Democracy as an equilibrium

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Abstract. Observation shows that while democracy is fragile in poor countries, it is impregnable in developed ones. To explain this pattern, I develop a model in which political parties propose redistributions of incomes, observe the result of an election, and decide whether to comply with the outcome or to launch a struggle for dictatorship. Democracy prevails in developed societies because too much is at stake in turning against it. More income can be redistributed in developed than in poor countries without threatening democracy. Limits on redistribution arise endogenously, so that constitutions are not necessary for democracy to endure. A democratic culture characterizes the equilibrium.

Introduction

No democracy ever fell in a country with a per capita income higher than that of Argentina in 1975, $6055.[1] This is a startling fact, given that throughout history about 70 democracies collapsed in poorer countries. In contrast, 35 democracies spent about 1000 years under more developed conditions and not one died. Developed democracies survived wars, riots, scandals, economic and governmental crises, hell or high water.

The probability that democracy survives increases monotonically in per capita income. Between 1951 and 1990, the probability that a democracy would die during any particular year in countries with per capita income under $1000 was 0.1636, which implies that their expected life was about 6 years. Between $1001 and 3000, this probability was 0.0561, for an expected duration of about 18 years. Between $3001 and 6055, the probability was 0.0216, which translates into about 46 years of expected life. And what happens above $6055 we already know: democracy lasts forever.

Moreover, as Table 1 shows, dictatorships established by electoral incumbents occurred at lower incomes than those founded by the forces out of office. In very poor countries, the probabilities are exactly equal that a dictatorship would be established by the electoral winners or losers. In countries with intermediate income levels, between $1001 and 6055, the electoral losers are much more likely to do so. Above $6055 neither side does.

The purpose of this article is to explain these facts. The story is simple. Each society is characterized by per capita income and a distribution of income

Table 1. Transitions to dictatorship, by the electoral winners and losers, by per capita income

Income range	All	Probability	By winners	Probability	By losers	Probability	Cases
–1000	18	0.1636	9	0.0818	9	0.0818	110
1001–3000	28	0.0561	6	0.0120	22	0.0441	499
3001–6055	8	0.0216	0	0.0000	8	0.0216	370
6055–	0	0.0000	0	0.0000	0	0.0000	762

among three classes: poor, middle, and wealthy. Two parties, Left and Right, representing respectively the poor and the wealthy, compete in elections offering proposals to redistribute incomes. Once votes are cast, one party is declared the winner, and both the winner and the loser decide whether to obey the election result or attempt to establish a dictatorship. If anyone rebels, a conflict ensues. The outcome of this conflict depends on the balance of military power. Democracy may survive or a dictatorship may be established. If democracy survives, the situation is repeated. If a dictatorship is established, it can last any amount of time.

The reason compliance is problematic is that voting is an imposition of a will over a will (Schmitt, 1988). Elections authorize compulsion: they empower governments, the rulers, to seize money from some and give it to others, to put people in jail, and sometimes even to take their life. This is what "ruling" is (Bobbio, 1984; Kelsen, 1988). Authorized to coerce, the electoral winners promote their values and interests against those of electoral losers. Hence, losers lose. As Condorcet (1986: 22) pointed out, "what is entailed in a law that was not adopted unanimously is submitting people to an opinion which is not theirs or to a decision which they believe to be contrary to their interest."[2] And while winners win, they still suffer limitations on their power. Rather than exercise moderation and risk losing office by holding elections, they can extract more or not hold elections.

The seminal work on repeated conflicts over distribution is Benhabib and Rustichini (1996) where, however, political institutions are implicit and exogenous. Acemoglou and Robinson (2001) develop a dynamic model of political regimes but do not study dependence on income. In turn, most of the burgeoning literature on the endogenous dynamics of political regimes is based on the belief, not supported by data (Przeworski and Limongi, 1997), that democracy is more likely to emerge in more developed countries. Note that I say nothing about the mechanisms that give rise to democracy – I believe that we do not know enough to model them – but only ask what makes democracies survive once they are established. Finally, there is a recent strand of writings which treat political institutions as endogenous in continuous terms, namely, as the location of the decisive voter in the distribution of income (Benabou, 1996, 2000; Bourgignon and Verdier, 2000; Saint Paul and Verdier, 1996). Of

particular relevance for this article is the work of Perotti (1993), who finds that effects of income distribution on its redistribution vary with per capita income (see also Banerjee and Duflo, 1999).

The rest is organized as follows. The assumptions are spelled out in democracy and dictatorship section. Results are derived in the analysis section. These results are interpreted and extended in the Interpretation and extension section.

Democracy and Dictatorship

General assumptions

A society with per capita income y, measured roughly in multiples of \$250,[3] consists of three types of income earners: poor, middle, and wealthy. The types are indexed by $i \in P, M, W$; their proportions in the society are $\pi_i < 0.5$ for all i.[4] These types may be identifiable by their assets or occupations but also by their ethnic, regional, or religious affiliations. What matters is that incomes of the poor and the middle are lower than the average, while incomes of the wealthy are higher than the average, so that $\alpha_P < \alpha_M < 1 < \alpha_W$, where α_i is a multiple of the average income. The subsistence (non-market income) share is $\alpha_S \leq \alpha_P$.

Two political parties (or coalitions thereof) compete in elections: a left party, L, represents the poor and a right party, R, the wealthy. Since each party represents a particular income class, parties are also indexed by $i \in L, \emptyset, R$. Since members of each type are identical, the objective of the party which represents them is to maximize $V_i = E \sum_{t=0}^{t=\infty} \rho^t U_{i,t}$, where $0 < \rho < 1$ is the discount rate. Note that since they must compete for votes of the middle class, in an electoral equilibrium parties may end up offering the same platform. Hence, they are "left" and "right" only insofar as the poor (wealthy) are never worse off when the left (right) party wins than when it loses. Moreover, a party may bear a religious, ethnic, or regional label and still be a left (right) party as long as its constituency are people who are poor (wealthy).

Parties propose to redistribute incomes. Details of feasible redistributions are spelled out below. For the moment it is sufficient to think that the left party proposes to redistribute at the rate τ_L while the right party offers to redistribute at the rate τ_R.

Once the electoral platforms are announced, the probability that the left party wins is known to be $p(\tau_L, \tau_R)$ but the result of an election remains uncertain (for various reasons they may be, see Roemer, 2001, Chapter 2). Since p depends only on the platforms, it is endogenous. Moreover, since the optimal platforms depend only on parameters, in any electoral equilibrium p is constant for any y.

When votes are cast, the left party obtains a vote share $v(\tau_L, \tau_R)$ Someone is then declared the "winner" according to a rule that defines what constitutes

electoral victory. For example, the rule may be that the winner is whoever happens to win a majority of votes and that a fair coin is flipped when vote shares are the same, so that the probability that the left party wins according to this rule is $p = 1$ if $v > 1/2$, $p = 1/2$ if $v = 1/2$, $p = 0$ otherwise. Outcomes of elections are indexed by $j \in L, R : j = L$ if the left party wins and $j = R$ when the right party does.

The designation of "winners" and "losers" is an instruction to the parties as to what they should and should not do: The winners should move into a White, Pink, or Blue House or perhaps even a palace; while there should not redistribute too much, and should hold elections again. The losers should not move into the House, should accept what they are given, and participate in elections again.

Given the platforms and the result of an election, both parties choose actions $A \in \{\text{obey, rebel}\}$ or $\{O, R\}$. If both the winners and the losers obey the result of an election, production occurs, incomes are redistributed according to the winning platform and consumed, and a new election is called. For the moment, it is sufficient to think that the post-distribution multiple of average income of each type i given the result of the election, j, is s_{ij}. The utility of this outcome is $U(s_{ij} y)$, which at times I also write for short as U_{ij}: utility of type i when party j wins an election.

If either party rebels, a conflict ensues. What happens depends on the balance of military force: the political posture of the military or the actual physical force of supporters. The probability that the left party wins in any conflict is $0 < q < 1$ and that the right party is victorious $(1 - q)$.[5] Hence, if only the right (left) party rebels, the probability democracy is successfully defended by the left (right) party is $q(1 - q)$. If both rebel, these are the probabilities that the left (right) becomes the dictator.

Under dictatorship, the victorious party redistributes incomes by giving some multiple s to those defeated and distributing the rest among its supporters.[6] If the left party becomes the dictator, it gives a multiple s_L to each of the poor and s to others. The right dictatorship gives a multiple s_R to the wealthy and a share s to others. The utility of the constituency of a party that becomes the dictator is $U(S_i y) \equiv U_i$, so that $U_L = U(s_L y)$ is the utility of the poor if the left party is the dictator, while $U_R = U(s_R y)$ is the utility of the wealthy if the right is the dictator. The utility of those suffering under a dictatorship is $U_S = U(sy)$.

But dictatorships not only redistribute income: they use force to repress their opponents. Concentration camps, gulags, internment camps (Buru Island in Indonesia after 1964, Dawson Island in Chile after 1973, Robben Island in South Africa), the Cambodian "killing fields," the Argentine "disappearances" are a standard repertory of dictatorial rule. And even where such barbarism is less rampant, the threat of imprisonment, torture, or death is sufficiently foreboding that the same consumption generates lower utility when one's

physical integrity is threatened. While all the results below hold for any CRRA utility function, to avoid proliferation of cases, I will work with

$$U(c) = \mu \log c, \tag{2.1}$$

where c stands for consumption and $\mu = 1$ under democracy and for dictators, $\mu < 1$ for those oppressed under dictatorship. Hence, μ represents distaste for physical insecurity.[7]

To recapitulate, two parties compete in elections proposing to redistribute incomes. Once the platforms are announced, voting takes place. One of the parties is declared the winner. Both the winner and the loser decide whether to obey the election result or to turn against democracy. If both obey, incomes are produced and distributed, and another election takes place. If at least one rebels, incomes are not distributed until either democracy survives or a dictatorship is established.

Feasible redistributions

At this moment, it is necessary to fill the details of redistributions feasible under both regimes. Under democracy,[8] redistribution consists of a proportional tax and a uniform transfer, so that the consumption of type i given the victory of party j, c_{ij}, is

$$\begin{aligned} c_{ij} &= (1 - \tau_j)y_i + \tau_j y(1 - \lambda \tau_j) = [\alpha_i + \tau_j(1 - \alpha_i - \lambda \tau_j)]y \\ &\equiv s_{ij}y, \end{aligned} \tag{2.2}$$

where τ is the tax-transfer rate, λ is the shadow cost of public funds, and $2\lambda y$ is the marginal deadweight loss of redistribution. Hence, consumption of type i voter is maximized when

$$\tau_i^* = (1 - \alpha_i)/2\lambda. \tag{2.3}$$

Consider now the range of redistributions feasible under democracy. Since the consumption of the decisive voter, whose income is below the mean, increases in the tax rate, it must be true that up to τ_M^*, $\partial p/\partial \tau_L > 0$ and $\partial p/\partial \tau_R < 0$. Voters may be inclined to vote for the right party on grounds other than consumption, so that in some electoral equilibria it may be true that $\tau_R < \tau_L$. But if the Right offered too low a tax rate, it would lose. Hence, in all electoral equilibria, the tax rate offered by the Right must be higher than τ_R^*, the preferred tax rate of the rich, and it cannot be much lower than that proposed by the Left. The left party, in turn, is constrained by electoral considerations to keep its proposal below τ_L^* and not much above the proposal of the Right. Hence, *if the survival of democracy is not at stake*, neither party

would propose a tax rate much different from that preferred by the median voter, which is τ_M^*.[9]

Under dictatorship, electoral constraints do not operate: the dictator rules by force. Hence, there is nothing to prevent the right dictatorship from reducing incomes of the poor (and middle) to subsistence. A left dictatorship, in turn, can maximize the income of the poor without worrying about the support of the middle class.[10]

This argument leads to the following conclusion, which will be useful throughout

Conclusion 1. *For any electorally feasible $\{\tau_L, \tau_R\}$ the income multiple of the poor under the left dictatorship is at least as large as the largest multiple feasible when the left party wins an election. $s_L \geq s_{PL}(\tau_L \mid \tau_R)$. In turn, the income multiple of the wealthy under right dictatorship is at least as large as the largest multiple feasible when the right party wins an election, $s_R \geq s_{WR}(\tau_R \mid \tau_L)$.*

Analysis

The only aspect of electoral equilibria that matters here is whether or not parties converge to the same platform. If in an electoral equilibrium redistribution platforms are the same, then victory is decided by a toss of a coin, which is the only source of uncertainty, and is of no consequence for redistribution. If, however, platforms are not the same in some electoral equilibrium, then it matters which party won. In this case, each party must consider what the other party would do if future elections were to generate a different result. Since almost all results can be obtained without a loss of generality by assuming that electoral competition leads the parties to converge to the same platform, this is the case I analyze.

When rates of taxation are linear in income and the budget is balanced, electoral competition is reduced to a single dimension. When, in addition, the distribution of voters' ideal points is known, in the unique equilibrium of electoral competition parties converge to the same platform. Hence, if each party anticipates that the other party will obey this result, in the electoral equilibrium both parties converge to $\tau_L = \tau_R = \tau_M^*$.

When both parties propose τ_M^*, each group obtains under democracy the instantaneous utility

$$
\begin{aligned}
U_i(\tau_M^*, \tau_M^*) &\equiv U[c_i(\tau_M^*)] = \log s_i(\tau_M^*) y \\
&= \log[\alpha_i + \tau_M^*(1 - \alpha_i - \lambda \tau_M^*)] + \log y, \quad (3.1)
\end{aligned}
$$

which is the same regardless which party won the election, so that $S_{iL} = s_{iR} = s_i(\tau_M^*)$. In turn, the utility of each constituency under the dictatorship

of the party that represents it is $U_i = \log s_i y$ and under the dictatorship of the other party it is $U_s = \mu \log s y$, which means that the expected utility of a conflict over dictatorship, when both parties rebel, is

$$EU_i(R, R) = q_i U_i + (1 - q_i)U_S, \qquad (3.2)$$

where $q_L = q$ and $q_R = 1 - q$.

If both parties obey, the game is repeated under identical circumstances. Hence, the present value of democracy for party i is

$$V_i(\tau_M^*) = \frac{1}{1 - \rho} U_i(\tau_M^*). \qquad (3.3)$$

If a party establishes dictatorship, the game ends, in the following sense: (1) the dictatorship of the party which won the conflict lasts for some T periods, and (2) if and when the country ever returns to democracy, past rebellions are forgotten and the game starts anew. But, since it turns out that the length of the period of dictatorship does not matter, we may as well think that the dictatorship lasts forever.[11]

To determine the value of rebelling, we need to determine the punishment strategy each party pursues if the other rebels. Since there are no good reasons to think otherwise, I assume that if one party rebels the other party rebels immediately, that is, before any redistribution takes place.[12] This punishment strategy is credible if $V_i(R \mid R) \geq V_i(O \mid R)$, that is, if in the face of rebellion party i is better off rebelling than defending democracy. Now, the value of defending democracy when the other party rebels is

$$
\begin{aligned}
V_i(O \mid R) &= q_i U_i(\tau_M^*) + (1 - q_i)\frac{1}{1 - \rho}U_S + q_i \rho \left[q_i U_i(\tau_M^*) \right. \\
&\quad \left. + (1 - q_i)\frac{1}{1 - \rho}U_S \right] + q_i^2 \rho^2 \left[q_i U_i(\tau_M^*) + (1 - q_i)\frac{1}{1 - \rho}U_S \right] \\
&\quad + \cdots = \frac{q_i}{1 - \rho q_i}U_i(\tau_M^*) + \frac{1 - q_i}{1 - \rho q_i}\frac{1}{1 - \rho}U_S, \qquad (3.4)
\end{aligned}
$$

where again $q_i = q$ if $i = L$ and $1 - q$ if $i = R$

Hence $V_i(R \mid R) \geq V_i(O \mid R)$ if

$$q_i U_i + (1 - q_i)U_S \geq \frac{q_i - \rho q_i}{1 - \rho q_i}U_i(\tau_M^*) + \frac{1 - q_i}{1 - \rho q_i}U_S \qquad (3.5)$$

which is always true, given that, by Conclusion 1, $U_i \geq U_i(\tau_M^*)$ for $i = \{L, R\}$.

Given this punishment strategy, the value of rebellion for party i is simply

$$V_i(R) = \frac{1}{1 - \rho} EU_i(R, R). \tag{3.6}$$

Hence, whether party opts for democracy or seeks to establish its dictatorship depends only on the comparison of the instantaneous utilities.

Proposition 1. Party i opts for democracy if $U_i(\tau_M^*) \geq EU_i(R, R)$, or, respectively for L and R, if

$$\log[\alpha_P + \tau(1 - \alpha_P - \lambda\tau)] - q \log s_L - (1 - q)\mu \log s$$
$$\geq (1 - q)(\mu - 1) \log y \tag{3.6 a}$$
$$\log[\alpha_W - \tau(\alpha_W + \lambda\tau - 1] - (1 - q) \log s_R - q\mu \log s$$
$$\geq q(\mu - 1) \log y. \tag{3.6 b}$$

Let us first study the comparative statics with regard to y, while holding τ fixed. The left-hand side of these conditions is then constant, while the right-hand side declines in y. Hence, for any fixed tax rate, there exists a threshold income $y^i(\tau)$ above which party i obeys if the other party obeys. Let $y^H \equiv \max_i y^i(\tau)$.

Then we have the following lemma.

Lemma 1. For any fixed redistribution rate, τ, democracy survives if $y \geq y^H(\tau)$.

To determine y^H, let $\underline{\tau}(y), \bar{\tau}(y)$ be the "rebellion constraint" tax rates, defined as follows: $\underline{\tau}(y)$ is the lowest tax rate under which the Left obeys, while $\bar{\tau}(y)$ is the highest tax rate under which the Right obeys, when per capita income is y. These tax rates can be determined by solving (3.6) with equality sign. Tedious algebra shows that $\partial\underline{\tau}/\partial y < 0$ while $\partial\bar{\tau}/\partial y > 0$: the Left tolerates a lower tax rate in more developed societies while the Right accepts a higher rate. Hence, either $\underline{\tau}(1) < \bar{\tau}(1)$ or there exists a $y = y^H$ such that $\underline{\tau}(y^H) = \bar{\tau}(y^H)$ and $\underline{\tau}(y^H) < \bar{\tau}(y^H)$ for all $y > y^H$.

Proposition 2. Since as income increases, the Right obeys at higher redistribution rates while the Left obeys at lower redistribution rates, there exists an income threshold beyond which $\underline{\tau}(y) \leq \bar{\tau}(y)$ and democracy survives if $\tau \in (\underline{\tau}(y), \bar{\tau}(y))$.

Figure 1 illustrates this result. When $q = 0.4$, the Right accepts democracy even in the poorest society, $y = 1$, as long as $\tau \lesssim 0.7$ and the Left accepts it
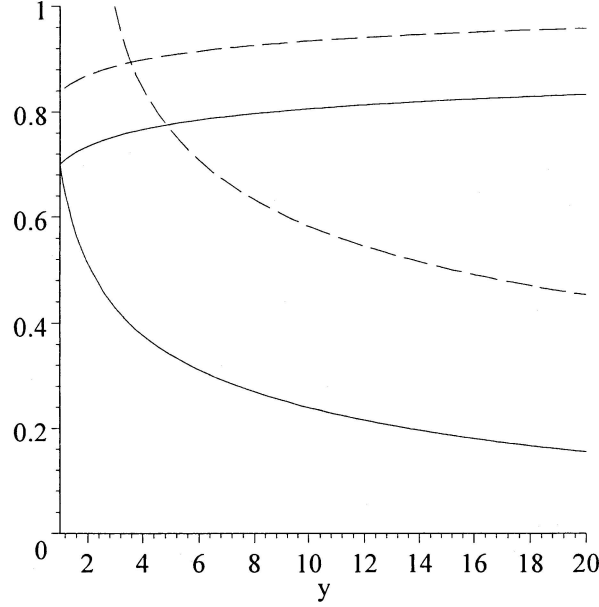
Figure 1. Redistribution rates under which democracy survives, as a function of per capita income and military relations. Dashed line is for $q = 0.5$, solid for $q = 0.4$. The Right obeys if tax rates are lower than the upper lines, the Left if they are higher than the lower lines.

as long as $\tau \gtrsim 0.7$. Hence, democracy survives when $\tau \approx 0.7$. In turn when $q = 0.5$, although the Right is willing to accept higher tax rates, the Left rebels at all tax rates that the Right would obey until $y \succsim 4$. Hence, $y^H \approx 4$, when $\underline{\tau}(y^H) = \bar{\tau}(y^H) \approx 0.9$.

Moreover, in poor societies the range of distributions under which democracy survives is tightly circumscribed by the rebellion constraints, while in developed countries democracy survives under a wide range of redistributions.

Corollary 1. Since as income increases, the Right obeys at higher redistribution rates while the Left obeys at lower redistribution rates, the range of redistributions feasible under democracy increases in per capita income.

Finally, the equilibrium tax rates, $\hat{\tau}$, and the actions are given as follows

Proposition 3. (1) If $\underline{\tau} \leq \bar{\tau} < \tau_M^*$, $\hat{\tau} = \bar{\tau}$: upper rebellion constraint bites and both parties obey. (2) If $\underline{\tau} < \tau_M^* \leq \bar{\tau}$, $\hat{\tau} = \tau_M^*$: electoral constraint bites and both parties obey. (3) If $\tau_M^* < \underline{\tau} \leq \bar{\tau}$, $\hat{\tau} = \underline{\tau}$: lower rebellion constraint bites and both parties obey. (4) If $\underline{\tau} > \bar{\tau}$, the Left proposes $\tau_L > \bar{\tau}$ the Right $\tau_R < \underline{\tau}$, and both parties rebel.

If $\tau_M^* > \bar{\tau} > \underline{\tau}$, both parties converge to $\bar{\tau}$. If democracy were not at stake, the electoral equilibrium would have been τ_M^*. But the right party will not obey this result. Since $\bar{\tau} > \underline{\tau}$, the Left proposes $\bar{\tau}$. The right party, in turn, cannot win by proposing $\tau < \bar{\tau}$ and both parties prefer democracy at $\bar{\tau}$ to a struggle over dictatorship. If $\bar{\tau} > \tau_M^* > \underline{\tau}$, the tax rate preferred by the median voter is acceptable to both parties and it is the equilibrium. If $\bar{\tau} > \underline{\tau} > \tau_M^*$, however, the Left will not obey when the tax rate is τ_M^*. The Right, in turn, prefers to suffer from higher taxes, $\underline{\tau} > \tau_M^*$ under democracy than to risk a conflict over dictatorship. Hence, both parties propose $\underline{\tau}$ and both obey. Finally, when $\underline{\tau} > \bar{\tau}$ conditions (3.3) cannot hold simultaneously, the Left proposes a tax rate the Right would not obey, the Right offers a rate the Left would not obey, and both rebel.

The income paths of equilibrium tax rates, $\hat{\tau}(y)$ depend on income distribution. Note first that the electoral constraint tax rate, τ_M^* is the equilibrium only if $\underline{\tau} \le \tau_M^* \le \bar{\tau}$. Otherwise, either rebellion constraint bites. Differentiating (3.3) implicitly with regard to α_P while holding α_M and thus τ_M^* constant,[13] shows that
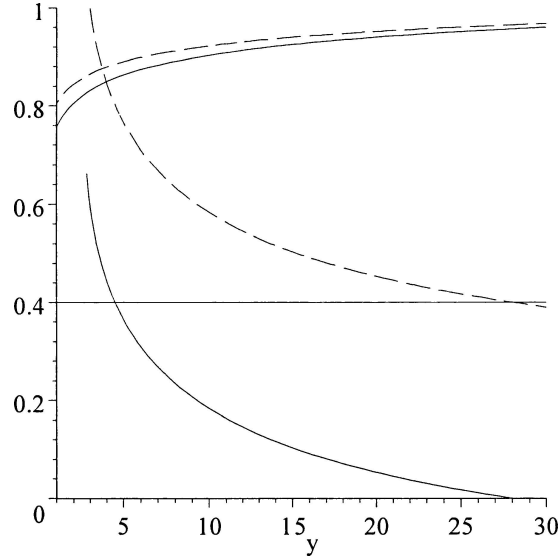
$$\frac{\partial \underline{\tau}}{\partial \alpha_P} = -\frac{1-\tau}{(1-\alpha_p) - 2\lambda\tau} < 0$$
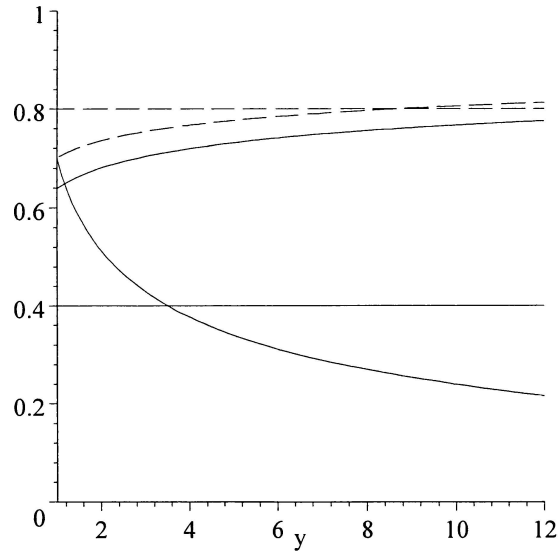
and

$$\frac{\partial \bar{\tau}}{\partial \alpha_P} = \frac{\partial \alpha_W}{\partial \alpha_P} \frac{\partial \bar{\tau}}{\partial \alpha_W} = -\frac{\pi_P}{\pi_W} \, frac 1 - \tau(\alpha_W - 1) - 2\lambda\tau < 0.$$

As the median preserving disparity between the incomes of the wealthy and the poor increases, the Right tolerates higher tax rates but the Left also demands higher rates. Hence, the effect of median preserving spread on y^H cannot be determined analytically. Simulations suggest, however, that the effect of equality on lowering $\underline{\tau}$ is more pronounced, so that democracy survives at lower income levels in more equal societies. Figure 2a illustrates democratic equilibria as a function of per capita income and its median preserving spread. Note that equilibrium tax rates decline following $\underline{\tau}$ until they reach τ_M^*.

In general, democratic equilibrium tax rates follow one of the rebellion constraints in low income countries and the electoral constraint in high income ones. Whether tax rates increase or decline in per capita income depends on the ratio of median to mean income. Figure 2b illustrates these possibilities, holding the share of the poor constant. In societies where median income is close to the mean, taxes decline in income and converge to a low rate. But in societies in which median income is low relative to the mean, equilibrium tax rates climb with income and eventually converge to a high rate.

Figure 2. (a)Redistribution rates under which democracy survives, as a function of per capita income, when the median income is held constant. Dashed line is for unequal society ($\alpha_P = 0.4$, $\alpha_M = 0.8$, $\alpha_W = 2.6$), solid for a more equal one ($\alpha_P = 0.6$, $\alpha_M = 0.8$, $\alpha_W = 2.2$). Solid horizontal line is τ^*. Democratic equilibrium tax rates are indicated by thick lines ($q = 0.5$, $\lambda = 0.25$). (b) Redistribution rates under which democracy survives, as a function of per capita income, when the share of the poor is held constant. Dashed line is for unequal society ($\alpha_P = 0.4$, $\alpha_M = 0.6$, $\alpha_W = 3$), solid for a more equal one ($\alpha_P = 0.4$, $\alpha_M = 0.8$, $\alpha_W = 2.6$). Democratic equilibrium tax rates are indicated by thick lines ($q = 0.4$, $\lambda = 0.25$).

To summarize, we learned the following:

(1) For any society, characterized by a distribution of incomes and the relation of military force, there exists some income threshold above which democracy survives.
(2) Given the relation of military force, democracy survives at lower income levels in more equal societies.
(3) As income increases, the range of redistributions feasible under democracy widens. Rebellion constraints bite in poor societies, electoral constraints limit redistribution in developed ones.

Generalizing this analysis to electoral equilibria in which parties diverge is difficult. But one consequence is intuitive, namely that when election results make a difference for redistribution, then losing the current election is worse than winning. This implies in turn that there are some income levels at which a party rebels when it loses but obeys when it wins. Illustrative value functions allowing for elections to make results are portrayed in Figure 3.
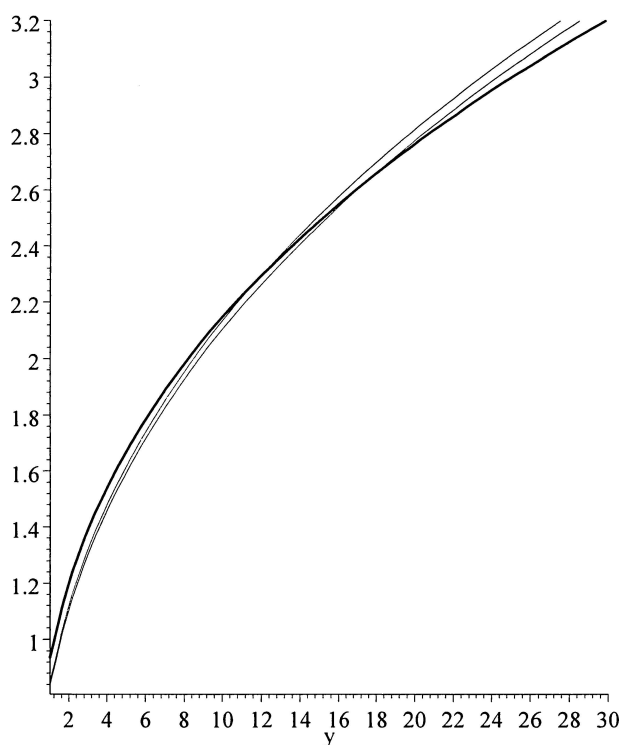

Figure 3. Illustrative value functions, as a function of per capita income, for each outcome of elections and for conflicts over dictatorship.

Interpretations and Extensions

Per capita income and the survival of democracy

Democracy always survives when a society is sufficiently developed. In countries with medium income levels, the winners may obey the results of elections while the losers rebel. Finally, democracy survives in poor countries only under special conditions.

The dependence on income in this story originates both from the aversion to physical insecurity, more precisely from the assumption that people enjoy any amount of consumption less when they face the possibility of physical oppression, and from risk aversion. As income increases, the gap between the well-being of electoral losers and of people oppressed by a dictatorship becomes large. The stakes are too high to risk losing the income guaranteed under democracy. Yet dependence on income, and all the other results, would also hold if we were to assume that people have a preference for democracy, independently of income.[14] The interpretation of the results would then be that as the marginal utility of consumption declines, the preference for democracy (or against dictatorship) overwhelms the eventual consumption gain from becoming a dictator. I cannot distinguish these two interpretations.

Regardless of the interpretation, however, this result sheds light on the role of economic crises in undermining democracy. What matters is not the rate of growth per se but the impact of economic crises on per capita income. Each country has some threshold of income above which democracy survives independently of election results. Economic crises matter if they result in income declining from above to below this threshold but not when they occur at income levels below or well above this threshold. In Trinidad and Tobago, per capita income fell by 34% between 1981 and 1990 but the 1990 income was still $7769 and democracy survived. In New Zealand, income fell by 9.7% between 1974 and 1978, but the 1978 income was $10,035. Yet in Venezuela, which enjoyed democracy during 41 years, per capita income declined by 25% from 1978 to 1999, when it reached $6172. Hence, this decline may be responsible for the emergence of anti-democratic forces in that country.

If elections make a difference, then it is possible in countries with intermediate income levels that one party obeys only if it wins while the other party obeys unconditionally. Results of elections are then obeyed only when they turn out in a particular way. One should thus expect to observe countries in which the same party repeatedly wins elections and both the winners and the losers obey the electoral decisions, but in which the winners would not accept the verdict of the polls had it turned differently.[15]

The model implies that democracies should be rare in poor countries. When one side has an overwhelming military power, it turns against democracy. But

even when military power is more balanced, democracy survives in poor countries only if the expected redistribution reflects the balance of military force. If democracy is to survive in poor countries, political power must correspond to the military strength. Note that this was the ancient justification of majority rule. According to Bryce (1921: 25–26; italics supplied), Herodotus used the concept of democracy "in its old and strict sense, as denoting a government in which the will of the majority of qualified citizens rules, . . . *so that physical force of the citizens coincides (broadly speaking) with their voting power*." Condorcet as well, while interpreting voting in modern times as a reading of reason, observed that in the ancient, brutal times, authority had to be placed where the force was.[16]

Income distribution and income redistribution

Democracy survives only if redistribution of income remains within bounds that depend on income distribution and the political posture of the military. These bounds open up as per capita income increases. In poor countries, either of the rebellion constraints may bite first, while in developed ones redistribution is constrained only by electoral considerations. Simulations show that democracy tends to survive at lower income levels in societies where the gap between the poor and the rich is lower. As per capita income increases, equilibrium tax rates, in turn, decline in societies where the income of the middle class is close to average income while they increase in societies where the middle class opts for higher rates of redistribution.

These results suggest the following interpretation of the democratic miracle that is India. Established in 1947, when the country had a per capita income of $556, democracy survived in India. Per capita income was very low in 1947 and it grew only slowly since then. But income distribution was highly egalitarian – as of 1951, the ratio of the top to the bottom quintile was 6.14 – and it became even more egalitarian by 1990, when this ratio was 4.30. The military were apolitical, so that neither side could rely on their support. Some redistribution in favor of the poor occurred.

Note that several poor democracies that have a highly unequal income distribution redistribute almost nothing. While systematic data seem impossible to obtain, poor democracies appear to redistribute much less than developed ones. The explanation must be that the upper rebellion constraint is very tight in poor countries.

The role of electoral chances

Przeworski (1991) argued that democracy is sustained when the losers in a particular round of the electoral competition have sufficient chances to

win in the future to make it attractive for them to wait rather than to rebel against the current electoral defeat. The argument was that when the value of electoral victory is greater than the expected value of dictatorship which, in turn, is greater than the value of electoral defeat, then political actors will accept a temporary electoral defeat if they have reasonable prospects to win in the future. In light of the model developed here, such prospects are neither sufficient nor necessary for democracy to survive. In poor countries, they may be insufficient. Above some income level, in turn, losers accept an electoral defeat even when they have no chance to win in the future, simply because even permanent losers have too much to risk in turning against democracy. Political forces are "deradicalized" because they are "bourgeosified."

On the role of constitutions

By "constitutions," I mean only those rules that are difficult to change, because they are protected by super-majorities or by some other devices. Note that in some countries, such as contemporary Hungary, constitutional rules can be changed by a simple majority, while in other countries, such as Germany, some clauses of the constitution cannot be changed at all.

Constitutions are neither sufficient nor necessary for democracy to survive. Constitutions are not sufficient because agreeing to rules does not imply that results of their application will be respected. We have seen that under some conditions, parties obey electoral verdicts only as long as they turn out in a particular way. Hence, the contractarian theorem – "if parties agree to some rules, they will obey them" or "if they do not intend to obey them, parties will not agree to the rules" (Buchanan and Tullock, 1962, Calvert, 1994)[17] – is false. If one party knows that it will be better off complying with the democratic verdict if it wins but not when it loses while the other party prefers democracy unconditionally, parties will agree to some rules knowing full well that they may be broken. Under such conditions, a democracy will be established but it will not be self-enforcing.

To see that constitutions are not necessary, note that above some income threshold democracy survives even though the rules of redistribution are chosen by each incumbent. Hence, democratic government is limited not because of some exogenous rules but for endogenous reasons: either because of the rebellion or the electoral constraint, whichever bites first. In equilibrium a democratic government obeys some rules that limit redistribution, but the rules that are self-enforcing are those that satisfy either constraint.

Alternatively, assume that the rule defining what constitutes an electoral victory is no longer that a party has to win a majority of votes but some other number increasing in votes, say a majority of legislative seats. Suppose

that under the current rule the expected value of democracy is so low for the left party that it opts for dictatorship whether it won or lost the election. Say it won the current election and it manipulates the electoral rules to its advantage. The conditions for a democratic equilibrium to hold then would be that its supporters would prefer democracy under a new rule which that makes the right party indifferent between democracy and dictatorship.

Hence, the rules that regulate the functioning of a democratic system need not be immutable or even hard to change. After all, in France successive incumbents changed electoral rules eleven times since 1875. When a society is sufficiently wealthy, the incumbents in their own interest moderate their distributional zeal and tolerate fair electoral chances.

Weingast (1997) may still be correct in claiming that the constitution is a useful device to coordinate actions of electoral losers when the government engages in excessive redistribution or excessive manipulation of future electoral chances. Yet the constitution is not a contract, because there are no third parties to enforce it (Hardin, 1989). Democratic rules must be thought of as endogenous (Calvert, 1994, 1995).

Laws constitute equilibria

Even if fixed exogenous rules are neither sufficient nor necessary for democracies to survive, laws do play a role in constituting democratic equilibria. Calvert (1994) goes too far when he claims that institutions are just descriptions of equilibria in pre-existing situations.[18] For democracies to exist, political parties must know at least how to interpret the results of voting; that is, they must be able to read any share of votes (or seats) as a "victory" or "defeat." Hence, the rule that defines victory is "constitutive" in the sense of Searle (1995): it enables behaviors that would not be possible without it, namely, a peaceful alternation in office. This rule plays a twofold role: (1) A democratic equilibrium may exist under this rule but need not under other rules. For example, an equilibrium may exist when the rule is that a party is the winner if it receives a majority of votes but not if the rule were that it obtains one-third. (2) Given one rule, a different party may be "the winner" than given some other rule under which a democratic equilibrium also exists. Hence, the particular rule both enables a democratic equilibrium and picks one among several equilibria possible.

Conversely, given a society characterized by a level and distribution of income, there is some set of rules which will be obeyed by the electoral winners and losers regardless of the distribution of votes. Some rules are self-enforcing. Moreover, even if the rules are endogenous, it is always a particular law that political forces obey. As Kornhauser (1999: 21) puts it, "The legal structure identifies which of many equilibria the players will

in fact adopt. The enactment of a law results in the institution of a new equilibrium."

Equilibrium culture

In a democratic equilibrium, the protagonists obey the verdicts of the polls and limit their actions to those enabled by law. They participate in a competition that is regulated by rules and they obey the results; they are law abiding; they act so as to perpetuate democracy. Moreover, neither the winners nor the losers engage each time in the calculations imputed to them in the model. Democracy, in a well-worn phrase, is "the only game in town." All this is just a description of the equilibrium, "equilibrium culture."

There is nothing wrong with such descriptions, but only as long as they are not infused with causal interpretations: it is one thing to describe the equilibrium actions and beliefs as a "culture" and another to claim that this culture is what generates the equilibrium.[19] Yet it is just a small step to transform these observable actions into motivations, to say that democracy lasts because individuals are motivated by a sense of duty to accept outcomes of competition in which they participate, because they respect the normativity of the law, because they cherish democracy, because their behavior is driven by habit. If a democratic equilibrium is sustained by a strategic pursuit of self-interest, then in equilibrium the political actors are law abiding. But this does not mean that the equilibrium is supported by the motivation to obey the law. In equilibrium people learn to behave out of habit, just as we learn to step at a crossroad on seeing a red light. Only if something happens that disturbs the habit – the Algerian war in France, the Aldo Moro affair in Italy – political forces may actually calculate. Hence, in developed countries, democracy is taken for granted. But this does not imply that it is not based on a calculation.

Situations induced by interests and those generated by culture look the same. Hence, observing equilibria is not sufficient to identify the mechanism which generates them. But any plausible cultural story would have to account for the relation between the stability of democracy and income.

Why democracy?

One, last, question needs to be considered, namely, why do we have democracies at all? Suppose that a democratic equilibrium holds. In equilibrium, each party has definite expectations as to what it will receive now and in the future; it attaches a fixed value to future life under democracy. Why would they not simply agree to divide the present and future income according to these expectations and go on for ever without holding elections and, conceivably,

alternating in office? Note that if they are risk-averse, citizens would be better off being assured of these expected values rather than getting more some of the time and less at other times. The reason, in my view, is that it is impossible to write a complete contract that would specify every contingent state of nature. In turn, leaving the residual control – over issues not explicitly regulated by contract – to any of the parties would generate increasing returns to power. Endowed with residual control, the party could not commit itself not to use the advantage to undermine the strength of the adversaries in an open conflict, that is, to manipulate the balance of military force. Hence, to avoid violence, the conflicting political forces adopt the following device: agree over those issues that can be specified and allow the residual control to alternate according to specified probabilities. In this sense, the constitution specifies the chances in electoral competition, but elections – a random device – decide who holds residual control.

In the end, the miracle of democracy is that conflicting political forces obey the results of voting. Incumbents risk their control of governmental offices by holding elections. Losers wait for their chance to win office. Conflicts are regulated, processed according to rules, and thus limited. This is not consensus, yet not mayhem either. Just limited conflict; conflict without violence (Hampton, 1994). Ballots are "paper stones," as Frederick Engels once observed.

Acknowlededgments

Notes

1. All the dollar figures refer to 1985 purchasing power parity dollars, from Penn World Tables, release 5.6.
2. "il s'agit, dans une loi qui n'a pas été votée unanimement, de soumettre des hommes à une opinion qui n'est pas la leur, ou á une décision qu'ils croient contraire à leur intérêt · · ·"
3. The lowest per capita income in the PWT 5.6 data set is $257.
4. The assumption that the poor are not a majority need not mean that most people are not poor: the middle types may be slightly better off.
5. One objection against treating q as exogenous may be that the military will obey the winner of elections. But studying the cases in which dictatorships were established between 1950 and 1990 shows that the miltary were about as likely to support the elected government as to turn against it.
6. Note that I implicitly assume that steady-state growth rates are the same for the two regimes. This assumption seems to represent the current consensus (Barro, 1997; Helliwell, 1994,

Przeworski, Alvarez, Cheibub and Limongi, 2000). In turn, introducing a cost of transition only clutters the model, without affecting any of the conclusions.

7. Assuming that $\mu < 1$ both for the dictators and those they defeated generates the same qualitative results but changes their interpretation. See the text.

8. Whether we think that redistribution is also linear or completely arbitrary under dictatorship makes no difference for the qualitative conclusions. Since algebra is greatly simplified, I assume the latter, that is, the dictator gives subsistence share, α_s, to everyone else and redistributes the rest to its core constituency. Such dictatorships are "narrow," as opposed to the "broad" dictatorships where the redistribution scheme is linear.

9. While the value of λ varies depending on the form of redistribution and on the specifics of a particular economy, even if λ is as low as 0.3 (the ball-park number used by Laffonte and Tirole, 1994), only three among 409 observations in the Deininger and Squire (1996) data set are so unequal as to make the voters in the middle quintile opt for a $\tau \geq 1$.

10. Note that this argument implies that right-wing dictatorships should have a more unequal distribution than democracies but left-wing dictatorships can be quite egalitarian, as were the communist ones. Hence, overall comparisons are ambivalent. The Gini coefficients in the Deininger and Squire (1996) data set are about the same in dictatorships and democracies, while the labor share in manufacturing is clearly higher in democracies (Przeworski et al., 2000: 118 and 168; Rodrik, 2000).

11. Suppose that the first dictatorship lasts T years and then the game is replayed anew. Since nothing will have changed, the only possibility is that a different party would become the dictator. The expected value of rebellion for the left is then

$$EV_L(R \mid R) = q^2 \frac{1}{1-\rho} U_L + [q(1-q)]\left(\frac{1-\rho^{T+1}}{1-\rho} U_L + \frac{\rho^{T+1}}{1-\rho} U_S\right)$$
$$+ [(1-q)q]\left(\frac{1-\rho^{T+1}}{1-\rho} U_S + \frac{\rho^{T+1}}{1-\rho} U_L\right) + (1-q)^2 \frac{1}{1-\rho} U_S$$
$$= \frac{1}{1-\rho}[q^2 U_L + q(1-q)(U_L + U_S) + (1-q)^2 U_S]$$
$$= \frac{1}{1-\rho}[q U_L + (1-q) U_S] = \frac{1}{1-\rho} EU_L(R, R).$$

It is easy to see, even if tedious to show, that the same is true for any number of repetitions.

12. Allowing one period deviation advantage just complicates the algebra and has no qualitative consequences.

13. Note that $\alpha P \pi_P + \alpha_M \pi_M + \alpha_W \pi_W = 1$ so that $\alpha W = \frac{1-\pi_M \alpha_M}{\pi_W} - \frac{\pi P}{\pi_W} \alpha_P$.

14. Technically, this means that $\mu < 1$ for the dictators as well as for those they oppress. See footnote 7.

15. This is the "Botswana" case of Alvarez, Cheibub, Limongi and Przeworski (1996).

16. "Lorsque I'usage de soumettre tous les individus á la volonté du plus grand nombre, s'introduisit dans les sociétes, et que les hommes convinrent de regarder la décision de la pluralité comme la volonté de tous, ils n'adoptérent pas cette méthode comme un moyen d'éviter I'erreur et de se conduire d'aprés des décisions fondées sur la vérité: mais ils trouvérent que, pour le bien de la paix et I'utilité générale, *il falloit placer l'autorité oú etoit la force...*" (Condorcet, 1986: 11; italics mine).

17. According to Calvert (1994: 33), "Should players explicitly agree on a particular equilibrium of the underlying game as an institution, and then in some sense end their communication about institutional design, they will have the proper incentives to adhere to the agreement since it is an equilibrium ... Any agreement reached is then automatically enforced (since it is self-enforcing), as required for a bargaining problem."

18. In Calvert's story, the institution that induces the cooperative equilibrium is the "director." This equilibrium would not have occurred in the original situation he describes

without the institution of the "director." Hence, it is not an equilibrium of the underlying situation.

19. This ambiguity is most apparent in Weingast's (1997) attempt to reconcile different explanations of democratic stability.

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