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Persistence of Power, Elites, and Institutions

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We construct a model to study the implications of changes in political institutions for economic institutions. A change in political institutions alters the distribution of de jure political power, but creates incentives for investments in de facto political power to partially or even fully offset change in de jure power. The model can imply a pattern of captured democracy*, whereby a democratic regime may survive but choose economic institutions favoring an elite. The model provides conditions under which economic or policy outcomes will be* invariant *to changes in political institutions, and economic institutions themselves will persist over time.* (*JEL* D02, D72)

> *The domination of an organized minority … over the unorganized majority is inevitable. The power of any minority is irresistible as against each single individual in the majority, who stands alone before the totality of the organized minority. At the same time, the minority is organized for the very reason that it is a minority.*
>
> — Gaetano Mosca (1939, 53).

Recent research on comparative development has emphasized the importance of political and economic institutions.[1] This research suggests that changes in political institutions, such as the end of colonial rule in Latin America, the enfranchisement of former slaves in the US South, and the democratization of British politics during the nineteenth century, ought to have led to significant changes in economic outcomes. The evidence on this point is mixed, however. While democratization in Britain led to important policy and economic changes, the end of colonial rule in Latin America and the end of Southern slavery appear to have had much more limited consequences.[2] Cross-country regression analysis also paints a mixed picture. While Dani Rodrik (1999), Torsten Persson and Guido Tabellini (2003, 2006), Timothy Besley, Persson, and Daniel Sturm (2005), Besley and Masayuki Kudamatsu (2006), and Emanuel Kohlscheen (2005) find significant effects of political institutions on economic outcomes, Casey Mulligan, Richard Gil, and Xavier Sala-i-Martin (2004) and Robert Barro (1997) argue that there are no systematic policy or growth differences between dictatorships and democracies.

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[1] See, among others, Douglass C. North and Robert P. Thomas (1973), Mancur Olson (1982), North (1990), North and Barry R. Weingast (1989), Stanley L. Engerman and Kenneth L. Sokoloff (1997), Robert E. Hall and Charles I. Jones (1999), Acemoglu, Simon Johnson, and Robinson (2001, 2002, 2005b).

[2] See, for example, Stanley J. Stein and Barbara H. Stein (1970) and Engerman and Sokoloff (1997) on Latin America and Gavin Wright (1986) and Lee J. Alston and Joseph P. Ferrie (1999) on the US South.

In this paper, we show that the impact of institutions on economic outcomes depends on the interaction between *de jure political power*, whose allocation is determined by political institutions, and *de facto political power*, which is determined by the equilibrium investments and organizations of different groups. De facto power is often essential for the determination of economic policies and the distribution of economic resources, but it is not allocated by institutions; rather, it is possessed by groups as a result of their wealth, weapons, or ability to solve the collective action problem. A change in political institutions that modifies the distribution of de jure power need not lead to a change in equilibrium economic institutions if it is associated with an offsetting change in the distribution of de facto political power (e.g., in the form of bribery, the capture of political parties, or use of paramilitaries). The central argument in this paper is that there is a natural reason to expect changes in the distribution of de facto political power to partially or even entirely offset changes in de jure power brought about by reforms in specific political institutions.

To make these ideas precise, we develop a model consisting of two groups, an elite and the citizens. Economic institutions are chosen either by the elite or the citizens depending on who has more political power.[3] Political power, in turn, is determined by both political institutions that allocate de jure power and the distribution of de facto power. The elite, by virtue of their smaller numbers and their greater expected returns from controlling politics, have a comparative advantage in investing in de facto power (Mosca 1939; Olson 1965). This implies that the amount of de facto political power of the elite is an *equilibrium outcome* and responds to incentives. Nevertheless, political institutions and de jure political power also matter for equilibrium outcomes. For example, in democracy, the balance of de jure power is tilted toward the citizens, while in nondemocracy the elite have greater de jure power.

In the model, in every period there is a "contest" between the elite and the citizens, and political institutions (democracy versus nondemocracy) determine how level the playing field is. Those with greater political power determine economic institutions today and political institutions tomorrow. Because the elite's de facto political power is an equilibrium outcome, it partly offsets the effect of changes in political institutions. In particular, the elite may invest more in their de facto political power in democracy than in nondemocracy. Somewhat strikingly, under certain circumstances the offset caused by the investments of the elite in de facto power will be *full*, so that the distribution of equilibrium economic institutions is identical in democracy and nondemocracy. We refer to this pattern as *invariance* and characterize the conditions under which this type of invariance applies.[4] The invariance result starkly illustrates how changes in certain political institutions can be undone by the greater exercise of de facto political power. It does not imply that political institutions are not important in reallocating power. Rather, it means that to understand their implications for economic outcomes we need to study how political change influences the incentives of groups to use other instruments to achieve their political objectives. The invariance result also implies a specific form of persistence. While political institutions change, economic institutions may persist over time and across different regimes. The historical example of the US South illustrates this result clearly. Even though former slaves were

[3] For instance, the elite might be landowners and the institutions in question might concern the organization of the agricultural labor market, in particular, whether wages are "competitive" or are "repressed." This example is motivated by the example of the US South, which we discuss further below. These terms may suggest that economic institutions preferred by the citizens are "economically more efficient" than those favored by the elite, in the sense that they lead to greater output or social surplus. Nevertheless, there is nothing in the model that depends on this feature. Alternatively, one can think of situations in which the economic institutions preferred by the citizens are more redistributive and thus create more distortions (see Acemoglu (forthcoming) for a contrast of the distortions created by pro-elite and pro-citizen economic institutions).

[4] To be precise, there *are* changes in economic institutions but the *equilibrium distribution* of economic institutions is *invariant* to political institutions.

enfranchised and slavery was abolished at the end of the Civil War, the South largely maintained its pre–Civil War agricultural system based on large plantations, low-wage uneducated labor, and labor repression, and it remained relatively poor until the middle of the twentieth century. The persistence of labor repression in the US South is consistent with changes in political institutions because they were offset by the exercise of de facto power; slavery was replaced by monopsonistic arrangements, policies designed to impede labor mobility, political disenfranchisement, intimidation, violence and lynching.[5]

Two comparative static results of the model are particularly noteworthy. *First,* when the elite has less to gain from using repressive methods, equilibrium institutions are more likely to favor the citizens. This implies that economic structures that reduce the gains to the elite from controlling institutions, for example, more competitive markets or greater factor mobility, make elite domination of politics less likely. *Second* and more paradoxically, a greater democratic advantage for the citizens may lead to a greater domination of politics by the elite. This is because the democratic advantage of the citizens creates a future cost for the elite, encouraging them to invest more to increase their de facto power in order to avoid this future cost. When democratic institutions are "sufficiently strong," however, the nature of the equilibrium changes qualitatively and democracy may become an absorbing state.

We also extend the basic environment by allowing political institutions to be more *durable* than economic institutions. In particular, we assume that it is more difficult to change political institutions than to affect economic institutions. This extended model leads to a pattern of *captured democracy*; the equilibrium may feature the emergence and persistence of democracy but the economic institutions still favor the elite. In fact, somewhat paradoxically, this extended model predicts that the equilibrium probability of pro-elite institutions may be higher in democracy than in nondemocracy, motivating the term captured democracy.

An interesting implication of our model is that there may be greater inefficiency in democracy than in nondemocracy (even when the policies favored by the elite are inefficient). This is because the economic allocations may be similar in democracy and nondemocracy, while there is greater investment in de facto political power by the elite in democracy, which is socially costly. This result suggests a potential reason why recent political reforms in many developing countries may have failed to generate significant economic growth, and why the postwar economic performance of democracies has been no better than those of dictatorships.

The current model extends the framework in Acemoglu and Robinson (2000, 2001, 2006a).[6] The major difference is that we now model the process of how agents invest in their de facto political power. While our previous work emphasized that democracy is more "pro-citizen," the analysis here shows this may not be the case if the elite is able to garner sufficient de facto political power in democracy.[7] Our approach is also related to the large literature on the effect of lobbying in democracy (see, e.g., David Austen-Smith 1987; David P. Baron 1994; Gene M. Grossman and Elhanan Helpman 1996; as well as Olson 1982). While certain aspects of our approach have less explicit microfoundations than in this literature, we explicitly model the incentives of individual

[5] See Jonathan Weiner (1978), Wright (1986), Roger L. Ransom and Richard Sutch (2001), and Alston and Kyle Kauffman (2001). The example of the abolition of slavery in the US South and its relationship to the model presented here are further discussed in Acemoglu and Robinson (2006b).

[6] See also Davide Ticchi and Andrea Vindigni (2005), William Jack and Roger Lagunoff (2006), and Lagunoff (2006) for related approaches.

[7] Recent work by Mulligan and Kevin Tsui (2006) also emphasizes the similarity of policies between democracies and nondemocracies. In terms of our terminology, they explain this similarity by lack of significant de jure power differences between regimes, while we show that changes in de facto power can undo real changes in de jure power.

agents to contribute to lobbying-type activities in a dynamic environment, and we endogenize not only policies but also institutions.[8]

The rest of the paper is organized as follows. Section I outlines the basic economic and political environment. Section II characterizes the equilibria of this baseline model. Section III shows how a simple extension leads to an equilibrium pattern of captured democracy, whereby the elite dictate their favorite economic institutions in democracy. Section IV briefly discusses how simultaneous reforms in multiple dimensions of political or economic institutions can be effective in breaking the cycle of persistence in economic institutions. Section V concludes.

I. Baseline Model

A. *Demographics, Preferences, and Production Structure*

Consider an infinite-horizon society in discrete time. The society is populated by a finite number L of citizens/workers and M elites. In the text, we assume that citizens are significantly more numerous than the elite, that is:[9]

ASSUMPTION 1: $L >> M$.

We use $h \in \{E, C\}$ to denote whether an individual is from the elite or a citizen, and $\mathcal{E}$ and $\mathcal{C}$ to denote the set of elites and citizens, respectively. All agents have the same risk-neutral preferences given by

$$\sum_{j=0}^{\infty} \beta^j \left(c_{t+j}^{h,i} + G_{t+j}^{h} \right) \tag{1}$$

at time t. Here, $c_{t+j}^{h,i}$ denotes consumption of agent i from group $h \in \{E, C\}$ at time $t + j$ in terms of the final good, and $\beta \in (0,1)$ is the common discount factor. In addition to the consumption of the final good, individuals derive utility from a public good and G_{t+j}^{h} denotes utility from a public good for an agent of group $h \in \{E, C\}$. The elite and citizens enjoy different types of public goods (for example, corresponding to different types of government services, or to consumption of amenities in different neighborhoods or regions). To simplify the analysis, we assume that in each period only one of two types of public goods can be provided (without any costs). The first type of public good is valued only by the elite, while the second is valued only by the citizens. We use $g_{t+j} \in \{e, c\}$ to denote the decision about which public good to provide, with $g_{t+j} = e$ denoting that the public good valued by the elite is provided, hence $G_{t+j}^{E} = \gamma^{E} > 0$ and $G_{t+j}^{C} = 0$. If, instead, $g_{t+j} = c$, the public good valued by the citizens is provided so $G_{t+j}^{E} = 0$ and $G_{t+j}^{C} = \gamma^{C} > 0$. The public goods play no major role in the analysis until Section III, and γ^{E} and γ^{D} can be set equal to zero without affecting any of our results.

[8] The reason individuals may invest in de facto political power in our model is related to the incentives to contribute to the private provision of public goods, e.g., Thomas R. Palfrey and Howard Rosenthal (1984). In particular, Peter G. Warr (1982) and Theodore Bergstrom, Lawrence Blume, and Hal Varian (1986) show that, under some conditions, the total amount of public good provision will be invariant to small redistributions of wealth among the players. Despite the similarity between this result and our invariance result in Corollary 1, the analysis leading to this corollary and the implications are different from the existing results in this literature.

[9] Here we are using the somewhat loose notation ">>" to denote "significantly greater than." In the Appendix, we provide an exact condition of the form "$L > \bar{L}$" for which all the statements in the text are correct, where $\bar{L}$ is a function of the parameters, including the number of elite agents, M. Assumption 1 enables us to state the main results in a simpler manner.

Each citizen owns one unit of labor, which they supply inelastically. Each member of the elite $i \in \mathcal{E}$ has access to a linear production function to produce the unique private good with constant marginal productivity of A.

We consider production and distribution under two different sets of (reduced-form) *economic institutions*. In the first, labor markets are *competitive* and we index these institutions by the subscript c (indicating "pro-citizen" or "competitive"). We use $\tau_t \in \{e, c\}$ to denote the institutional choice in period t. Given the linear production technology, with competitive labor markets, each citizen will receive their marginal product of labor, A, and each elite will make zero returns. Therefore, when $\tau_t = c$, the wage rate is

$$w_c \equiv A, \tag{2}$$

and the return to a member of the elite is

$$R_c \equiv 0. \tag{3}$$

The alternative set of economic institutions favors the elite and is *labor repressive* $(\tau_t = e)$ and allows the elite to use their political power to reduce wages below competitive levels. We parameterize the distribution of resources under labor repression as follows: $\lambda < 1$ denotes the share of national income accruing to citizens, and $\delta \in [0,1)$ is the fraction of potential national income, AL, that is lost because of the inefficiency of labor repression.[10] This implies that factor prices under these economic institutions can be expressed as

$$w_e \equiv \lambda(1 - \delta)A, \tag{4}$$

and

$$R_e \equiv (1 - \lambda)(1 - \delta)\frac{AL}{M}. \tag{5}$$

Factor prices can then be written as a function of economic institutions as $w_t = w(\tau_t = e) = w_e, R_t = R(\tau_t = e) = R_e$, $w_t = w(\tau_t = c) = w_c$, and $R_t = R(\tau_t = c) = R_c$. For future reference, let us also define

$$\Delta R \equiv R_e - R_c = (1 - \lambda)(1 - \delta)\frac{AL}{M} > 0 \tag{6}$$

and

$$\Delta w \equiv w_c - w_e = (1 - \lambda(1 - \delta))A > 0 \tag{7}$$

as the gains to the elite and the citizens from their more preferred economic institutions. Since the citizens are significantly more numerous, i.e., $L >> M$, (6) and (7) imply that $\Delta R >> \Delta w$.

[10] For instance, $\delta > 0$ may result from standard monopsony distortions in the labor market. Note, however, that none of the results presented in this paper depends on the value of δ. The case where $\delta = 0$ would correspond to a situation in which there is no distortion from labor repression and the choice of economic institutions is purely redistributive. Alternatively, and without any change in our results, we could consider the case in which $\delta < 0$, so that economic institutions favored by the elite are more "efficient" than those preferred by the citizens.

We will later investigate the comparative statics of the equilibrium, both with respect to δ and the parameter λ governing the distribution of income under labor repression.

B. *Political Regimes and De Facto Political Power*

There are two possible political regimes, democracy and nondemocracy, denoted respectively by D and N. The distribution of de jure political power will vary between these two regimes. At time t, the "state" of this society will be represented by $s_t \in \{D,N\}$, which designates the political regime that applies at that date. Irrespective of the political regime (state), the identities of the elites and the citizens do not change.

Overall political power is determined by the interaction of de facto and de jure political power. Both groups can invest to garner further de facto political power. In particular, suppose that elite $i \in \mathcal{E}$ spends an amount $\theta_t^i \geq 0$ as a contribution to activities increasing their group's de facto power. Then, total elite spending on such activities will be $\Sigma_{i\in\mathcal{E}}\,\theta_t^i$, and we assume that their de facto political power is

$$P_t^E(s) = \phi^E(s)\sum_{i\in\mathcal{E}}\theta_t^i(s), \tag{8}$$

where $\phi^E(s) > 0$. We index this parameter by the state $s \in \{D,N\}$ to allow for the possibility that investment in de facto power by the elite is less effective in democracy. The superscript E distinguishes it from the corresponding parameter for the citizens.

Citizens' power comes from three distinct sources. First, they can also invest in their de facto political power. Second, because citizens are more numerous, they may sometimes solve their collective action problem and exercise additional de facto political power. We assume that this second source of de facto political power is stochastic and fluctuates over time.[11] These fluctuations will cause equilibrium changes in political institutions. Finally, again because they are more numerous, citizens will have greater power in democracy than in nondemocracy. Overall, the power of the citizens when citizen $i \in \mathcal{C}$ spends an amount $\theta_t^i \geq 0$ is

$$P_t^C(s) = \phi^C(s)\sum_{i\in\mathcal{C}}\theta_t^i(s) + \omega_t + \eta I(s_t = D), \tag{9}$$

where $\phi^C(s) > 0$, ω_t is a random variable drawn independently and identically over time from a given distribution $F[\cdot]$, $I(s = D) \in \{0,1\}$ is an indicator function for $s = D$, and η is a strictly positive parameter measuring citizens' de jure power in democracy. Equation (9) implies that in democracy the political power of the citizens shifts to the right in the sense of first-order stochastic dominance. To simplify the discussion, we make the following assumptions on F:

ASSUMPTION 2: *F is defined over $(\underline{\omega},\infty)$ for some $\underline{\omega} < 0$, is everywhere strictly increasing, and is twice continuously differentiable (so that its density f and the derivative of the density, f', exist everywhere). Moreover, $f[\omega]$ is single peaked (in the sense that there exists ω^* such that $f'[\omega] > 0$ for all $\omega < \omega^*$ and $f'[\omega] < 0$ for all $\omega > \omega^*$) and satisfies* $\lim_{\omega\to\infty} f[\omega] = 0$.

All of the features embedded in Assumption 2 are for convenience and how relaxing the assumptions affects the equilibrium is discussed below.

We introduce the variable $\pi_t \in \{e,c\}$ to denote whether the elite has more (total) political power at time t. In particular, when $P_t^E(s) \geq P_t^C(s)$, we have $\pi_t = e$ and the elite has more

[11] This assumption is used extensively in Acemoglu and Robinson (2006a) and defended there. Briefly, given their large numbers, whether and how effectively citizens will be able to organize is difficult to predict in advance and will change from time to time. The randomness of ω_t captures this in a simple way.

political power and will make the key decisions. In contrast, whenever $P_t^E(s) < P_t^C(s)$, $\pi_t = c$ and citizens have more political power, and they will make the key decisions.

To complete the description of the environment, we must specify what these key decisions are. We assume that the group with greater political power will decide both economic institutions at time t, τ_t, and what the political regime will be in the following period, s_{t+1}. We further assume that the group in power at the start of the period decides which type of public good to provide. This implies that when $s_t = D$, the public good provision is decided by the citizens (irrespective of which group wins the subsequent contest) and when $s_t = N$, public good provision is decided by the elite. Thus the public goods represent benefits that citizens receive from democracy (and the elite receives from nondemocracy) even when they cannot dictate their favorite economic institutions.

We also assume that when the elite has more political power, a representative elite agent makes the key decisions, and when citizens have more political power, a representative citizen does so. Since the political preferences of all elites and all citizens are the same, these representative agents will always make the decisions favored by their group.[12]

C. *Timing of Events*

We now briefly recap the timing of events in this basic environment. At each date t, society starts with a state variable $s_t \in \{D,N\}$. Then:

- The group in power decides which public good to provide, $g_t \in \{e,c\}$.
- Each elite agent $i \in \mathcal{E}$ and each citizen $i \in \mathcal{C}$ simultaneously chooses how much to spend to acquire de facto political power for their group, $\theta_t^i \geq 0$, and P_t^E is determined according to (8).
- The random variable ω_t is drawn from the distribution F, and P_t^C is determined according to (9).
- If $P_t^E \geq P_t^C$ (i.e., $\pi_t = e$), a representative (e.g., randomly chosen) elite agent chooses (τ_t, s_{t+1}), and if $P_t^E < P_t^C$ (i.e., $\pi_t = c$), a representative citizen chooses (τ_t, s_{t+1}).
- Given τ_t, the factor prices, R_t and w_t, are determined and paid to elites and citizens, and consumption takes place.

II. Analysis of the Baseline Model

We now analyze the baseline model described in the previous section. We focus on symmetric Markov perfect equilibria (MPE).[13] An MPE imposes the restriction that equilibrium strategies are mappings from payoff-relevant states, which here include only $s \in \{D,N\}$. Since we formulate the model recursively, we drop time subscripts from now on. In an MPE, strategies are not conditioned on the history of the game over and above the influence of this history on the

[12] Various different voting mechanisms among the elite and among the citizens will also lead to the same outcome.

[13] Symmetric MPE is a natural equilibrium concept in this context. Subgame perfect equilibria would allow greater latitude to both groups in solving the collective action problems by using implicit punishment strategies. In Acemoglu and Robinson (2006b) we show that qualitatively similar results to those derived here apply both with nonsymmetric MPE and with subgame perfect equilibria.

payoff-relevant state s. An MPE consists of contribution functions $\{\theta^i(s)\}_{i\in\mathcal{E}}$ for each elite agent as a function of the political state, a corresponding vector of functions $\{\theta^i(s)\}_{i\in\mathcal{C}}$ for the citizens, decision variables, $g(s)$, $\tau(\pi)$, and $s'(\pi)$, as a function of the state s and $\pi \in \{e,c\}$, and equilibrium factor prices as given by (2)–(5).[14] Here the function $g(s)$ determines the equilibrium decision about which public good to provide conditional on the state, the function $\tau(\pi)$ determines the equilibrium decision about labor repression conditional on who has power, and the function $s'(\pi) \in \{D,N\}$ determines the political state at the start of the next period. In addition, symmetric MPE will impose the condition that contribution functions take the form $\theta^E(s)$ and $\theta^C(s)$, i.e., do not depend on the identity of the individual elite or citizen, $i \in \mathcal{E} \cup \mathcal{C}$.

A. *Value Functions and Definition of Equilibrium*

The MPE can be characterized by backward induction within the stage game at some arbitrary date t, given the state $s \in \{D,N\}$ and taking future plays (as functions of future states) as given. Clearly, whenever $\pi = e$ so that the elite have political power, they will choose economic institutions that favor them $(\tau(e) = e)$ and a political system that gives them more power in the future $(s'(e) = N)$. In contrast, whenever citizens have political power, $\pi = c$, they will choose $\tau(c) = c$ and $s'(c) = D$. Finally, we also have $g(N) = e$ and $g(D) = c$. This implies that choices over economic institutions and political states are straightforward. Moreover, the determination of market prices under different economic institutions has already been specified above by equations (2)–(5). The only remaining decisions are the contributions of each agent to their de facto power, $\theta^i(s)$ for $i \in \mathcal{E}\cup\mathcal{C}$ and $s \in \{D,N\}$. A symmetric MPE can thus be summarized by two vectors of contribution functions $\theta^E = (\theta^E(D),\theta^E(N))$ and $\theta^C = (\theta^C(D),\theta^C(N))$. The MPE can be characterized by writing the payoff to agents recursively. We denote the equilibrium value of an elite agent in state $s \in \{D,N\}$ by $V^E(s)$ (i.e., $V^E(D)$ for democracy and $V^E(N)$ for nondemocracy).

Since we are focusing on symmetric MPE, suppose that all other elite agents, except $i \in \mathcal{E}$, have chosen a level of contribution to de facto power equal to $\theta^E(s)$ and all citizens have chosen a contribution level $\theta^C(s)$. Consequently, when agent $i \in \mathcal{E}$ chooses θ^i, the total power of the elite will be

$$P^E\left(\theta^i,\theta^E(s),\theta^C(s)|s\right) = \phi^E(s)\left((M-1)\theta^E(s) + \theta^i\right).$$

The elite will have political power if

$$P^E\left(\theta^i,\theta^E(s),\theta^C(s)|s\right) \geq \phi^C(s)L\theta^C(s) + \eta I(s=D) + \omega_t. \tag{10}$$

Expressed differently, the probability that the elite has political power in state $s \in \{N,D\}$ is

$$p\left(\theta^i,\theta^E(s),\theta^C(s)|s\right) = F\left[\phi^E(s)\left((M-1)\ \theta^E(s) + \theta^i\right) - \phi^C(s)L\theta^C(s) - \eta I(s=D)\right]. \tag{11}$$

As noted above, backward induction within the stage game implies that $g(N) = e$, $g(D) = c$, $\tau(e) = e$, $\tau(c) = c$, $s'(e) = N$, and $s'(c) = D$. Thus, returns to the citizens and the elite will be w_e and R_e, as given by (4) and (5) when $\pi = e$, and w_c and R_c as in (2) and (3) when $\pi = c$.

[14] More generally, we could use the notation $g(\pi,s)$, $\tau(\pi,s)$, and $s'(\pi,s)$, so that these choices are conditioned on which party has political power, π, and the current state, s. Since it is clear that the public good decision will depend only on the current state, s, while the decision over economic and future political institutions will depend only on π, we use the more economical notation $g(s)$, $\tau(\pi)$, and $s'(\pi)$.

Incorporating these best responses and using the one-step-ahead deviation principle (e.g., Drew Fudenberg and Jean Tirole 1994, 108–10), we can write the payoff of an elite agent i recursively as follows:[15]

$$V^E(N|\theta^E,\theta^C) = \max_{\theta^i \geq 0} \{-\theta^i + \gamma^E + p(\theta^i,\theta^E(N),\theta^C(N)|N)[R_e + \beta V^E(N|\theta^E,\theta^C)] + [1 - p(\theta^i,\theta^E(N),\theta^C(N)|N)][R_c + \beta V^E(D|\theta^E,\theta^C)]\}. \tag{12}$$

The second term in the first line, γ^E, is the utility from public goods which the elite receives since the current state is $s = N$. This equation also incorporates the fact that with probability $p(\theta^i,\theta^E(N),\theta^C(N)|N)$ the elite will remain in power and choose $\tau = e$ and $s' = N$, and with the complementary probability, the citizens will come to power and choose $\tau = c$ and $s' = D$. Finally, this expression also makes use of the one-step-ahead deviation principle in writing the continuation values as $V^E(N|\theta^E,\theta^C)$ and $V^E(D|\theta^E,\theta^C)$ because it restricts attention to symmetric MPE after the current period where all citizens and elites choose the contribution levels given by the vectors θ^C and θ^E.

Since F is continuously differentiable (cf. Assumption 2), $p(\theta^i,\theta^E(N),\theta^C(N)|N)$ is also differentiable. Moreover, the continuation values $V^E(D|\theta^E,\theta^C)$ and $V^E(N|\theta^E,\theta^C)$ are taken as given, so the first-order necessary condition for the optimal choice of θ^i by elite agent i can be written as

$$\phi^E(N) f[\phi^E(N)((M-1)\theta^E(N) + \theta^i) - \phi^C(N) L \theta^C(N)] [\Delta R + \beta \Delta V^E] \leq 1, \tag{13}$$

and $\theta^i \geq 0$, with complementary slackness.[16] Recall that ΔR is defined in (6), f is the density function corresponding to the distribution function F, and

$$\Delta V^E \equiv V^E(N|\theta^E,\theta^C) - V^E(D|\theta^E,\theta^C)$$

is the difference in value between nondemocracy and democracy for an elite agent in the symmetric MPE. Intuitively, (13) requires the cost of one more unit of investment in de facto political power to be no less than the benefit. The benefit is given by the increased probability that the elite will control politics induced by this investment, $\phi^E(N)$, times the density of the F function evaluated at the equilibrium investments, multiplied by the benefit from controlling politics, which is the current benefit ΔR plus the discounted increase in continuation value, $\beta \Delta V^E$. In addition, the second-order sufficient condition is $f'[\phi^E(N)((M-1)\theta^E(N) + \theta^i) - \phi^C(N) L \theta^C(N)] < 0$.[17] For future reference, let us also introduce the notation that $\theta^i \in \Gamma^E[\theta^E,\theta^C|N]$ if θ^i is a solution to (13) that satisfies the second-order condition.

Similarly, the value function for a citizen when the initial political state is nondemocracy is

$$V^C(N|\theta^E,\theta^C) = \max_{\theta^i \geq 0} \{-\theta^i + p_0(\theta^i,\theta^E(N),\theta^C(N)|N)[w_e + \beta V^C(N|\theta^E,\theta^C)] + [1 - p_0(\theta^i,\theta^E(N),\theta^C(N)|N)][w_c + \beta V^C(D|\theta^E,\theta^C)]\} \tag{14}$$

[15] Since instantaneous payoffs are bounded, there is no loss of generality in appealing to the one-step-ahead deviation principle and writing payoffs recursively.

[16] That is, either $\theta^i = 0$ or (13) holds as equality.

[17] The condition $f'[\phi^E(N)((M-1)\theta^E(N) + \theta^i) - \phi^C(N) L \theta^C(N)] < 0$ is sufficient, while $f'[\phi^E(N)((M-1)\theta^E(N) + \theta^i) - \phi^C(N) L \theta^C(N)] \leq 0$ is necessary but not sufficient. We impose the sufficient condition throughout to simplify the discussion.

which is very similar to (12) except that economic rewards are now given by w_e and w_c instead of R_e and R_c; the utility from the public good is absent since $g(N) = e$; and the probability that $\pi = e$ is now given by the function

$$(15)\quad p_0\big(\theta^i, \theta^E(s), \theta^C(s)|s\big) = F\left[\phi^E(s)M\theta^E(s) - \phi^C(s)\left((L-1)\theta^C(s) + \theta^i\right) - \eta I(s = D)\right],$$

which is the probability that the elite has more power than the citizens in state $s \in \{D,N\}$ (given that all elite agents choose investment in de facto power, $\theta^E(s)$, all citizens except i choose, and individual i chooses θ^i). The first-order necessary condition is similar to (13) and can be written as

$$(16)\qquad \phi^C(N)f\left[\phi^E(N)M\theta^E(N) - \phi^C(N)\left((L-1)\theta^C(N) + \theta^i\right)\right][\Delta w + \beta\Delta V^C] \leq 1,$$

and $\theta^i \geq 0$ with complementary slackness, and

$$\Delta V^C \equiv V^C(D|\theta^E, \theta^C) - V^C(E|\theta^E, \theta^C).$$

The interpretation of this condition is the same as that of (13). The second-order sufficient condition is $f'\left[\phi^E(N)M\theta^E(N) - \phi^C(N)\left((L-1)\theta^C(N) + \theta^i\right)\right] > 0$. If θ^i is a solution to (16), we denote this by $\theta^i \in \Gamma^C[\theta^E, \theta^C|N]$.

By analogy, the value function for the elite in democracy is given by

$$(17)\qquad V^E(D|\theta^E, \theta^C) = \max_{\theta^i \geq 0}\{-\theta^i + p\left(\theta^i, \theta^E(D), \theta^C(D)|D\right)\left[R_e + \beta V^E\left(N|\theta^E, \theta^C\right)\right] + \left[1 - p\left(\theta^i, \theta^E(D), \theta^C(D)|D\right)\right]\left[R_c + \beta V^E\left(D|\theta^E, \theta^C\right)\right]\},$$

where $p(\theta^i, \theta^E(D), \theta^C(D))|D)$ is again given by (11). The first-order necessary condition for the investment of an elite agent in democracy then becomes

$$(18)\qquad \phi^E(D)f\left[\phi^E(D)\left((M-1)\theta^E(D) + \theta^i\right) - \phi^C(D)L\theta^C(D) - \eta\right]\left[\Delta R + \beta\Delta V^E\right] \leq 1,$$

and $\theta^i \geq 0$, again with complementary slackness and with the second-order condition $f'\left[\phi^E(D)\left((M-1)\theta^E(D) + \theta^i\right) - \phi^C(D)L\theta^C(D) - \eta\right] < 0$. We write $\theta^i \in \Gamma^E[\theta^E, \theta^C|D]$ if θ^i solves (18) and satisfies the second-order condition. Finally, for the citizens in democracy, we have

$$(19)\qquad V^C(D|\theta^E, \theta^C) = \max_{\theta^i \geq 0}\{-\theta^i + \gamma^C + p_0(\theta^i, \theta^E(D), \theta^C(D)|D)\left[w_e + \beta V^C\left(N|\theta^E, \theta^C\right)\right] + \left[1 - p_0\left(\theta^i, \theta^E(D), \theta^C(D)|D\right)\right]\left[w_c + \beta V^C\left(D|\theta^E, \theta^C\right)\right]\},$$

which incorporates the utility from the public good γ^C since the regime is democratic, and $p_0(\theta^i, \theta^E(D), \theta^C(D)|D)$ is given by (15). The first-order necessary condition is now

$$(20)\qquad \phi^C(D)f\left[\phi^E(D)M\theta^E(D) - \phi^C(D)\left((L-1)\theta^C(D) + \theta^i\right) - \eta\right][\Delta w + \beta\Delta V^C] \leq 1,$$

and $\theta^i \geq 0$, with complementary slackness and the second-order condition is $f'\left[\phi^E(D)M\theta^E(D) - \phi^C(D)\left((L-1)\theta^C(D) + \theta^i\right) - \eta\right] > 0$. We denote solutions to this problem by $\theta^i \in \Gamma^C[\theta^E, \theta^C|D]$.

B. *Equilibrium*

Definition 1.—A symmetric MPE consists of contribution levels $\theta^E = (\theta^E(N), \theta^E(D))$ and $\theta^C = (\theta^C(N), \theta^C(D))$ such that $\theta^E(N) \in \Gamma^E[\theta^E, \theta^C|N]$, $\theta^E(D) \in \Gamma^E[\theta^E, \theta^C|D]$, $\theta^C(N) \in$

$\Gamma^C[\theta^E,\theta^C|N]$ and $\theta^C(D) \in \Gamma^C[\theta^E,\theta^C|D]$. In addition, policy, economic, and political decisions $g(s)$, $\tau(\pi)$, and $s'(\pi)$ are such that $g(N) = e$, $g(D) = c$, $\tau(e) = e$, $s'(e) = N$, $\tau(c) = c$, and $s'(c) = D$, and factor prices are given by (2)–(5) as a function of $\tau \in \{e,c\}$.

The comparison of (13) and (16) immediately implies that these first-order conditions cannot generally hold as equalities both for the elite and the citizens. The comparison of (18) and (20) also leads to the same conclusion. In particular, "generically" only one of the two groups will invest to increase their de facto political power.[18] Which group will be the one to invest in their political power? Loosely speaking, the answer is: whichever group has higher gains from doing so. Here the difference in numbers becomes important. In particular, recall that $L >> M$ implies $\Delta R >> \Delta w$. Consequently, it will be the elite that has more to gain from controlling politics and that will invest to increase their de facto power. We note this here as a lemma and provide the exact conditions for this to be the case in Lemma A in the Appendix.

LEMMA 1: *Suppose Assumptions 1 and 2 hold. Then any symmetric MPE involves* $\theta^C(D) = \theta^C(N) = 0$.

Lemma 1 simplifies the characterization of equilibrium, which is now reduced to the characterization of two investment levels, $\theta^E(N)$ and $\theta^E(D)$, such that $\theta^E(N) \in \Gamma^E[\theta^E,0|N]$ and $\theta^E(D) \in \Gamma^E[\theta^E,0|D]$. Given Lemma 1, we can also write the equilibrium probabilities that the elite will have more political power as

$$p(N) \equiv F[\phi^E(N)M\theta^E(N)] \qquad \text{and} \qquad p(D) \equiv F[\phi^E(D)M\theta^E(D) - \eta]. \tag{21}$$

Next, substituting $\theta^C(D) = \theta^C(N) = 0$ into the first-order conditions (13) and (18), and assuming the existence of an interior solution (with $\theta^E(N) > 0$ and $\theta^E(D) > 0$), we obtain the following two equations that characterize interior equilibria:

$$\phi^E(N)f[\phi^E(N)M\theta^E(N)][\Delta R + \beta\Delta V^E] = 1, \tag{22}$$

and

$$\phi^E(D)f[\phi^E(D)M\theta^E(D) - \eta][\Delta R + \beta\Delta V^E] = 1. \tag{23}$$

The question is whether there exists an interior equilibrium. The following assumption imposes that the additional rents that the elite will gain from labor repressive institutions are sufficiently large and ensures that this is the case.

ASSUMPTION 3: $\min\{\phi^E(N)f[0]\Delta R, \phi^E(D)f[-\eta]\Delta R\} > 1$.

Given this assumption, we have the following characterization result.

[18] Here "generically" means "for almost all parameter values." Alternatively, defining the Lebesgue measure over the feasible values of parameters, the set of parameters for which both equalities could be satisfied simultaneously would have a Lebesgue measure equal to 0.

Moreover, note that even if these conditions were satisfied as equalities, the two second-order conditions would be incompatible with each other (unless f were uniform).

PROPOSITION 1 (State Dependence): *Suppose that Assumptions 1, 2, and 3 hold. Then any symmetric MPE leads to a Markov regime switching structure where the society fluctuates between democracy with associated competitive economic institutions* $(\tau = c)$ *and nondemocracy with associated labor repressive economic institutions* $(\tau = e)$*, with switching probabilities* $p(N) \in (0,1)$ *and* $1 - p(D) \in (0,1)$*. Moreover, provided that* $\phi^E(N) > \phi^E(D)$*, we have* $p(D) < p(N)$*.*

PROOF:
See the Appendix.

This proposition has a number of important implications. First, the equilibrium involves endogenous switches between different political regimes. Second, there is "state dependence" or persistence, in the sense that democracy is more likely to follow democracy than it is to follow nondemocracy (i.e., $p(D) < p(N)$). Third, the effects of the changes in the distribution of de jure power induced by political regime change are partially offset by changes in investments in de facto power (see, in particular, Corollary 1). This offset is due to the elite's investments in its de facto political power. Consequently, we have $p(D) < 1$, meaning that the elite can be successful in imposing the economic institutions that they prefer even in democracy (and also induce a change in political institutions). Nevertheless, provided that $\phi^E(N) > \phi^E(D)$, this offset is imperfect and the elite is more powerful in nondemocracy than in democracy—in particular, we have $p(D) < p(N)$, so that the elite is less likely to obtain its preferred economic institutions starting in democracy.

The role of investments in de facto power in counteracting changes in de jure power can be seen more starkly in the special case where $\phi^E(N) = \phi^E(D)$, so that the elite's investments in de facto power are equally effective in nondemocracy and in democracy. In this case, we obtain the following important corollary to Proposition 1.

COROLLARY 1 (Invariance): *Suppose Assumptions 1–3 hold and that* $\phi^E(N) = \phi^E(D)$*. Then there exists a unique symmetric MPE. This equilibrium involves* $p(D) = p(N) \in (0,1)$*, so that the probability distribution over economic institutions is nondegenerate and independent of whether the society is democratic or nondemocratic.*

PROOF:
See the Appendix.

This corollary shows a striking result; the effects of changes in political institutions are totally offset by changes in investments in de facto power. Consequently, the stochastic distribution for economic institutions is independent of whether the political state is a democracy or nondemocracy. The intuition for this result is straightforward and can be obtained by comparing (22) and (23) in the special case where $\phi^E(N) = \phi^E(D) = \phi^E$. These two conditions can hold as equalities only if

$$f[\phi^E M \theta^E(N)] = f[\phi^E M \theta^E(D) - \eta]. \tag{24}$$

The second-order conditions imply that f must be nonincreasing when evaluated both at $\phi^E M \theta^E(N)$ and at $\phi^E M \theta^E(D) - \eta$. Since f is single peaked (cf. Assumption 2), (24) can be satisfied only when $\phi^E M \theta^E(N) = \phi^E M \theta^E(D) - \eta$. Thus, we obtain

$$\theta^E(D) = \theta^E(N) + \frac{\eta}{\phi^E M} \tag{25}$$

and $p(D) = p(N)$ (from (21)). This is the *invariance* result discussed in the introduction.

Intuitively, in democracy the elite invests sufficiently more to increase their de facto political power so that they entirely offset the democratic (de jure power) advantage of the citizens. A more technical intuition for this result is that the optimal contribution conditions for the elite both in nondemocracy and democracy equate the marginal cost of contribution, which is always equal to one, to the marginal benefit. Since the marginal costs are equal, equilibrium benefits in the two regimes also have to be equal. The marginal benefits consist of the immediate gain of economic rents, ΔR, plus the gain in continuation value, which is independent of the current regime. Consequently, marginal costs and benefits can be equated only if $p(D) = p(N)$. This result illustrates how institutional change and persistence can coexist—while political institutions change frequently, the equilibrium process for economic institutions remains unchanged. This pattern is particularly interesting in light of the evidence from historical cases, such as the enfranchisement of former slaves in the US South or the end of colonialism in Latin America, which show that certain significant political reforms can go hand-in-hand with the persistence of the economic structure and the distribution of resources in society.

Another counterintuitive prediction of Corollary 1 relates to the potential inefficiency of democracy relative to nondemocracy. In particular, suppose that there are no public goods, so that $\gamma^C = \gamma^E = 0$. In this case, an allocation starting from nondemocracy weakly Pareto dominates one that starts in democracy, even when labor repression is socially costly, i.e., even if $\delta > 0$. This is because citizens are equally well off in the two allocations, while starting in democracy the elite receives the same economic payoff but invests more in de facto power and thus is worse off than in nondemocracy. This analysis therefore suggests that the high levels of investment in de facto political power by the elite in democracy, which are socially costly, may be one of the reasons many democratic societies have disappointing economic performances.

The results so far rely on Assumption 3, which ensures that investment in de facto power is always profitable for the elite. When this is not the case, democracy can become an absorbing state and changes in political institutions will have more important effects. This is stated in the next corollary to Proposition 1.

COROLLARY 2 (Democracy as an Absorbing State): *Suppose that* (*i*) *Assumptions 1 and 2 hold;* (*ii*) *there exists* $\bar{\theta}^E(N) > 0$ *such that*

$$\phi^E(N) f\left[\phi^E(N) M \bar{\theta}^E(N)\right]\left(\frac{\Delta R + \beta\gamma^E - \beta\bar{\theta}^E(N)}{1 - \beta F\left[\phi^E(N) M \bar{\theta}^E(N)\right]}\right) = 1; \tag{26}$$

and (iii)

$$\eta > -\underline{\omega}. \tag{27}$$

Then, there exists a symmetric MPE in which $p(N) \in (0,1)$ *and* $p(D) = 0$.

PROOF:

See the Appendix.

Therefore, if we relax part of Assumption 3, symmetric MPEs with democracy as an absorbing state may arise. Clearly, Condition (27), which leads to this outcome, is more likely to hold when η is high. This implies that if democracy creates a substantial advantage in favor of the citizens, it may destroy the incentives of the elite to engage in activities that increase its de facto power. This will then change the future distribution of political regimes and economic institutions.

It is also interesting to note that even when Condition (27) holds, the equilibrium with $p(D) = p(N) > 0$ characterized in Proposition 1 and Corollary 1 may still exist, leading to a symmetric MPE with $p(D) = p(N)$. Consequently, whether democracy becomes an absorbing state (i.e., whether it becomes fully consolidated) may depend on expectations.[19]

C. *Generalizations*

The model presented so far incorporates a number of simplifying assumptions. We now briefly discuss how relaxing those will affect the results. First, Assumption 1 is essential for the results. If the citizens were not more numerous than the elite, it might be the citizens who undertook the investments in de facto political power, thus the character of the results would change significantly. Nevertheless, this assumption is reasonable, since the fact that the citizens are more numerous than the elite is a good approximation to reality. Second, as already pointed out above, Assumptions 2 and 3 are adopted to simplify the exposition. For example, if we relax the single-peakedness assumption on $f[\omega]$, then the conclusions in Proposition 1 would continue to apply, but in Corollary 1 the symmetric MPE may no longer be unique. If the parts of Assumption 2 (F is increasing everywhere and $\lim_{\omega \to \infty} f[\omega] = 0$) or Assumption 3 were relaxed, then we could obtain corner solutions, whereby $p(N)$ or $p(D)$ may be equal to zero or one. This feature is illustrated, for example, in Corollary 2.

Another implicit assumption is that the costs of investing in de facto political power and the utility from consumption are linear. An alternative would be to have convex costs $C(\theta^i)$. In this case, the analysis becomes more involved; if the cost function $C(\cdot)$ featured $C'(0) = 0$, then both the elite and the citizens would always invest in de facto power (where C' denotes the derivative of this function). Nevertheless, under the more reasonable assumption that $C'(0) > 0$, Assumption 1 would again ensure that the citizens do not invest to increase their de facto power. In this case, however, even when $\phi^E(N) = \phi^D(N)$, the invariance result in Corollary 1 no longer applies and equilibria are always similar to those in Proposition 1.[20]

Finally, another implicit assumption is that democracy shifts the power of the citizens additively (rather than ω being drawn from general distributions F_N in nondemocracy and F_D in democracy, with F_D first-order stochastically dominating F_N). This assumption is also important for the invariance result in Corollary 1.

D. *Comparative Statics*

The analysis so far has established how the interplay between de facto and de jure political power leads to the coexistence of persistence in economic institutions and change in political regimes. Equally important, however, is how the likelihood of different institutional outcomes is related to the underlying parameters. We now present a number of comparative static results shedding light on this question. To simplify the analysis, we focus on the case where $\phi^E(N) =$

[19] Note, also, that following a reasoning similar to that in the proof of Corollary 2, Assumption 3 could be relaxed to the following weaker condition: there exists $\bar{\theta}^E(N) > 0$ satisfying (26), and

$$\phi^E(D)\, f[-\eta] \left(\frac{\Delta R + \beta \gamma^E - \beta \bar{\theta}^E(N)}{1 - \beta F\left[\phi^E(N) M \bar{\theta}^E(N)\right]} \right) > 1.$$

We prefer Assumption 3 to this condition since, despite being more restrictive, it is simpler and more transparent.

[20] An equivalent alternative would be to assume that the utility from consumption is given by a concave function $u(\cdot)$. The concavity of $u(\cdot)$ would also, however, imply that the benefits of increasing consumption are lower for the rich. On the other hand, such concavity would introduce a link between political equilibria and inequality. We do not pursue this specification, since this particular mechanism connecting inequality to politics seems less important than others considered in the literature.

$\phi^E(D) = \phi^E$, which was treated in Corollary 1. We will then comment on how these results generalize to the case where $\phi^E(N) > \phi^E(D)$. When $\phi^E(N) = \phi^E(D)$, comparative statics are straightforward, since equations (12), (17), and (25) immediately imply that

$$\Delta V^E = \gamma^E + \frac{\eta}{\phi^E M} > 0. \tag{28}$$

This equation is intuitive. In the equilibrium of Corollary 1, there are only two differences between democracy and nondemocracy for the elite. The first is that in nondemocracy the elite chooses the type of public good and thus receives a utility γ^E. The second is that in democracy the elite has to spend more in contributions in order to retain the same political power. In particular, the additional spending for each member of the elite is equal to $\eta/\phi^E M$, which is increasing in the de jure political power advantage that democracy creates for the citizens (since, in equilibrium, the elite totally offsets this advantage).

Using (22) and (28) and denoting the equilibrium level of $\theta^E(N)$ by $\theta^*(N)$, we obtain

$$\phi^E f[\phi^E M\theta^*(N)]\left[\Delta R + \beta\left(\gamma^E + \frac{\eta}{\phi^E M}\right)\right] = 1. \tag{29}$$

Similarly, denoting the equilibrium level of $\theta^E(D)$ by $\theta^*(D)$, we also have

$$\phi^E f[\phi^E M\theta^*(D) - \eta]\left[\Delta R + \beta\left(\gamma^E + \frac{\eta}{\phi^E M}\right)\right] = 1. \tag{30}$$

Finally, let us denote the probability that the elite will have political power by $p^* = p(D) = p(N)$. This probability corresponds both to the probability that the elite will control political power, and to the probability that the society will be nondemocratic and economic institutions will be labor repressive rather than competitive. Thus, this probability summarizes most of the economic implications of the model.

PROPOSITION 2 (Comparative Statics): *Suppose that Assumptions 1–3 hold and that* $\phi^E(N) = \phi^E(D) = \phi^E$. *Then* $\theta^*(N)$, $\theta^*(D)$, *and* p^* *are strictly increasing in* ΔR, β, *and* η, *and strictly decreasing in* M. *Moreover,* p^* *is strictly increasing in* ϕ^E.

Many of the comparative statics in Proposition 2 are intuitive and do not require much elaboration. For example, the effect of the number of elite agents, M, on investments in de facto power, and the equilibrium probability of nondemocracy and the effect of ϕ^E on the equilibrium probability of nondemocracy are straightforward to understand.[21] The fact that an increase in ΔR increases the probability that the elite controls political power is also natural, since ΔR is a measure of how much it has to gain by controlling political power.[22] But this latter result also has interesting economic implications. Since ΔR will be high when λ or δ are low, it implies $\partial p^*/\partial\lambda < 0$ and $\partial p^*/\partial\delta < 0$, so that political and economic institutions favoring the elite are more likely to arise when the elite will be able to use labor repressive institutions effectively or when the costs of repression are relatively low. A major reason why λ and δ may vary across societies is because

[21] Observe that M also has an indirect effect on the equilibrium, which goes in the same direction; greater M reduces ΔR (cf. equation (6)) and further discourages investments in de facto power via this channel.

[22] This finding is also in line with the empirical literature on collective action, which finds that it is more likely when the benefits are higher (e.g., Robert Wade 1988).

of differences in economic structure. For example, we may expect both parameters to be lower in societies where agriculture is more important and physical or human capital–intensive sectors are less important because labor repression may be more effective in reducing wages and may also create less distortion in such societies than in those with more complex production relations. This interpretation is consistent with the greater prevalence of labor repressive practices in predominantly agricultural societies.[23]

The fact that a higher β also increases the likelihood of labor repressive institutions is somewhat more surprising. In many models, a higher discount factor leads to better allocations. Here, in contrast, a higher discount factor leads to more wasteful activities by the elite and to a higher likelihood of labor repressive economic institutions. The reason is that the main pivotal agents in this model are the elite, who, by virtue of their smaller numbers, are the ones investing in their de facto political power (cf. Lemma 1) and thus take the effect of their contributions on equilibrium allocations into account. Contributing to de facto political power is a form of investment and some of the returns accrue to the elite in the future (when they secure nondemocracy instead of democracy). Therefore, a higher level of β encourages them to invest more in their political power and makes nondemocracy and labor repressive economic institutions more likely.

The most surprising and interesting comparative static result concerns the effects of η. Since a higher η corresponds to a greater de jure power advantage for the citizens in democracy, one might have expected a greater η to lead to better outcomes for the citizens. In contrast, we find that higher η makes nondemocracy and labor repressive economic institutions more likely (as long as Assumption 3 still holds). This is because a higher η makes democracy more costly for the elite, inducing each elite agent to invest more in the group's political power in order to avoid democracy. This effect is strong enough to increase the probability that they will maintain political power. However, the overall impact of η on the likelihood of democracy is nonmonotonic: if η increases so much that Assumption 3 no longer holds, then Corollary 2 applies and democracy becomes fully consolidated (i.e., an absorbing state).

Some of the comparative static results in Proposition 2 are the outcome of two competing forces. The fact that the cost of investing in de facto political power is linear and the assumption that $\phi^E(N) = \phi^E(D)$ are important for these results.[24] In particular, in the case where $\phi^E(N) > \phi^E(D)$, the comparative statics with respect to ΔR, β, and M still hold (see Acemoglu and Robinson 2006b). But those with respect to η become ambiguous; for example, a greater democratic advantage for citizens helps them gain power in democracy but also induces the elite to invest more in their de facto political power. Which effect dominates cannot be determined without imposing further structure.

III. Captured Democracy

We have so far assumed that when the elite has more political power than the citizens, it can change both economic institutions and the political system. Many historical examples, for instance, the persistence of economic institutions in Latin America both after the end of colonialism and during periods of democracy, point to an alternative pattern, which we refer to as

[23] For example, see David Eltis (2000) for evidence that slavery was more profitable in agriculture than in industry, and Jerome Blum (1978) for historical evidence that forms of servile labor persisted much longer in rural societies. The implications of differential profitability of repression in agriculture and industry for politics are discussed in Barrington Moore (1966), Jeffrey M. Paige (1997), and Acemoglu and Robinson (2006a).

[24] Under more general assumptions, the effect of M on p^* is also ambiguous for reasons pointed out in Joan M. Esteban and Debraj Ray (2001); with a larger number of agents, each agent contributes less, but there are more of them.

captured democracy.[25] In such an equilibrium path, democratic political institutions emerge and survive for extended periods of time, but they are captured by the elite, which is able to impose its favorite economic institutions (or at the very least, they are able to have a disproportionate effect on the choice of economic institutions). We now show that a simple generalization of our baseline model generates this pattern.

As discussed in detail in Acemoglu and Robinson (2006a), in many situations, political institutions are more difficult to change than economic institutions, and may have additional "durability". We modify the baseline model in the simplest way that will enable us to study these issues. We assume that overthrowing a democratic regime is more difficult than influencing economic institutions, so that the elite requires greater political power to force a switch from democracy to nondemocracy than simply influencing economic institutions in democracy. In particular, we assume that when $s = D$ and $P_t^C(D) + \xi > P_t^E(D) \geq P_t^C(D)$, where $\xi > 0$, the elite can choose economic institutions at time t, but cannot change the political system. If, on the other hand, $P_t^E(D) \geq P_t^C(D) + \xi$, then the elite can choose both economic institutions and the future political system. Symmetrically, when $s = N$ and $P_t^E(N) + \xi > P_t^C(N) \geq P_t^E(N)$, the citizens can choose economic institutions but cannot change the political system. This formulation builds on the assumption that changing political institutions is more difficult than influencing economic institutions.[26] Moreover, to simplify the analysis we focus on the case where $\phi^E(N) = \phi^E(D) = \phi^E$ and also strengthen Assumption 2:

ASSUMPTION 2′: *F is defined over* $(\underline{\omega}, \infty)$ *for some* $\underline{\omega} < 0$*, is everywhere strictly increasing, and is twice continuously differentiable (so that its density f and the derivative of the density, f′, exist everywhere), and moreover we have* $f'[\omega] < 0$ *for all* ω *and* $\lim_{\omega \to \infty} f[\omega] = 0$.

Given these assumptions, the structure of the model is similar to the previous section and a symmetric MPE is also defined similarly. The value functions are more complicated but have similar intuitions to those described in Section II. To simplify the exposition, let us incorporate the result of Lemma 1 in writing the various probabilities. In particular, suppose that citizens choose zero contribution to their de facto political power, all elite agents except $i \in \mathcal{E}$ choose an investment level of $\theta^E(D)$and i chooses θ^i. Then, let the probability that the elite has sufficient power to change democracy to nondemocracy be

$$\hat{p}\left(\theta^i, \theta^E(D), \theta^C(D) | D\right) = F[\phi^E((M-1)\theta^E(D) + \theta^i) - \eta - \xi], \tag{31}$$

while the probability that it only has power to choose economic institutions is, as before,

$$p(\theta^i, \theta^E(D), \theta^C(D) | D) = F[\phi^E((M-1)\theta^E(D) + \theta^i) - \eta].$$

[25] As discussed in footnote 10, there is no reason to presume that economic institutions favored by the elite are always less efficient than those preferred by the citizens. Thus "captured democracy" may sometimes lead to fewer distortions than an effective democracy.

[26] One could also consider the opposite case in which changing economic institutions is more difficult than reforming political institutions. Given the costs involved in political reform, we find this alternative less compelling. In any case, the implications of this polar case would be similar to our baseline model, with the elite having a greater probability of controlling economic institutions in nondemocracy.

Correspondingly, the value function for the elite in democracy can be written as

$$V^E(D|\theta^E,\theta^C) = \max_{\theta^i\geq 0}\{-\theta^i + p\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)R_e + \left(1 - p\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)\right)R_c + \hat{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)\beta V^E\left(N|\theta^E,\theta^C\right) + \left(1 - \hat{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)\right)\beta V^E\left(D|\theta^E,\theta^C\right)\}, \tag{32}$$

where we have already assumed that when the citizens have sufficient power they will choose democracy.[27]

With similar arguments as before, the maximization in (32) implies the following first-order condition for an interior equilibrium:

$$\phi^E f[\phi^E M\theta^E(D) - \eta]\,\Delta R + \beta\phi^E f[\phi^E M\theta^E(D) - \eta - \xi]\Delta V^E = 1, \tag{33}$$

which is now sufficient, since Assumption 2′ ensures that the second-order condition is satisfied.

The main difference of this first-order condition from the one in the previous section, (23), is that the probability with which the elite gains the economic rent ΔR is different from the probability with which it secures a change in the political system. For this reason, two different densities appear in (33).

Similarly for nondemocracy, we define

$$\hat{p}\left(\theta^i,\theta^E(N),\theta^C(N)|N\right) = F\left[\phi^E((M-1)\theta^E(N) + \theta^i) + \xi\right], \tag{34}$$

and

$$p(\theta^i,\theta^E(N),\theta^C(N)|N) = F[\phi^E((M-1)\theta^E(N) + \theta^i)],$$

which leads to the value function for nondemocracy:

$$V^E(N|\theta^E,\theta^C,\theta^i) = \max_{\theta^i\geq 0}\{-\theta^i + \gamma^E + p\left(\theta^i,\theta^E(N),\theta^C(N)|N\right)R_e + \left(1 - p\left(\theta^i,\theta^E(N),\theta^C(N)|N\right)\right)R_c + \hat{p}\left(\theta^i,\theta^E(N),\theta^C(N)|N\right)\beta V^E\left(N|\theta^E,\theta^C\right) + \left(1 - \hat{p}\left(\theta^i,\theta^E(N),\theta^C(N)|N\right)\right)\beta V^E\left(D|\theta^E,\theta^C\right)\}, \tag{35}$$

which again has a similar structure to the value function in democracy. Consequently, the first-order (necessary and sufficient given Assumption 2′) condition for optimal contribution by an elite agent in an interior equilibrium is also similar:

$$\phi^E f[\phi^E M\theta^E(N)]\,\Delta R + \beta\phi^E f[\phi^E M\theta^E(N) + \xi]\,\Delta V^E = 1. \tag{36}$$

[27] An alternative way of writing (32) would be as follows: define $\tilde{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$ as the probability that the elite is able to impose its preferred economic institutions but not able to change political institutions. Let $\check{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$ be the probability that it is able to change the political institutions as well as the economic institutions. Then, with probability $\tilde{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$, it receives only ΔR, whereas with probability $\check{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$, it receives $\Delta R + \beta\Delta V^E$. This way of writing the recursive formulation is equivalent to (32) with $\check{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right) = \hat{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$ and $\tilde{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right) = p\left(\theta^i,\theta^E(D),\theta^C(D)|D\right) - \hat{p}\left(\theta^i,\theta^E(D),\theta^C(D)|D\right)$.

To characterize the equilibrium, let us introduce the additional notation such that $\pi = (e,e)$ denotes the elite keeping total power in nondemocracy or gaining total power in democracy (i.e., $P_t^E(N) \geq P_t^C(N)$ or $P_t^E(D) \geq P_t^C(D) + \xi$); $\pi = (e,c)$ corresponding to the elite keeping control of de jure power but losing control of economic institutions in nondemocracy (i.e., $P_t^E(N) + \xi \geq P_t^C(N) > P_t^E(N)$); $\pi = (c,c)$ means the elite loses power in nondemocracy or fails to gain any power in democracy (i.e., $P_t^C(N) > P_t^E(N) + \xi$ or $P_t^C(D) > P_t^E(D)$); and, finally, $\pi = (c,e)$ corresponds to the citizens maintaining de jure power in democracy but losing control over economic institutions (i.e., $P_t^C(D) + \xi > P_t^E(D) \geq P_t^C(D)$).

The interesting result in this case is that once the society becomes democratic, it may remain so potentially for a long time (i.e., $\hat{p}(D)$ can be small) but the elite will still be able to control the economic institutions (i.e., $p(D)$ could be quite large), so that the equilibrium will involve $\pi = (c,e)$ for many periods. This is stated and proved in the next proposition.

PROPOSITION 3 (Captured Democracy): *Consider the modified model with durable political institutions. Suppose that* (*i*) *Assumptions 1, 2′, and 3 hold;* (*ii*) $\phi^E(N) = \phi^E(D) = \phi^E$; *and* (*iii*) $\gamma^C \geq \overline{\gamma}^C$ *where* $\overline{\gamma}^C < \infty$. *Then, we have a Markov regime-switching process with state dependence and* $1 > \hat{p}(N) > \hat{p}(D) > 0$. *Moreover, democracy is captured in the sense that* $0 < p(N) < p(D) < 1$, *that is, democracy will survive but choose economic institutions in line with the elite's interests with an even higher probability than does nondemocracy.*

PROOF:

See the Appendix.

The equilibrium predictions in this proposition are richer than those in our baseline model. The equilibrium still takes a Markov regime-switching structure with fluctuations between democracy and nondemocracy. But there is no guarantee that economic institutions in democracy will be those favored by the citizens. While in the baseline model the elite was able to impose both its political and economic wishes at the same time, here we have an equilibrium pattern whereby democracy persists but the elite may be able to impose its favorite economic institutions. In fact, the proposition shows that (given Assumption 2′) the elite will be able to impose labor repressive economic institutions with a *higher* probability under democracy than in nondemocracy.

The intuition for this (somewhat paradoxical) result is that in democracy there is an additional benefit for the elite to invest in de facto political power, which is to induce a switch from democracy to nondemocracy. Consequently, the elite invests so much more in de facto power in democracy that it is able to obtain its favorite economic institutions with a greater probability.[28] Nevertheless, the elite is happier in nondemocracy because the cost of investing in de facto political power in democracy is significantly higher. In fact, it is precisely because they prefer nondemocracy to democracy that they are willing to invest more in their de facto political power in democracy and obtain the labor repressive economic institutions with a high probability. What about citizens? If there were no additional benefit of democracy, then citizens would be worse off in democracy than in nondemocracy because they would care only about economic institutions and economic institutions are more likely to be labor repressive in democracy than in nondemocracy. However, if the benefits to citizens from the public goods provided in democracy, γ^C,

[28] This result is not independent of functional form assumptions. For example, if we relax Assumption 2′, it is possible to obtain an equilibrium with a semi-captured democracy where political institutions still follow a Markov-switching structure with state dependence, but the probability of labor repressive economic institutions in democracy is positive and no higher than in nondemocracy, i.e., $p(N) \geq p(D) > 0$. Nevertheless, relaxing Assumption 2′ does not guarantee that such an equilibrium will exist; it only makes it possible.

are sufficiently high, i.e., $\gamma^C > \overline{\gamma}^C$ as hypothesized in Proposition 3, then citizens are willing to choose a democratic regime, even though economic institutions in democracy will be no better for them than those in nondemocracy.

Overall, this model features state dependence in political and economic institutions, and also leads to the coexistence of political change and persistence in economic institutions (i.e., the presence of labor repression in democracy). In fact, it is straightforward to see that the larger is ξ, the more likely is the configuration with stable democracy choosing economic institutions in line with the interests of the elite.

IV. Effective Reform

Our framework shows how the equilibrium path may feature persistence in economic institutions even when political institutions change. The pattern of *invariance* in Corollary 1 illustrates this type of persistence most starkly. This analysis then leads to the following questions: When will political reforms lead to changes in economic outcomes? When will they break this type of persistence?

In this section, we discuss potential answers to the question suggested by our model. The comparative static results show that a change in political institutions from nondemocracy to democracy is likely to be effective (in terms of leading to equilibrium competitive labor markets and persistent democracy) under two alternative (but complementary) scenarios.

First, if democracy creates a substantial advantage for the citizens in the form of a large value of η, then, as shown by Corollary 2, this will end the cycle of institutional persistence and make the permanent consolidation of democracy an equilibrium. Empirically, the implication is that there may be a qualitative difference between democracies where the electoral advantage created for larger social groups is limited and those where democratic institutions create a substantial advantage for the majorities. In terms of empirical work, this result suggests that when investigating the impact of democracy on economic outcomes, one may wish to distinguish between different gradations of democracy and also between democracies with different electoral and party structures.

Second, if one of the following reforms is undertaken *simultaneously* with the switch to democracy, then the economy is less likely to switch back to nondemocracy and to labor repressive economic institutions: (a) a reduction in $\phi^E(D)$, so that the elite is more limited in their ability to control democratic politics (for example, preventing local threats of violence or the capture of political parties by the traditional elites could achieve such an outcome); (b) a reduction in ΔR, for example, by means of an increase in λ, which will reduce the potential rents that the elite can obtain and discourage further investments in de facto political power. In terms of empirical work, this suggests that one might wish to distinguish the effects of simultaneous political and economic reforms from those of political reforms that are not accompanied by economic reforms (see Francesco Giavazzi and Tabellini (2005) for such an empirical investigation).

This discussion therefore illustrates that while politics-as-usual may favor the elite even in democracy, undertaking simultaneous and significant reforms may change the character of the political equilibrium, making democracy and competitive labor markets more likely. The contrast between two political reforms, the democratization of the US South in 1865 and the 1688 Glorious Revolution in England, illustrates the implications of our framework for the nature of effective reforms. The enfranchisement of blacks after the Civil War left the Southern economic structure unchanged and also afforded many effective channels of controlling politics to the landed elite, who managed to disenfranchise and intimidate black workers, and also restrict their mobility and keep their wages low. The result was the continuation of the pre–Civil War economic order after the Northern troops left the South. It took almost another

100 years until more effective reforms were implemented in the US South (see Weiner 1978; Wright 1986, 1999; Alston and Ferrie 1999; Ransom and Sutch 2001; Alston and Kauffman 2001). This contrasts with the Glorious Revolution, which not only changed the distribution of de jure power by dethroning the Stuart monarchy and substantially increasing the role of the Parliament, but also reformed the economic institutions of British society, for example by abolishing previously established privileges and trading monopolies. The juxtaposition of these changes irreversibly altered the distribution of de facto political power (see, for example, North and Weingast 1989; Acemoglu, Johnson, and Robinson 2005a).

V. Concluding Remarks

Almost all theoretical and empirical research in political economy starts with the presumption that political institutions, once in place, persist and shape the political-economic interactions of different groups and agents. Nevertheless, many societies experience frequent changes in their political institutions. For example, most Latin American countries freed themselves from Spanish colonialism in the first 20 years of the nineteenth century, wrote constitutions, and became republics. In the twentieth century, these same countries experienced multiple switches between dictatorship and democracy. While some of these significant changes in political institutions led to corresponding changes in economic institutions and economic outcomes, in other instances the structure of the economy showed significant resilience in the face of potentially radical political changes.

In this paper, we proposed a simple model in which equilibrium institutions and the distribution of resources are the outcome of the interplay between de jure political power allocated by political institutions and investments in de facto political power to influence the course of politics through such other means as lobbying, bribery, and use of extralegal force. By virtue of their smaller numbers and greater expected gains, the elite is more likely to invest in their de facto political power than the more numerous citizens. This asymmetry between the elite and the citizens has important implications for the structure of political equilibria, the persistence of institutions, and the relationship between changes in political institutions and economic performance. The main result of our analysis is that changes in de jure power driven by reforms and political institutions can be partially or entirely offset by changes in de facto political power. A special case of our model, for example, leads to an extreme form of offset, which we referred to as *invariance*; even though political institutions change along the equilibrium path, the stochastic distribution of economic outcomes remains invariant. This type of persistence in economic institutions and outcomes is broadly consistent with a number of historical examples. Our model also clarifies the conditions under which changes in political institutions translate into corresponding changes in economic outcomes. A particular example would be an effective democratic reform that creates a sufficiently level political playing field so that it becomes no longer profitable for the elite to invest heavily in their de facto political power. Such democratization will lead to significant changes in equilibrium outcomes. In contrast, more moderate steps toward democracy may lead to little or no change in economic outcomes. In addition, when political and economic reforms take place simultaneously, their effect on the structure of equilibrium could be much larger.

The interplay between de facto and de jure political power also leads to a number of new comparative static results. For example, our analysis shows that elites that have fewer members, that can benefit more from controlling economic institutions, and that are more forward-looking are more likely to dominate politics. Somewhat paradoxically, over a certain range, a greater democratic advantage for the citizens leads to greater elite domination of politics. The reason for this result is that when there is a greater democratic advantage for the citizens,

elites intensify their investments in de facto political power in order to avoid democratic institutions, which are now more costly for them. Finally, a simple extension of our model, which incorporates the realistic feature that changing political institutions is more difficult than changing economic institutions, leads to a pattern of *captured democracy*, whereby democratic institutions may survive but end up creating equilibrium economic institutions that are in line with the interests of the elite.

We view this paper as a first step in the investigation of the coexistence of persistence and change in institutions. While the forces highlighted by our model appear to be important in a number of historical episodes, for example in the context of the abolition of slavery in the US South and the end of colonialism in various Latin American countries, there are other instances where a different mechanism may be responsible for the persistence of the existing economic structure. In these cases, it appears that, following political reform, the identity of the elite changes but new elites adopt policies in line with the worst practices of their predecessors. Such a pattern appears to have been particularly prevalent following independence in Africa and also in some Latin American countries, such as Bolivia and Mexico. This is reminiscent of ideas discussed by Robert Michels (1911) in his *Iron Law of Oligarchy.* A challenging and fruitful area for future research would be to develop a unified model to study the composition of elites, when existing elites persist, when elites change but institutions persist, and when institutions truly change.

Appendix

We first provide a more explicit and general form of Lemma 1, which dispenses with Assumptions 1–3, applies to any MPE, and also provides an explicit condition to guarantee no investment in de facto power by the citizens.

LEMMA A:

Suppose that $f[\omega]$ exists everywhere and that $L \geq \bar{L}$, where

$$\bar{L} \equiv \max\left\{\frac{\phi^C(D)}{\phi^E(D)}, \frac{\phi^C(N)}{\phi^E(N)}\right\} \frac{[(1-\lambda(1-\delta))+\beta\gamma^C/A]}{(1-\beta)(1-\lambda)(1-\delta)} M \in (0,\infty). \tag{37}$$

Then, any MPE involves $\theta^C(D) = \theta^C(N) = 0$.

PROOF:

To obtain a contradiction, suppose that $L \geq \bar{L}$ with $\bar{L}$ given by (37), and that $\theta^i(s) > 0$ for some $i \in \mathcal{C}$ and some $s \in \{D,N\}$. Suppose $s = N$. The proof for $s = D$ is identical. The fact that $\theta^i(N) > 0$ for some $i \in \mathcal{C}$ implies from (16) that

$$\phi^C(N) f\left[\phi^E(N)\sum_{i\in\mathcal{E}}\theta^i(N) - \phi^C(N)\sum_{i\in\mathcal{C}}\theta^i(N)\right][\Delta w + \beta\Delta V^C] = 1.$$

From (13), we also have

$$\phi^E(N) f\left[\phi^E(N)\sum_{i\in\mathcal{E}}\theta^i(N) - \phi^C(N)\sum_{i\in\mathcal{C}}\theta^i(N)\right][\Delta R + \beta\Delta V^E] \leq 1.$$

Combining these two expressions, we obtain

$$\frac{\phi^E(N)[\Delta R + \beta\Delta V^E]}{\phi^C(N)[\Delta w + \beta\Delta V^C]} \leq 1; \tag{38}$$

$$\frac{\phi^E(N)\Delta R}{\phi^C(N)[\Delta w + \beta\Delta V^C]} < 1,$$

which exploits the fact that $\Delta V^E > 0$. Next, from (14) we obtain

$$V^C(N|\theta^E,\theta^C) \geq \frac{w_e}{1-\beta},$$

and from (19),

$$V^C(D|\theta^E,\theta^C) \leq \frac{w_c + \gamma^C}{1-\beta},$$

so that

$$\Delta V^C \leq \frac{\Delta w + \gamma^C}{1-\beta}.$$

Combining this with (38),

$$\frac{\phi^E(N)(1-\beta)\Delta R}{\phi^C(N)[\Delta w + \beta\gamma^C]} < 1.$$

Finally, using (6) and (7),

$$\frac{\phi^E(N)}{\phi^C(N)} \frac{(1-\beta)(1-\lambda)(1-\delta)L}{[(1-\lambda(1-\delta)) + \beta\gamma^C/A]M} < 1,$$

which contradicts $L \geq \bar{L}$, proving the lemma.

Since this lemma applies to any MPE, it applies a fortiori to symmetric MPE and thus implies Lemma 1.

We next provide proofs of both Proposition 1 and Corollary 1.

PROOFS OF PROPOSITION 1 AND OF COROLLARY 1:

Let us start with Corollary 1, that is, the case in which $\phi^E(N) = \phi^E(D) = \phi^E$. Lemma A implies that $\theta^C(D) = 0$ and $\theta^C(N) = 0$. Then, Assumption 3 ensures that $\theta^E(D) = 0$ and $\theta^E(N) = 0$ cannot be part of an equilibrium. Since Assumption 2 implies that $f[\omega]$ is continuous and $\lim_{\omega\to\infty} f[\omega] = 0$, both conditions (22) and (23) must hold as equalities for some interior values of $\theta^E(D)$ and $\theta^E(N)$, establishing existence. Equations (22) and (23) also immediately give (24). The second-order conditions imply that $f'[\phi^E M\theta^E(N)] \leq 0$ and $f'[\phi^E M\theta^E(D) - \eta] \leq 0$. Then, since f is a single peaked (Assumption 2), (24) implies that $\theta^E(D)$ and $\theta^E(N)$ are uniquely defined and must satisfy (25). Next, (25), together with (21), yields $p(D) = p(N)$. Since F is strictly increasing throughout its support (Assumption 2), for any interior $\theta^E(D)$ and $\theta^E(N)$ we must have $F[\phi^E M\theta^E(D) - \eta] = F[\phi^E M\theta^E(N)] \in (0,1)$ and thus $p(D) = p(N) \in (0,1)$.

Finally, uniqueness also follows from the fact that $\theta^E(D)$ and $\theta^E(N)$ are uniquely defined and satisfy (25), which implies that ΔV^E is also uniquely determined as $\Delta V^E = \gamma^E + \eta/(\phi^E M)$ (from (12), (17) and (25)). This establishes the uniqueness of the symmetric MPE.

Next, suppose that $\phi^E(N) > \phi^E(D)$. Lemma A and Assumption 3 again imply that $\theta^C(D) = \theta^C(N) = 0$, $\theta^E(D) > 0$ and $\theta^E(N) > 0$. From Assumption 2, $f[\omega]$ is again continuous with $\lim_{\omega \to \infty} f[\omega] = 0$, so that both conditions (22) and (23) must hold as equalities for some interior values of $\theta^E(D)$ and $\theta^E(N)$, establishing existence. $p(D) > 0$ and $p(N) > 0$ follow from the fact that $\theta^E(D) > 0$ and $\theta^E(N) > 0$, and $p(D) < 1$ and $p(N) < 1$ follow from Assumption 2.

To complete the proof, we need to establish that when $\phi^E(N) > \phi^E(D)$, $p(D) < p(N)$. Suppose, to obtain a contradiction, that $p(D) \geq p(N)$. Then, Assumption 2 and the second-order conditions imply that $\phi^E(D)M\theta^E(D) - \eta \geq \phi^E(N)M\theta^E(N)$ and $f[\phi^E(D)M\theta^E(D) - \eta] \leq f[\phi^E(N)M\theta^E(N)]$. But, combined with the hypothesis that $\phi^E(N) > \phi^E(D)$, this implies that (22) and (23) cannot both hold, which leads to a contradiction and establishes that $p(D) < p(N)$.

PROOF OF COROLLARY 2:

Suppose there exists a symmetric MPE with $\theta^E(D) = 0$. This implies $p(D) = 0$ and thus $V^E(D) = R_c/(1 - \beta)$, while $V^E(N)$ is still given by (12), and the relevant first-order necessary condition for $\theta^E(N) > 0$ is given by (22). Combining this with the expression for $V^E(D)$, we obtain $\theta^E(N) = \overline{\theta}^E(N)$ as in (26) and

$$\Delta V^E = \frac{F[\phi^E(N)M\overline{\theta}^E(N)]\Delta R - \overline{\theta}^E(N) + \gamma^E}{1 - \beta F[\phi^E(N)M\overline{\theta}^E(N)]}.$$

Now, using (22), we see that (26) is sufficient to ensure that a positive contribution to de facto power in nondemocracy is optimal for elite agents. Moreover, (27) implies that $f[-\eta] = 0$; thus

$$\phi^E(D)f[-\eta]\left(\frac{\Delta R + \beta\gamma^E - \beta\overline{\theta}^E(N)}{1 - \beta F(\phi^E(N)M\overline{\theta}^E(N))}\right) < 1,$$

so zero contribution in democracy is also optimal for the elite. Moreover, again from (27), $F[-\eta] = 0$, which establishes the existence of a symmetric MPE with $p(N) \in (0,1)$ and $p(D) = 0$.

PROOF OF PROPOSITION 2:

All the comparative static results follow from (29) and (30) using the Implicit Function Theorem (e.g., Carl Simon and Lawrence Blume 1994, Theorem 15.2). We can use this theorem, because f is differentiable everywhere; moreover, Assumptions 2 and 3 ensure that the equilibrium is always at an interior point. We briefly sketch the argument for some of these results. For example, for $\partial\theta^*(N)/\partial\Delta R$, apply the Implicit Function Theorem to (29) to obtain

$$\frac{\partial\theta^*(N)}{\partial\Delta R} = -\frac{f[\phi^E M\theta^*(N)]}{f'[\phi^E M\theta^*(N)](M\phi^E(\Delta R + \beta\gamma^E) + \beta\eta)} > 0,$$

since $f' < 0$ from the second-order condition. Applying the Implicit Function Theorem to (30) establishes $\partial\theta^*(D)/\partial\Delta R > 0$. To obtain $\partial p^*/\partial\Delta R > 0$, note that $p^* = F[\phi^E M\theta^*(N)]$ and F is everywhere strictly increasing.

The comparative statics in part (ii) with respect to β are identical.

Using the Implicit Function Theorem with respect to M also immediately establishes $\partial\theta^*(N)/\partial M < 0$ and $\partial\theta^*(D)/\partial M < 0$, as claimed in part (iii). Since $p^* = F[\phi^E M\theta^*(N)]$, the effect on p^* at first appears ambiguous. However, note from (29) that as M increases, the second term on the left-hand side declines, so $f[\phi^E M\theta^*(N)]$ has to increase. Since $f' < 0$, this is possible only if $\phi^E M\theta^*(N)$ declines, so $p^* = F[\phi^E M\theta^*(N)]$ also declines (given the monotonicity of F).

Next, the Implicit Function Theorem also gives the results in part (iv), in particular,

$$\frac{\partial\theta^*(N)}{\partial\eta} = -\frac{\beta f[\phi^E M\theta^*(N)]}{\phi^E f'[\phi^E M\theta^*(N)](M^2\phi^E(\Delta R + \beta\gamma^E) + M\beta\eta)} > 0,$$

and, similarly, $\partial\theta^*(D)/\partial\eta > 0$. Moreover, since in this case $p^* = F[\phi^E M\theta^*(N)]$, we also obtain $\partial p^*/\partial\eta > 0$.

Finally, it is straightforward to verify that the effect of ϕ^E on $\theta^*(N)$ and $\theta^*(D)$ is ambiguous. However, writing (29) as

$$f[\phi^E M\theta^*(N)]\left(\phi^E(\Delta R + \beta\gamma^E) + \frac{\beta\eta}{M}\right) = 1,$$

we see that an increase in ϕ^E increases the second term on the left-hand side, so $f[\phi^E M\theta^*(N)]$ has to decline. Since $f' < 0$, this implies that $\phi^E M\theta^*(N)$ increases, and $p^* = F[\phi^E M\theta^*(N)]$ must also increase, establishing $\partial p^*/\partial\phi^E > 0$.

PROOF OF PROPOSITION 3:

The following actions are clearly best responses: $g(s = D) = c$, $g(s = N) = e$, $\tau(\pi = e) = e$, $\tau(\pi = c) = c$, $s'(\pi = e) = N$. Suppose also that $s'(\pi = c) = D$. Then Lemma A implies that the probability of labor repressive economic institutions under democracy is

$$p(D) = F[\phi^E M\theta^E(D) - \eta],$$

and

$$p(N) = F[\phi^E M\theta^E(N)]$$

in nondemocracy. Suppose, to obtain a contradiction, that $p(D) \leq p(N)$. This is equivalent to

$$\phi^E M\theta^E(D) - \eta \leq \phi^E M\theta^E(N). \tag{39}$$

Since from Assumption 2′ f is decreasing everywhere, this implies

$$f[\phi^E M\theta^E(D) - \eta] \geq f[\phi^E M\theta^E(N)].$$

This equation combined with (33) and (36) implies that

$$f[\phi^E M\theta^E(D) - \eta - \xi] \leq f[\phi^E M\theta^E(N) + \xi].$$

Since from Assumption 2′ f is decreasing, this is equivalent to

$$\phi^E M\theta^E(D) - \eta - \xi \geq \phi^E M\theta^E(N) + \xi,$$

which, given $\xi > 0$, contradicts (39), establishing that $p(D) > p(N)$, i.e., that democracy is captured.

By the same reasoning, the result that $p(D) > p(N)$ implies $f[\phi^E M\theta^E(D) - \eta - \xi] > f[\phi^E M\theta^E(N) + \xi]$; thus, $\phi^E M\theta^E(D) - \eta - \xi < \phi^E M\theta^E(N) + \xi$. Since F is strictly monotonic, this implies $\hat{p}(N) > \hat{p}(D)$, establishing the Markov regime-switching structure.

Finally, as $\gamma^C \to \infty$, citizens prefer democracy to nondemocracy, and thus set $s'(\pi = c) = D$. Since all other parameters are finite, there exists $\overline{\gamma}^C < \infty$ such that the same conclusion applies for all $\gamma^C \geq \overline{\gamma}^C$.

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