A Theory of Competitive Authoritarian Institutitons and Democratic Transition

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Abstract

This paper develops a model to study the effects of electoral competition in nondemocratic regimes. In this model, an authoritarian government can introduce a system of fraudulent elections anticipating a democratic transition. If a government allows this sort of competition, it will undertake some investments, a portion of which are sunk costs, in setting up the organizational capacity to mobilize voters. This organization is complementary to the institutions of democracy, hence, once a reform has occurred, the authoritarian elite is more willing to tolerate democracy in the future. Comparative statics suggests that when elections under a dictatorship are more competitive, democracy is more likely. This result is investigated empirically using a panel of countries from 1972 to 2002. The evidence shows that, controlling for time invariant differences as well as global and regional trends, an increase in the competitiveness of the electoral system in a dictatorship increases the probability of a transition to democracy in the following period. This effect is robust and consistent with the theory.

1   Introduction

The last quarter of the twentieth century was a period of political liberalization across the world. This transformation included not only an important number of political systems that transitioned from nondemocratic to democratic governments, but also, minor liberalizations in countries that did not become fully democratic (Huntington 1991: 14-15). For example, the proportion of regimes having an elected legislature but widely considered as nondemocratic went from 58 percent in 1975 to more than 80 percent in 2002 (Keefer 2007). Similarly, the proportion of nondemocratic regimes with more than one autonomous party in the legislature rose from 20 percent in 1972 to 63 percent in 1996 (Gandhi and Przeworski 2006). Hence, a salient empirical regularity resulting from this global trend is the proliferation of regimes that combine seemingly democratic institutions with elements of authoritarianism.[1]

An important question is how these reforms, which have taken place in nondemocratic societies, affect the likelihood of future regime change and democratization. Recent research on comparative politics suggests that changes in political institutions during dictatorship ought to have significant effects on the political development of such regimes. In particular, the introduction of institutions promoting the participation and representation of opposition sectors should negatively affect a transition toward democracy (Magaloni 2006; Gandhi and Przeworski 2007; Boix and Svolik 2008). In this view, an autocratic government can credibly commit to future policy concessions and redistribution by allowing legislatures and some degree of electoral competition. Since these policy and material concessions are sufficient to maintain or co-opt a ruling coalition, a liberalization should enhance the political survival of a dictatorship, making democracy less likely.[2]

However, the empirical evidence on the stabilizing effect of liberalization is inconclusive. The idea that seemingly democratic institutions promote the survival of dictatorships seems to contradict a number of studies showing that different types of dictatorships have different propensities for survival and for democratization. On one hand, during the post-war period,

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[1]The emergence and proliferation of this type of regimes is documented by Carothers (2002), Diamond (2002), Gandhi (2008:Ch 1), Hadenious and Teorell (2007), Huntington (1991), Levitsky and Way (2002), Ottaway (2003) and Schedler (2002,2006a,2006b) among others.

[2]The idea that some political institutions during dictatorship can be used to co-opt the opposition is also suggested in the early literature on authoritarian regimes (e.g., Linz 1973, 1975, O'Donnell 1973 and Hermet, Rose, and Rouquié 1978).

legislatures and party competition do not seem to affect the tenure of dictators (Gandhi 2008:175-177), or if they do, they have a *negative* effect on the lifespan of the regime (Hadenious and Teorell 2007:151). Second, cross-sectional analyses for the period 1972-2002 indicate that autocratic governments without a single dominant party are more likely than other nondemocratic regimes to become democracies (Hadenious and Teorell 2007; Brownlee 2009). Lastly, recent research focusing on the effect of elections on regime change finds evidence consistent with the theory that elections during dictatorship may promote democratization (Lindberg 2006, 2007; Howard and Roessler 2006).

In this paper, I argue that the reason why we fail to observe a positive effect of liberalizations on regime stability is because the theories predicting such an effect are seriously incomplete. These theories fail to recognize that any ruling elite would like to preserve its interest across time not only under dictatorship but also under democracy. Thus, if some of the actions taken during dictatorship influence the prospects of democracy and a transition is a possibility, a liberalization may have the opposite effect over regime change. This consideration allows for a different rationale for the incidence of liberalizations under authoritarian rule and accounts for the recent increase in the number of democracies around the world.

An autocratic government facing an organized opposition may attempt to block political change by force. Democracy will emerge in this context when the costs of repression are high relative to the costs of having a democratic system. In cases in which repression is costly such that democracy is preferred, the ruling elite would want to preserve their power by successfully contesting elections. If electoral competition during dictatorship reduces the potential costs of democracy in the future, a liberalization can be a preventive measure taken by an autocratic regime anticipating a democratization. Thus, an autocratic elite may use institutional reforms not only to co-opt challengers but also to preserve some form of power in an eventual democracy.

Even if a liberalization is introduced to co-opt an opposition movement today, the actions taken as a response to the new political environment may alter the incentives to tolerate democracy tomorrow. For example, some organizations created during a liberalization persist and are valuable assets in a democracy. If the creation of this organizational capacity is associated with irreversible investments, the incentives to repress or democratize after a liberalization are thereby altered. Thus, a liberalization that is accompanied by

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some degree of electoral competition can alter the willingness to either introduce or block democracy in the future.

To illustrate these ideas, I develop a simple dynamic model that combines elements of the probabilistic voting model introduced by Lindbeck and Weibull (1987) with elements of the democratization model pioneered by Acemoglu and Robinson (2000, 2001). In this model, an authoritarian government can introduce a system of fraudulent elections anticipating a democratic opposition in the future. If this form of competition is allowed, the government will undertake some investments, a portion of which are sunk costs, in setting up the organizational capacity to mobilize voters. In periods in which democracy is demanded, an authoritarian government can repress the opposition or it can democratize. In the latter case, this government will try to compete in free and fair elections. This simple set up allows us to capture the mechanism by which the introduction of electoral competition during dictatorship alters the intertemporal incentives to oppose or accept a regime change.

The model shows how under certain circumstances, the introduction of electoral competition during dictatorship induces history dependence in the sense that the decision to allow or block democracy is influenced by past actions. Specifically, under certain circumstances, a democratic transition occurs only if the authoritarian regime was liberalized in the past. The intuition for this result is straightforward. Since some of the organizations created during a liberalization are complementary to the institutions of democracy, a ruling elite in a liberalized dictatorship is more willing to tolerate a democratic system. This means that in some cases, democratization is more likely in a liberalized dictatorship than in a closed regime. This prediction contrasts with current interpretations of political institutions under dictatorship. As mentioned, these interpretations focus on the stabilizing effects of liberalization without considering the dynamics of electoral competition and regime change.

In addition to showing precisely how different political arrangements in a nondemocracy affect the likelihood of future regime change and democratization, the model offers a number of comparative static results. One that is particularly noteworthy is the relationship between the degree of political competitiveness in a liberalized dictatorship and the likelihood of democracy. In cases in which elections in a dictatorship are more competitive, a liberalization of this regime is more likely to influence the decision to democratize in the future. This is the case because the differential value between a closed and a liberalized

dictatorship increases the more competitive elections are. Thus, the "lock-in" effect of having a liberalized dictatorship as opposed to a fully authoritarian regime is greater for cases in which elections under dictatorship are more fair and competitive. Consequently, the competitiveness of the electoral system conditions the effect of liberalizations on regime change.

The rest of the paper investigates empirically the effects of political liberalization under dictatorship. This analysis focuses on the conditions under which electoral competition under dictatorship influences the likelihood of democratization and regime change. I explore these conditions using panel data from a cross-section of nondemocratic regimes during the period 1972-2008.

My empirical strategy is to exploit the within-country variation in the data, controlling for time-constant unobserved effects. This strategy is particularly useful to eliminate a potential source of omitted-variable bias in an econometric model of transitions and institutional characteristics. The econometric results shows that, controlling for these country-specific effects, an increase in the competitiveness of the electoral system in a dictatorship has a positive and significant effect on the probability of a transition to democracy in the following period. This means that reforms allowing electoral competition and representation in nondemocratic regimes have a *positive* effect on the likelihood of democratization. This result is consistent with the motivating theory and robust across samples, regime classifications and model specifications.

Even if within-country comparisons are an important improvement over the sectional analyses prevalent in the literature, the estimates reported may not represent the causal of political competitiveness on democratic transitions. The presence of time-varying omitted variables affecting the likelihood of transition and correlated with the main explanatory variable cannot be ruled out. Nevertheless, the conditional correlations uncovered are robust to global and region-specific time trends in democracy and to some of the time-varying covariates explored in the literature.

In addition to the works cited above, this paper is related to a number of formal models of nondemocratic politics and democratization such as Feng and Zak (1999), Rosendorff (2001), Conley and Timimi (2001) and Lizzeri and Persico (2004). Somewhat closer to the model presented, is that of Llavador and Oxoby (2005). These authors emphasize the role of elite competition over economic interests as a major factor explaining the extension of voting

rights in nineteenth century Europe. Although elite competition is an important element in the argument, the main contribution is to emphasize how some of the organizations resulting from this competition influence the intertemporal incentives to democratize. To the best of my knowledge, no previous study has formalized the role of organizations and irreversible investments in a context of democratization.

On a broader level, this paper also relates to a large literature in political science studying the dynamics of authoritarian politics and democratization (see, e.g., Huntington and Moore 1970; Rustow 1970; O'Donnell 1973; Linz and Stepan 1996). Some of the arguments proposed in this literature are consistent with the idea that some degree of electoral competition may precede a full democratization. For instance, inspired by the political histories of England and Sweden, Dahl (1971) argues that the path most likely to produce a stable transition toward democracy is one in which:

> ...the rules, the practices, and the culture of competitive politics developed first among a small elite, and the critical transition from nonparty politics to party competition also occurred initially within the restricted group. (pp. 36)

Similarly, case studies and cross national analyses about political transitions in more recent years suggest that democratization is less resisted in countries with legacies of political competition (see, e.g., Collier and Collier 1991; Remmer 1989; Mainwaring 1999; Mahoney 2001). For example, explaining the domestic conditions that conditioned the democratization of some African countries in the early 1990s, Bratton and van de Walle (1997) argue that

> Getting democracy is easier from a regime in which competition is encourage and the main challenge is to broaden participation; getting to democracy is much more difficult from a regime that has no tradition of political competition...(pp. 273)

Since these studies seldom explain how competitive politics or electoral competition alter the incentives in a way that is conducive to democracy, this paper complements these studies by providing explicit micro-foundations and a mechanism explaining how some of these institutional legacies affect the prospects of democratization.

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The paper proceeds as follows. Section 2 presents a simple dynamic model formalizing the main theoretical contribution. Section 3 presents the econometric model, the cross-section of countries used in the empirical analysis, and the econometric results. Section 4 offers some conclusions, and Section 5 (the Appendix) presents all the proofs from Section 2.

2 The Model

In this section I formalize the main argument in a dynamic model of political competition. The model features two groups competing for power under different political regimes. The initial regime is a dictatorship controlled by one of these groups. The incumbent group in this regime enjoys a monopoly of violence so that any opposition can be met with repression. As an alternative to repression, the dictatorship can liberalize the regime and allow competition. If the regime is liberalized, these groups will invest some resources in the establishment of organizations that are specific to electoral competition. Given that some of these investments are irreversible, any liberalization during dictatorship will alter the incentives to introduce or block democracy in the future. This framework provides some useful comparative statics results about the exact conditions under which the liberalization of a nondemocratic regime will influence the probability of a democratic transition in the future.

2.1 The Environment

Consider an infinite-horizon model of political competition between two groups, A and B. The competition between these groups is Downsian in the sense that they do not have policy preferences and only care about holding office. The economy consists only of the production of a natural resource good which creates some rents labeled R_t. All rents are collected by the government, thus the incumbent group at time t enjoys rents in the amount R_t from holding power. For simplicity, suppose $R_t = R$ so the production of natural resources is constant across time.

Voters are modeled as two groups, the elite superscripted E and the citizens (or poor) superscripted P, with a continuum of individuals within each group. Let $\mathcal{E}$ and $\mathcal{P}$ denote these two sets of voters, respectively. The mass of voters is normalized to unity, and the

share of total voters in each group is given by λ^E and λ^P. These groups are such that $\lambda^E < \frac{1}{2} < \lambda^P$ so the voters in $\mathcal{E}$ are a minority in the population.

Each generation of voters is alive for only one period. As in the standard probabilistic voting model of Lindbeck and Weibull (1987), voter's preferences consist of two components: economic and ideological. All voters within each group share the same economic preferences but they differ in their ideological support for a regime ruled by any given party. Formally, the utility of a representative voter i in group j when A is in power during a generic time period t is:

$$U_i(q, x_A) = u_{j(i)}(q) + f(|x_A - x_i|) + \xi_t, \tag{1}$$

where $u_{j(i)}$ is an indirect utility function, $j(i)$ means that individual i is a voter in group $j = \mathcal{E}, \mathcal{P}$ and $q \in Q \subset \mathbb{R}^{\mathbb{K}}$ is a vector of economic policies where $K \geq 1$. The function $u_{j(i)}$ is strictly concave and differentiable. The term $f(.)$ represents the utility that individuals derive from intrinsic characteristics of A and B. This affinity between the citizens and the groups competing can be explained in terms of a partisan, ethic or religious affiliation. The function f is monotone decreasing, thus x_A represents the ideological bliss point of A, and x_i is the ideological bliss point of individual i. Lastly, ξ_t represents the average (relative) popularity of A in the population at time t.

In each period, the competition between A and B is conditioned by the political regime. The society starts in a dictatorship ruled by A. In this regime, both B and the voters are excluded from the political process, so there is no competition. This status quo is not stable since the voters can organize and demand democracy. Following Acemoglu and Robinson (2001, 2006), assume that the mobilization capacity of the voters is stochastic and fluctuates over time. Explicitly, in every period in which the regime is not democratic, the voters organize, posing a credible threat to the existing regime with probability p. Periods in which the citizens organize are labeled as "high threat" periods. A popular mobilization may not lead to a democratization since the group enjoying the monopoly of violence can employ repression and stop the movement. If repression is used, it is always a successful strategy, and the group repressing pays a deterministic cost $\kappa > 0$. For simplicity, suppose that only A can repress and that the capacity to do so is not dependent upon A holding office.[3]

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[3]This can be interpreted as a case in which A is a military group or the case in which the military is a perfect agent of group A. An alternative specification is to assume some form of "institutionalized"

To analyze how different levels of competition in a dictatorship influence the incentives to repress or to democratize, I consider an additional political regime. In this regime, elections are introduced, and B is allowed to compete for the popular vote. The main difference between this system and a democracy is that, in the former, the incumbent can manipulate the outcome of the election. In this process, the regime gives less electoral weight to groups that are expected to have low electoral support for the incumbent group. This political regime based on lopsided elections is called "competitive authoritarian".

The next subsection explains in detail the following: the economic mechanism that explains why competitive authoritarian institutions influence the willingness to introduce democracy, a rationale for why a dictatorial regime may introduce such institutions, and the probability of victory for each group in each regime

2.2 Regimes and Electoral Competition

The political regime in any period t is treated as a state variable denoted s_t. This variable can take three values: dictatorship (M), competitive authoritarian (C), and democracy (D). A dictatorship of A is modeled in a simple way by assuming that B is banned from the political process. In such a regime, the government is not accountable to the voter population so there are no elections. In a competitive authoritarian and in a democratic regime, voters participate, elections are held and the winner captures all rents from the natural resource and becomes the next period incumbent.

The introduction of electoral competition is modeled as a process analogous to the adoption of a technology. As any standard production function, this electoral technology is associated with some stochastic costs, labeled θ, part of which are sunk investment costs. This means that that once these costs have been expended, they need not to be repeated and nor can they be recovered. These costs represent the resources necessary to develop some organizations that are specific to electoral competition. For example, θ could represent the costs of setting up a clientelistic network or establishing a party ideology in the population.[4] The irreversibility of θ, or at least a part of θ, is important for the

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repression so only the group in power can repress. In this case the military acts like a perfect agent of the regime. This alternative would complicate the analysis without changing any of the substantive results.

[4]These organization are just *some* of the organizations inherent to any electoral competition. For instance, to guarantee the fairness of the election, the introduction of competition may require the creation of an independent electoral entity. The resources invested in this organization are not the ones highlighted

argument since the organizations associated with θ are complementary to the institutional framework of a democracy. This means that once these costs have been incurred by A, this group will be less likely to repress and more willing to tolerate democracy in the future.

The level of θ depends on how stiff the electoral environment is. In particular, suppose that in periods in which the citizens are organized, political competition is more intense relative to periods in which they are not. Let θ^l represent the level of party formation costs involved in a low threat period, and θ^h the costs for a high threat period. These costs are such that $0 \leq \theta^l < \theta^h$ so the introduction of electoral competition in periods in which citizens solve their collective action dilemma and organize are associated with higher investments.

In any regime in which elections are held, A and B can credibly commit to any economic policy, but they cannot make credible commitments regarding their ideological position. Then, a voter i type $j(i)$ will vote for A when

$$u_{j(i)}(q_A) + F(x_i) + \xi_t > u_{j(i)}(q_B), \tag{2}$$

where q_A and q_B are the policy platforms offered by A and B, and

$$F(x_i) \equiv f(|x_A - x_i|) - f(|x_B - x_i|).$$

Following Lindbeck and Weibull (1987), Dixit and Londregan (1995, 1996) and Persson and Tabellini (2000), voter turnout is modelled as a probabilistic process. In particular, $F(x_i)$ is an iid random variable uniformly distributed over I_i where

$$I_i = \begin{cases} [-\frac{1}{2\phi}, \frac{1}{2\phi}] \text{ for all } i \in \mathcal{E} \\ [-\frac{\mu}{\phi}, \frac{1-\mu}{\phi}] \text{ for all } i \in \mathcal{P}. \end{cases}$$

The ideological distribution in the population is such that $\mu \in (\frac{1}{2}, 1]$ so that a fraction μ of the citizens have a bias against a regime controlled by group A. To capture aggregate uncertainty during elections assume that ξ_t is a random variable characterized by a uniform distribution with support $[-\frac{1}{2\psi}, \frac{1}{2\psi}]$. Hence, conditional on the realization of ξ_t, and given the distributional assumptions, the fraction of elite voters supporting party A is

$$\int_{-\Delta u_E - \xi_t}^{1/2\phi} \phi di = \frac{1}{2} + \phi \left[u_E(q_A) - u_E(q_B) + \xi_t \right], \tag{3}$$

in the model since a dictatorship would not want to invest in such entity (it would lower their payoffs in a competitive authoritarian regime).

where $\Delta u_E \equiv u_E(q_A) - u_E(q_B)$. Similarly, the fraction of poor voters supporting A is given by

$$\int_{-\Delta u_P - \xi_t}^{(1-\mu)/\phi} \phi \, di = 1 - \mu + \phi \left[u_P(q_A) - u_P(q_B) + \xi_t \right] \tag{4}$$

where $\Delta u_P \equiv u_P(q_A) - u_P(q_B)$.

As mentioned, an incumbent group in a competitive authoritarian regime can rig the outcome of elections. Naturally, a rational incumbent in this regime would like to give less importance to the votes of groups favoring the opposition. This process is captured in a reduced-form way assuming that the incumbent can influence directly the proportion of supporters within each group. Specifically, an incumbent in a competitive authoritarian regime can set a variable γ such that the effective population weights during elections are $\tilde{\lambda}^E = \lambda^E + \gamma$ and $\tilde{\lambda}^P = \lambda^P - \gamma$. This variable can take two values, $-\underline{\gamma}$ and $\overline{\gamma}$, where $\underline{\gamma} \leq \lambda^E$ and $\overline{\gamma} \leq \lambda^P$.[5] The parameter $\overline{\gamma}$ is interpreted as a proxy of how much power A has vis-à-vis the opposition group. For cases in which $\overline{\gamma}$ is high, an incumbency of A will have more power to manipulate the electoral process relative to cases in which $\overline{\gamma}$ is low.

Then, assuming a majoritarian rule and conditioning on the decision γ, party $A's$ probability of winning in any period of a competitive authoritarian regime is simply[6]

$$\Pi^C(q_A, q_B | \gamma) = \Pr \left\{ \tilde{\lambda}^E \frac{1}{2} + \tilde{\lambda}^P (1 - \mu) + \phi \sum_{j \in \{P,E\}} \tilde{\lambda}^j (\Delta u_j + \xi_t) > \frac{1}{2} \right\}. \tag{5}$$

In a democracy the regime cannot manipulate the electoral process, so we have the standard probabilistic model of political competition. Given that in a democracy we have the same two parties competing, the number of supporters from each group in a democracy is given by (3) and (4). The corresponding probability for A in a democratic regime is given by

$$\Pi^D(q_A, q_B) = \Pr \left\{ \lambda^E \frac{1}{2} + \lambda^P (1 - \mu) + \phi \sum_{j \in \{P,E\}} \lambda^j (\Delta u_j + \xi_t) > \frac{1}{2} \right\}. \tag{6}$$

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[5] A more flexible specification would be to allow for a continuum of γ. Yet, given that there are only two groups of voters, the restriction on γ is without loss of generality. In Chacon (2009), I propose a continuum case extension of this model.

[6] The assumption of majoritarian rule is not crucial. If the objective of the parties is instead the maximization of the vote share (an objective that would correspond to a system of proportional representation) the results would be exactly the same.

Lastly, A and B have identical preferences represented by $E_t \sum_{k=0}^{\infty} \delta^k U_{t+k}^g$ for $g = A, B$, where δ is the discount rate, U_t^g is the utility of party g at time t and E_t is a standard expectation operator (conditional on the information available at time t). The expected utility for each party at any given period depends on the political regime and on the decisions taken within each period. These actions, and how they affect the evolution of regimes across time, are explained below.

2.3 Timing of Events and Equilibrium Concept

The order of moves within a generic period t is as follows:

1. If the citizens mobilize and the society is in a dictatorship, A decides whether to repress or to democratize. If there is repression, A collects R, pays κ, and the stage game ends. If democracy is introduced, A and B pay the cost θ^h

2. If the citizens mobilize and the regime is competitive authoritarian, A decides whether to repress or to democratize. If there is repression, A pays κ and the regime remains competitive authoritarian.

3. If the citizens do not mobilize and the regime is a dictatorship, the incumbent group decides whether to introduce competitive authoritarian institutions. If competitive authoritarian institutions are introduced, the incumbent chooses $\gamma \in \{-\bar{\gamma}, \bar{\gamma}\}$ and both A and B pay a cost θ^l.

4. In a competitive authoritarian or in a democratic regime, A and B simultaneously and noncooperatively announce their electoral promises q_A and q_B. The value ξ_t is realized and elections held. The winner of the election implements his announced policy, collects all rents for office and becomes the incumbent in the next period.

5. Consumption takes place, and the stage game ends.

The standard solution concept in this type of infinite horizon game is subgame perfect equilibrium. In this concept, strategies may depend on the entire history of the game. To simplify the analysis, I focus on pure strategy Markov-perfect equilibria (MPE). In this concept, the strategies players play are restricted to those that depend only on the current state of the world and not on the entire history of play (except for relevant within-period

histories). The state of the system in any stage game consists of a political regime s_t and a variable $o_t \in \{l, h\}$ indicating whether or not the citizens are organized. To simplify the notation, let s^h denote a political state during a period in which the citizens mobilize and demand democracy, and s^l a state in which they do not. Thus, s^h is a political regime of type s facing a "high threat" from the citizens. Given that the citizens can only mobilize if the state is not a democracy, the set of states is $\mathcal{S} = \{M^l, M^h, C^l, C^h, D\}$.

A strategy for A is a function $\sigma_A(s)$. This strategy determines the action profile $\{\omega, c, \gamma, q_A\}$. The variable ω denotes the decision to repress, which applies only in states M^h and C^h. $\omega = 1$ means repression and $\omega = 0$ means no repression. The variable c represents the decision to introduce competitive authoritarian institutions, a decision that applies only in state M^l. Following the same notation, $c = 1$ implies the introduction of such institutions, and $c = 0$ means no introduction. $\gamma \in \{-\underline{\gamma}, \overline{\gamma}\}$ denotes the decision of how to manipulate an election, a decision which applies only when $c = 1$. Lastly, q_A is a policy announcement during elections which happens only in states C^l and D. Similarly, a strategy for B is $\sigma_B(s)$ and it determines the profile $\{\gamma, q_B\}$ where γ is the decision to manipulate the election in state C^l, and q_B is a policy announcement for B and applies only in states C^l and D. A strategy combination (σ_A^*, σ_B^*) is a pure strategy MPE if σ_A^* and σ_B^* are best responses to each other for all s in $\mathcal{S}$.

The transition between states is as follows. Starting from M^h, if there is repression then the state switches to M^l, and if there is no repression the state becomes D, which is an absorbing state. From C^h, if there is repression, the state transits to C^l, and if there is no repression, the state transits to D. Finally, starting from M^l, if competitive authoritarian institutions are introduced (i.e., $c = 1$), the state transits to C^l. If these institutions are not introduced, the state remains in M^l. The law of motion between high and low states is summarized in Figure 1 and Figure 2.

2.4   Characterization of Equilibria

The MPE profiles are characterized by backward induction in any stage game beginning at some arbitrary date t and taking future plays as given. The choice over γ is straightforward. Since the citizens have a bias against any regime ruled by A (μ is bigger than one half), any period in which there is a competitive authoritarian regime ruled by A, this group will give more electoral power to the elite voters. Thus, in any period in which $s = C^l$ and A

is in power, they will choose $\gamma^* = \overline{\gamma}$. To simplify the analysis, suppose that once the level of electoral manipulation is chosen it remains fixed for the rest of the game. Taking this decision to manipulate the elections as given, let us focus on the equilibrium policies in any electoral regime. Let $\zeta^s = (\tau_A(s), \tau_B(s))$ a MPE policy combination during elections in state s where $\tau_g : \mathcal{S} \to Q$ for $g = A, B$. Then, the relevant Bellman equation describing the equilibrium discounted value for A in a dictatorship when the citizens are not organized is given by

$$V^A(M^l|\zeta^D) = R + \delta\left[(1-p)V^A(M^l|\zeta^D) + pV^A(M^h)\right], \qquad (7)$$

where $\delta \in (0,1)$ is the discount rate and p is the probability of the popular mobilization defined previously. The interpretation of (7) is straightforward. Since there is no competition in a dictatorship, A enjoys all rents from office and holds power with probability one in the current period. In the next period, with probability $1-p$ the citizens do not mobilize, so the value $V^A(M^l|\zeta^D)$ recurs. In the last term, with probability p the citizens mobilize, so the continuation value is $V^A(M^h)$, the value of a threatened dictatorship. $V^A(M^h)$ is not necessarily equal to $V^A(M^l)$ since the equilibrium value in this case is a function of the decision to repress or to democratize. Formally, $V^A(M^h)$ can be expressed as

$$V^A(M^h) = \max_{\omega \in \{0,1\}} \omega(V^A(M^l|\zeta^D) - \kappa) + (1-\omega)(V^A(D|\zeta^D) - \theta^h),$$

where $\omega = 1$ implies repression and $\omega = 0$ implies democratization. The decision to democratize depends crucially on the costs of repression κ and on the costs of introducing democratic institutions in a high state θ^h. For the case in which there is no repression, the (gross) value of democracy for A is given by $V^A(D|\zeta^D)$.

Using the same recursive form, the equilibrium value functions for A and B in a competitive authoritarian regime where citizens do not mobilize (ignoring party formation costs and taking the decision γ as given) are expressed as

$$V^A(C^l|\zeta^{C^l}, \zeta^D) = \max_{q \in Q}\{\Pi^C(q, \tau_B)R + \delta[(1-p)V^A(C^l|\zeta^{C^l}, \zeta^D) + pV^A(C^h)]\} \qquad (8)$$

and

$$V^B(C^l|\zeta^{C^l}, \zeta^D) = \max\{[1 - \Pi^C(\tau_A, q)]R + \delta[(1-p)V^B(C^l|\zeta^{C^l}, \zeta^D) + pV^B(C^h)]\} \qquad (9)$$

where $\Pi^C(.)$ is given by (5). The main difference between $V^A(C^l)$ and $V^A(M^l)$ is that in a competitive regime, A captures power in the current period with probability $\Pi^C < 1$. This probability depends not only on the behavior of the voters, but also on the interaction with party B. The values $V^A(C^l|\zeta^{C^l}, \zeta^D)$ and $V^B(C^l|\zeta^{C^l}, \zeta^D)$ take into account the "one-step-ahead deviation" principle, since it is assumed that both A and B will follow the same optimal strategies tomorrow if they face the same state as today. By the same logic as before, $V^A(C^h)$ and $V^B(C^h)$ are given by

$$V^A(C^h) = \max_{\omega \in \{0,1\}} \omega(V^A(C^l|\zeta^{C^l}, \zeta^D) - \kappa) + (1 - \omega)V^A(D|\zeta^D)$$

$$V_B(C^h) = \omega V^B(C^l|\zeta^{C^l}, \zeta^D) + (1 - \omega)V^B(D|\zeta^D).$$

The value for A in the case in which the citizens challenge a competitive authoritarian regime depends on their own choice about whether or not to repress. On the other hand, since A enjoys the monopoly of repression, the value for B depends on A's decision to repress. If A represses, so $\omega = 1$, they get the same payoff $V^A(C^l|\zeta^{C^l}, \zeta^D)$ and pay the cost κ. For the case in which there is no repression, A and B find themselves in a democracy. Notice how θ^h plays no role in this decision; given that the regime is competitive authoritarian, this cost was incurred in a previous period.

The following lemma characterizes the MPE policies in a competitive authoritarian regime (all proofs are contained in the Appendix).

Lemma 1 *In any MPE, the unique electoral equilibrium in a competitive authoritarian regime involves $\tau_A(C^l) = \tau_B(C^l) \equiv q_C^*$. For the case in which the equilibrium is interior and the regime is controlled by A, q_C^* is characterized by*

$$(\lambda_e + \bar{\gamma})\nabla u_E(q_C^*) + (\lambda_c - \bar{\gamma})\nabla u_P(q_C^*) = 0, \tag{10}$$

where $\nabla u_j(q)$ denotes the gradient vector $(\frac{\partial u_j}{\partial q_1}, .., \frac{\partial u_j}{\partial q_K})^T$.

Lemma 1 highlights two important points. The first is that in a competitive authoritarian regime the unique electoral equilibrium involves both parties converging to the same platform. The intuition for this result is that since parties do not have policy preferences, the objective function of B is symmetric to that of A. Thus, parties face exactly the same maximization problem (see proof in the Appendix). As it is well know, this result is not

so general and is a consequence of the fact that parties do not have policy preferences. Policy convergence between parties is not important for the main result, but it simplifies the analysis.

Second, and more important, the equilibrium policy caters to the preferences of the elite and the citizens. This is easy to see from (10), but it is also true for the case in which the solution is not in the feasible set. The interior solution characterization is useful since it corresponds to the solution of a weighted utilitarian social welfare function, with weights $(\lambda_e + \bar{\gamma})$ and $(\lambda_c - \bar{\gamma})$. As we see, both the elite and the citizens have "electoral power" in a competitive authoritarian election. Yet, this power depends not only on the primitives of the population (their numbers and ideological heterogeneity) but on the capacity of the incumbent to manipulate the outcome of the election. In this state, the ruling group can decrease (or increase) the power of the citizens depending on how this affects their electoral prospects. In the case in which A controls the government, given that A has a negative popularity among the citizens, the equilibrium institutions in a competitive authoritarian regime will give disproportionate power to the elite voters. As a result, the minority group in the population has more power in a competitive authoritarian regime ruled by A than in a democracy.

Lastly, using the fact that democracy is an absorbing state, the values for A and B in a democracy are

$$V^A(D|\zeta^D) = \max_{q \in Q} \left\{ \frac{\Pi^D(q, \tau_B(D))R}{1 - \delta} \right\} \tag{11}$$

$$V^B(D|\zeta^D) = \max_{q \in Q} \left\{ \frac{\left[1 - \Pi^D(\tau_A(D), q)\right]R}{1 - \delta} \right\}.$$

The following result is analogous to Lemma 1, and it characterizes the equilibrium policies in a democracy.

Lemma 2 *In any MPE, the unique electoral equilibrium in a democracy involves $\tau_A(D) = \tau_B(D) \equiv q_D^*$. For the case of interior equilibrium, policy is characterized by*

$$\lambda_e \nabla u_E(q_D^*) + \lambda_c \nabla u_P(q_D^*) = 0 \tag{12}$$

The characterization result of Lemma 2 shows that in a democracy, both parties will converge to the same policy. The intuition for this result is similar to the one explained previously. Also, equation (12) shows how the economic policy in a democracy is catered

according to the size of each group, with bigger groups having more electoral power. Given that the poor voters constitute a majority in the population, they will have more power in a democracy than the elite voters.

As mentioned, the decision to democratize depends crucially on repression cost κ and on the party formation cost θ^h. For cases in which κ and θ^h are too high, A will never repress but also, they would not want to invest in a party to compete in elections. More interesting are cases in which, given that electoral competition is introduced, A will always find it optimal to compete. A sufficient condition for this is to be true is

Assumption 1: $\frac{\Pi^D(\zeta^D)R}{1-\delta} - \theta^h > 0.$

This assumption is simply a "participation constraint" for A in a democratic state. Given that there is an average negative popularity for A in the population, $\Pi^D(\zeta^D)$ is smaller than $1 - \Pi^D(\zeta^D)$. This implies that if Assumption 1 holds, the participation constraint for B in a democracy also holds.

We now define some values necessary to describe equilibrium strategies. In particular, we focus on some critical values for κ that will determine the decision to repress or democratize in different states of the game. To derive the equilibrium value in a dictatorship, suppose that A is playing a strategy of always repressing every time there is popular mobilization. Then, $V^A(M^h) = V^A(M^l|\zeta^D) - \kappa$. Substituting this value in (7) and solving for $V_A(M^l|.)$ we get

$$V^A(M^l|.,\kappa) = \frac{R - \delta p \kappa}{1 - \delta}. \tag{13}$$

The interpretation of this value is straightforward. This value is the per-period return from having an infinitely-lived dictatorship discounted to the present. It takes into account the fact that the regime will pay the cost of repression κ a proportion p of future periods. This value is conditioned on κ for presentation purposes. Let κ^* be a repression cost such that in any high state, a dictatorship ruled by A is indifferent between repression and democratizing. This threshold is implicitly given by $V^A(M^l|.,\kappa^*) - \kappa^* = V^A(D|\zeta^D) - \theta^h.$[7]

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[7]This derivation is without loss of generality since any conjectures we make about future actions are not important. If instead we use a "one-shot deviation" principle approach, assuming that repression would take place today and never in the future, we would get exactly the same repression threshold κ^*. This is a property of this type of games and of dynamic programing more generally (see Fudenberg and Tirole 1991).

Using (11), (13) and the result of Lemma 2, solving for κ^* we get

$$\kappa^* = \frac{1}{1 - \delta(1-p)} \left[(1 - \Pi^D(\zeta^D))R + (1-\delta)\theta^h \right], \tag{14}$$

where $\zeta^D = (q_D^*, q_D^*)$. Replacing the MPE platforms in (6) we get

$$\Pi^D(\zeta^D) = \frac{1}{2} - \frac{\psi}{\phi}[\frac{1}{2} - \lambda^E \frac{1}{2} - \lambda^P(1-\mu)]. \tag{15}$$

Comparative statics on κ^* reveals that if δ and p are high, which means that the dictator cares about the future and the citizens are well organized across time, repression is less attractive and democracy more likely. More interesting is the relationship between μ and κ^*. An increase in μ, holding all other variables constant, decreases the probability of victory in a democracy. Thus, an increase in μ increases the region of the parameter space in which repression takes place, so democratization is less likely. A bigger θ_h also makes democracy less likely through the same mechanism.

Using a similar approach, we derive $V^A(C^l|\zeta^{C^l}, \zeta^D)$ assuming that A will always repress in a high state. This strategy implies that $V^A(C^h) = V^A(C^l|\zeta^{C^l}, \zeta^D) - \kappa$. Replacing this value in (8) and using the result of Lemma 1, $V^A(C^l, .)$ becomes

$$V^A(C^l|\zeta^{C^l}, \zeta^D, \kappa) = \frac{\Pi^C(\zeta^{C^l})R - \delta p \kappa}{1 - \delta} \tag{16}$$

where $\zeta^{C^l} = (q_C^*, q_C^*)$. For the case in which A is the stage game incumbent, the probability of victory in a competitive authoritarian regime induced by the equilibrium platforms is

$$\Pi^C(\zeta^{C^l}) = \Pi^D(\zeta^D) + \frac{\psi}{\phi}\bar{\gamma}(\mu - \frac{1}{2}), \tag{17}$$

where $\Pi^D(\zeta^D)$ is given by (15).

Let κ^{**} denote a repression cost such that for $\kappa < \kappa^{**}$ it is optimal for a competitive authoritarian regime ruled by A to repress in a case of high threat. For $\kappa > \kappa^{**}$ democracy is preferred. This critical threshold is given implicitly by $V^A(C^l|., \kappa^{**}) - \kappa^{**} = V^A(D|\zeta^D)$. This equality implies that

$$\kappa^{**} = \frac{1}{1 - \delta(1-p)} \left[\Pi^C(\zeta^{C^l}) - \Pi^D(\zeta^D) \right] R, \tag{18}$$

where $\Pi^C(\zeta^{C^l})$ is given by (17).

It is clear to see that $\kappa^{**} < \kappa^*$. This means that the critical cost of repression that makes party A indifferent between repressing and democratizing is lower if the citizens mobilize in a competitive authoritarian regime (as opposed to the case when the regime is a dictatorship). This is partly caused by the costs sunk in a previous period -the period in which competitive institutions were introduced. The difference in these thresholds highlights the mechanism by which electoral competition influences the likelihood of democratization. In this setting, the introduction of electoral competition at any point in time alters the *willingness* to introduce democracy in the future.

Lastly, we define a critical value for μ such the A, acting as an incumbent, is indifferent between competitive authoritarianism and dictatorship. For the purpose of the presentation, suppose $\kappa \in (\kappa^{**}, \kappa^*)$. Implicitly, this value is given by

$$V^A(C^l|\mu^*) - \theta^l = V^A(M^l), \tag{19}$$

where

$$V^A(C^l|\mu^*) = \frac{\Pi^C(\zeta^{C^l}|\mu^*)R + \delta p V^A(D|\mu^*)}{1 - \delta(1-p)},$$

and $V^A(M^l)$ is given by (13). The value $V^A(C^l|\mu^*)$ takes into account that for $\kappa \in (\kappa^{**}, \kappa^*)$, the introduction of electoral competition in dictatorship will lead to a democratization in the future. Since $V_A(C^l)$ is monotonically decreasing and continuous in μ, we know there exists a unique μ^* satisfying (19). This means that for $\mu < \mu^*$, a dictatorship ruled by A will liberalize the regime knowing that this will inevitably lead to a democracy in the future. On the other hand, for $\mu > \mu^*$, electoral competition during authoritarian rule is too costly, so a dictatorship of A will not liberalize even if this means that it will have to pay the cost of repression in every period in which the citizens organize.

Before I present the main proposition, I introduce a participation constraint for both parties in a competitive authoritarian state ruled by A. A sufficient condition is given by

Assumption 2: $\frac{\Pi^C(\zeta^{C^l})R + \delta p V^A(D|\zeta^D)}{1 - \delta(1-p)} - \theta_l > 0$ *and* $\frac{[1 - \Pi^C(\zeta^{C^l})]R + \delta p V^B(D|\zeta^D)}{1 - \delta(1-p)} - \theta_l > 0$.

This assumption is analogous to Assumption 1. It implies that if competitive authoritarian institutions are introduced, it would be worth while for both A and B to invest in a party and compete in elections.

Given the previous analysis, we can now characterize the MPE outcomes in different parts of the parameter space. The following proposition summarizes the result.

Proposition 1: *Suppose that Assumption 1 and 2 hold, and let κ^*, κ^{**} and μ^* be defined by (14), (18) and (19) respectively. If $\kappa \in (\kappa^{**}, \kappa^*)$ and the society starts in a dictatorship by A, any MPE is such that:*

i) If $\mu \leq \mu^*$, competitive authoritarian institutions are introduced in the first period of low threat, the society democratizes in the first period the citizens mobilize, and repression is never used.

ii) If $\mu > \mu^*$, competitive authoritarian institutions are never introduced, repression is used in every period the citizens mobilize and society remains a dictatorship.

The characterization of Proposition 1 has two important properties. First, for medium levels of κ, namely for $\kappa \in (\kappa^{**}, \kappa^*)$, democracy is introduced at any point in time if and only if competitive institutions were introduced in the past. Otherwise repression will always take place. Then, in this region of the parameter space, we identify two equilibrium paths, one with early competitive authoritarianism and democracy and the other with a persistent dictatorship and repression. In the first path, the introduction of competitive authoritarianism at any point in time can be identified as *causing* democracy to be implemented in the future.

Second, for medium levels of κ, competitive authoritarianism is introduced only when $s = M_l$ and $\mu \leq \mu^*$. This means that a dictatorship of A needs a minimum level of support from the citizens so that a system of fraudulent elections is sufficiently attractive. Moreover, the condition $\mu \leq \mu^*$ is necessary but not sufficient for the liberalization of a dictatorship, since this decision can only take place in a low threat period. This means that even if $\mu \leq \mu^*$ holds, the citizens will be repressed if they organize and demand democracy in the first and subsequent periods. Thus, a first period of low mobilization from the citizens can be interpreted as a "window of opportunity" for the introduction of some democratic elements during dictatorship. This opportunity, together with the resources invested in political organization that are specific to the political competition, explain the two diametrical equilibrium paths.

2.5 State Dependence and Regime Change

The thresholds κ^* and κ^{**}, given by (14) and (18) respectively, are useful to describe the cases in which political liberalizations during dictatorship matter for political transitions.

For cases in which $\kappa < \kappa^{**}$, repression costs are so low that independently of the state, repression is always a best response when the citizens mobilize. Hence, independently of the state, a nondemocratic regime ruled by A will always repress. This parameterization is interpreted as countries ruled by closed dictatorships with no history of democratic competition.[8] On the other hand, cases in which the cost of repression is such that $\kappa > \kappa^*$, repression is too costly, so independently of the state, democracy is always introduced in a high threat period.[9] This means that for this region of the parameter space, the effect of pre-democratic competition cannot be identified (since democratization takes place regardless of whether or not the regime is competitive authoritarian). Thus, for $\kappa < \kappa^{**}$ or $\kappa > \kappa^*$, the mechanism by which a liberalization affects the incentives to democratize does not operate.

More interesting are cases for which $\kappa^{**} < \kappa < \kappa^*$. In these cases, the incumbent group will repress if and only if the state is a dictatorship and never otherwise. This implies that a democratic state can only emerge in a competitive authoritarian regime. As a result, for this region of the parameter space there is a particular "path dependence" process in the sense that the state of the system at time t is a function of the state at time $t-1$.[10] Hence, the causal effect of electoral competition on regime change can only be identified for cases in which $\kappa \in (\kappa^{**}, \kappa^*)$.

This characterization result suggests that the effect of institutions promoting competition on a possible regime change is heterogenous, and it depends crucially on how costly it is for a dictatorship to repress the citizens. For cases in which the cost of repression is too low (or too high) the effect is null.

In order to derive some comparative statics results, I focus on the cases in which pre-democratic competition ought to have a positive effect on democratization. In particular, I define a critical region of the parameter space in which the proposed mechanism operates. The idea is to compare how this region changes depending on different values of some

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[8]For this region of the parameter space liberalizations don't occur on the equilibrium path. Given that the benefits from having a preventive liberalization are never realized, competitive authoritarian institutions are never introduced.

[9]For these cases, liberalizations will occur on the equilibrium depending on the relative gain from paying the low θ^l today or the high cost θ^h in the future. If θ^l is sufficiently low, an equilibrium liberalization will occur in the first low threat state.

[10]See Page (2006) for a taxonomy and a detailed discussion of other types of history dependence in dynamic games.

parameters. Formally, the region of state dependence is given by

$$\Delta_\kappa \equiv \kappa^* - \kappa^{**},$$

where κ^* and κ^{**} are defined by (14) and (18). Replacing for each threshold and simplifying we get

$$\Delta_\kappa = \frac{1}{1 - \delta(1 - p)} \left[(1 - \Pi^C(\zeta^D | \gamma) R + (1 - \delta) \theta^h \right]. \tag{20}$$

As we see, the region of state dependence depends on: how patient the group in power is, the probability of popular mobilization, the probability of victory in a competitive authoritarian regime, the gross rents from holding power and the cost of building a party in a high state. The following lemma summarizes some comparative statics for the case in which A is the first period dictator.

Proposition 2: *The region of state dependence Δ_κ is such that*

$$\frac{\partial \Delta_\kappa}{\partial R} > 0, \ \frac{\partial \Delta_\kappa}{\partial \bar{\gamma}} < 0 \ and \ \frac{\partial \Delta_\kappa}{\partial \theta^h} > 0.$$

Interestingly, when the natural resource rents are higher, it is more likely that competitive institutions in a dictatorship will have an effect on democratization. The intuition for this result is the following. Holding everything constant, as rents increase, the value of holding power in a dictatorship increases more relative to the value of doing so in a competitive authoritarian regime. Then, conditional on being in a competitive authoritarian state, the incentives to repress increase, but they increase "less" relative to the case in which the state is a full dictatorship. This result shows how an exogenous, nontax revenue, creates different incentives depending on the type of authoritarian regime.

An important comparative result is the relationship between $\bar{\gamma}$, the degree of electoral manipulation in a competitive authoritarian regime, and the likelihood of democracy. As Proposition 2 shows, holding everything constant, a higher $\bar{\gamma}$ will decrease the region of state dependence. This means that in cases in which the ruling party in a dictatorship has a strong influence on the electoral process, competitive authoritarian institutions are *less likely* to influence the decision to democratize. This result indicates that the level of competition and the degree of electoral fraud in a competitive authoritarian regime condition the effects that these institutions have on the likelihood of democracy. Based on this, we would expect that the more competitive and the less corrupt the the dictatorship is, the more likely that a liberalization will influence the decision to democratize.

3   Empirical Evidence

This section presents cross country evidence consistent with the idea that conditional on some country characteristics, the competitiveness of a nondemocratic regime influences the likelihood of democratization. The theory advanced in the previous section does not offer strong insights on how to specify the econometric model. Yet, the model suggests that the effect of political liberalization during dictatorship is heterogenous and depends crucially on the costs of repression. Moreover, the comparative statics results suggest that this effect is stronger for cases in which the incumbent group in a dictatorship exerts less control over the electoral process. Thus, the empirical test focuses on these conditional effects. I start by explaining the empirical strategy and the identifying assumptions of the econometric exercise.

3.1   Empirical Strategy

The empirical strategy followed is based on within-country comparisons across time. This approach is particularly useful to deal with time-invariant unobserved factors that affect both the competitiveness of a political system at any given point in time and the occurrence of a political transition. For example, it is widely believed in the political economy literature that historical legacies play an important role in determining the long run political equilibrium of colonized countries (see Engerman and Sokoloff 1997 and Engerman, Marical and Sokoloff 1998). If these historical factors are correlated with the main explanatory variable and are omitted, this may lead to serious biases in a regression analysis. The main idea of the empirical strategy is to eliminate these unobserved effects by using either within transformations or first differencing.

Even if within-country comparisons are an important improvement over a pure cross sectional analysis, the estimates presented may not reflect the true causal effect of political competitiveness on democratic transitions. In particular, the presence of time-varying unobserved factors correlated with the explanatory variables will lead to the typical omitted variable bias. In the absence of a valid instrument or a structural model with valid exclusion restrictions, there is no easy way to get around this issue. To address this concern, the model is conditioned on some of the time-varying covariates that have been highlighted in the literature.

Another difficulty arises from the global increase in political liberty and the proliferation of democracies during the post-war period. If the econometric model does not account for these time trends, the effect of competition during dictatorship will be identified from the over-time variation in the data. In this case, the estimate would correspond to the global increase in democracy and liberalizations in nondemocracies and not to the causal effects of competition. To address this problem, all the models presented include time effects and region-specific time trends.

Therefore, the econometric model used should be interpreted as an approximation of a transitional probability conditional on all time-constant, country-specific, unobserved variables and other observed time-varying characteristics. With all the caveats discussed, this conditional probability takes a causal interpretation.

3.2 Econometric Model

Consider a linear model with an additive unobserved effect of the form:

$$d_{it} = \gamma pc_{it-1} + \mathbf{x}'_{it-1}\beta + \alpha_i + \mu_t + r_i t + \varepsilon_{it}, \tag{21}$$

where d_{it} is an indicator function taking the value of one if country i is classified as an autocracy in time $t-1$ and as a democracy in time t, and a value of zero otherwise. pc_{it-1} is the level of political competition at time $t-1$, so the coefficient γ will be the main parameter of interest. The vector $\mathbf{x}'_{it-1}$ contains a set of control variables, α_i is the unobserved heterogeneity for country i, μ_t is a time effect capturing common shocks in the likelihood of democratization, r_i is a regional dummy so that $r_i t$ represents a region-specific time trend and ε_{it} is the idiosyncratic error.

As mentioned, the linear model (21) approximates a conditional probability of transition. Even if this specification is not the best description of the conditional probability of interest, it is a convenient approximation since we can deal with unobserved heterogeneity in a natural way.[11] This linear specification will be the main model for all our samples, but we also check the robustness of the results using some of the non-linear (fully parametric)

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[11] A common critique to this approach is that for some values of the explanatory variables the predicted probability will lie outside the unit interval. This can be avoided by using a non-linear specification (e.g. Logit or Probit). Since many of these non-linear models cannot accommodate fixed and time effects, the linear model is preferable and the

models suggested in the literature. Non-linear models are relevant not only because they might provide a better approximation, but also because they have been heavily used by previous studies. Then, we use non-linear models to check the robustness of the results and also to draw comparisons with the existing literature.

3.3   Data

Our main measure of democratic transitions comes from the "Freedom in the World 2008 Survey " produced by Freedom House (2008). The *status* variable of this survey, which is available from 1972 to 2008, is used to identify years of transition between nondemocracy and democracy. The *status* of each country corresponds to the combination of various ratings, and it indicates the general state of political rights and civil liberties in the political system. For our purposes, we code a democratic transition when a country is labeled as "partly free" or "not free" at time $t-1$ becomes "free" during time t. To check the robustness of the results, a second indicator was created in which a political transition is coded only for countries going from "not free" to "free". According to the methodology of Freedom House, movements from "not free" to "free" correspond to more drastic political reforms compared with movements from "partly free" to "free", which should be interpreted as minor democratic transitions.

To check the consistency and the robustness of the transition years identified by Freedom House, a second classification was used: the "Democracy and Development Extended Data Set" by Alvarez, Cheibub, Limongi, Przeworski (2002). This taxonomy is used extensively by Przeworski et al. (2000). As opposed to the Freedom House taxonomy, this classification is more minimalist in the sense that it focuses on some key requirements regarding the level of contestation. To construct our second indicator of democratic transition, we used the regime classification variable *reg* which is coded 1 for dictatorship and 0 for democracy. According to this classification, a country is a dictatorship if the legislature (or the executive) is not elected, if there is no more than one party or if there is no alternation in power (see Przeworski et al. 2000, 14-22). The original classification covers the period 1950-1990 and is updated for the 1990-2002 period by Cheibub and Gandhi (2004). It is worth mentioning that even though the Przeworski index is based on the type of government and on the level of contestation and the Freedom House classification on political and civil liberty

characteristics, the timing and the number of transitions are quite similar (see Table 1).[12]

To measure how competitive an authoritarian regime is, we rely on both qualitative and observable characteristics. Our main qualitative index is the *Polcom* variable, constructed by Marshall and Jaggers (2004). This variable is a seven point scale measuring the competitiveness of elections and participation. Countries in which opposition parties are repressed and participation is restricted receive low *Polcomp* scores. Countries with institutionalized party competition in the absence of coercion are coded with high scores. To check the robustness of our qualitative indexes, observable characteristics are used as proxy for competitiveness. Specifically, we use the distribution of seats in the lower chamber of the legislature. As a proxy for competitiveness, we take the percentage of seats in parliament held by all minority parties and independents. In cases in which the legislature composition and party information is not available, the vote share of all the small parties is used, as in Vanhanen (2002). This data is mainly from Vanhanen (2002) and Banks (2008). To facilitate the analysis, both measures of political competition are normalized to lie in the zero-one interval.

Finally, in order to specify the most parsimonious model possible, only two control variables are chosen, real GDP per capita (in 2000 Constant Prices) and total population. These variable are taken from Alan Heston, Robert Summers, and Bettina Atten (2002). The effect of income per capita is of special interest given the importance it has received in the literature. We include total population in the model since we want to control for changes in demographics that could have an effect on the over-time variation of democracy. Table 2 summarizes the descriptive statistics of the main samples used in the estimation.

3.4   Estimation

There are several procedures to estimate (21). A common approach in the literature is to put α_i in the error term and estimate the model using pooled OLS or by random effects methods.[13] The validity of these approaches depends crucially on the statistical relationship

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[12]For the period 1972-2002, Przeworski and his coauthors report a total of 72 democratic transitions. On the other hand, the Freedom House system reports 76 transitions during the same time span. See Table 1 for details.

[13]In addition to ignoring α_i, the vast majority of works assume a fully parametric model for the composite error $\alpha_i + \varepsilon_{it} \equiv v_{it}$ and estimate (1) by maximum likelihood. Since the identification of γ in this setup comes mainly from the cross sectional variation, these models are analogous to pooled OLS estimation (with the caveat that a maximum likelihood model is less robust since identification also depends on form

between α_i and pc_{it}. For the case in which α_i is correlated with pc_{it} (or with any other element in $\mathbf{x}_{it}$), ignoring α_i will lead to biased and inconsistent estimates. For this reason, the orthogonality of α_i and pc_{it} is crucial in this context. α_i can be interpreted as a random variable containing all the unobserved, time-invariant, country characteristics that affect the likelihood of transition in country i across time. If these unobserved characteristics are important in explaining the path of political development, it is natural to think that they are not independent of the level of competitiveness of the political system at any point in time. Thus, the identifying assumption of a random effect model seems particularly strong in this context.

To have a more flexible specification, we prefer to place no restriction on the correlation between α_i and pc_{it}. Formally, we do this by applying a simple demeaning transformation. For simplicity, suppose $\mathbf{x}_{it}$ is a scalar. Subtracting a first averaging equation from the linear model (21) we get the following estimating equation

$$\tilde{d}_{it} = \gamma p\tilde{c}_{it-1} + \beta \tilde{x}_{it-1} + \tilde{\mu}_t + \tilde{\varepsilon}_{it}, \tag{22}$$

where $\tilde{d}_{it} = d_{it} - \frac{1}{T}\sum_{t=1}^{T} d_{it}$, $p\tilde{c}_{it-1} = pc_{it-1} - \frac{1}{T}\sum_{t=1}^{T} pc_{it}$, $\tilde{x}_{it-1} = x_{it-1} - \frac{1}{T}\sum_{t=1}^{T} x_{it}$ and $\tilde{\varepsilon}_{it} = \varepsilon_{it} - \frac{1}{T}\sum_{t=1}^{T} \varepsilon_{it}$. In this equation, we take each observation and subtract its country mean. Given that α_i is constant across time, this procedure eliminates this kind of unobserved effects so they can be arbitrarily correlated with pc_{it-1} (or with any other variable included in $\mathbf{x}_{it-1}$). Then, estimation of γ using (22) and OLS is certainly more robust than the estimation of (21) by pooled OLS or by random effects estimation (e.g., Generalized Least Squares). The critical identifying assumption is that conditioning on α_i, all other components of $\tilde{\varepsilon}_{it}$ are uncorrelated with pc_{it-s}, for all $t = 1, 2, ..T$ and $s = 1, 2, ., t$.

The econometric model is estimated for the base line period 1972-2002. The base line panel takes observations every fifth year. As a robustness test, we also construct ten-year and twenty-year panels. The choice of having a time dimension of five years corresponds to the interpretation we give to a generic period in the theoretical model. Given that we want to capture the effect of competition that entails the development of some political organizations, a time span of five (or even ten) years seems more appropriate than a time span of one year. Even if a five-year, or a ten-year, specification is preferable, as a robustness test, we also estimate one-year panels -with the caveat that serial correlation could affect

of the distribution assumed).

the relationship of interest.[14]

3.5   Results

Table 3 and Table 4 present the results for the base line sample 1972-2002 ignoring the potential heterogeneity discussed in the theoretical section. Table 3 uses the regime classification proposed by Freedom House and Table 4 uses the taxonomy of Przeworski and his coauthors. The standard errors in all models are robust to arbitrary heteroskedasticity and are clustered at the country level.

The first column in these tables uses the political competitiveness index from Polity and the second the percentage of seats (votes) in parliament held by all minorities parties. These models show that lagged competitiveness has a positive, statistically significant, effect on the likelihood of democratization. This result is robust to using different regime classifications. The point estimate in column 1, Table 3, implies that holding everything else constant, a one standard deviation rise in this index increases the chances of democratization in the next five-year period by approximately $(0.2*0.37)*100\approx 7,5$ percentage points. Similarly, using the percentage of votes for minority parties as a proxy for competitiveness gives a slightly bigger effect of $(0.289*0.37)*100\approx 10,7$ percentage points (Column 2). Given that transitions are rare events, this effect is also significant from a quantitative perspective. The models in columns 3 and 4 control for income per capita and population size. The inclusion of these variables does not effect the magnitude or significance of the result. This implies that the effect of liberalization is robust to some time-varying characteristics such as income and demographics. Lagged GDP per capita has a positive effect on democratic transitions even though this effect is neither robust nor statistically significant. This is consistent with recent empirical findings about the relationship between income and democracy (Acemoglu et al. 2008, 2009). Lastly, population has a negative and significant effect. This relationship is interesting on its own and to the best of my knowledge has not been explored in the literature.

The remaining columns of Table 3 and Table 4 explore how the result depends on the length of the time period taken. Columns 5 and 6 show that the result holds if we

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[14]Another difficulty in a one-year panel comes from the possibility of a long transition such that the increase in competitiveness is coming from the transition itself. This possibility, the serial correlation issues, and the theoretical motivation, tilt the balance in favor of the 5-year and 10-year panels.

take annual observations instead of 5-year observations. The marginal effect of lagged competition in these models is naturally smaller since a transition in this specification is even more rare than in a 5-year panel. Also, the estimates are more precise since the number of observations are inflated by using a higher frequency in the data. To address concerns of serial correlation this annual model is also estimated using five lags of all the explanatory variables. Column 7 reports the p-value of an F-test of joint significance of these variables. The five year lags of the competitiveness index are significant at standard levels only for the Freedom House classification (the same is true for the vote share measure, but the result is not reported). Finally, columns 8 and 9 explore the result using a lower frequency in the data. The result for the 10-year panel are similar and consistent to the ones obtained using the 5-year panel specification.

Table 5 and Table 6 explore the results using different time periods and different samples. In Table 5, following a collection of empirical works in the literature, I explore the result taking a sample of nondemocracies for the entire post-war period (see e.g., the influential work of Przeworski et al. 2000). Lagged competitiveness is highly significant for this period and the effect is robust to the inclusion of income per capita and (log) population. Given that the time period is longer, in the sample I also estimated a panel taking observations every 20 years (see columns 7 and 8). In this panel, almost 50 percent of the variation in the transition function is explained just by lagged competitiveness and by country and time effects. The point estimate suggests that a rise of one standard deviation in the competitiveness measure increase the probability of a democratic transition in the next 20-year period by $(0.692*0.37)*100 \approx 25.7$ percentage points. Lastly, Table 6 studies how the estimate varies across regions. In this sensitivity analysis, the effect is particularly strong for Latin America and consistent with the overall findings.

3.6 Competitiveness and Repression

According to the theoretical model advanced in Section 2, the effect of institutions promoting electoral competition is heterogenous and depends crucially on how costly it is for a dictatorship to repress a mobilized opposition. For cases in which the costs associated with repression are too low (or too high) the effect should be smaller compared to cases in which these costs are "intermediate". In this subsection I propose a proxy measuring the costs of repression and test this proposition.

It is particularly difficult to find good proxies for the costs associated with repression during dictatorship. We could use some country-specific characteristics that could be correlated with these costs. For example, the cost of employing violence against a popular opposition may be bigger in a wealthy society relative to a less developed one.[15] This approach is somewhat challenging since income, in this case, is potentially correlated with many other factors that could influence the decision of an authoritarian government to repress its opposition. Arguably a better proxy is the *observed* level of state repression. The idea is that countries in which repression is widely used are countries associated with low costs of repression. Similarly, regimes with no record of state violence against civilians are assumed to be cases in which the costs of such strategy are very high. Thus, we use the state repression scale developed by Gibney and Dalton (1996). This measure is appropriate for the analysis since it focuses on state (or its organizations) behavior and excludes societal and other types of violence. The scale goes from 1 to 5 and measures the magnitude of violations carried out by any state, and it includes torture, extrajudicial killings, physical abuses, disappearances, and political imprisonments. The data for this measure comes from annual reports of the U.S. Department of State and Amnesty International.

To approach the idea that the costs of repression conditions the effect of competition assume a decreasing monotone relationship between the cost of repression and the observed levels of repression. This means that countries with high levels of observed repression are associated with low repression costs. Similarly, dictatorships in which repression never takes place, are assumed to be cases in which the costs of such a strategy are high. Thus, I categorize each country according to the state repression scale of Wood and Gibney (2008). For each country, the average score received between 1980 and 2007 is calculated. Then, countries with an average score between the 10th and the 90th centile of the world average are classified as "medium repression". Similarly, countries with an average score below the 10th centile and above the 90th are classified as low and high repression respectively.[16]

Table 7 presents the results exploring the relationship between the competitiveness and repression. Column 1 replicates the results of the model using the political competitiveness index, column 2 estimates the same model restricting the sample to countries classified as

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[15]This theory is advanced by Acemoglu and Robinson (2001) and Brückner and Ciccone (2008).

[16]The results taking the 20th and the 80th percentile, instead of 10th and 90th percentile, are pretty similar.

"medium repression". The results are consistent with the theory, in countries with medium levels of repression (assumed to be associated with medium repression costs), the marginal effect of competition is higher relative to the complete sample. A similar result is found using the composition of legislature measure and by taking 10-year observations instead of 5-year. To the extent that there could be other relationship between observed repression and the costs of such activity, these results are tentative evidence of a heterogenous effect of competition in dictatorship conditioned by the costs of repression.

4 Conclusion

In this paper I developed a simple dynamic model to study the effects of political liberalizations under dictatorship. The model emphasizes the role of sunk costs and irreversible investments as important factors explaining different propensities for democratization. The theory explains how a reform during dictatorship may alter the incentives to tolerate democracy in the future. The comparative statics of the model and the econometric evidence suggest that when elections during dictatorship are more competitive, liberalizations are more likely to affect the decision to democratize.

5 Appendix

PROOF LEMMA 1

Using the distribution of ξ, the probability of victory for A in any period of a competitive authoritarian regime is

$$\Pi^C(q_A, q_B) = \frac{1}{2} - \frac{\psi}{\phi} W(q_A, q_B),$$

where

$$W(q_A, q_B) \equiv \frac{1}{2} - (\lambda^E + \gamma)[\frac{1}{2} + \phi(u_E(q_A) - u_E(q_B))] - (\lambda^P - \gamma)[(1 - \mu) + \phi(u_P(q_A) - u_P(q_B))] \tag{23}$$

Now, the electoral problem for A in any period in which there is a competitive authoritarian state is

$$\max_{q \in Q} \left\{ \Pi^C(q, \tau_B(.))R + \delta[(1 - p)V^A(C^l|\zeta^{C^l}, \zeta^D) + pV^A(C^h)] \right\}. \tag{24}$$

Similarly, B's problem is

$$\max_{q \in Q} \left\{ [1 - \Pi^C(\tau_A(.), q)]R + \delta[(1-p)V^B(C^l|\zeta^{C^l}, \zeta^D) + pV^B(C^h)] \right\} \quad (25)$$

An electoral equilibrium in this state is a policy combination (q_A^*, q_B^*) that solves (24) and (25) simultaneously. Taking future plays as given, the problem for A reduces to the maximization of $\Pi^C(.)$. Given that each u_j for $j = P, E$ is differentiable, the first order conditions for A (in the interior solution case) are

$$(\lambda^E + \gamma)\nabla u_E(q_A^*) + (\lambda^P - \gamma)\nabla u_P(q_A^*) = 0,$$

where ∇u_j is the gradient function defined in Lemma 1. By the same logic, the problem for B reduces to the maximization of $1 - \Pi^C(.)$. Thus, first order conditions for B, in the case in which the solution is interior, are given by

$$(\lambda^E + \gamma)\nabla u_E(q_B^*) + (\lambda^P - \gamma)\nabla u_P(q_B^*) = 0$$

As we see, the first order conditions for A and B are exactly the same. Given the strict concavity of each u_j, we have that the solution is unique so $q_A^* = q_B^* \equiv q_C^*$. Then, any MPE involves $\tau_A(C^l) = \tau_B(C^l) \equiv q_C^*$. Lastly, replacing these policies in $\Pi^C(.)$ we get that the equilibrium probability for A in a competitive authoritarian regime is

$$\Pi^C(q_C^*, q_C^*) = \frac{1}{2} + \frac{\psi}{\phi}\left[\lambda^E \frac{1}{2} + \lambda^P(1-\mu) + \gamma(\mu - \frac{1}{2}) - \frac{1}{2}\right].$$

Since $\mu > \frac{1}{2}$, $\Pi^C(q_C^*, q_C^*)$ is strictly increasing in γ. Then, in any period in which A controls a competitive authoritarian regime any MPE involves $\gamma = \bar{\gamma}$. Replacing this in the first order condition for q_C^* we get the characterization presented in Lemma 1.

PROOF LEMMA 2

This proof follows the same logic as the Lemma 1's proof. In a democracy, the probability of victory for A is given by

$$\Pi^D(q_A, q_B) = \frac{1}{2} - \frac{\psi}{\phi}Y(q_A, q_B),$$

where

$$Y(q_A, q_B) \equiv \frac{1}{2} - \lambda^E[\frac{1}{2} + \phi(u_E(q_A) - u_E(q_B))] - \lambda^P[(1-\mu) + \phi(u_P(q_A) - u_P(q_B))].$$

The problem for A in any period of democracy is

$$\max_{q \in Q} \frac{\Pi^D(q, \tau_B(D))R}{1 - \delta}. \tag{26}$$

Similarly, the problem for B is

$$\max_{q \in Q} \frac{\left[1 - \Pi^D(\tau_A(D), q)\right] R}{1 - \delta}. \tag{27}$$

An electoral equilibrium in a democracy is a policy combination (q_A^*, q_B^*) that solves (26) and (27) simultaneously. By the logic used in the previous proof, the MPE equilibrium is unique and involves policy convergence. Denote q_D^* the policy to which both parties converge. The first order condition for the interior solution case satisfies

$$\lambda^E \nabla u_E(q_D^*) + \lambda^P \nabla u_P(q_D^*) = 0.$$

Hence, in any MPE $\zeta^D = (\tau_A(D), \tau_B(D)) = (q_D^*, q_D^*)$. This completes the proof.

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Figure 1.
Transition in a High State

$\omega = 0$

D
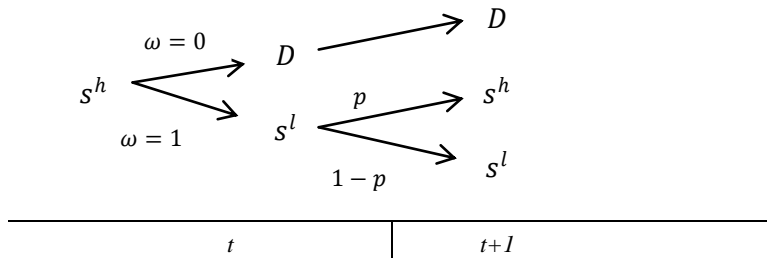
D

s^h

$\omega = 1$

s^l

p

s^h

$1 - p$

s^l

| t | $t+1$ |

Figure 2.
Transition in a Low Threat Dictatorship

p

M^h

$c = 0$

M^l

M^l

$1 - p$

M^l

$c = 1$

C^l

p

C^h

$1 - p$

C^l

| t | $t+1$ |
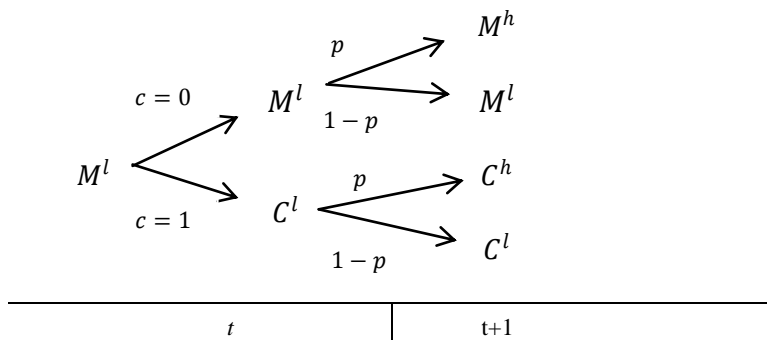
Table 1
Democratic Transitions 1972-2000

Period	Freedom House	Przeworski et al. (2000)
1973-1980	Argentina (73), Botswana (73), Dominican Rep (78), Ecuador (79), Ghana (80) Greece (74) Grenada (77), India (77), Maldives I. (74), Nigeria (79), Papua NG (76), Peru (80), Portugal (76), Spain (77), Sri Lanka (76), Thailand (75), Turkey (74), Burkina F (78).	Argentina (73), Bolivia (79), Brazil (79), Ecuador (79), Ghana (79), Greece (74), Nigeria (79), Peru (80), Portugal (76), Spain (77), Thailand (75), Uganda (80)
1981-1985	Argentina (84), Brazil (85), Grenada (85), Honduras (84), Uruguay (85)	Argentina (83), Bolivia (82), Cyprus (83), El Salvador (84) Grenada (84), Honduras (82), Nicaragua (84), Thailand (83), Turkey (83), Uruguay (85)
1986-1990	Chile (90), Czechoslovakia (90) Gambia (89), Hungary (90), Korea Rep. (88), Malta (87), Namibia (90), Philippines (87), Poland (90), Suriname (88), Thailand (89), Vanuatu (89), W. Samoa (89)	Bulgaria (90), Chile (90), Comoro I (90), Czechoslovakia (90), Guatemala (86), Hungary (90), Korea rep. (88), Panama (89), Philippines (86), Poland (89), Romania (90), Sri Lanka (89), Sudan (86), Suriname (88)
1991-1995	Bangladesh (91), Benin (91), Bulgaria (91), C Verde I (91), Estonia (93), Guyana (93), Latvia (94), Malawi (94), Mali (92), Mali (95), Mongolia (91), Nepal (91), Panama (94), Sao T/P (91), Slovak Rep. (94), S. Africa (94), Zambia (91)	Albania (92), Bangladesh (91), Benin (91), Burundi (93), C. Verde I (91), Central Af. Rep. (93), Congo (92), Ghana (93), Guyana (92), Haiti (94), Lesotho (93), Madagascar (93), Malawi (94), Mali (92), Mongolia (92), Nepal (91), Niger (93), Sao T/P (91), S. Africa (94), Suriname (91), Thailand (92), Zambia (91)
1996-2000	Bolivia (96), Croatia (00), Dominican rep (98), Ecuador (98), el Salvador (97), Fiji (99), Ghana (00), Honduras (97), India (98), Mexico (00), Papua NG (98), Philippines (96), Romania (96), Slovak Rep.(98), Suriname (00), Taiwan (96), Thailand (98), Venezuela (96)	Cote d'I (00), Guinea-B (00), Indonesia (99), Kenya (98), Mexico (00), Moldova (96), Niger (00), Nigeria (99), Senegal (00), Sierra L. (96), Sierra L. (98), Taiwan (96)

Notes: Using the Freedom House taxonomy, a country experiences a democratic transition in years in which the country is classified as "free" in that year conditional on being classified as "not free" or as "partially free" in the previous year. Similarly, for the Przeworski index, the country reports a democratization for year in which the country is classified as a democracy in that year conditional on being classified as a dictatorship in the previous year. The exact year in which the transition takes place is reported in parenthesis.

Table 2
Descriptive Statistics

	Transitions Freedom House	Transitions PACL (2000)
	(1)	(2)
Period 1972-2002		
Democratic Transition Indicator	0.09	0.09
	(0.28)	(0.28)
Countries	158	146
Observations	649	682
Panel A		
Democratic Transition Indicator	0.09	0.10
	(0.28)	(0.31)
Political Competitiveness Index$_{t-1}$	0.18	0.14
	(0.28)	(0.25)
Countries	134	124
Observations	565	525
Panel B		
Democratic Transition Indicator	0.09	0.11
	(0.29)	(0.31)
Percentage votes (seats) for minorities parties$_{t-1}$	0.12	0.09
	(0.19)	(0.16)
Countries	148	131
Observations	636	575
Panel C		
Ln GDP per capita$_{t-1}$	7.86	7.83
	(1.03)	(1.05)
Ln population$_{t-1}$	15.60	15.45
	(1.78)	(1.74)
Countries	135	118
Observations	570	515

Notes: The numbers reported are averages during sample period. Standard errors are reported in parenthesis. The first row report the values for the entire 1972-2002 period. The first column of Panel A refers to the sample used in column 1 of Table 3. Similarly, the second column of this panel refers to the sample of column 1 Table 5. The first column of Panel B refers to the sample used in Table 3, column 2 and the second to the sample of Table 5, column 2. Panel C, column 1 refers to the sample of Table 3, column 4. Panel C, column 2 refers to the sample used in Table 5, column 4. The observations refer to the total number of observations and the countries to the total number of countries used in each panel. The democratic transition indicator takes a vale one if a country is classified as a democracy conditional on being classified as an autocracy in the previous period. In column 1 the classification of regimes is taken from Freedom House (2008) and in column 2 from Przeworski et al. (2000). Real GDP per capita (in 2000 Constant Prices) and total population are taken from Heston, Summers, and Atten (2002).

Table 3
Transitions to Democracy Freedom House

	Fixed effects OLS, sample 1972-2002								
	Five-year data				Annual data			Ten-year data	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political Competitiveness Index$_{t-1}$	0.203 (0.075)		0.201 (0.078)		0.094 (0.025)		[0.02]	0.329 (0.127)	
% votes (seats) for minority parties$_{t-1}$		0.289 (0.112)		0.255 (0.111)		0.135 (0.042)			0.449 (0.195)
Ln GDP per capita$_{t-1}$			0.069 (0.035)	0.048 (0.034)	0.003 (0.008)	-0.006 (0.010)	[0.56]	0.076 (0.067)	0.062 (0.058)
Ln population$_{t-1}$			-0.264 (0.107)	-0.315 (0.111)	-0.029 (0.026)	-0.092 (0.034)	[0.45]	-0.421 (0.161)	-0.486 (0.170)
Observations	565	636	504	570	2336	2702	2083	244	279
No. Countries	134	148	122	135	135	142	122	108	122
R-squared (within)	0.085	0.101	0.103	0.116	0.034	0.033	0.044	0.234	0.227

Notes: the standard errors reported in parenthesis are robust to arbitrary heteroskedasticity and are clustered at the country level. All models include year effects. Dependent variable in all models is a transition function taking the value of 1 if a country is classified as "free" in time *t* conditional on being classified as "not free" or as "partially free" in period *t-1*. This classification is taken from Freedom House (2008). Sample in 1-4 is an unbalanced panel with observations taken every 5 years, sample in 5-7 is an unbalanced panel with annual observations and sample in 8-9 is an unbalanced panel with data is taken every 10 years. In column 7 the p-value from an F-test of joint significance of all 5 lags is reported in brackets.

Table 4

Transitions to Democracy Przeworski et al. (2000)

	Fixed effects OLS, sample 1972-2002								
	Five-year data				Annual data			Ten-year data	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political Competitiveness Index$_{t-1}$	0.248 (0.096)		0.259 (0.098)		0.073 (0.034)		[0.31]	0.454 (0.172)	
% votes (seats) for minority parties$_{t-1}$		0.358 (0.145)		0.37 (0.149)		0.109 (0.057)			0.559 (0.306)
Ln GDP per capita$_{t-1}$			0.054 (0.048)	0.015 (0.044)	-0.001 (0.011)	-0.006 (0.012)	[0.50]	-0.019 (0.099)	0.004 (0.074)
Ln population$_{t-1}$			-0.306 (0.109)	-0.284 (0.101)	-0.071 (0.029)	-0.101 (0.034)	[0.14]	-0.486 (0.185)	-0.347 (0.142)
Observations	525	575	464	515	2242	2517	2008	232	259
No. Countries	124	131	110	118	113	122	109	102	111
R-squared (within)	0.144	0.144	0.145	0.145	0.047	0.046	0.054	0.292	0.241

Notes: the standard errors reported in parenthesis are robust to arbitrary heteroskedasticity and are clustered at the country level. All models include year effects. Dependent variable in all models is a transition function taking the value of 1 if a country is classified as a democracy at time t conditional on being classified as a dictatorship in period $t-1$. This classification is taken from Preworski et al. (2000). Sample in 1-4 is an unbalanced panel with observations taken every 5 years, sample in 5-7 is an unbalanced panel with annual observations and sample in 8-9 is an unbalanced panel with data is taken every 10 years. In column 7 the p-value from an F-test of joint significance of all 5 lags is reported in brackets.

Table 5
Transitions to Democracy Post-war Sample

	Five-year data		Annual data		Ten-year data		Twenty-year data	
		Fixed effects OLS, sample 1946-2002						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Political Competitiveness Index$_{t-1}$	0.168	0.174	0.055	0.055	0.29	0.291	0.692	0.541
	(0.070)	(0.075)	(0.021)	(0.024)	(0.120)	(0.129)	(0.226)	(0.245)
Ln GDP per capita$_{t-1}$		0.054		0.003		-0.004		0.022
		(0.043)		(0.012)		(0.079)		(0.194)
Ln population$_{t-1}$		-0.305		-0.044		-0.515		-0.618
		(0.105)		(0.021)		(0.183)		(0.610)
Observations	797	606	4046	3100	368	293	157	125
No. Countries	128	129	129	117	124	105	105	91
R-squared (within)	0.119	0.134	0.037	0.042	0.261	0.281	0.496	0.506

Notes: the standard errors reported in parenthesis are robust to arbitrary heteroskedasticity and are clustered at the country level. All models include year effects. Dependent variable in models (1)-(8) is a transition function taking the value of 1 if a country is classified as a democracy at time t conditional on being classified as a dictatorship in period $t-1$. This classification is taken from Preworski et al. (2000). Sample in 3-4 is an unbalanced panel with annual observations. Samples in 1-2, 5-6 and 7-8 are unbalanced panels with observations taken every 5, 10 and 20 years respectively.

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Table 6

Robustness Checks and Sensitivity Analysis

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	Fixed effects OLS, five-year data							
	Sample 1972-2002,						Sample 1800-2002	
	all countries	without Sub-Saharan Africa	without Latin America	without ex-soviet countries	Sample 1972-2008			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Political Competitiveness Index$_{t-1}$	0.203 (0.075)	0.244 (0.115)	0.139 (0.079)	0.214 (0.077)	0.185 (0.067)		0.115 (0.037)	
% votes (seats) for minority parties$_{t-1}$						0.19 (0.097)		0.132 (0.056)
Ln GDP per capita$_{t-1}$					0.054 (0.031)	0.031 (0.028)		
Ln population$_{t-1}$					-0.094 (0.074)	-0.186 (0.086)		
Region-specific time effects F test					[0.00]	[0.01]	[0.00]	[0.00]
Observations	565	353	490	497	587	666	1931	1770
No. Countries	134	92	114	108	123	137	156	149
R-squared (within)	0.085	0.103	0.082	0.072	0.133	0.124	0.167	0.168

Notes: the standard errors reported in parenthesis are robust to arbitrary heteroskedasticity and are clustered at the country level. All models include year effects. Dependent variable in models (1)-(6) is a is a transition function taking the value of 1 if a country is classified as "free" in time t conditional on being classified as "not free" or as "partially free" in period $t-1$. This classification is taken from Freedom House. Dependent variable in models (7) and (8) is an indicator function taking the value of one if a country is classified as a liberal democracy in time t conditional on being classified as a dictatorship in $t-1$. This regime classification is taken from Boix and Rosato (2006). All samples are unbalanced panels with observations taken every five years. The p-value from an F test of joint significance for all the regional-specific time trends is reported in brackets. The regions used to construct these trends are Latin America, Sub-Saharan Africa, North Africa and Middle East and East Asia.

Table 7
Heterogeneous Effects of Competitiveness Freedom House

	Fixed effects OLS, sample 1972-2002							
	Five-year data				Ten-year data			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Political Competitiveness Index$_{t-1}$	0.201 (0.078)	0.251 (0.079)			0.329 (0.127)	0.379 (0.139)		
% votes (seats) for minority parties$_{t-1}$			0.255 (0.111)	0.283 (0.126)			0.449 (0.195)	0.559 (0.226)
Sample	All	Medium Repression Countries	All	Medium Repression Countries	All	Medium Repression Countries	All	Medium Repression Countries
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	504	422	570	460	244	205	279	224
No. Countries	122	103	135	113	108	89	122	100
R-squared (within)	0.103	0.139	0.116	0.15	0.234	0.266	0.227	0.279

Notes: the standard errors reported in parenthesis are robust to arbitrary heteroskedasticity and are clustered at the country level. All models include year effects. Dependent variable in all models is a transition function taking the value of 1 if a country is classified as "free" in time t conditional on being classified as "not free" or as "partially free" in period $t-1$. This classification is taken from Freedom House (2008). Sample in 1-4 is an unbalanced panel with observations taken every 5 years, sample in 5-7 is an unbalanced panel with annual observations and sample in 8-9 is an unbalanced panel with data is taken every 10 years. In column 7 the p-value from an F-test of joint significance of all 5 lags is reported in brackets. The control variables are the same used in Table 1, (log) GDP per capita and (log) total population.