A Theory of Political Transitions*

Daron Acemoglu
Massachusetts Institute of Technology
and
James A. Robinson
University of California, Berkeley

August 10, 2000

Abstract

We develop a theory of political transitions inspired in part by the experiences of Western Europe and Latin America. Nondemocratic societies are controlled by a rich elite. The initially disenfranchised poor can contest power by threatening social unrest or revolution, especially when the opportunity cost of social unrest is low, for example, during periods of recessions. The threat of revolution may force the elite to democratize. Democracy may not consolidate because it is more redistributive than a nondemocratic regime, and so gives the elite an incentive to mount a coup. Highly unequal societies are less likely to consolidate democracy, and may end up oscillating between regimes and suffer substantial fiscal volatility.

Keywords: democracy, dictatorship, inequality, political instability, redistribution.

JEL Classification: D72, D74, O15, P16.

Although economists and policymakers increasingly realize the importance of political institutions in shaping economic performance, there is relatively little work on what determines political institutions. For instance, why are some countries democracies while others are ruled by nonrepresentative regimes? The contrast between Northern Europe

and Latin America in this regard is quite stark. Most Northern European countries extended the franchise during the late 19th and early 20th centuries, and succeeded in consolidating mass democracy. For example, in Britain, following the first tentative reforms of 1832, voting rights were significantly extended in 1867 and in 1884. They were further expanded in 1919, when universal male suffrage was introduced, and in 1928, when all women were allowed to vote. There were no reversals in this process of democratization. Although many less developed countries, notably those in Latin America, also became democratic during the late 19th and early 20th century, most quickly reverted to nondemocratic regimes.[1]

The recent history of many Latin American countries is therefore marred by oscillations in and out of democracy. In Argentina, for example, universal male suffrage became effective in 1912. But it was soon overthrown by a coup in 1930. Democracy was re-instated in 1946, but fell to a coup in 1955, re-created again in 1973, subverted again in 1976, and finally re-installed in 1983. Why has mass democracy been durable in many Northern European countries, and why has it been so hard to consolidate this set of political institutions in less developed countries such as those in Latin America?

This paper provides a framework for analyzing this question. We emphasize that in democratic societies the poor impose higher taxes on the rich than in nondemocratic societies. This makes the poor pro-democratic while simultaneously giving the rich an incentive to oppose democracy.[2] In nondemocratic societies, the poor are excluded from political power, but pose a revolutionary threat, especially during periods of crisis. The rich (elite) will try to prevent revolution by making concessions to the poor, for example in the form of income redistribution. However, because the threat of revolution is often only transitory, current redistribution does not guarantee future redistribution. If this temporary redistribution is insufficient to prevent a revolution, the elite will be forced to make a credible commitment to future income redistribution. This is what extending voting rights achieves by changing the identity of the future median voter.

Democracies are not necessarily permanent because the elite may have an opportunity to mount a coup. The poor would like to commit to low levels of future taxation to prevent this. But since such commitments are not always credible, the elite may prefer to retake power, even though coups are socially wasteful. They are more likely to do so when, due to high taxes, democracy is relatively costly for them. Taxes will be high in

turn when inequality is high. As a result, a highly unequal society is likely to fluctuate in and out of democracy.

In consolidated democracies, such as the OECD economies, the threat of coups is not important, so taxes are determined by the usual trade-off for the median voter between transfers and deadweight losses. There is little or no variability in the amount of redistribution. In contrast, in highly unequal economies, fiscal policy is more volatile, because as a society fluctuates between different political regimes, the amount of fiscal redistribution changes (Michael Gavin and Roberto Perotti, 1997, for example, show that fiscal policy in Latin America is much more variable than in Europe). Interestingly, while greater inequality in a consolidated democracy increases redistribution (e.g. Allan H. Meltzer and Scott F. Richard, 1981), an unequal society is less likely to be in the more redistributive democratic regime, and so may be less redistributive.

Our framework emphasizes that regime changes are more likely during recessionary periods because costs of political turmoil, both to the rich and to the poor, are lower during such episodes. This is in line with the broad patterns in the data. Stephan Haggard and Robert R. Kaufman (1995), for example, document that many transitions to democracy in Latin America happened during economic crises. They summarize their findings by writing "in Argentina, Bolivia, Brazil, Peru, Uruguay and the Philippines, democratic transitions occurred in the context of severe economic difficulties that contributed to opposition movements" (1995, p. 45). Many coups also happen during recessions or during periods of economic difficulties, such as those in Brazil in 1964, Chile in 1973 and Argentina in 1976. In support of this Mark J. Gasiorowski (1995) and Adam Przeworski et al. (1996) show that recessions significantly increase the probability of a coup. Przeworski et al. (1996, p. 42) conclude: "the fragility of democracy...flows largely from its vulnerability in the face of economic crises." The relationship between volatility and coups also suggests that a possible reason for the greater success of richer societies in consolidating democracy is their economic stability.

The incentives to engage in or avoid fiscal redistribution, which are generated by underlying asset inequality, are a key factor in shaping political transitions in our framework. This suggests that redistribution of assets, if it is relatively costly to reverse, may be used to alter regime dynamics. For example, educational reforms that increase the relative earnings capacity of the poor and land reforms that achieve a more egalitarian

distribution of assets may consolidate democracy. This is because, by promoting asset equality, they reduce subsequent fiscal redistribution and discourage future coups. There is a danger in radical reforms, however; despite reducing the future incentive to mount coups, their anticipation may increase the likelihood of a coup during the reform period as in Guatemala in 1954, Brazil in 1964, and Chile in 1973. We also discuss how asset redistribution may be used by the elite to prevent democratization, how the possibility of repression affects the relationship between inequality and political transitions, and how the presence of investments that have different returns in democracies and non-democracies can lead to multiple equilibria. Finally, our model provides a framework for understanding other empirically salient patterns related to political transitions. For example, we discuss the reasons why economic development might encourage democratic consolidation, and why democracies may be less stable in societies with presidential systems (see Przeworski et al., 1996, for evidence).

Although the reasons for changes in regimes are numerous, conflict between different social groups appears to be important in practice. In Acemoglu and Robinson (1997), we presented evidence suggesting that in Britain, France, Germany and Sweden democratization was in large part a response to the threat of revolution and social unrest. In Latin America, many instances of democratization, including those in Peru, Uruguay, and Brazil during the 1980s, in Argentina in 1912 and 1973, and in Venezuela in 1945 and 1958, appear to have been driven by the same factors (see, for example, Haggard and Kaufman, 1995, and Ruth B. Collier, 1999, for general treatments, Rock, 1987, Ch. 8, for the Argentine case, and Daniel H. Levine, 1989, p. 256, and Glen L. Kolb, 1974, p. 175, on Venezuela).

In the economics literature, our paper is related to the analyses of the political economy of redistribution (e.g., Meltzer and Richards, 1981, Torsten Persson and Guido Tabellini, 1994, and Alberto Alesina and Rodrik, 1994, Roland Bénabou, 1999) and to models of social conflict (e.g., John E. Roemer, 1985, herschel I. Grossman, 1991, Aaron Tornell and Andres Velasco, 1992, Alberto Ades and Thierry Verdier, 1996, and Jess Benhabib and Aldo Rustichini, 1995). There is a large political science literature on democratization, starting with the work of Seymour M. Lipset (1959) and Barrington Moore (1966) that emphasizes the structural determinants of democracy (such as income level and class composition). More recent work has focused on the strategic interaction

between regimes and their opponents, and on political rather than economic factors (e.g., Dankwart C. Rustow, 1970, Guillermo O'Donnell and Philip C. Schmitter, 1986, Przeworski, 1991, Juan J. Linz and Alfred Stepan, 1996). Goran Therborn (1977) and Dietrich Rueschemeyer, Evelyn H. Stephens and John D. Stephens (1992) are more closely related, since they also emphasize the importance of the disenfranchised poor in democratization, though they do not discuss the commitment role of different political regimes, which is key to our approach. In our previous work, Acemoglu and Robinson (2000), we emphasized democratization as a commitment to future redistribution, but did not discuss coups and democratic consolidation. The literature on coups is much less developed and focuses mostly on how purely political factors explain the persistence or collapse of democratic politics (for example, Robert A. Dahl, 1971, and Linz, 1978). This contrasts with our focus on social conflict and redistribution (though O'Donnell, 1973, also pointed out that many coups in Latin America were intended to reduce wage pressure).

The paper proceeds as follows. In Section 2, we present our basic model and study the determinants of transitions between regimes. In Section 3, we discuss how redistribution of assets, constitutional provisions and political institutions, and regime specific investments may help consolidate democracies. In Section 4, we discuss the strategies of the elite to avoid democratization. Section 5 concludes.

1 The Basic Model

There are two groups of agents: the poor and the rich (the elite). The political state can be democratic or nondemocratic. In a democracy, the median voter sets the tax rate, and because the poor are more numerous, the median voter is a poor agent. In a nondemocratic regime, taxes are set by the rich. When the political system is nondemocratic, the poor can attempt a revolution, and the elite decide whether to establish democracy. When the system is democratic, the rich can mount a coup. The level of income in this economy is stochastic, and the opportunity costs of coups and revolutions change with income. This captures the notion that some periods, such as recessions, may be more conducive to social and political unrest. It also enables us to model the fact that those in power cannot commit to future tax rates, which will be determined in

future political equilibria.

1.1 The Environment

We consider an infinite horizon economy with a continuum 1 of agents. A proportion λ of these agents are "poor", while the remaining $1-\lambda$ form a rich "elite". Throughout the paper superscript p denotes poor agent and r denotes rich agent (or member of the elite). We will treat all poor agents as identical, and all members of the elite are also identical. Initially, political power is concentrated in the hands of the elite, but $\lambda > \frac{1}{2}$ so that if there is full democracy, the median voter is a poor agent.

There is a unique consumption good y, and a unique asset with total stock, h (which can be thought of as physical or human capital or land). We begin our analysis of the economy at time $t = 0$ where each poor agent has capital h^p and each member of the elite has $h^r > h^p$. These capital stocks are exogenous. To parametrize inequality, let $h^r = (1-\theta)h/(1-\lambda)$ and $h^p = \theta h/\lambda$ where $\lambda > \theta > 0$, so that a low level of θ corresponds to higher inequality. The final good is produced from capital, and total output of an agent is $y_t^i = A_t h^i$ for $i = p, r$, where A_t captures aggregate productivity. In particular, we assume that A_t takes two values,

$$A_t = \begin{cases} A^h = 1 & \text{with probability } 1-s \\ A^l = a & \text{with probability } s \end{cases}$$

where $A^l = a < 1$ is a period of recession. We assume that $s < 1/2$ so that recessions are relatively rare. We therefore refer to $A_t = A^h$ as "normal times". The role of recessions is to change the opportunity cost of coups to rich agents in a democracy and of revolution to poor agents in a nondemocracy.[3]

All agents have identical preferences represented by $E_t \sum_{j=0}^{\infty} \beta^{t+j} C_{t+j}^i$, for $i = p, r$, where C_t^i is consumption of agent i at time t, β is the discount factor and E_t is the expectations operator conditional on all information available at time t. Post-tax income is given by, $\hat{y}_t^i \equiv (1-\tau_t)A_t h^i + T_t^i$, where $\tau_t \geq 0$ is the tax rate on income, and $T_t^i \geq 0$ is the lump-sum transfer that an agent of group i receives from the state. We simplify the analysis by assuming that taxes are linear and transfers cannot be person specific, hence $T_t^i = T_t$ (see the previous version, Acemoglu and Robinson, 1999, for group-specific transfers). We also assume that it is costly to raise taxes: at tax rate τ_t, there is a

deadweight cost of $c(\tau_t)A_t h$, where c is twice continuously differentiable with $c(0) = 0$, $c'(0) = 0$, $c'(\tau) > 0$ for all $\tau > 0$, and $c'' \geq 0$. This formulation implies that a proportion $c(\tau_t)$ of pre-tax output is lost due to taxation. If there were no costs of taxation, our general results would not be altered, but some of the comparative statics would not apply when the tax rate is at a corner, i.e., at $\tau = 1$. To avoid keeping track of this case, we assume $c'(1) = \infty$, which ensures an interior tax rate. The government budget constraint implies

$$T_t = \tau_t A_t \left(\lambda h^p + (1-\lambda)h^r\right) - c\left(\tau_t\right) A_t h = \left(\tau_t - c(\tau_t)\right) A_t h.$$

The society starts in nondemocracy and the λ poor agents are initially excluded from the political process, but they can attempt a revolution in any period $t \geq 1$. We assume that if a revolution is attempted and a fraction $\xi^p \leq 1$ of the poor take part, it always succeeds. After a revolution, poor agents expropriate an additional fraction $\pi - \theta$ of the asset stock of the economy. During the period of the revolution, a fraction $1 - \mu > 0$ of the income of the economy is destroyed, so each agent obtains a per-period return of $\mu\pi A_t h/\lambda$. After this initial period following revolution, each for agent receives a per-period return of $\pi A_t h/\lambda$ forever. Since a revolution generates private benefits for a poor agent, there is no collective action problem.[4] We also assume that the rich lose everything after a revolution, so that they will always try to prevent it. A low value of μ implies that a revolution is relatively costly, and a low value of π implies that returns from revolution are limited.[5] The rich can also decide to voluntarily extend the franchise and establish a democracy, and there are no costs in this process. If the franchise is extended, then the economy becomes a democracy, and the median voter, a poor agent, sets the tax rate.

In a democracy, the elite have no special voting power (one-person-one-vote), but they can attempt a coup. We assume that if a coup is attempted and a fraction $\xi^r \leq 1$ of the elite take part, it always succeeds. After a coup, the political situation reverts back to the initial status quo with the elite controlling political power. This formalization implies that, as with a revolution, there is no free rider problem with a coup.[6] A coup causes economic disruption and political turmoil, and destroys a fraction $1 - \phi$ of all agents' income during the period in which it takes place. Agent i's income if a coup occurs in period t is therefore $\phi A_t h^i$.

The timing of events within a period can be summarized as follows.

1. The state A_t is revealed.

2. If there has been a revolution in the past, the poor receive their share of income, consumption takes place and the period ends.

   If the society is in a democracy, the poor set the tax rate, τ_t. If the society is in a nondemocratic regime, the rich set τ_t.

3. In a nondemocratic regime, the rich decide whether or not to extend the franchise. In a democracy, they decide whether to mount a coup. If they extend the franchise or a coup takes place, the party that comes to power decides whether to keep the tax τ_t set at stage 2 or set a new tax rate.

4. In a nondemocratic regime, the poor decide whether or not to initiate a revolution. If there is a revolution, they share the remaining output of the economy. If there is no revolution, the tax rate decided at 2 or 3 gets implemented.

5. Consumption takes place and the period ends.

Notice that coups are only possible starting in a democratic regime, and revolutions are only possible starting in a nondemocratic regime. This implies that the poor cannot undertake a revolution immediately following a coup against democracy.

1.2 Definition of Equilibrium

Since there are no free-rider problems affecting political action, we can treat poor agents as one player and members of the elite as another player in a repeated game. This economy can therefore be represented as a repeated game between the elite and the poor. We will characterize the pure strategy Markov Perfect Equilibria of this game in which strategies only depend on the current state of the world and the prior actions taken within the same period.

The state S is one of (A, D), (A, E), or (A, R) where $A = A^l$ or $A = A^h$. Here E denotes elite in power (nondemocratic regime), D denotes democracy, and R denotes "revolution". The strategy of the elite is denoted by $\sigma^r(S|\tau^p)$ and is a function of

the state S and the taxation decision by the poor when $S = (A, D)$. This strategy determines the actions of the elite which are $\{\gamma, \zeta, \tau^r\}$. γ denotes the decision to extend the franchise, which only applies in the state (A, E), and $\gamma = 1$ corresponds to the extension of the franchise, while $\gamma = 0$ means no franchise extension. ζ is the decision to mount a coup, which only applies in the state (A, D), and we adopt the convention that $\zeta = 1$ corresponds to a coup, and $\zeta = 0$ to no coup. Finally, τ^r is the tax rate set by the elite, and they get to set the tax rate either when $S = (A, E)$ and $\gamma = 0$, or when $S = (A, D)$ and $\zeta = 1$. The strategy of the poor is denoted by $\sigma^p(S|\gamma, \tau^r)$ and depends on the state S, and the franchise extension and tax rate decision of the elite in the state (A, E) (because the elite move before the poor in the state (A, E) according to the timing of events above). This strategy determines the actions $\{\rho, \tau^p\}$. ρ is the decision to initiate a revolution when the state is (A, E), with $\rho = 1$ corresponding to revolution and $\rho = 0$ to no revolution; τ^d is the tax rate when the state is (A, D). Transitions between states are given as follows: starting from (A, E), if there is a revolution, i.e. $\rho = 1$, then we transit into state (A, R) which is an absorbing state. If there is no revolution and $\gamma = 0$, the state remains at (A, E), and if $\gamma = 1$, it switches to (A, D). Starting from (A, D), if there is a coup, i.e. $\zeta = 1$, the state transits to (A, E).

A pure strategy Markov Perfect equilibrium is a strategy combination denoted by $\{\widehat{\sigma}^r(S|\tau^p), \widehat{\sigma}^p(S|\gamma, \tau^r)\}$, such that $\widehat{\sigma}^p$ and $\widehat{\sigma}^r$ are best-responses to each other for all possible states. More formally, consider the following pair of Bellman equations.

$$(1) \quad V^r(S) = \max_{\sigma^r} \left\{ C^r\left(\widehat{\sigma}^p(S|\gamma, \tau^r), \sigma^r, S\right) + \beta \int V^r(S')\, dP(S' \mid \widehat{\sigma}^p(S|\gamma, \tau^r), \sigma^r, S) \right\}$$

$$(2) \quad V^p(S) = \max_{\sigma^p} \left\{ C^p\left(\sigma^p, \widehat{\sigma}^r(S|\tau^p), S\right) + \beta \int V^p(S')\, dP(S' \mid \sigma^p, \widehat{\sigma}^r(S|\tau^p), S) \right\}$$

where $C^i(\sigma^p, \sigma^r, S)$ denotes the consumption of agent i as a function of the state S and strategies σ^p and σ^r, and $P(S' \mid \sigma^p, \sigma^r, S)$ denotes the probability distribution function of transition from state S to state S' as a function of the strategies σ^p and σ^r. (1) and (2) are standard Bellman equations that express the net present discounted value of an agent as his current consumption plus his future discounted value. A pure strategy Markov Perfect equilibrium is a strategy combination $\{\widehat{\sigma}^r(S|\tau^p), \widehat{\sigma}^p(S|\gamma, \tau^r)\}$ such that $\widehat{\sigma}^r$ solves (1) and $\widehat{\sigma}^p$ solves (2).

1.3 Analysis

The optimal tax rate for a poor agent in the absence of a coup threat, τ^m, simply maximizes his per period consumption, and is independent of the state of the economy. Thus,

$$\tau^m = \arg\max_{\tau} \left\{ (1-\tau) A_t h^p + (\tau - c(\tau)) A_t h \right\},$$

where $(1-\tau)A_t h^p$ is the after-tax earned income for a poor agent, and $(\tau - c(\tau))A_t h$ is the lump-sum transfer, T_t. The first-order condition of this problem gives

$$c'(\tau^m) = \frac{\lambda - \theta}{\lambda}, \tag{3}$$

where we used the fact that $h^p \equiv \theta h/\lambda$. (3) implies that τ^m is uniquely defined and decreasing in θ. As in the standard voting model (e.g. Meltzer and Richard, 1981), inequality increases the preferred tax rate of poor agents. When $\theta = \lambda$, so that $h^r = h^p$, we have $\tau^m = 0$. Hence, in the case of complete equality, the median voter sets a zero tax rate and there is no redistribution. Since τ^m does not directly depend on the shock A_t, the tax rate would always remain constant in the absence of the threat of political change. In practice, the tax rate will vary over time because of the political constraints imposed by changes in A_t.

Define $\delta^i(\theta)A_t$ to be the net amount of redistribution that a person of type i receives in state A_t when the tax rate is τ^m, i.e. $\delta^i(\theta)A_t \equiv T_t^m - \tau^m A_t h^i$. The assumption that the budget is balanced then implies, $T_t^m = (\tau^m - c(\tau^m))A_t h$. Note $\delta^r(\theta) < 0 < \delta^p(\theta)$, so that there are net transfers to the poor. Furthermore, higher inequality raises the tax rate on the rich, while simultaneously increasing the net transfer to the poor.[7]

We start by making two assumptions that will simplify the exposition. These assumptions will ensure that coups and revolutions are not beneficial when $A_t = A^h$. A sufficient condition for coups not to take place in the state $A_t = A^h$ is

Assumption 1: $(1-\beta)(1-\phi)h^r > -(1+\beta s(a-1))\,\delta^r(\theta)$.

The cost of a coup for a rich agent during normal times is $(1-\phi)h^r + \delta^r(\theta)$, which is the direct loss due to turbulence minus the taxes that they would have paid in a democracy (recall $\delta^r(\theta) < 0$). Whereas the maximum benefit of a coup is to avoid taxation in all future periods. The net present value of taxation at the rate τ^m in the future is

$-\beta((1-s)+sa)\delta^r(\theta)/(1-\beta)$, and comparing this to the cost $(1-\phi)h^r+\delta^r(\theta)$ gives Assumption 1. This assumption guarantees that there is no threat of a coup in normal times.

Next, define the continuation value (the discounted expected net present value) of a poor agent after a revolution but before the state A_t is revealed as:

$$W^p(R)=\frac{(sa+1-s)\,\pi h}{(1-\beta)\lambda}, \tag{4}$$

This expression follows because a revolution is permanent, and after a revolution, the poor obtain a fraction π of the total assets of the economy, h, and share it among themselves forever (and λ is the fraction of the poor in the economy). A fraction of $1-s$ of the time, we are in state $A_t=A^h$, so these assets have return 1, and the remaining fraction s of the time, $A_t=A^l$ and the return is $a<1$.

If, starting in the state (A_t,E), the poor undertake a revolution, they would obtain

$$V^p(A_t,R)=\frac{\pi\mu A_t h}{\lambda}+\beta W^p(R), \tag{5}$$

where $A_t=A^l=1$ or $A_t=A^h=1$. This expression follows because during the period of revolution the poor only receive a fraction $\pi\mu$ of the assets of the economy, h, and obtain $W^p(R)$ thereafter.

In contrast, if, starting from the state (A_t,E), they never undertake a revolution, and there is no redistributive taxation, they would obtain a utility of

$$\widehat{V}^p(A_t,E)=A_t h^p+\beta\frac{((1-s)+sa)h^p}{1-\beta}.$$

This expression follows because without taxation the poor receive h^p this period, h^p in all future normal periods, and ah^p in all future recession periods. $\widehat{V}^p(A^h,E)$ is clearly a lower bound on the utility that the poor would obtain in nondemocracy, since in equilibrium there may be redistributive taxation. Therefore, a sufficient condition for the poor not to undertake a revolution in the state (A^h,E) is that $\widehat{V}^p(A^h,E)$ is greater than $V^p(A^h,R)$ as given by equation (5) evaluated at $A_t=A^h$. This is guaranteed by the following condition on parameters:

Assumption 2:

$$\mu<\frac{(\pi-\theta)\beta s(1-a)+\theta-\beta\pi}{(1-\beta)\pi}.$$

This assumption will imply below that in normal times, i.e. when $A_t = A^h$, the elite will choose no redistribution when in power.

Since $\lambda > 1/2$, in a democracy, the median voter is a poor agent. By Assumption 1, there is no threat of a coup in normal times, so in a Markov Perfect Equilibrium he will choose the tax rate τ^m. The expected discounted value of an agent of type $i = p, r$ in this state, denoted by $V^i(A^h, D)$, is given simply by using equations (1) and (2). In this case, these give:

$$V^i(A^h, D) = h^i + \delta^i(\theta) + \beta W^i(D). \tag{6}$$

The agent receives h^i from his own capital and $\delta^i(\theta)$ as net transfer from the government. The expected return in the next period is the continuation value under democracy,

$$W^i(D) = (1 - s)V^i(A^h, D) + sV^i(A^l, D), \tag{7}$$

where $V^i(A^l, D)$ is the value to agent i in state (A^l, D). With probability $1 - s$, the state (A^h, D) recurs next period, while with probability s there is a recession, and in this state the continuation value is $V^i(A^l, D)$.

The continuation value $V^i(A^l, D)$ depends on the actions of the rich, who might want to undertake a coup in the state $A_t = A^l$. The poor may therefore reduce the tax rate to τ^d in this state in an attempt to prevent the coup—recall that the coup decision follows the taxation decision of the poor. Suppose that this reduced taxation prevents the coup. Then, the value of agent i in state (A^l, D) would be $V^i(A^l, D) = v^i(A^l, D \mid \tau^d)$. This continuation value $v^i(A^l, D \mid \tau^d)$ satisfies the Bellman equation;

$$v^i(A^l, D \mid \tau^d) = a\left(h^i + \Delta^i(\theta, \tau^d)\right) + \beta W^i(D), \tag{8}$$

where

$$\Delta^i(\theta, \tau^d)A_t \equiv T^d - \tau^d A_t h^i$$

is the net amount of redistribution for a person of type i in state A_t with a tax rate of τ^d. Notice that in the current period, taxes are lower, τ^d instead of τ^m, giving higher utility to the rich—i.e., $\Delta^p(\theta, \tau^d) \leq \delta^p(\theta)$, and $\Delta^r(\theta, \tau^d) \geq \delta^r(\theta)$. However, the continuation value is still $W^i(D)$. This captures the notion that next period if the state switches to A^h, taxes will increase back to τ^m: it is impossible for the poor to commit to future taxes, unless the future also poses an effective coup threat.

Reducing the tax rate to τ^d may not be enough to prevent a coup, however. After observing the tax rate τ^d, the elite decide whether to mount a coup, $\zeta = 1$, or not, $\zeta = 0$, so

$$V^r(A^l, D) = \max_{\zeta \in \{0,1\}} \left\{ \zeta \widetilde{V}^r(A^l, E) + (1-\zeta) v^r(A^l, D \mid \tau^d) \right\}, \tag{9}$$

where $\widetilde{V}^r(A^l, E)$ is the continuation value to the elite after a coup in the state (A^l, E) given by

$$\widetilde{V}^i(A^l, E) = \phi a h^i + \beta W^i(E), \tag{10}$$

and

$$W^i(E) = (1-s) V^i(A^h, E) + s V^i(A^l, E), \tag{11}$$

is the expected continuation value with the elite in control of the political system. This continuation value depends on the strategies that the players will pursue in a nondemocratic regime. Assumption 2 above ensures that in the state (A^h, E), the rich will set zero taxes, so agent i obtains income h^i, and his continuation value is $W^i(E)$. Hence, $V^i(A^h, E) = h^i + \beta W^i(E)$.

In contrast, if there is a recession, (A^l, E), there are three possibilities: (i) democratization, $\gamma = 1$; or (ii) they may choose not to democratize, i.e., $\gamma = 0$ and set a tax rate of τ^e; and the poor could choose $\rho = 0$ (no revolution) in response; or (iii) the poor may undertake a revolution, $\rho = 0$. The contination values depend on which of these cases applies. In the text, we focus on $\gamma = 1$, i.e., franchise extension, which is the case that applies along the equilibrium path.[8] In this case,

$$V^i(A^l, E) = a(h^i + \delta^i(\theta)) + \beta W^i(D). \tag{12}$$

This expression follows because in this first period of democracy, there is no threat of a coup, and the poor set the unconstrained tax rate τ^m, which gives a current consumption of $a\left(h^i + \delta^i(\theta)\right)$. The continuation value is $W^i(D)$.

The elite prefer not to carry out a coup in state (A^l, D), i.e., $\zeta = 0$, if $\widetilde{V}^r(A^l, E)$ given by (10) is less than $v^i(A^l, D \mid \tau^d)$ in (8). Hence, there will be no coup as long as

$$W^r(E) - W^r(D) \leq \frac{a\left((1-\phi)h^r + \Delta^r(\theta, \tau^d)\right)}{\beta}. \tag{13}$$

Equation (13) is the *coup constraint*: a coup occurs if the gain to the rich of capturing political power and reducing taxation, $\beta\left(W^r(E)-W^r(D)\right)-a\Delta^r(\theta,\tau^d)$, is greater than the cost of the coup, $a(1-\phi)h^r$. A coup is less likely to be beneficial for the elite when the level of income in a recession, a, is high since this determines the opportunity cost of political turmoil caused by the coup. Therefore, coups are only attractive when a recession causes a severe drop in output, reducing the opportunity cost of political turmoil.

We can first determine a critical value of the cost of coup, $\widehat{\phi}(\theta,a,s)$, such that as long as $\phi<\widehat{\phi}(\theta,a,s)$, a coup is never beneficial for the rich, even if the poor continue to tax at the rate $\tau=\tau^m$ in state (A^l,D). This critical value is found by solving (13) for ϕ with $\tau^d=\tau^m$ (i.e., with $\Delta^r(\theta,\tau^d)=\delta^r(\theta)$):

$$\widehat{\phi}(\theta,a,s)=\frac{(1-\beta(1-s))a\left(h^r+\delta^r(\theta)\right)+\beta(1-s)\delta^r(\theta)}{(1-\beta(1-s))ah^r}. \tag{14}$$

When $\phi<\widehat{\phi}(\theta,a,s)$, the coup threat does not play a role, and democracy is *fully consolidated*. Moreover, as we show in the Appendix, $\partial\widehat{\phi}(\theta,a,s)/\partial\theta>0$, so a less unequal society is more likely to achieve a fully consolidated democracy. Intuitively, a greater level of inequality makes democracy less attractive for the rich as it implies higher taxes. Note also that $\partial\widehat{\phi}(\theta,a,s)/\partial a>0$, so an increase in a, which makes recessions less severe, increases the opportunity cost of mounting a coup and makes it easier to consolidate democracy. Finally, $\partial\widehat{\phi}(\theta,a,s)/\partial s>0$. An increase in the frequency of recessions implies that the coup constraint binds regularly, and because in this state the rich pay relatively low taxes, this makes low taxes more "credible". Democracy is therefore less costly to the elite. Therefore, a coup must be less costly (ϕ higher) to be worthwhile.

We can next determine the value of the cost of coup, $\overline{\phi}(\theta,a,s)>\widehat{\phi}(\theta,a,s)$, such that as long as $\phi<\overline{\phi}(\theta,a,s)$, the poor can stop a coup by setting a low enough tax rate in the state (A^l,D). Conversely, when $\phi>\overline{\phi}(\theta,a,s)$, their incomes fall by a sufficiently small amount as a result of political turmoil that even a policy of setting $\tau^d=0$ does not stop a coup. The threshold $\overline{\phi}(\theta,a,s)$ is derived by solving (13) for ϕ with $\tau^d=0$ (i.e., $\Delta^r(\theta,\tau^d)=0$):

$$\overline{\phi}(\theta,a,s)=\frac{(1-\beta(1-s))ah^r+\beta\left(1-s(1+a)\right)\delta^r(\theta)}{(1-\beta(1-s))ah^r}. \tag{15}$$

The comparative statics are identical to those of $\widehat{\phi}(\theta, a, s)$.

If $\widehat{\phi}(\theta, a, s) < \phi < \overline{\phi}(\theta, a, s)$, then democracy is *semi-consolidated*: the poor can avoid a coup by reducing the tax rate below τ^m in state (A^l, D). In particular, they would set $\tau = \tau^d$ such that $\beta\left(W^r(E) - W^r(D)\right) = a\left((1-\phi)h^r + \Delta^r(\theta, \tau^d)\right)$, satisfying the coup constraint (13) as an equality. Although the society always remains democratic, the threat of a coup is still important and influences taxes: the tax rate τ^d is less than τ^m, which the poor would have set in the absence of this threat. In the Appendix we show that τ^d is increasing in θ so that higher inequality reduces the tax rate necessary to prevent a coup. Intuitively, higher inequality makes democracy more costly for the rich, and the poor have to give them a bigger tax concession to prevent a coup.

Finally, if $\phi > \overline{\phi}(\theta, a, s)$, a coup is not very costly to the rich, so even a strategy of setting $\tau = 0$ by the poor will not prevent it. In this case, society will revert back to a nondemocratic regime when $A_t = A^l$, despite the social costs involved in this process.

We next turn to the incentives to undertake a revolution in a non-democratc society. If the poor attempt a revolution in the state (A^l, E), they would obtain $V^p(A^l, R)$ as given by equation (5) above evaluated at $A_t = A^l$. Although Assumption 2 ensures that the revolution constraint is not binding in state A^h, it may bind in state A^l. The elite may then choose to redistribute income to the poor in order to prevent a revolution, imposing a tax rate τ^e and giving the poor a return $V^p(A^l, E) = v^p(A^l, E \mid \tau^e)$. The value $v^i(A^l, E \mid \tau^e)$, satisfies the Bellman equation,

$$v^i(A^l, E \mid \tau^e) = a\left(h^i + \eta^i(\theta, \tau^e)\right) + \beta W^i(E). \tag{16}$$

where $\eta^i(\theta, \tau^e)a \equiv T_t^e - \tau^e a h^i$ is the net redistribution for agent i at the tax rate τ^e in the state A^l. In this case, the poor receive net income $(1-\tau^e)ah^p$ from their own earnings and transfer $T_t^e = \left(\tau^e - c\left(\tau^e\right)\right)ah$, giving them a total income of $a\left(h^p + \eta^p(\theta, \tau^e)\right)$. Notice that the continuation value is $W^i(E)$: if in the next period we are still in state $A_t = A^l$, then redistribution continues. But, if in contrast the economy switches to $A_t = A^h$, redistribution stops. This captures the notion that *the elite cannot commit to future redistribution*, unless the future also poses an effective revolution threat. Also note that $\tau^e \leq \tau^m$, that is, the elite will not tax themselves at a rate higher than τ^m, since this is the rate that maximizes redistribution to a poor agent. If this tax rate is not sufficient to stop a revolution, then no other tax rate $\tau^e \in [0, 1]$ will do so.

Combining (5) and (16), we calculate the *revolution constraint* in the state A^l as

$$W^p(R) - W^p(E) \leq \frac{a\left(h^p + \eta^p(\theta, \tau^e) - \mu\pi h\right)}{\beta}. \tag{17}$$

This constraint requires that the utility from a revolution for the poor is not very large relative to their utility of living in a nondemocratic regime; so a tax concession can convince them not to undertake the revolution.

Since the elite would like to prevent a revolution at all cost, they will set τ^e as high as necessary to prevent a revolution. However, (17) may be violated even when the elite give maximum transfers to the poor in state A^l, i.e. when they tax themselves at the rate τ^m. In this case, the elite will have to extend the franchise in order to prevent a revolution. Substituting $\tau^e = \tau^m$ into equation (17), we can solve for a critical value of μ, denoted by $\overline{\mu}(\theta, a, s)$, such that for $\mu > \overline{\mu}(\theta, a, s)$, a revolution is so attractive for the poor in state A^l that even the maximum amount of redistribution by the rich cannot stop it. This critical value is

$$\overline{\mu}(\theta, a, s) = \frac{(1 - \beta + s\beta)\, a\left(h^p + \delta^p(\theta)\right) - (as + 1 - s)\,\beta\pi h + \beta(1 - s)h^p}{(1 - \beta)a\pi h}. \tag{18}$$

When $\mu < \bar{\mu}(\theta, a, s)$, democratization can be avoided by redistributing to the poor in state (A^l, E). In this case, the tax rate that the elite have to set in order to avoid revolution is $\tau = \tau^e$, such that $v^p(A^l, E \mid \tau^e) = V^p(A^l, R)$, where v^p is given by (16) above.

In contrast to the case with $\mu < \bar{\mu}(\theta, a, s)$, when $\mu > \overline{\mu}(\theta, a, s)$, democratization is the only option left to the elite. Notice that $\partial\overline{\mu}(\theta, a, s)/\partial\theta > 0$, so higher inequality reduces the revolution threshold because the poor are worse off in a nondemocratic regime. Furthermore, $\partial\overline{\mu}(\theta, a, s)/\partial a > 0$ so that if a increases, making recessions less severe, a revolution must be less costly to be attractive for the poor, and so becomes less likely. Finally, $\partial\overline{\mu}(\theta, a, s)/\partial s > 0$, which implies that when recessions are more frequent, it becomes easier to prevent a revolution without democratization. The reason for this result is similar to the comparative statics of $\widehat{\phi}(\theta, a, s)$ and $\overline{\phi}(\theta, a, s)$ with respect to s; an increase in the frequency of recessions makes future redistribution by the elite more credible because it is in their interest to redistribute during recessions.

Democratization may not always prevent a revolution depending on the value of a democracy to the poor. For our purposes, it is more interesting to restrict attention to

the case in which democratization does prevent a revolution. The value of democracy to the poor depends on whether it is consolidated or not. Since the value to the poor of a semi-consolidated democracy is higher than that of a democracy subject to coups, it suffices to ensure that the value to the poor of an unconsolidated democracy is greater than $V^p(A^l, R)$. In the Appendix we derive the value for a unconsolidated democracy, denoted $V_1^p(A^l, D)$. Comparing this with $V^p(A^l, R)$ as given by equation (5), we can derive a sufficient condition:[9]

Assumption 3: $V_1^p(A^l, D)$ is greater than $V^p(A^l, R)$.

Notice that Assumption 3 is a simple condition on parameters since, as depicted in the Apendix, both $V^p(A^l, R)$ and $V_1^p(A^l, D)$ only depend on the underlying parameters.

Now we can establish the following result (proof in the Appendix):

Proposition 1. Suppose Assumptions 1, 2 and 3 hold and the society starts in a non-democratic regime. Then:

1. If $\mu < \overline{\mu}(\theta, a, s)$, then the society remains nondemocratic.
2. If $\mu > \overline{\mu}(\theta, a, s)$ and $\phi < \widehat{\phi}(\theta, a, s)$, then the society democratizes the first time the state is $\left(A^l, E\right)$, and then remains a fully consolidated democracy.
3. If $\mu > \overline{\mu}(\theta, a, s)$ and $\widehat{\phi}(\theta, a, s) < \phi < \overline{\phi}(\theta, a, s)$, then the society democratizes the first time the state is $\left(A^l, E\right)$, and then remains a semi-consolidated democracy.
4. If $\mu > \overline{\mu}(\theta, a, s)$ and $\phi > \overline{\phi}(\theta, a, s)$, then the society is an unconsolidated democracy, and continuously switches regimes.

In the first type of equilibrium where $\mu < \overline{\mu}(\theta, a, s)$, a revolution is sufficiently costly that given the amount of inequality and the value of s, the elite can avoid it by redistributing. Therefore, in state A^h, the elite set $\tau = 0$, while in state A^l, they redistribute by setting the tax rate τ^e, which is just enough to stop a revolution. In this equilibrium, there is never democratization and the amount of redistribution is relatively limited. More inequality nonetheless increases the level of redistribution in this regime because the rich are forced to choose higher taxes to prevent a revolution in the state (A^l, E).

Now consider the case with $\mu > \overline{\mu}(\theta, a, s)$. When the economy transits into state A^l, the rich can no longer maintain their political power via redistribution, and must extend the franchise. There are three types of equilibria depending on the value of ϕ. If $\phi < \widehat{\phi}(\theta, a, s)$, democracy, once created, is fully consolidated. When the state first moves from A^h to A^l, the elite are forced to extend the franchise. After this, the poor always set $\tau = \tau^m$. In this type of society, the amount of redistribution is at its highest level, there is very little or no fiscal volatility, and the threat of a coup plays no role once the society becomes democratic. We interpret this case as similar to the situation in most OECD countries. It is more likely to arise when θ is high, that is when the society is fairly equal.

The second possibility is that $\phi > \widehat{\phi}(\theta, a, s)$, but $\phi < \overline{\phi}(\theta, a, s)$. In this case, democracy is not fully consolidated; if the poor were to set a tax rate τ^m in the state (A^l, D), a coup would occur. However, the poor can avoid a coup by setting a lower tax $\tau = \tau^d$ in state (A^l, D), which is just sufficient to dissuade the elite from mounting a coup. Although the society always remains democratic, it is in some sense "under the shadow of a coup", as the coup threat limits overall redistribution.[10]

The final type of equilibrium involves $\mu > \overline{\mu}(\theta, a, s)$ and $\phi > \overline{\phi}(\theta, a, s)$. In this case, democracy is unstable: when the state moves to A^l, a coup is relatively attractive for the elite, and cannot be halted by reducing taxes. As a result, the economy will stochastically fluctuate between democracy and elite control. More specifically, the economy starts with the elite in power and they set $\tau = 0$. Whenever the state moves to A^l, the elite extend the franchise. But as soon as the state goes from (A^h, D) to (A^l, D), they mount a coup, regain political power, and set $\tau = 0$. The variability of fiscal policy is therefore highest in this equilibrium, and the amount of redistribution is less than in cases 2 and 3, but more than in case 1. Higher inequality increases redistribution in this regime because it increases the tax rate when there is democracy, while there is never any redistribution during nondemocracies.

The reason why there is an inefficient equilibrium in this case, in contrast to an intuition based on the *Coase Theorem,* is that the political system is unable to commit to future taxes. If the poor and the rich could bargain and commit to a path of future taxes, there would be no coups along the equilibrium path. Yet, in practice, future taxes are determined in future political equilibria, and promises of lower taxes in the

future are not credible—once the coup threat disappears, the tax rate will rise back to τ^m. Forward-looking elites, realizing this, prefer a coup, even though this is a costly outcome for society.

Notice that when democracy is unconsolidated and the poor are in power, they set the maximum tax rate, fully anticipating that redistribution will eventually come to an end as a result of a coup. This result may help to explain the existence of highly redistributive, but relatively short-lived, populist regimes of Latin America. This is consistent with Kaufman and Barbara Stallings (1991)'s emphasis on the connection between unconsolidated democracy and populist redistribution. They write (1991, p. 27) "established democracies (Venezuela, Colombia and Costa Rica in our study) were also associated with orthodox macro policies...it was the transitional democracies (Peru, Argentina and Brazil) that followed populist policies".

There are four major conclusions to be drawn from this analysis. The first links inequality to regime changes. A decrease in θ reduces $\overline{\mu}(\theta, a, s)$, $\overline{\phi}(\theta, a, s)$ and $\widehat{\phi}(\theta, a, s)$. This implies that at higher levels of inequality, both revolutions and coups are more attractive. Therefore, societies with more initial inequality are more likely to switch between democracy and nondemocracy, and less likely to have a fully consolidated democracy. So our results are in line with the empirical findings of a positive association between inequality and political instability (e.g. Edward N. Muller and Mitchell A. Seligson, 1987, and Alesina and Perotti, 1996).

The second conclusion pertains to the link between inequality and redistribution. To see this, fix the cost of coup ϕ, and define $\theta^H > \theta^L$ such that $\phi = \widehat{\phi}(\theta^H, a, s)$ and $\phi = \overline{\phi}(\theta^L, a, s)$. Moreover, suppose that $\mu > \overline{\mu}(\theta, a, s)$. When $\theta > \theta^H$, $\phi < \widehat{\phi}(\theta, a, s)$, so inequality is sufficiently low that democracy is fully consolidated. Now consider an increase in inequality (a reduction in θ). This will increase redistribution at first as in the standard models of voting over redistribution (e.g. Meltzer and Richard, 1981), since $\frac{\partial \tau^m}{\partial \theta} < 0$. When θ falls below θ^H, we have $\phi \in \left(\widehat{\phi}(\theta, a, s), \overline{\phi}(\theta, a, s)\right)$ and democracy is only semi-consolidated. The poor are then forced to reduce taxes from τ^m to τ^d in the state (A^l, D). Nevertheless, overall redistribution increases.[11] As inequality increases further, it will eventually fall below θ^L. When $\theta < \theta^L$, we have $\phi > \overline{\phi}(\theta, a, s)$, and democracy is now unconsolidated. So in the state (A^l, D), there is a coup followed by a period of nondemocracy and no taxation. The increase in inequality in the neighborhood

of θ^L therefore reduces overall redistribution. As a result, there is a nonmonotonic relationship between inequality and redistribution, with societies at intermediate levels of inequality redistributing more than both very equal and very unequal societies.

The third implication of our analysis is related to fiscal volatility. The relationship between fiscal volatility and inequality is likely to be increasing. Within each regime, higher inequality leads to more variability. Moreover, higher inequality makes Case 4, which has the highest amount of fiscal variability, more likely. This may explain why fiscal policy has been much more volatile in Latin America than in the OECD (Gavin and Perotti, 1997).

The fourth implication is that the costs of redistribution will also have an impact on the equilibrium political system. Suppose that the cost of taxation becomes less convex, so that $c(\tau^m)$ is unchanged, but $c'(\tau^m)$ decreases. Since deadweight losses from taxation are now lower, the median voter will choose a higher level of taxation. However, as τ^m increases, so will $-\delta^r(\theta)$, so democracy becomes more costly to the elite, and hence less likely to be consolidated. This implies that in societies where taxation creates less economic distortions, for example in societies where a large fraction of the GDP is generated from natural resources, democracies may be harder to consolidate.

Finally, it is interesting to briefly consider the implications of our model for political development. A large empirical literature beginning with Lipset (1959) has found that democracy tends to be correlated with high per-capita income. In our model, holding inequality and other parameters constant, rich countries are no more likely to be democratic than poor countries. This is because an increase in h leaves both the revolution and coup constraints unchanged. However, there are a number of plausible ways in which such a connection can be introduced into the analysis. First, it is quite likely that GDP is more volatile and recessions relatively worse in poor countries (see Acemoglu and Fabrizio Zilibotti, 1997, for theory and evidence). This would imply that a is lower in poor countries, so they suffer more severe recessions, leading to greater political turmoil. As a result, democracy would tend to be less stable in poor countries.[12] Second, development is often associated by structural changes in the economy, and these changes may affect the costs and benefits of coups and revolutions. Most important, richer economies are typically more urbanized, and urbanization increases the power of the poor segments of the society. This may make democratization more likely, and

coups less likely, contributing to the long run trends observed by Lipset.

2 Consolidating Democracy

We now discuss ways in which unconsolidated democracies may be consolidated. One method of consolidating a democracy is asset redistribution. Asset inequality determines the level of taxation and the costs and benefits of coups. If asset inequality can be reduced permanently, the benefits of a future coup to the elite would be lower because democracy would be less redistributive. Although asset redistributions, such as education and land reforms, may in the long run consolidate democracy, we show that the anticipation of such reforms will create political instability in the short run because the elite will have a greater incentive to undertake a coup. We then show how constitutional limits on taxation and political institutions may be useful in consolidating democracy. Finally, we discuss the effects of investments when returns depend on political regime, and demonstrate the possibility of multiple equilibria.

2.1 Asset Redistribution under Democracy

Unlike fiscal redistribution, if asset inequality is reduced, it is permanent[13] and cannot be reversed, but it also has permanent costs. We model the costs by assuming that asset redistribution reduces the total stock of assets in the economy. If h is the initial stock, then the post-redistribution stock is $H(\theta)$, where H is a concave twice continuously differentiable decreasing function, i.e. $H'(.) < 0$ and $H''(.) < 0$, so asset redistribution reduces total resources. We define θ_0 to be the initial level of inequality so that $h = H(\theta_0)$. We assume that the poor can undertake asset redistribution in the first period they come to power, which is naturally in state A^l. For simplicity, we do not allow further asset redistributions after this date.

Recall that θ^L is defined by $\phi = \overline{\phi}(\theta^L, a, s)$ where $\theta^L > \theta_0$, and assume $\phi > \overline{\phi}(\theta_0, a, s)$ so that without any asset redistribution the economy would oscillate between regimes. Hence, for democracy to be (semi-)consolidated, inequality needs to be reduced, i.e. θ_0 needs to be raised to θ^L. Also suppose that $\theta^R > \theta_0$ where $\mu = \overline{\mu}(\theta^R, a, s)$, and that θ^R is very high, so that it can be ignored it for now.

Using (A4) from the previous section, we can write the value to a poor agent of

unconsolidated democracy starting from state A^l as $v_1^p(A^l, D \mid \theta)$ (which we derive in the Appendix). This value function applies when coups occur along the equilibrium path. In contrast, if $\theta \geq \theta^L$, coups can be stopped, and we can use equations (6), (7), and (8) to write the corresponding value for consolidated democracy, again starting from state A^l, denoted $v_2^p(A^l, D \mid \theta)$ (see Appendix for the expressions).

To determine equilibrium asset redistribution, let $\theta' = \arg\max_\theta v_1^p(A^l, D \mid \theta)$, bearing in mind that we might be at a corner solution with $\theta' = \theta_0$ where no asset redistribution is chosen. Also, let $\theta'' = \arg\max_\theta v_2^p(A^l, D \mid \theta)$. Then we can see that:

1. If $\theta'' > \theta^L$, the poor will redistribute assets up to θ''. Intuitively, in this case, the level of redistribution that the poor prefer ignoring the coup constraint also prevents coups. This case is illustrated in Figure 1.

2. If $\theta'' < \theta^L$, and $v_1^p(A^l, D \mid \theta') > v_2^p(A^l, D \mid \theta^L)$, then the poor will redistribute to θ', and coups will occur along equilibrium path.

3. Otherwise, the level of redistribution will be θ^L. This case, shown in Figure 2, is probably the most interesting one for our purposes as it illustrates that, in order to prevent coups, the poor may choose a level of redistribution higher than that which would maximize their income in the absence of the threat of a coup.

A key comparative static pertains to the level of inequality: if $\theta_0 \geq \theta^L$, there will not be a motive to redistribute assets in order to prevent a coup (though there may be an incentive to redistribute assets to increase the income of the poor in a consolidated democracy). We may therefore expect asset redistribution to emerge as a method of consolidating democracy especially in relatively unequal democratic regimes that are expected to be threatened in the future.

Overall, the main implication of this analysis is that asset redistribution can help to consolidate democracy. Whenever the choice of the poor is θ^L or greater, coups no longer occur along the equilibrium path because asset redistribution has changed the level of inequality permanently, and made coups less attractive for the elite.

In practice, asset redistribution appears to have played such a role in a number of instances. In Acemoglu and Robinson (2000), we argued that educational expansion in 19th century Britain and France was in part a result of democratization, and Stanley

L. Engerman, Elisa Mariscal and Kenneth L. Sokoloff (1998) argue the same for Latin America. In Britain and France, these and other policies reduced inequality and there were no significant reversals in the process of democratization. In Costa Rica, the educational and land reforms that reduced both earnings and land inequality after the democratization in 1948 appear to have helped with the consolidation of democracy (see Deborah J. Yashar, 1997, for this argument, and Carlos M. Vilas, 1995, for some numbers). The situation in Venezuela after the return to democracy in 1958, which led to a land reform redistributing 19.3 percent of agricultural land, also provides some support to this view (see Table 10.2 in Eliana Cardoso and Ann Helwege, 1992, and John D. Powell, 1971).

2.2 Anticipated Asset Redistribution and Political Instability

Since asset redistribution is permanent and costly to the elite, the anticipation of such redistribution may make a coup more attractive and create political turmoil. We will now analyze this using a simple extension of our model. Suppose that $\widehat{\phi}(\theta_0, a, s) < \phi < \overline{\phi}(\theta_0, a, s)$ (i.e., $\theta^H > \theta > \theta^L$) so that democracy is (semi-)consolidated without asset redistribution. Consider the first period of democracy, in state A^l. The poor may want to redistribute assets, this time not to consolidate democracy but to increase their incomes. However, we now assume that there is a one period delay between the legislation and the implementation of asset redistribution. For example, land reforms involve administrative delays. If, during this period, the state stays in $A_t = A^l$, then the rich may mount a coup to avoid asset redistribution before it is implemented.

Suppose that the poor legislate a redistribution of assets changing inequality from θ_0 to $\widehat{\theta}$. The elite will not undertake a coup during the administrative delay of the asset redistribution if the state is at A_t and

$$w^r(E \mid \theta_0) - w^r(D \mid \widehat{\theta}) \leq \frac{A_t[(1-\phi)h^r(\theta_0) + \Delta^r(\theta_0, \tau^d)]}{\beta}$$

where $w^r(E \mid \theta)$ is the continuation value to the elite in non-democracy as a function of the distribution of assets θ. Hence $w^r(E \mid \theta_0) = W^r(E)$ will be their value if they reestablish control of the political system and keep the distribution of assets at θ_0. Similarly, $w^r(D \mid \widehat{\theta})$ is the value to the elite of democracy after the distribution of assets changes to $\widehat{\theta}$. Notice that the poor would never redistribute to a level $\widehat{\theta}$ such that the

elite undertake a coup in state A^h because this would imply that there will necessarily be a coup following asset redistribution. The poor may undertake enough redistribution, however, to cause a coup in a recession (state A^l). The critical value of ϕ, $\widetilde{\phi}$, such that when $\phi < \widetilde{\phi}$, a coup in state A^l can be prevented is defined by

$$w^r(E \mid \theta_0) - w^r(D \mid \widehat{\theta}) = \frac{a(1-\widetilde{\phi})h^r(\theta_0)}{\beta}.$$

Therefore, when $\phi > \widetilde{\phi}$ there will be a coup if there is a recession following asset redistribution. In contrast, recall that $\overline{\phi}$, the critical value of the cost of a coup without asset redistribution, is given by

$$w^r(E \mid \theta_0) - w^r(D \mid \theta_0) = \frac{a(1-\overline{\phi})h^r(\theta_0)}{\beta}$$

Since $w^r(D, \widehat{\theta}) < w^r(D \mid \theta_0)$, we have $\widetilde{\phi} < \overline{\phi}$. This implies that there exist values of $\phi \in (\widetilde{\phi}, \overline{\phi})$ such that without asset redistribution, democracy is consolidated, but if, during the period of administrative delay after asset redistribution, the state remains in A^l, the elite will attempt a coup. If s, the probability that the state remains in A^l, is low enough, the poor may prefer to enact asset redistribution despite its potentially destabilizing effects. Therefore, the main conclusion of this subsection is that asset redistribution, which is generally in the interest of the poor and often useful in consolidating democracy, may create a temporary period of instability for a democracy.

A number of coups in Latin America appear to have been motivated by a desire to prevent radical land reform. For example, in Brazil, a central aim of the coup in 1964 was to prevent the attempt by the left-wing President Goulart to by-pass the veto of the Congress and use other means to push through agrarian reform (see, for example, Skidmore, 1967, and Michael Wallerstein, 1980). Similarly, most scholars argue that the agrarian reform after 1952 in Guatemala was the main motivation for the coup of 1954 (James Handy, 1984, Robert Trudeau, 1993), and that the increasing radicalization of Allende's policies, especially on land reform, precipitated the coup of 1973 in Chile (see Arturo Valenzuela, 1989). Marion Brown (1989, p. 236), for example, writes "a second generation of [agrarian] reform was clearly gaining momentum in the latter part of Allende's administration - a fact that was not lost on counterreform elements that ultimately supported Pinochet's coup d'état." In fact, of the land originally expropriated

by Allende's government, 43% was returned to previous owners or excluded from the reform by other means (see Lovell S. Jarvis, 1989, p. 249). The same is true in Venezuela, where the 1948 land reform law was immediately repealed by the incoming military government (see Peter Dorner, 1992, p. 47, and Powell, 1971).

2.3 Constitutional Limitations on Taxation

In our economy, coups arise because democracies cannot commit not to levy high taxes on the rich in state A^h. While governments may be unable to commit to future taxes, society may be able to adopt a constitution that limits how taxes are set. For example, before the 16th Amendment to the US constitution in 1913, the government was unable to use income taxes due to Constitutional restrictions (see Sven Steinmo, 1993, pp. 74-76). Such restrictions may help democracy consolidate by reducing the fear of the rich that they will be heavily taxed in state A^h. More generally, our model suggests that the structure of democratic institutions may be crucial for consolidation since they influence what types of policies can arise in equilibrium.

To capture these ideas, consider the case where $\phi > \overline{\phi}(\theta, a, s)$, so that democracy is unconsolidated. Nevertheless, there will exist a level of transfers from the rich, $\widehat{\delta}^r(\theta) > \delta^r(\theta)$ (recall that $\delta^r(\theta) < 0$), such that when net redistribution away from the rich in the state A_h is $\widehat{\delta}^r(\theta)$, and zero in the state A_l, they will be indifferent between undertaking a coup and remaining in democracy. By similar reasoning to above (especially equation (15)), this level of redistribution, $\widehat{\delta}^r(\theta)$, satisfies

$$\phi = \frac{(1-\beta(1-s))ah^r + \beta\left(1-s(1+a)\right)\widehat{\delta}^r(\theta)}{(1-\beta(1-s))ah^r}.$$

Let the tax rate that leads to $\widehat{\delta}^r(\theta)$ be $\widehat{\tau}$, where obviously $\widehat{\tau} < \tau^m$. Now imagine that in the state (A^l, D), the median voter—a poor agent—has an option to introduce an irreversible constitutional restriction on taxes, such that a tax rate greater than $\widehat{\tau}$ is unconstitutional. By construction, once this irreversible constitution is in place and the poor cut the tax rate in this state (A^l, D) to 0, the rich will be indifferent between undertaking a coup and living under democracy. Since there was output loss in the process of coups, this immediately implies that the introduction of the constitution improves the welfare of the poor. Intuitively, using the constitution, they commit to low taxes in the future, which discourages the elite from undertaking a coup.

A natural concern is that constitutions may be changed or amended. Although in many cases a supermajority is required to change a constitution, constitutional restrictions on taxes may not always be credible commitments to low taxes in the future. The importance of constitutional, and more generally institutional, restrictions on taxation in consolidating democracy therefore depends on how durable they are expected to be. This remains an important question for future research.

Constitutional restrictions on the tax rate is just one example of how the structure of political institutions has important implications for the consolidation of democracy in our model. Another much discussed idea is that presidential systems may lead to more instability than parliamentary systems. Przeworski et al. (1996) present evidence supporting this hypothesis. This pattern is also consistent our framework. Presidential systems concentrate more power in the executive relative to parliamentary systems, and hence may make democracy more threatening to the rich, and coups more attractive. In line with this view, Linz (1978), for example, has argued that presidential systems "raise the stakes" of the political game. It is also interesting that James Madison and the writers of the U.S. constitution were aware of these dangers, and constrained the powers of president by instituting a separation of powers (see Madison, 1788).

2.4 Investment and Multiple Equilibria

The only economic actions we have considered so far have been taxation decisions. Our interest in political institutions is in part motivated by our belief that these affect a range of economic decisions, including investment and growth. Here, we briefly discuss the interaction between investment and political transitions, pointing out a possible source of multiple equilibria.

Suppose now that an agent of type i can undertake an investment of value k^i at cost $h^i\Gamma(k^i)$ where Γ is increasing and convex, with $\Gamma(0) = 0$. The cost is incurred only once, and this investment raises the return in democracy forever by a factor of $1+k^i$, but has no effect on income in a nondemocratic regime. The desirability of the investment therefore depends on the expected duration of democracy. The assumption that the investment has no return in a nondemocracy is not essential. The important feature is that the return to a range of investments is higher in democracies than in nondemocracies. Plausible examples include investments in sectors that trade with other countries which may reduce

trade following a coup, investments in long-run projects that require guarantees against future expropriation that may be better provided by democracies, and also investments in political participation, parties and unions. We will now show that the duration of democracy is affected by the amount of investment, as well as affecting the profitability of investment. As a result, if agents believe that democracy will persist, they will invest more, and this will in turn increase the durability of democracy. Thus there may be multiple equilibria.

Notice first that since all agents face the same marginal tax rate and since both returns and costs are multiplied by h^i, they will all choose the same level of investment, $k^i = k$. Now let us now define $v_1^i(A^l, D \mid k)$ as the value to an agent in an unconsolidated democracy starting in state A^l and with investment k. Let us define $\overline{k}$ as the investment level when democracy is expected to be unconsolidated. This investment level is given by $\overline{k} = \arg\max_k v_1^i(A^l, D \mid k)$.

In contrast, in a semi-consolidated democracy, the investment is productive also during periods of recession. Now define $v_2^i(A^l, D \mid k)$ to be the value to an agent in a semi-consolidated democracy starting in state A^l and with investment k. The investment level that will be chosen by the agents in this case, k^*, will be different, and in particular, will satisfy $k^* = \arg\max_k v_2^i(A^l, D \mid k)$. Notice that when democracy is consolidated, the investment is productive in all future periods. Therefore, $k^* > \overline{k}$, because the cost of investment is independent of the political regime, but when democracy is consolidated, the expected return is higher.

Now consider the coup constraint conditional on the level of investment, k. In particular, define $\overline{\phi}(k)$ as the critical value of ϕ such that when $\phi < \overline{\phi}(k)$, and the level of investment is k, a coup can be prevented in the state A^l. Our usual arguments imply that the critical value is $\overline{\phi}(k)$ given by

$$w^r(E \mid k) - w_2^r(D \mid k) = \frac{a(1 - \overline{\phi}(k))h^r}{\beta},$$

where $w_2^r(D \mid k)$ is the expected continuation value, conditional on k, when democracy is consolidated (defined by (**??**) in the Appendix), and $w_2^r(D \mid k)$ is the expected continuation value in nondemocracy. The reason why the value function $w_2^r(D \mid k)$ features in the coup constraint is because the elite compare $\beta w_2^r(D \mid k)$, which is the value of remaining in a democracy forever, with that of mounting a coup which is $\beta w^r(E \mid k) - a(1 - \overline{\phi}(k))h^r$.

Notice that k^* is the maximizer of $w_2^r(D \mid k)$, so $w_2^r(D \mid k^*) > w_2^r(D \mid \overline{k})$, and hence $\overline{\phi}(k^*) > \overline{\phi}(\overline{k})$. Intuitively, a greater level of investment makes a coup less attractive because the political turmoil associated with the coup creates a greater output loss.

This analysis implies that there exist values of ϕ such that $\phi \in \left(\overline{\phi}(\overline{k}), \overline{\phi}(k^*)\right)$. When $\phi \in \left(\overline{\phi}(\overline{k}), \overline{\phi}(k^*)\right)$, democracy will be consolidated when all agents invest up to k^*, and when democracy is consolidated, they will indeed prefer to invest k^*. There is another equilibrium, however, where all agents expect democracy not to be consolidated, so invest only up to $\bar{k}$. This level investment, in turn, is not high enough to consolidate democracy. The general implication is that when there exist investments whose payoffs are higher in democracies, expectations about how durable these democracies are can be self-reinforcing, leading to multiple equilibria with different political regimes, output levels, and economic welfare.

3 Consolidating Nondemocracy

3.1 Asset Redistribution in Nondemocratic Regimes

The elite may also wish to undertake asset redistribution in order to stop a revolution or democratization. To illustrate the role of asset redistribution in preventing democracy in a simple way, assume $\mu > \overline{\mu}(\theta_0, a, s)$, or equivalently, $\theta^R > \theta_0$, where recall that θ^R is defined by $\mu = \overline{\mu}(\theta^R, a, s)$. This implies that without asset distribution, there will be democratization. Suppose also that $\phi < \widehat{\phi}(\theta_0, a, s)$, so democracy, if created, will be fully consolidated. We also assume that redistribution away from the poor is not possible, i.e. $\theta \geq \theta_0$.

With these assumptions, democratization will take place the first time we are in state (A^l, E). The assumption $\phi < \widehat{\phi}(\theta_0, a, s)$ also ensures that $\phi < \widehat{\phi}(\theta, a, s)$ for any $\theta \geq \theta_0$, so democracy, once created, will always be fully consolidated. Let the return to the rich under a consolidated democracy, starting from state A^l, be $v_2^r(A^l, D \mid \theta)$. In this case, the elite may wish to undertake asset redistribution in order to reduce $\delta^r(\theta)$ depending on whether asset or fiscal redistribution is more costly to them. In what follows, we assume that asset redistribution is sufficiently costly that the elites will not do this, so $\arg\max v_2^r(A^l, D \mid \theta) = \theta_0$.[14]

In contrast if $\theta \geq \theta^R$, asset redistribution can also be used to avoid democratization. The value of the elite in state (A^l, E) is $v_3^r(A^l, E \mid \theta)$.

Whether the elite will choose asset redistribution is determined simply by comparing $v_2^r(A^l, D \mid \theta_0)$ and $v_3^r(A^l, E \mid \theta^R)$. If $v_2^r(A^l, D \mid \theta_0) < v_3^r(A^l, E \mid \theta^R)$, then the elite prefer to prevent democratization and will choose the minimum redistribution sufficient to prevent democratization, that is $\theta = \theta^R$. Otherwise, they will choose not to redistribute, so $\theta = \theta_0$, and there will be democratization.

In practice, two cases appear to fit the implication that the elite may choose to redistribute assets in order to prevent democratization.[15] In a 1949 reform, South Korea redistributed 50% of the agricultural land in Korea. Haggard (1990, p. 55) argues that the reforms were aimed at defusing rural insurrections and counteracting the destabilizing spillovers from land reform in North Korea. Taiwanese land reforms of 1949-1953 that redistributed 24.6% of the land (Samuel Ho, 1978, p. 163) also appear to have been an attempt to defuse rural protest (see Alice H. Amsden, 1985). In the words of Ch'en Ch'eng, the governor of Taiwan at the time of the reforms, "...the situation on the Chinese mainland was becoming critical and the villages on the island were showing marked signs of unrest and instability. It was feared that the Communists might take advantage of the rapidly deteriorating situation" (quoted in Haggard, 1990, p. 82). Interestingly, until very recently both South Korea and Taiwan remained relatively nondemocratic, especially compared to other countries with similar per capita income levels.

Asset redistribution as a method of preventing democratization is more likely to emerge when $\delta^r(\theta)$, the transfers away from the rich in a democracy, are larger. This result may help explain why asset redistribution emerged in South Korea and Taiwan, where the threat of communism made social unrest very costly to the elite, but not in the Philippines, where the threat was less serious.

Finally, although we have modeled the elite as distributing assets equally among the poor, a different interpretation may be a strategy of co-opting. In particular, the elite may redistribute assets selectively to groups among the poor who are important for the threat of revolution and who can be persuaded to switch sides with such transfers. This is equivalent to our formulation, but this interpretation may fit the example of Mexico in the 1930s better, where small groups of peasants that supported the ruling party were given land.

3.2 Repression

An alternative strategy for the elite wishing to prevent democratization is to use repression. Such repression is observed in many cases, for example, in Indonesia in 1965 and in El Salvador in 1932. We now return to the simpler model of Section 2 with an exogenous distribution of assets, and consider the possibility of repression. The main result is that in very unequal societies, the elite may have so much to lose from democratization as to prefer a repression strategy to suppress revolution and prevent democratization. Therefore, the relationship between inequality and regime changes is potentially nonmonotonic; societies with intermediate levels of inequality are more likely to democratize. Nevertheless, we will show that only societies with limited inequality will achieve democratic consolidation. Furthermore, political instability is more likely in more unequal societies also, as long as social unrest suppressed by repression is counted as "political instability" in the data.

To analyze these issues in the simplest possible way, suppose that the elite are in power, and we have $\mu > \overline{\mu}(\theta, a, s)$ and $\phi < \widehat{\phi}(\theta, a, s)$, so that if the society democratizes, it will remain so forever, and the rich will obtain the value $V^r(A^l, E)$ as given by (12) in Section 2. Assume also that the rich can hire an army with the sole purpose of suppressing revolutionary threats, at per period cost M for each member of the elite, and that this strategy completely avoids the threat of revolution.[16] It is clear that with this strategy in the state the rich will have a return of

$$\overline{V}^r(A^l, E) = \frac{\left(\left(1 - \beta\left(1 - s\right)\right)a + \beta\left(1 - s\right)\right)\left(h^r - M\right)}{1 - \beta}.$$

Comparing $\overline{V}^r(A^l, E)$ to $V^r(A^l, E)$ as given by (12) immediately implies that the rich will find it beneficial to use repression if

$$M < -\delta^r(\theta).$$

This condition will be satisfied if inequality is sufficiently high, in particular, if $\theta < \theta^M$ where $\theta^M = \delta^{r^{-1}}(-M)$. Define θ^R as above, i.e., $\mu = \overline{\mu}(\theta^R, a, s)$. So the elite cannot prevent a revolution with redistribution if $\theta < \theta^R$. This implies that in the case where $\theta^R \leq \theta^M$, there will be no equilibrium democratization: a level of inequality that is large enough to make democratization necessary will also make military repression desirable.

The case of $\theta^R > \theta^M$ is more interesting and illustrates the non-monotonic relationship between inequality and democratization. A society with $\theta \in (\theta^M, \theta^R)$ will democratize because social unrest cannot be prevented by redistribution and military repression is too costly. In contrast, if $\theta < \theta^M$, then inequality is so high that the elite are willing to pay for military repression in order to prevent democratization. Finally, if $\theta > \theta^R$, then there will be no democratization either, this time because the elite can prevent social unrest by redistribution.

With this extension, it is still true that among the countries that democratize, those with greater inequality are less likely to consolidate democracy and will therefore oscillate between democracy and nondemocracy. But, it is only those with $\theta \in (\theta^M, \theta^R)$ and $\phi < \overline{\phi}(\theta, a, s)$ that transit to and consolidate democracy. The condition $\phi < \overline{\phi}(\theta, a, s)$ requires inequality to be low. Therefore, our main result that low levels of inequality are conducive to the consolidation of democracy continues to hold in this model with repression. Political instability, either in the form of frequent regime changes or repression, is also more likely when inequality is high.

4 Conclusions

In this paper, we have developed a simple theory of political transitions. Our theory emphasizes the role of the threat of revolution and social unrest in leading to democratization and the desire of the rich elite to limit redistribution in causing switches to nondemocratic regimes. Inequality emerges as a crucial determinant of political instability as it encourages the rich to contest power in democracies, and also often encourages social unrest in nondemocratic societies. Therefore, democracy is more likely to be consolidated if the level of inequality is limited, while high inequality is likely to lead to political instability, either in the form of frequent regime changes or repression of social unrest.

Inequality is also likely to lead to fiscal volatility, as the redistributive regime changes with political transitions. Nevertheless, inequality does not necessarily lead to more redistribution. Unequal societies switch between regimes and in nondemocratic regimes, there is no redistribution. Our theory suggests that asset redistributions may be used to stabilize both democratic and nondemocratic regimes, but the anticipation of a radical

asset redistribution, such as a land reform, may destabilize an otherwise consolidated democracy because the elite may mount a coup specifically to avoid the reforms.

Our approach also suggests a number of avenues for future empirical work. First, a more systematic analysis of whether redistributive taxation increases after democratizations and declines after coups is necessary. Second, it would be interesting to investigate whether the reason why parliamentary democracies appear more stable than presidential democracies is because they lead to lower and/or less variable taxes as suggested above. Finally, a number of issues require both empirical and further theoretical work. For example, what are the major factors that increase the likelihood of democracy as an economy develops? Also, our theory suggests that redistribution through assets is more likely to consolidate democracy; why, then, do many populist regimes, such as Peron in Argentina, use mainly fiscal and labor market redistribution?

5 Appendix

We now present in more detail the derivations culminating in Proposition 1 and sketch the proof of our main result. We also explicitly derive the value functions discussed in Section 3 where we restricted ourselves to a more intuitive approach.

5.1 The Coup Constraint

In the state (A^l, E), there are three possibilities as we noted in the text. The contination values depend on which of these cases applies. In the text we considered the case where $\gamma = 1$ where the franchise is extended. An alternative is for the rich to choose $\gamma = 0$ (no franchise extension), set a tax rate of τ^e, and the poor could choose $\rho = 0$ (no revolution) in response. In this case, instead of (12) the relevant continuation value is

$$V^i(A^l, E) = a\left(h^i + \eta^i(\theta, \tau^e)\right) + \beta W^i(E), \tag{A1}$$

where $a\eta^i(\theta, \tau^e) = a((\tau^e - c(\tau^e))h - \tau^e h^i)$ is net redistribution at the tax rate τ^e in the state A^l. In the next period, the continuation value $W^i(E)$ applies since the society is still in a nondemocratic regime. Finally, the poor may choose $\rho = 1$, undertaking a revolution, in which case $V^i(A^l, E) = V^i(A^l, R)$ and $V^i(A^l, R)$ is given by (5). We focused in the text on the case where $\gamma = 1$ in the state (A^l, E) since this is the one that will apply along the equilibrium path. The algebra for the other cases is similar, and is only useful for characterizing the off-the-equilibrium path behavior.

5.2 Comparative Statics of $\widehat{\phi}(\theta, a, s)$, τ^d and τ^e

To derive the properties of $\widehat{\phi}(\theta, a, s)$ discussed in the text, observe that the sign of $\partial\widehat{\phi}(\theta, a, s)/\partial\theta$ is the same as the sign of $\partial[\delta^r(\theta)/h^r]/\partial\theta$. Using the fact that $\partial\delta^r(\theta)/\partial\theta = \tau^m A_t h/(1-\lambda)$, we have

$$\frac{\partial\delta^r(\theta)/h^r}{\partial\theta} = \frac{\tau^m}{1-\theta} + \frac{\delta^r(\theta)}{(1-\theta)^2 h/(1-\lambda)} = \frac{(\tau^m - c(\tau^m))(1-\lambda)}{(1-\theta)^2} > 0,$$

as argued in the text. The other comparative statics follow by straightforward differentiation. Comparing the expression for $\widehat{\phi}(\theta, a, s)$ and $\overline{\phi}(\theta, a, s)$ shows that the comparative statics for $\overline{\phi}(\theta, a, s)$ are indentical to those just derived.

When $\widehat{\phi}(\theta,a,s) < \phi < \overline{\phi}(\theta,a,s)$ a coup can be avoided by cutting the tax rate to τ^d when there is a recssion. τ^d is derived by solving the coup constraint and is implicitly defined by

$$\text{(A2)}\ \ (1-\beta(1-s))a(\phi-1) = \frac{\Delta^r(\theta,\tau^d)}{h^r}a\left((1-\beta(1-s))+\beta s\right) + \frac{\delta^r(\theta)}{h^r}\beta\left(1-s-as\right),$$

where recall that $\Delta^i(\theta,\tau^d)A_t \equiv T^d - \tau^d A_t h^i$. Implicit differentiation of (A2) implies that, since as shown above $\partial[\delta^r(\theta)/h^r]/\partial\theta > 0$, we must also have $\partial[\Delta^r(\theta,\tau^d)/h^r]/\partial\theta < 0$. This implies that τ^d must be increasing in θ as claimed in the text.

When $\mu < \overline{\mu}(\theta,a,s)$ so that the elite can avoid having to democratize by redistributing in state (A^l,E) the tax rate that ensures $V^p(A^l,E) = v^p(A^l,E \mid \tau^e)$ is,

(A3)

$$(1-\beta(1-s))a\left(\frac{\theta}{\lambda} + (\tau^e - c(\tau^e))\,a - \frac{\tau^e a\theta}{\lambda}\right) + \beta(1-s)\frac{\theta}{\lambda} = \frac{\pi\left((1-\beta)\mu a + \beta(sa+1-s)\right)}{\lambda}.$$

τ^e is increasing in μ, and decreasing in θ (i.e. increasing in the level of inequality). Notice that the tax rate, τ^e, that the elite set in order to prevent a revolution can be as high as the maximum tax rate, τ^m, while the tax rate that the poor set in a recession in order to prevent a coup, τ^d, can be as low as zero. This tax rate τ^e is increasing in μ, and decreasing in θ (i.e. increasing in the level of inequality). This implies that despite their more redistributive tendencies, democracies may sometimes set lower taxes than nondemocracies because of political constraints.

5.3 Value of an Unconsolidated Democraccy

Finally, to establish Proposition 1, it is necessary to assume that democracy is sufficiently redistributive that it is more attractive for the poor than a revolution. To make this assumption explicit we combine (6), (7), (10), (11), and (12) to calculate the value to the poor of an unconsolidated democracy. This gives,

$$\text{(A4)}\ V_1^p(A^l,D) = \frac{\beta\left(1-s\right)h^p}{1-\beta} + \frac{\left(1-\beta\left(1-s\right)\right)\left\{\left[\beta\left(1-s\right)+\left(1-\beta\left(1-s\right)\right)a\right]\delta^p\left(\theta\right)+\left[\beta s\phi+\left(1-\beta\left(1-s\right)\right)\right]ah^p\right\}}{\left(1-\beta\left(1-s\right)\right)^2-\beta^2 s^2}$$

Assumption 3 is equivalent to comparing (A4) to $V^p(A^l,R)$ given by (5) and is a simple restriction on underlying parameters.

5.4 Proof of Proposition 1:

We now prove Proposition 1. Recall that the economy initially starts in nondemocracy and that a pure strategy Markov Perfect equilibrium is a strategy combination $\{\widehat{\sigma}^r(S|\tau^p), \widehat{\sigma}^p(S|\gamma,\tau^r)\}$ where $\widehat{\sigma}^r$ solves (1) and $\widehat{\sigma}^p$ solves (2).

Let us start with the case in which $\mu < \overline{\mu}(\theta, a, s)$. We can solve for the complete set of Markov Perfect equilibria by backward induction. In nondemocracy, the rich move first, and then the poor respond. So let us consider the actions of the poor following the decisions of the rich, $\{\gamma, \tau^r\}$. By Assumption 2, the unique best response for the poor in the state $\left(A^h, E\right)$ is to choose

$$\text{(A5)} \qquad \widehat{\sigma}^p(A^h, E|\gamma = 0, \tau^r = .) = \{\rho = 0\}\,,$$

i.e., they will never undertake a revolution during normal times. Next, in the state $\left(A^h, E\right)$, the poor agents' unique optimal strategy is

$$\text{(A6)} \qquad \widehat{\sigma}^p(A^l, E|\gamma = 0, \tau^r = \tau) = \left\{ \begin{array}{ll} \rho = 0 & \text{if } \gamma = 0 \text{ and } \tau \geq \tau^e \\ \rho = 1 & \text{if } \gamma = 0 \text{ and } \tau < \tau^e \\ \rho = 0 & \text{if } \gamma = 1 \end{array} \right\}$$

where τ^e is given by equation (A3) above. The optimality of (A6) follows immediately since τ^e, given by equation (A3), is by construction the tax rate that makes the poor indifferent between revolution and no revolution, and by Assumption 3, they prefer democracy to revolution. It is then clear that the unique best response of the elite is $\widehat{\sigma}^r(A^h, E \mid .) = \{\gamma = 0, \tau^r = 0\}$ and $\widehat{\sigma}^r(A^l, E \mid .) = \{\gamma = 0, \tau^r = \tau^e\}$. This completes the proof of part 1.

Now the proof parts 2, 3 and 4, consider the case in which $\mu > \overline{\mu}(\theta, a, s)$. $\widehat{\sigma}^p(A^h, E|\gamma = 0, \tau^r = .)$ given by (A5) is still the unique best response in the state $\left(A^h, E\right)$. The unique best response in state $\left(A^l, E\right)$ in contrast is

$$\text{(A7)} \qquad \widehat{\sigma}^p(A^l, E|\gamma = 0, \tau^r = .) = \left\{ \begin{array}{ll} \rho = 1 & \text{if } \gamma = 0 \\ \rho = 0 & \text{if } \gamma = 1 \end{array} \right\},$$

since, by construction, in this case no amount of redistributive taxation can make nondemocracy preferred to revolution. It immediately follows that the the best response for the elite is $\widehat{\sigma}^r(A^h, E \mid .) = \{\gamma = 0, \tau^r = 0\}$ and $\widehat{\sigma}^r(A^l, E \mid .) = \{\gamma = 1\}$, and there will be

democratization, and a state will transit to $\left(A^l, E\right)$. Also, since there is no constraint on the poor immediately after democratization, they set $\tau^p = \tau^m$ in the period following democratization, where τ^m is the most preferred tax rate for the poor given by (3) in the text. Now consider state (A^h, D), and do backward induction this time starting with the actions of the elite who move before the poor in a democracy. Assumption 1 ensures that

$$\widehat{\sigma}^r(A^h, D|.) = \{\zeta = 0\}, \tag{A8}$$

i.e., the elite will never undertake a coup during normal times. This immediately implies a unique best response for the poor $\widehat{\sigma}^p(A^h, D|.) = \{\tau^p = \tau^m\}$ since τ^m is their most preferred tax rate. Next consider democracy in the state (A^h, D), and suppose that $\phi < \widehat{\phi}(\theta, a, s)$. Then by construction the revolution constraint never binds, so the unique best response of the elite is

$$\widehat{\sigma}^r(A^l, D|.) = \{\zeta = 0\}, \tag{A9}$$

and the best response of the poor is $\widehat{\sigma}^p(A^l, D|.) = \{\tau^p = \tau^m\}$. So as claimed in the proposition, the society is in a fully consolidated democracy, and the tax rate is always equal to τ^m. Next suppose that $\widehat{\phi}(\theta, a, s) < \phi < \overline{\phi}(\theta, a, s)$. Now the unique best response of the elite is

$$\widehat{\sigma}^r(A^l, D|\tau^p = \tau) = \left\{ \begin{array}{ll} \zeta = 0 & \text{if } \tau \leq \tau^d \\ \zeta = 1 & \text{if } \tau > \tau^d \end{array} \right\}, \tag{A10}$$

where τ^d is given by equation (A2) above. The optimality of (A10) follows because τ^d is by construction the tax rate that makes the elite indifferent between coup and no coup. The unique best response of the poor to (A10) is then

$$\widehat{\sigma}^p(A^h, D|.) = \left\{\tau^p = \tau^d\right\}. \tag{A11}$$

Any lower tax would create less redistribution, and any higher tax would lead to a coup, which is costly for the poor. Hence the society always remains democratic, but it is a semi-consolidated democracy, since the tax rate has to fall to τ^d in the state (A^l, D) in order to prevent a coup.

Finally, when $\phi > \overline{\phi}(\theta, a, s)$, the unique best response of the elite is

$$\widehat{\sigma}^r(A^l, D|\tau^p = \tau) = \{\zeta = 1\}, \tag{A12}$$

for any τ, so the economy will undergo a coup in the state (A^l, D), taking it to the state (A^l, E). As soon as they resume power, the elite set $\tau^e = 0$, and then follow the optimal strategy characterized above, so the economy continues the switches between democracy and nondemocracy. This completes the proof of Proposition 1.

5.5 Details for Sections 3 and 4

We now derive some of the formulas which we used in Section 3. In Section 3.1 we use (A4) from the previous section to write the value to a poor agent of unconsolidated democracy starting from state A^l as $v_1^p(A^l, D \mid \theta)$. This is:

$$v_1^p(A^l, D \mid \theta) = \frac{\beta(1-s)\theta H(\theta)/\lambda}{1-\beta} + \frac{(1-\beta(1-s))\left\{\left[\beta(1-s) + (1-\beta(1-s))a\right]\delta^p(\theta) + \left[\beta s\phi + (1-\beta(1-s))\right]a\theta H(\theta)/\lambda\right\}}{(1-\beta(1-s))^2 - \beta^2 s^2}$$

where $\delta^p(\theta) = T_t^m - \tau^m A_t h^p$ is defined as in the previous section and $h^p \equiv \theta H(\theta)/\lambda$. The corresponding value for consolidated democracy, again starting from state A^l, is.

(A13)

$$v_2^p(A^l, D \mid \theta) = \frac{\beta(1-s)\left[\theta H(\theta)/\lambda + \delta^p(\theta)\right] + (1-\beta(1-s))a\left[\theta H(\theta)/\lambda + \Delta^p(\theta, \tau^d)\right]}{1-\beta}$$

where $\Delta^p(\theta, \tau^d)A_t \equiv T_t^d - \tau^d A_t h^p$ is defined as in the previous section (and $\Delta^p(\theta, \tau^d) = \delta^p(\theta)$ if $\phi \leq \widehat{\phi}(\theta, a, s)$, i.e. when $\theta \geq \theta^H$).

In Section 3.2, $w^r(D \mid \widehat{\theta})$, the value of democracy with asset distribution $\widehat{\theta}$ to the elite is

$$w^r(D \mid \widehat{\theta}) = \frac{(1-s)\left[(1-\widehat{\theta})H(\widehat{\theta})/(1-\lambda) + \delta^r(\widehat{\theta})\right] + sa\left[(1-\widehat{\theta})H(\widehat{\theta})/(1-\lambda) + \Delta^r(\widehat{\theta}, \tau^d)\right]}{1-\beta}$$

Next in Section 3.3, recall that $v_1^i(A^l, D \mid k)$ is the value to an agent in an unconsolidated democracy starting in state A^l and with investment k. Our assumption implies that during democracy the flow payoff is $A_t\left(h^i + \delta^i(\theta)\right)(1+k)$ (so that if $k = 0$ income is unchanged), but once the regime switches to nondemocracy, all agents only produce $A_t h^i$. Therefore, the value starting from state A^l conditional on investment k with unconsolidated democracy is $v_1^i(A^l, D \mid k)$, given by

$$v_1^i(A^l, D \mid k) = a\left(h^i + \delta^i(\theta)\right)(1+k) + \beta w_1^i(D \mid k) - h^i \Gamma(k),$$

where

(A14)

$$w_1^i(D \mid k) = \frac{\left(h^i + \delta^i(\theta)\right)(1+k)\left((1-\beta(1-s))(1-s) + \beta s^2 a\right) + s h^i \left(\phi a(1-\beta(1-s)) + \beta(1-s)\right)}{(1-\beta(1-s))^2 - \beta^2 s^2}$$

is the continuation value in an unconsolidated democracy with investment k.

In contrast, when democracy is consolidated the flow payoff is $\left(h^i + \delta^i(\theta)\right)(1+k)$ during normal times and $a\left(h^i + \Delta^i(\theta)\right)(1+k)$ during recessions. In this case, the value function $v_2^i(A^l, D \mid k)$ will be,

$$v_2^i(A^l, D \mid k) = a\left(h^i + \delta^i(\theta)\right)(1+k) + \beta w_2^i(D \mid k) - h^i \Gamma(k),$$

where

$$w_2^i(D \mid k) = \frac{(1-s)\left(h^i + \delta^i(\theta)\right)(1+k) + s a\left(h^i + \Delta^i(\theta)\right)(1+k)}{1-\beta} \tag{A15}$$

is the continuation value in a semi-consolidated democracy with investment k.

Finally, consider our analysis in section 4. The return to the rich under a consolidated democracy, starting from state A^l, is

$$v_2^r(A^l, D \mid \theta) = \frac{\left[a(1-\beta(1-s)) + \beta(1-s)\right]\left[(1-\theta)H(\theta)/(1-\lambda) + \delta^r(\theta)\right]}{1-\beta}. \tag{A16}$$

The value of the elite in state (A^l, E) is $v_3^r(A^l, E \mid \theta)$:

(A17)

$$v_3^r(A^l, E \mid \theta) = \frac{\beta(1-s))(1-\theta)H(\theta)/(1-\lambda) + a(1-\beta(1-s))\left[(1-\theta)H(\theta)/(1-\lambda) + \eta^r(\theta)\right]}{1-\beta}.$$

References

Acemoglu, Daron and James A. Robinson (1999) "A Theory of Political Transitions," CEPR Discussion Paper No.2277.

Acemoglu, Daron and James A. Robinson (2000) "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective," forthcoming in the *Quarterly Journal of Economics.*

Acemoglu, Daron and Fabrizio Zilibotti (1997) "Was Prometheus Unbound by Chance? Risk, Diversification and Growth," *Journal of Political Economy*, 105, 709-751.

Ades, Alberto and Thierry Verdier (1996) "The Rise and Fall of Elites: A Theory of Economic Development and Social Polarization in Rent-Seeking Societies," CEPR Discussion Paper No. 1495.

Alesina, Alberto and Roberto Perotti (1996) "Income Distribution, Political Instability and Investment," *European Economic Review*, 40, 1203-1225.

Alesina, Alberto and Dani Rodrik (1994) "Distributive Politics and Economic Growth," *Quarterly Journal of Economics*, 109, 465-490.

Amsden, Alice H. (1985) "The State and Taiwan's Economic Development," in Peter B. Evans, Dietrich Rueschemeyer and Theda Skocpol eds. *Bringing the State Back In*, Princeton University Press, Princeton NJ.

Bénabou, Roland (1999) "Unequal Societies," NBER Working Paper, forthcoming *American Economic Review.*

Benhabib, Jess and Aldo Rustichini (1996) "Social Conflict and Growth" *Journal of Economic Growth*, 1, 125-142.

Brown, Marion (1989) "Radical Reformism in Chile: 1964-1973," in William C. Thiesenhusen ed. *Searching for Agrarian Reform in Latin America*, Unwin Hyman, Boston.

Cardoso, Eliana and Ann Helwege (1992) *Latin America's Economy: Diversity, Trends, and Conflicts* The MIT Press, Cambridge MA.

Collier, Ruth B. (1999) *Paths Towards Democracy: The Working Class and Elites in Western Europe and South America*, Cambridge University Press, New York.

Dahl, Robert A. (1971) *Polyarchy* Yale University Press, New Haven.

Dorner, Peter (1992) *Latin American Land Reforms in Theory and Practice*, University of Wisconsin Press, Madison WI.

Ellman, Matthew and Leonard Wantchekon (2000) "Electoral Competition under the Threat of Political Unrest," *Quarterly Journal of Economics*, 115, 499-531.

Engerman, Stanley L., Elisa Mariscal and Kenneth L. Sokoloff (1997) "Schooling, Suffrage, and the Persistence of Inequality in the Americas, 1800-1945," Unpublished Paper, Department of Economics, UCLA.

Gasiorowski, Mark J. (1995) "Economic Crises and Political Regime Change: An Event History Analysis," *American Political Science Review*, 89, 882-897.

Gavin, Michael and Roberto Perotti (1997) "Fiscal Policy in Latin America" *NBER Macroeconomics Annual*, edited by Benjamin Bernanke and Julio Rotemberg, MIT Press, Cambridge.

Grossman, Herschel I. (1991) "A General Equilibrium Theory of Insurrections," *American Economic Review*, 81, 912-921.

Grossman, Herschel I. (1993) "Production, Appropriation and Land Reform," *American Economic Review*, 84, 705-712.

Haggard, Stephan (1990) *Pathways from the Periphery: The Politics of Growth in the Newly Industrializing Countries*, Cornell University Press, Ithaca NY.

Haggard, Stephan and Robert R. Kaufman (1995) *The Political Economy of Democratic Transitions*, Princeton University Press, Princeton NJ.

Handy, James (1984) *Gift of the Devil: A History of Guatemala*, Dumont Press, Toronto.

Ho, Samuel (1978) *Economic Development of Taiwan, 1860-1970*, Yale University Press, New Haven CT.

Horowitz, Andrew W. (1993) "Time Paths of Land Reform: A Theoretical Model of Reform Dynamics," *American Economic Review*, 83, 1003-1010.

Jarvis, Lowell, S. (1989) "The Unraveling of Chile's Agrarian Reform, 1973-1986," in William C. Thiesenhusen ed. *Searching for Agrarian Reform in Latin America*, Unwin Hyman, Boston.

Kaufman, Robert R. and Barbara Stallings (1972) "The Political Economy of Latin American Populism," in Rudiger Dornbusch and Sebastian Edwards eds. *The Macroeconomics of Populism in Latin America*, University of Chicago Press, Chicago

IL.

Kolb, Glen L. (1974) *Democracy and Dictatorship in Venezuela, 1945-1958*, Shoestring Press, Hamden CT.

Levine, Daniel H. (1989) "Venezuela: The Nature, Sources, and Prospects of Democracy," in L. Diamond, J.J. Linz and S.M. Lipset eds. *Democracy in Developing Areas: Latin America*, Lynne Reimer, Boulder Co.

Linz, Juan J. (1978) *Crisis, Breakdown and Reequilibration*, Johns Hopkins University Press, Baltimore MD.

Linz, Juan J. and Alfred Stepan (1996) *Problems of Democratic Transition and Consolidation*, Johns Hopkins University Press, Baltimore MD.

Lipset, Seymour M. (1959) "Some Social Prerequisites for Democracy: Economic Development and Political Legitimacy," *American Political Science Review,* 53, 69-105.

Madison, James (1788) *The Federalist: A Collection of Essays Written in Favor of the New Constitution*, New York.

Meltzer, Allan H. and Scott F. Richard (1981) "A Rational Theory of the Size of Government," *Journal of Political Economy*, 89, 914-927.

Moore, Barrington (1966) *The Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World*, Beacon Press, Boston MA.

Muller, Edward N. and Mitchell A. Seligson (1987) "Inequality and Insurrections," *American Political Science Review*, 81, 425-451.

O'Donnell, Guillermo (1973) *Modernization and Bureaucratic Authoritarianism: Studies in South American Politics*, University of California, Institute for International Studies, Berkeley CA.

O'Donnell, Guillermo and Phillip C. Schmitter (1986) *Transitions from Authoritarian Rule: Tentative Conclusions about Uncertain Democracies*, Johns Hopkins University Press, Baltimore MD.

Powell, John D. (1971) *Political Mobilization of the Venezuelan Peasant*, Harvard University Press, Cambridge MA.

Persson, Torsten and Guido Tabellini (1994) "Is Inequality Harmful for Growth? Theory and Evidence," *American Economic Review*, 84, 600-621.

Prezworski, Adam (1991) *Democracy and the Market*, Cambridge University Press.

Prezworski, Adam, Michael Alvarez, José A. Cheibub and Fernando Limongi (1996) "What Makes Democracy Endure?" *Journal of Democracy*, 7, 39-55.

Rock, David (1987) *Argentina 1516-1987: From Spanish Colonization to Alfonsin,* University of California Press, Berkeley CA.

Roemer, John E. (1985) "Rationalizing Revolutionary Ideology: A Tale of Lenin and the Tsar," *Econometrica*, 53, 85-108.

Rodrik, Dani (1999) "Democracies Pay Higher Wages," *Quarterly Journal of Economics,* CXIV, 707-738.

Rueschemeyer, Dietrich, Evelyn H. Stephens and John D. Stephens (1992) *Capitalist Development and Democracy*, University of Chicago Press, Chicago IL.

Rustow, Dankwart C. (1970) "Transitions to Democracy: Toward a Dynamic Model," *Comparative Politics*, 2, 337-363.

Skidmore, Thomas E. (1967) *Politics in Brazil, 1930-1964: An Experiment in Democracy*, Oxford University Press, New York NY.

Smith, Peter H. (1978) "The Breakdown of Democracy in Argentina, 1916-1930," in Juan J. Linz and Alfred Stepan eds. *The Breakdown of Democratic Regimes: Latin America*, The Johns Hopkins University Press, Baltimore, MD.

Steinmo, Sven (1993) *Taxation and Democracy: Swedish, British and American Approaches to Financing the Modern State*, Yale University Press, New Haven CT.

Stepan, Alfred (1978) "Political Leadership and Regime Breakdown: Brazil," in Juan J. Linz and Alfred Stepan eds. *The Breakdown of Democratic Regimes: Latin America*, The Johns Hopkins University Press, Baltimore, MD.

Therborn, Goran (1977) "The Rule of Capital and the Rise of Democracy," *New Left Review*, 103, 3-41.

Tornell, Aaron and Andres Velasco (1992) "The Tragedy of the Commons and Economic Growth: Why Does Capital Flow from Poor to Rich Countries?" *Journal of Political Economy*,100, 1208-31.

Trudeau, Robert (1993) *Guatemalan Politics: The Popular Struggle for Democracy*, Lynne Reimer, Boulder CO.

Tullock, Gordon (1971) "The Paradox of Revolution," *Public Choice*, 11, 88-99.

Valenzuela, Arturo (1989) "Chile: Origins, Consolidation and Breakdown of a Democratic Regime," in L. Diamond, J.J. Linz and S.M. Lipset eds. *Democracy in*

Developing Countries: Latin America, Lynne Reimer, Boulder CO.

Vilas, Carlos M. (1995) *Between Earthquakes and Volcanos: Market, State, and the Revolutions in Central America*, Monthly Review Press, New York NY.

Wallerstein, Michael (1980) "The Collapse of Democracy in Brazil: Its Economic Determinants," *Latin American Research Review*, 15, 3-40.

Wantchekon, Leonard (1999) "Strategic Voting in Conditions of Political Instability: The 1994 Elections in El Salvador," *Comparative Political Studies*, 32, 810-834.

Yashar, Deborah J. (1997) *Demanding Democracy: Reform and Reaction in Costa Rica and Guatemala, 1870's-1950's,* Stanford University Press, Stanford CA.

Footnotes

[1]* We would like to thank two anonymous referees, Abhijit Banerjee, Timothy Besley, François Bourguignon, Ruth Berins Collier, Steven Durlauf, Jeffry Frieden, Michael Kremer, Robert Powell, Dani Rodrik, Kenneth Sokoloff, Mariano Tommasi, Jaume Ventura and seminar participants at MIT, Wisconsin, NYU, Western Ontario, Toulouse, NBER Summer Institute, IMF, Canadian Institute of Advanced Research, Berkeley, Princeton and Yale Political Science Departments, the conference on "Asset Inequality and Poverty" at the Ministry of Land Reform in Brasilia, and LACEA 98 at the Universidad di Tella, for useful suggestions.

[1]Before the mass democratization of the 19th century, Britain had elections with a very restricted franchise, while in Argentina, nondemocratic regimes have often been military dictatorships. We do not distinguish between these different types of nondemocratic regimes. We also define any significant move towards mass democracy as "democratization".

[2]For example, Dani Rodrik (1999) shows that democracies tend to have higher wages and a higher labor share. In the context of Latin America, there are many examples of military coups specifically aimed at reducing redistribution, including the coups in Argentina against Peron, the coup in Brazil against Goulart, and the coup in Chile against Allende (see Thomas E. Skidmore, 1967, Peter H. Smith, 1978, Alfred Stepan 1978, and Michael Wallerstein, 1980). Obviously, in practice, there are dictatorships that are against the interests of the richer segments of society, such as socialist dictatorships or some African regimes, and they fall outside the scope of our model.

[3]The previous version of the paper, Acemoglu and Robinson (1999), discussed the case in which the costs of coups and recessions were directly stochastic. This could be because wars, changes in the international balance of power, and recessions affect the extent of the collective action problem or inequality. Here we focus on recessions for concreteness.

[4]While a revolution which changes the political system might seem to have public good-like features, the existing empirical literature substantiates the assumption that revolutionary leaders concentrate on providing private goods to potential revolutionaries (see Gordon Tullock, 1971).

There could also be a coordination problem where all poor agents expect others not

to take part in a revolution, so do not take part themselves. However, since taking part in a revolution imposes no additional costs irrespective of whether it succeeds or not, it is a weakly dominant strategy, and we therefore ignore this coordination problem both in this case and in the case of coups below where a similar issue arises.

[5]An alternative formulation is to assume that a revolution creates a temporary period of low output, but eventually leads to a democracy. The results are identical in this case, but somewhat more complicated because the desirability of a revolution depends on whether democracy is consolidated or not.

[6]This seems plausible. For example, in Venezuala in 1948, Guatemala in 1954, and Chile in 1973, landowners were rewarded for supporting the coup by having their land returned to them.

[7]This follows since, by the Envelope Theorem, $d\delta^r(\theta)/d\theta = \tau^m A_t h/(1-\lambda) > 0$, and $d\delta^p(\theta)/d\theta = -\tau^m A_t h/\lambda < 0$.

[8]To see why only the case with $\gamma = 1$ is relevant along the equilibrium path, note that the society starts in a nondemocratic regime. So if either $\gamma = 0$ or $\rho = 1$, there will never be a democracy along the equilibrium path, and we are calculating the value of a deviation from democracy.

[9]Assumption 3 will hold when democracy is sufficiently redistributive. This leads to an interesting trade-off: a highly redistributive democracy leads to political instability, but if the potential for redistribution is too limited, democratization does not prevent revolution.

[10]Leonard Wantchekon (1999) argues this has been the case in El Salvador. This result is also related to Matthew Ellman and Wantchekon (2000) and Wantchekon (1999) who analyze how the threat of conflict initiated by the loser of a democratic election affects the voting outcomes.

[11]Overall redistribution (average redistribution) is $-\left[(1-s)\delta^r(\theta) + sa\Delta^r(\theta,\tau^d)\right]/h^r$ since in state A^h net transfers from the rich are equal to $-\delta^r(\theta)$, and in state A^h, they are equal to $-\Delta^r(\theta,\tau^d)/h^r$. Solving for $\Delta^r(\theta,\tau^d)/h^r$ in terms of $\delta^r(\theta)/h^r$ from (A2) in the Appendix, and using the fact that $\partial[\delta^r(\theta)/h^r]/\partial\theta > 0$, we find that overall redistribution increases with inequality

[12]Interestingly, if output becomes less volatile because of a reduction in s, the effect

is ambiguous. On the one hand, a lower s makes recessions less frequent, and hence the society becomes more stable. On the other hand, a lower s, by making recessions less likely, reduces "the credibility of future concessions" both by democracies and nondemocracies, and may increase the attractiveness of coups and revolutions.

[13]For our general results to hold, asset redistribution does not need to be permanent, it only needs to be harder to reverse than fiscal redistribution. In practice, it may be easier to reverse asset distributions than democracy, but this is ultimately an empirical question.

[14]Formally, $-H(\theta_0)/(1-\lambda) + (1-\theta_0)H'(\theta_0)/(1-\lambda) + \delta^{r\prime}(\theta_0) \leq 0$.

[15]This result is related to previous analyses of land reform, such as Grossman (1993) and Andrew W. Horowitz (1993), which argue land reform can prevent revolution, though these papers do not compare asset and fiscal redistribution. Also in contrast to these papers, asset redistribution in our economy may prevent not only a revolution but also democratization.

[16]For example, the army may be financed by taxation, in which case M is the tax paid by each member of the elite for this purpose.

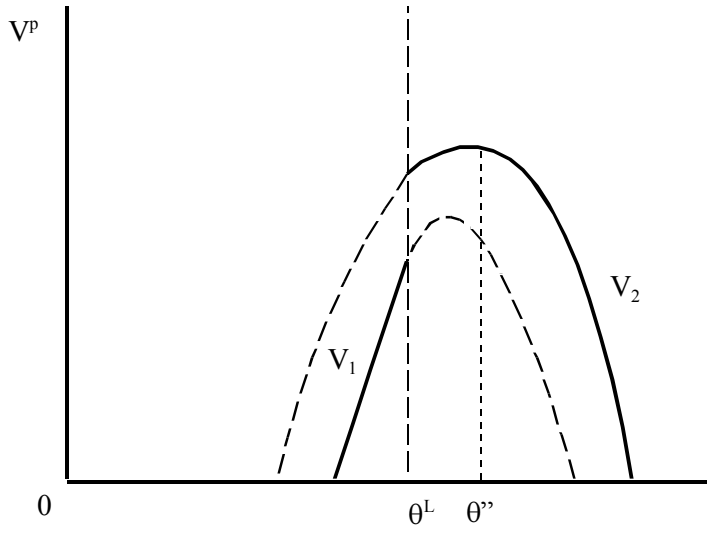

Figure 1: V_1^p applies when democracy is unconsolidated, and V_2^p applies when democracy is consolidated. Democracy is consolidated when $\theta \geq \theta^L$.

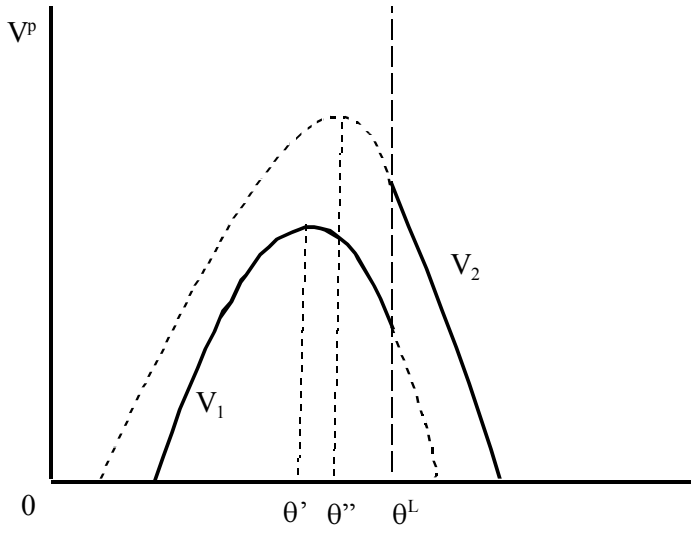

Figure 2: V_1^p applies when democracy is unconsolidated, and V_2^p applies when democracy is consolidated. Democracy is consolidated when $\theta \geq \theta^L$.