0.16 (5034)	0.10 (8346)	0.08 (1647)	0.14 (5099)	0.07 (512)	0.19 (4014)
(4)	Flag Resilient t-1	0.12 (5034)	0.09 (8346)	0.07 (1647)	0.12 (5099)	0.05 (512)	0.14 (4014)
(5)	Turnover	0.24 (5034)	0.09 (8346)	0.06 (1647)	0.14 (5099)	0.14 (512)	0.28 (4014)
Tenure and Age							
(6)	Tenure	4.18 (4490)	9.28 (6674)	13.07 (1579)	8.10 (5095)	5.55 (499)	4.01 (3991)
(7)	Age at entry	53.81 (4486)	45.15 (6671)	43.07 (1579)	45.79 (5092)	54.44 (499)	53.73 (3987)
Education							
(8)	Graduate education	0.39 (3963)	0.14 (6136)	0.11 (1507)	0.15 (4629)	0.33 (468)	0.40 (3495)
(9)	College education	0.39 (3963)	0.35 (6136)	0.25 (1507)	0.38 (4629)	0.29 (468)	0.41 (3495)

(10)	High-school education	0.10 (3963)	0.18 (6136)	0.16 (1507)	0.19 (4629)	0.08 (468)	0.11 (3495)
(11)	Elementary-school education	0.09 (3963)	0.23 (6136)	0.33 (1507)	0.20 (4629)	0.21 (468)	0.08 (3495)
(12)	Illiterate	0.01 (3963)	0.09 (6136)	0.15 (1507)	0.07 (4629)	0.07 (468)	0.01 (3495)
Occupation							
(13)	Military background	0.07 (4146)	0.34 (6251)	0.26 (1511)	0.36 (4740)	0.08 (480)	0.07 (3666)
(14)	Lawyer	0.29 (4146)	0.11 (6251)	0.04 (1511)	0.14 (4740)	0.30 (480)	0.29 (3666)
(15)	Professor/ scientist	0.13 (4146)	0.10 (6251)	0.09 (1511)	0.10 (4740)	0.1 (480)	0.13 (3666)
(16)	Business background	0.07 (4146)	0.02 (6251)	0.001 (1511)	0.03 (4740)	0.05 (480)	0.07 (3666)
(17)	Civil servant	0.10 (4146)	0.06 (6251)	0.03 (1511)	0.07 (4740)	0.08 (480)	0.10 (3666)
(18)	Unskilled	0.02 (4146)	0.02 (6251)	0.01 (1511)	0.02 (4740)	0.05 (480)	0.02 (3666)
(19)	Monarch	0.05 (4146)	0.21 (6251)	0.39 (1511)	0.15 (4740)	0.10 (480)	0.04 (3666)

Social Class							
(20)	Underclass	0.025 (3211)	0.05 (5011)	0.02 (1539)	0.06 (3472)	0.04 (460)	0.02 (2751)
(21)	Lower class	0.19 (3211)	0.25 (5011)	0.23 (1539)	0.26 (3472)	0.13 (460)	0.20 (2751)
(22)	Middle	0.47 (3211)	0.25 (5011)	0.18 (1539)	0.28 (3472)	0.48 (460)	0.47 (2751)
(23)	Upper class	0.306 (3211)	0.45 (5011)	0.57 (1539)	0.39 (3472)	0.34 (460)	0.30 (2751)
Mode of Leader Entry							
(24)	Elected	0.83 (3982)	0.25 (5682)	0.15 (1398)	0.29 (4244)	0.74 (453)	0.84 (3529)
(25)	Hereditary	0.04 (3982)	0.12 (5642)	0.28 (1398)	0.07 (4244)	0.10 (453)	0.04 (3529)
(26)	Colonial transition	0.04 (3982)	0.07 (5642)	0.05 (1398)	0.08 (4244)	0.10 (453)	0.03 (3529)
(27)	Autocratic entry	0.11 (3982)	0.34 (5642)	0.27 (1398)	0.36 (4244)	0.15 (453)	0.10 (3529)
Country Characteristics							
(28)	Past share of years in strong executive constraints	0.69 (5034)	0.09 (8346)	0.09 (1647)	0.10 (5099)	0.85 (512)	0.65 (4014)
(29)	Real PPP-adjusted GDP per capita relative to US	0.49 (3966)	0.21 (4786)	0.23 (1090)	0.20 (3627)	0.55 (376)	0.47 (3486)

(30)	Sub Saharan Africa	0.11 (5034)	0.17 (8346)	0.11 (1647)	0.24 (5099)	0.20 (512)	0.10 (4014)
(31)	Middle East	0.02 (5034)	0.10 (8346)	0.15 (1647)	0.10 (5099)	0.02 (512)	0.02 (4014)
(32)	North Africa	0.004 (5034)	0.04 (8346)	0.05 (1647)	0.04 (5099)	0.01 (512)	0.004 (4014)
(33)	Europe	0.45 (5034)	0.20 (8346)	0.31 (1647)	0.13 (5099)	0.29 (512)	0.47 (4014)
(34)	Central Asia	0 (5034)	0.03 (8346)	0.02 (1647)	0.03 (5099)	0 (512)	0 (4014)
(35)	East Asia and Pacific	0.14 (5034)	0.10 (8346)	0.19 (1647)	0.08 (5099)	0.16 (512)	0.14 (4014)
(36)	South Asia	0.03 (5034)	0.06 (8346)	0.11 (1647)	0.04 (5099)	0.04 (512)	0.03 (4014)
(37)	Latin America and Caribbean	0.16 (5034)	0.30 (8346)	0.08 (1647)	0.33 (5099)	0.15 (512)	0.18 (4014)
(38)	North America	0.06 (5034)	0 (8346)	0 (1647)	0 (5099)	0.11 (512)	0.05 (4014)

Note: See the Data Appendix for sources and definitions.

Table 2: Resilient leaders, Turnover and Institutional Reform
Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)
Executive constraints	High	High	High	Low	Low	Low
Dependent variable	Executive constraints	Turnover	Executive constraints	Executive constraints	Turnover	Executive constraints
Estimation method	OLS	IV 1st Stage	IV 2nd Stage	OLS	IV 1st Stage	IV 2nd Stage
Personally resilient leader	0.009 (0.006)[0.003]	-0.040* (0.022)[0.022]		-0.009* (0.005)[0.005]	-0.040*** (0.012)[0.012]	
Flag resilience (t-1)	0.012** (0.005)[0.005]	-0.100*** (0.019)[0.019]		-0.018*** (0.006)[0.007]	-0.080*** (0.013)[0.013]	
Flag resilience (t-2)	-0.005 (0.007)[0.006]	-0.007*** (0.02)[0.02]		-0.015** (0.007)[0.007]	-0.060*** (0.014)[0.014]	
Turnover			-0.060 (0.047)[0.048]			0.224*** (0.061)[0.07]
F-statistic on excluded instruments		9.33 (0.000)			14.13 (0.000)	
Sargan-Hansen statistic overidentification test			3.28 (0.194)			0.066 (0.968)
Number of leaders	1,127	1,127	1,127	759	759	759
Number of observations	4,346	4,346	4,346	6,486	6,486	6,486
R-squared	0.148	0.261		0.073	0.181	

Notes: The dependent variables are indicators for either strong executive constraints or turnover, as indicated. These are defined in the text of Section 4 and the Data Appendix. Standard errors clustered by country in parentheses, and clustered by region (10 regions) in square brackets. Asterisks refer to the former: *** p<0.01, ** p<0.05, * p<0.10. All regressions include log tenure of the leader, the age of the leader at entry, as well as fixed country and fixed year effects. The sample is for the period 1875-2004.

Table 3: Resilient leaders, Turnover and Institutional Reform under Low Executive Constraints
Checking the Instruments

Dependent variable	(1) Executive constraints	(2) Turnover	(3) Executive constraints	(4) Executive constraints	(5) Executive constraints	(6) Turnover	(7) Executive constraints	(8) Executive constraints
Estimation method	OLS	IV 1st Stage	IV 2nd Stage	IV 2nd Stage	OLS	IV 1st Stage	IV 2nd Stage	IV 2nd Stage
Personally Resilient Leader	-0.010** (0.005)	-0.040*** (0.012)						-0.001 (0.005)
Turnover			0.246* (0.126)	0.248* (0.13)			0.221*** (0.066)	0.220*** (0.066)
Flag resilience (t-1)				0.003 (0.012)	-0.018*** (0.006)	-0.080*** (0.013)		
Flag resilience (t-2)				0.001 (0.011)	-0.016** (0.007)	-0.060*** (0.014)		
F-test on excluded instruments		6.47 (0.012)				20.35 (0.000)		
Number of leaders	759	759	759	759	759	759	759	759
Number of observations	6,486	6,486	6,486	6,486	6,486	6,486	6,486	6,486
R-squared	0.069	0.172			0.072	0.180		

Notes: The dependent variables are indicators for either strong executive constraints or turnover, as indicated. These are defined in the text of Section 4 and the Data Appendix. Standard errors clustered by country in parentheses. Asterisks refer to: *** p<0.01, ** p<0.05, * p<0.10. All regressions also include log tenure of the leader, age of the leader at entry, as well as fixed country and fixed year effects. The sample is for the period 1875-2004.

Table 4: Resilient leaders, Turnover and Institutional Reform under Low Executive Constraints
Robustness to Leader Characteristics and Income

Dependent variable	(1) Executive constraints	(2) Turnover	(3) Executive constraints	(4) Executive constraints	(5) Turnover	(6) Executive constraints	(7) Executive constraints	(8) Turnover	(9) Executive constraints
Estimation method	OLS	IV 1st Stage	IV 2nd Stage	OLS	IV 1st Stage	IV 2nd Stage	OLS	IV 1st Stage	IV 2nd Stage
Personally resilient leader	-0.009*	-0.032**					-0.018*	-0.018	
	(0.005)	(0.013)					(0.010)	(0.017)	
Flag resilience (t-1)				-0.019***	-0.080***		-0.019**	-0.058***	
				(0.006)	(0.013)		(0.008)	(0.014)	
Flag resilience (t-2)				-0.016**	-0.070***		-0.012	-0.057***	
				(0.007)	(0.014)		(0.008)	(0.014)	
Turnover			0.282*			0.231***			0.293***
			(0.167)			(0.068)			(0.102)
Controls	Leader characteristics	Leader characteristics	Leader characteristics	Income	Income	Income	Leader characteristics + income	Leader characteristics + income	Leader characteristics + income
F-test on excluded instruments		4.81			20.20			8.28	
		(0.030)			(0.000)			(0.000)	
Number of leaders	359	359	359	505	505	505	270	270	270
Number of observations	4,472	4,472	4,472	4,568	4,568	4,568	3,390	3,390	3,390
R-squared	0.076	0.199		0.081	0.219	0.025	0.104	0.259	

Notes: The dependent variables are indicators for either strong executive constraints or turnover, as indicated. These are defined in the text of Section 4 and the Data appendix. Standard errors clustered by country in parentheses. Asterisks refer to: *** p<0.01, ** p<0.05, * p<0.10. In columns (1)-(3) and (7)-(9), education of the current leader is measured by five categories (post-graduate, college, high-school or corresponding, elementary school, no formal education), occupation in 8 categories (military, lawyer, professor-scientist, business, civil servant, unskilled, manual worker, other), and social class of father in 4 categories (upper/elite, middle, lower, under). Income in columns (4)-(9) is measured by the country's PPP adjusted GDP per capita relative to the US in the current year. All regressions also include log tenure of the leader, age of the leader at entry, as well as fixed country and fixed year effects. The sample is for the period 1875-2004.

Table 5: Resilient leaders, Turnover and Institutional Reform under Low Executive Constraints
Robustness to Political Context

Dependent variable	(1) Executive constraints	(2) Turnover	(3) Executive constraints	(4) Executive constraints	(5) Turnover	(6) Executive constraints
Estimation method	OLS	IV 1st Stage	IV 2nd Stage	OLS	IV 1st Stage	IV 2nd Stage
Personally resilient leader	-0.013** (0.007)	-0.024* (0.013)		-0.014** (0.007)	-0.025* (0.013)	
Flag resilience (t-1)	-0.019*** (0.006)	-0.080*** (0.013)		-0.018*** (0.006)	-0.080*** (0.013)	
Flag resilience (t-2)	-0.016** (0.007)	-0.060*** (0.014)		-0.016** (0.007)	-0.060*** (0.014)	
Turnover			0.254*** (0.070)			0.254*** (0.070)
Controls	Mode of entry	Mode of entry	Mode of entry	Mode of entry + past constraints	Mode of entry + past constraints	Mode of entry + past constraints
F-test on excluded instruments		12.79 (0.000)			12.57 (0.000)	
Number of leaders	576	576	576	576	576	576
Number of observations	5,401	5,401	5,401	5,401	5,401	5,401
R-squared	0.078	0.198		0.078	0.199	

Notes: The dependent variables are indicators for either strong executive constraints or turnover, as indicated. These are defined in the text of Section 4 and the Data appendix. Standard errors clustered by country in parentheses. Asterisks refer to: *** p<0.01, ** p<0.05, * p<0.10. Mode of entry in columns (1)-(6) refers to how the current leader entered office measured by four categories (elected, inherited, colonial transition, other autocratic modes of entry). Past constraints in columns (4)-(6) refers to the proportion of years in the past (since 1800 or independence), in which the country had High executive constraints. All regressions also include log tenure of the leader, age of the leader at entry, as well as fixed country and fixed year effects. The sample is for the period 1875-2004.

Table 6: Resilient leaders, Turnover and Institutional Reform under Low Executive Constraints
Robustness to Sample Period and Definition of High Executive Constraints

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample period	Pre WWII	Pre WWII	Pre WWII	Post WWII	Post WWII	Post WWII	1875-2004	1875-2004	1875-2004
Dependent variable	Executive constraints	Turnover	Executive constraints	Executive constraints	Turnover	Executive constraints	Executive constraints 4	Turnover	Executive constraints 4
Estimation method	OLS	IV1st stage	IV2nd stage	OLS	IV1st stage	IV2nd stage	OLS	IV1st stage	IV2nd Stage
Personally resilient leader	-0.012** (0.005)	-0.050*** (0.021)		-0.013 (0.009)	-0.043*** (0.016)		-0.008 (0.005)	-0.030*** (0.012)	
Flag resilience (t-1)	-0.009** (0.004)	-0.180* (0.110)		-0.018*** (0.006)	-0.080*** (0.012)		-0.021*** (0.007)	-0.080*** (0.013)	
Flag resilience (t-2)	-0.023** (0.011)	0.011 (0.14)		-0.016** (0.007)	-0.068*** (0.013)		-0.017** (0.008)	-0.066*** (0.014)	
Turnover			0.173* (0.098)			0.239*** (0.067)			0.255*** (0.071)
F-test on excluded instruments		5.69 (0.002)			13.46 (0.000)			14.43 (0.000)	
Number of leaders	362	362	362	392	392	392	721	721	721
Number of observations.	2,380	2,380	2,380	4,106	4,106	4,106	6,276	6,271	6,276
R-squared	0.079	0.142		0.097	0.234	0.060	0.079	0.180	

Notes: The dependent variables are indicators for either strong executive constraints or turnover, as indicated. These are defined in the text of Section 4 and the Data appendix. In columns (7)-(9), the boundary between strong and weak executive constraints is (weakly) greater than 4, rather than 5, on the 7-degree scale for "xconst". Standard errors clustered by country in parentheses. Asterisks refer to: *** p<0.01, ** p<0.05, * p<0.10. All regressions also include log tenure of the leader, age of the leader at entry, as well as fixed country and fixed year effects. Sample period varies, as indicated.

Table 7: Resilient leaders, Turnover and Electoral Reform under Low Executive Constraints

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variable	Exrec8	Exrec8	Exrec8	Polcomp10	Polcomp10	Polcomp10	Przeworski	Przeworski	Przeworski
Estimation method	OLS	IV 1st stage	IV 2nd stage	OLS	IV 1st stage	IV 2nd stage	OLS	IV 1st stage	IV 2nd stage
Personally resilient leader	-0.007	-0.039***		0.004	-0.038***		0.013	-0.038***	
	(0.015)	(0.011)		(0.014)	(0.011)		(0.038)	(0.015)	
Flag resilience (t-1)	-0.019	-0.083***		0.001	-0.08***		-0.012	-0.097***	
	(0.015)	(0.013)		(0.002)	(0.013)		(0.015)	(0.015)	
Flag resilience (t-2)	-0.015	-0.067***		0.001	-0.067***		-0.007	-0.079***	
	(0.014)	(0.014)		(0.002)	(0.014)		(0.015)	(0.016)	
Turnover			0.219			-0.027			0.074
			(0.157)			(0.050)			(0.156)
F-test on excluded instruments		14.07			14.03			16.87	
		(0.000)			(0.000)			(0.000)	
Number of leaders	734	734	734	759	759	759	724	724	724
Number of observations	6,425	6,425	6,425	6,486	6,486	6,486	5,403	5,403	5,403
R-squared	0.406	0.182	0.361	0.407	0.142	0.403	0.742	0.129	0.739

Notes: The dependent variables are alternative indicators for open elections, defined in the text of Section 6 and the Data Appendix. Standard errors clustered by country in parentheses. Asterisks refer to: *** p<0.01, ** p<0.05, * p<0.10. All regressions also include log tenure of the leader, age of the leader at entry, as well as fixed country and fixed year effects. The sample is for the period 1875-2004.