The Political Economy of the Kuznets Curve

*Daron Acemoglu and James A. Robinson**

Abstract

The paper provides a political economy theory of the Kuznets curve. When development leads to increasing inequality, this can induce political instability and force democratization on political elites. Democratization leads to institutional changes which encourage redistribution and reduce inequality. Nevertheless, development does not necessarily induce a Kuznets curve, and it is shown that development may be associated with two types of nondemocratic paths: an "autocratic disaster," with high inequality and low output, and an "East Asian Miracle," with low inequality and high output. These arise either because inequality does not increase with development, or because the degree of political mobilization is low.

1. Introduction

One of the major stylized facts about long-run processes of economic development is the Kuznets curve—the inverse-U shaped pattern of inequality. In a seminal paper, Kuznets (1955) argued that as countries developed, income inequality first increased, peaked, and then decreased, and documented this using both cross-country and time-series data. The empirical validity of this "Kuznets curve" has been intensively investigated, but the evidence is mixed (see, e.g., Williamson, 1985; Lindert, 1986; Feinstein, 1988; Anand and Kanbur, 1993; Fields, 1995; Fields and Jakubson, 1993; Deininger and Squire, 1998; Schultz, 1998; Morrisson, 1999). Historical investigations of Western European countries tend to support Kuznets' conjecture. For example, in England, the Gini coefficient for income inequality rose from 0.400 in 1823 to 0.627 in 1871, but fell to 0.443 in 1901 (Williamson, 1985). As we discuss in more detail in section 2, the evidence from France, Sweden, and Germany also follows this pattern. On the other hand, this finding is not uniform. Evidence from Norway and the Netherlands suggests monotonically declining inequality from the mid-nineteenth century. Moreover, the evidence from more recent experiences of development is possibly even less supportive of Kuznets' hypothesis. While data from some Latin American countries, such as Colombia and Brazil, seems basically consistent with the hypothesis, Asian countries such as South Korea, Japan, and Taiwan have experienced monotonically falling inequality. A successful theory of the Kuznets curve should therefore not only explain the inverse-U shaped pattern of inequality in the development experience of European economies, but also account for the lack of such a relationship in the histories of many Latin American and Asian countries.

Existing theories of the Kuznets curve have focused on economic factors. Kuznets himself conjectured that the pattern was caused by dual economy dynamics which were generated by the switch from the agricultural to the industrial sector. Lindert (1986)

instead proposed that the curve resulted from the falling importance of income generated by land. Williamson (1985) alternatively argued that technological change increased wages faster than the rate of return on capital. More recently, Aghion and Bolton (1997) developed a model where accumulation by the rich eventually pushes down the interest rate sufficiently to allow the poor to invest and catch up.

In contrast to these theories, we argue that political factors and the institutional transformation of the West during the nineteenth century are crucial to understanding the patterns of inequality. In our view, the decline in inequality was not an unavoidable consequence of economic development, but an outcome of political changes forced on the system by the mobilization of the masses. Before the nineteenth-century, political power in European countries was monopolized by a small elite, and as a consequence, most policies favored the elite, and there was little redistribution of income to the masses. The process of industrialization increased economic inequality, and may have also mobilized the poor segments of the society by concentrating them in urban centers and factories. These developments led to increased political unrest, or even to the threat of revolution. We argue that in response to the political unrest and the threat of revolution, the political elites were forced to undertake radical reform.[1] There are a number of reform options for the elite to prevent revolution and political unrest, ranging from income redistribution, to repression, or to fundamental political change. In Acemoglu and Robinson (2000b) we argue in detail why fundamental political change—extension of the franchise—was the best option for the elite. Such democratization acts as a commitment to future redistribution and prevents social unrest, whereas promises of income redistribution may not be credible, especially when political unrest is only temporary. For our focus here what is more important, however, is that social unrest results in increased redistribution, which in turn affects the distribution of assets and income. In particular, as discussed in detail in section 2, in Britain and in France, extension of the franchise led to important changes in labor market institutions and mass education, all contributing to a reduction in inequality. Overall, our theory of the Kuznets curve is that *capitalist industrialization tends to increase inequality, but this inequality contains the seeds of its own destruction, because it induces a change in the political regime toward a more redistributive system.*

Although our model explains the Kuznets curve in European countries, it does not predict that this pattern should be a feature of all development processes—which accords with the empirical findings of Anand and Kanbur (1993), Fields (1995), and Fields and Jakubson (1993). Alternative development paths, which we label the "autocratic disaster" and the "East Asian miracle," do not feature Kuznets curves. In an autocratic disaster, inequality is high, but there is no democratization or redistribution, because civil society is not well organized. The poverty of the disenfranchised poor slows down accumulation and leads to stagnation at a low level of output. In contrast, in an East Asian miracle initial inequality is low, so the economy accumulates rapidly and converges to a high level of output. Also, because gains from growth are more equally shared, social pressure does not emerge until much later, and political reform is considerably delayed. In both of these cases, as in the Kuznets curve, it is political factors that are key in determining the relationship between inequality and development. The distinguishing feature of East Asian countries is the mass land reforms that took place in the late 1940s, 1950s, and 1960s. We argue that these fundamentally altered the subsequent relationship between growth and inequality. In contrast, in the case of an "autocratic disaster" low levels of political mobilization imply no effective

threat of revolution, hence the initial nondemocratic regimes survive for longer periods.

Two patterns, other than the Kuznets curve, the autocratic disaster, and the East Asian miracle paths discussed above, can be detected from the experiences of different countries. First, in many Latin American cases, democratization is followed by coups, and inequality fluctuates as the society switches between less and more democratic regimes. In Acemoglu and Robinson (2001) we argue that this is because initial levels of asset inequality are sufficiently high in these economies that democracies create strong incentives for the rich segments of the society to undertake coups, and are not consolidated. The second pattern is that of the US, which is very unusual relative to the other cases discussed here. In the US, democratization appears to have arrived without much social unrest, and inequality fell only after the 1930s (Williamson and Lindert, 1980). A full explanation for why the US political development experience is "exceptional" is beyond the scope of this paper. Nevertheless, armed with the insights here, we can offer some speculations. Early democratization may have been due to a combination of the "open frontier" and the potential shortage of labor. These may have induced (local) democratization at the state level in order to attract labor, or to prevent out-migration. Local democratization may have in turn encouraged rapid national democratization. In fact, Engerman and Sokoloff (2000) show that it was the frontier states trying to attract labor that democratized first. The relatively late arrival of significant redistributive policies, on the other hand, may be because the poorest segments of the society—immigrants, blacks, and even poor and illiterate whites—were excluded from the political process. Perhaps more importantly, lower middle-class non-immigrant voters saw themselves as highly upwardly mobile (Lindert, 1989, 1994), and thus their desire for redistribution was different from the lower-class British voters. In this respect, the 1930s are a turning point: the end of mass immigration and the Great Depression appear to have altered people's perceptions of social mobility, and the level of inequality widened enough so that the costs and benefits of redistribution for the lower middle-class voters are likely to have changed. A more careful analysis of the US experience is clearly a very fruitful area for future research.

Our paper is related to the growing literature on the political economy of development. In particular, it builds on our previous research reported in Acemoglu and Robinson (2000a,b, 2001). In Acemoglu and Robinson (2000b) we develop the idea that democratization acts as a commitment to future redistribution in a stochastic model with infinitely lived agents. We also argue that the approach we take to modeling democratization, that it was forced on elites by the threat of social unrest and revolution, is more persuasive than alternative theories, such as the notion that democratization occurred because of intra-elite competition. In that paper we also consider the implications of economic growth, though in a linear setup. The present convex model allows us to investigate much richer transitional dynamics which generate additional implications, particularly with respect to nondemocratic development paths. In related papers (Acemoglu and Robinson, 2000a,c, 2001) we consider how democratization interacts with other instruments such as repression, investigate the determinants of democratic consolidation by endogenizing coups, and enrich the model in several other ways.

Our work has various antecedents in both economics and political science. In economics, Roemer (1985) provided the first economic model of revolution, Grossman (1991, 1993, 1995) modeled predation by the unprivileged against the rich, and Ades

and Verdier (1993) investigated a model where there is concentration of power in the hands of an elite. As in our paper, Bénabou (2000), Galor and Zeira (1993), Perotti (1993), and Banerjee and Newman (1993) model investment opportunities as indivisible and show that distribution of income matters for growth and development. Our contribution also shares a common theme with North and Weingast (1989) who argued that political reform can be a method of commitment, but in the context of the strengthening of the English Parliament in the seventeenth century. In political science, Lipset (1960) and Moore (1966) proposed early theories of the connection between development and democracy, though our work has more in common with Therborn (1977) and Rueschemeyer et al. (1992) who emphasize outside pressure on nondemocratic regimes as the key force in the creation of democracy. Our work is also related to O'Donnell and Schmitter (1986) and Przeworski (1991) who suggested that democratization be modeled as a game, but they focus on none of the issues which we develop.

In section 2, we consider some relevant historical evidence and investigate which approach receives support from the major events of the period. We argue in this section that for many countries in which a Kuznets curve is detected, the peak coincides with political reform triggered by social unrest. In section 3, we develop a model where political power is initially concentrated in the hands of an elite but the poor can initiate a revolution to contest this power. We show that the elite has to prevent a revolution by democratizing because promises to redistribute income are not credible. We show that an increase in inequality can intensify the threat of revolution, and analyze the dynamics of inequality and output in this model. In section 4, we outline how a Kuznets curve, an autocratic disaster, an East Asian miracle, and a revolution may arise along the equilibrium path. Section 5 briefly discusses some extensions. Section 6 concludes.

2. Historical Evidence

Our theory is motivated by historical evidence. Here we will provide a brief overview, emphasizing the evidence in support of the following three features:

1. Inequality was increasing before the extension of the franchise.
2. The franchise was extended as a strategic move to avoid a revolution or at least very costly political unrest.[2]
3. Democratization led to a surge in redistribution, and the increased supply of educated workers caused by this redistribution, and the direct impacts of these redistributive efforts, were key factors in the Kuznets curve pattern of inequality.

Most of our evidence comes from Britain but we will also refer to the historical experiences of other countries. In Britain, the franchise was extended in 1832, and then again in 1867 and 1884 (and later in 1919 and 1928 when all women were finally allowed to vote).

Inequality

Data on income inequality for the nineteenth century are not extremely reliable. However, a number of studies using different data sources on Britain reach the same conclusion. Inequality increased substantially during the first half of the nineteenth

Table 1. British income inequality

Year	Share of the top 10%	Gini coefficient
1823	47.51	0.400
1830	49.95	0.451
1871	62.29	0.627
1891	57.50	0.550
1901	47.41	0.443
1911	36.43	0.328
1915	36.46	0.333

century, then started falling in the second half. The turning point appears to be some-time after 1870. This picture is also consistent with the findings of Lindert (1986) on wealth inequality.[3] Table 1—taken from Williamson's (1985) Table 4.2—gives a representative picture.

A similar pattern emerges from earnings inequality data reported in Williamson (1985), Table 3.2, where the Gini coefficient increases from 0.293 in 1827 to 0.358 in 1851 and falls to 0.331 in 1901.

Another country for which there has been research into inequality trends is the US for which Williamson and Lindert (1980) find a Kuznets-curve type relation. Though Goldin and Katz (1999) disagree about the timing, there is no disagreement that at some point inequality increased, and then contracted. The most common view is that the peak of the Kuznets curve came in the early 1930s, in the years when the most redistributive policies in US history were introduced. Other evidence is mixed. The studies surveyed by Morrisson (1999) and Acemoglu and Robinson (2000b) show that the evidence is consistent with a Kuznets curve in France, Sweden, and Germany, but in other countries, such as Norway, inequality seems to have declined monotonically.[4]

Franchise Extension and the Threat of Revolution

When introducing the electoral reform to the British parliament in 1831, the prime minister Earl Grey said: "There is no-one more decided against annual parliaments, universal suffrage and the ballot, than am I. . . . The Principle of my reform is to prevent the necessity of revolution. . . . I am reforming to preserve, not to overthrow" (quoted in Evans, 1983). This view of political reform is shared by most modern historians such as Briggs (1959) and Lee (1994). The reforms that extended political power from a narrow elite to larger sections of the society were immediately viewed as a success not because of some ideal of enlightenment or democracy, but because the threat of revolution and further unrest were avoided (Lee, 1994). Before the 1832 Reform Act, the total electorate stood at 478,000 out of a population of 24 million. Although the Act increased the electorate to 813,000 by reducing the property and wealth restrictions on voting, the majority of British people could not vote. Moreover, the elites still had considerable scope for patronage since 123 constituencies contained fewer than 1,000 voters (the so-called "rotten-boroughs"), and there is evidence of serious corruption and intimidation of voters which was not halted in Britain until the

Ballot Act of 1872 and the Corrupt and Illegal Practices Act of 1883 which introduced effective secret ballots at elections. Mass democratization really arrived with the Second and Third Reform Acts in 1867 and 1884. Lee argues that "as with the first Reform Act, the threat of violence has been seen as a significant factor in forcing the pace; history was repeating itself." As a result of these reforms, the total electorate was expanded from 1.4 million to 2.52 million and then doubled again by the Reform Act of 1884 (though this represented only 65% of adult males), and the Redistribution Act of 1885 removed many remaining inequalities in the distribution of seats.

The British experience is replicated in most other western and northern European countries. In Acemoglu and Robinson (2000b) we present evidence showing that the threat of revolution was central to democratization in Sweden and Germany after World War I and also in France in the 1870s after the collapse of the Second Empire in the Franco-Prussian War.

Redistribution

Starting from the end of the nineteenth century, all western societies experienced increased redistributive activity. Each country followed a different mix of policies and it is not currently understood where exactly these differences came from. For instance, the US, and to a lesser extent Canada, achieved much higher primary school enroll-ment rates than European countries[5] but did not introduce social security pro-visions nor other direct redistribution measures until well into the twentieth century. Germany, perhaps thanks to its bureaucratic tradition, was able to develop the most far-reaching welfare state at the turn of the century but made no effort to increase schooling among the masses (Heidenheimer, 1981). Again the salient case for our analysis appears to be Britain which adopted a mixture of direct redistribution and mass education.

The Reform Acts of the period 1867–1884 were a turning point in the history of the British state. In 1871 Gladstone reformed the civil service, opening it to public exam-ination and making it meritocratic. Liberal and conservative governments introduced a considerable amount of labor market legislation, fundamentally changing the nature of industrial relations in favor of workers. During 1906–1914, the Liberal Party under the leadership of Lloyd George introduced the modern redistributive state into Britain, including health and unemployment insurance, government financed pensions, and a commitment to redistributive taxation. As a result of these fiscal changes, taxes as a proportion of national product more than doubled in the 30 years following 1870 and then doubled again. In the meantime, taxation also became highly progressive (Lindert, 1989). Consistent with these trends, Lindert (1994) has shown that variables measuring democracy, in particular voter turnout, had a significant positive effect on the expansion of government expenditures on social programs (welfare and unem-ployment compensation, pensions, healthcare and housing subsidies) in the period from 1880 to 1930, again supporting the interpretation that democratization has been a key driving force of the radical shift towards redistributive fiscal and social policy.

Meanwhile the education system which was open only to the elites during most of the nineteenth century also became more and more open to the masses. (Mitch (1993) discusses the poor educational standards of the British workforce during the early 1800s.) First, school leaving age was set at 11 in 1893, then increased to 12 in 1899 and

special provisions for the children of needy families were introduced. Finally, the reform act of 1902 introduced public schooling as a duty of the government towards its people. As a result of these changes, the proportion of 10-year-olds enrolled in school which stood at a disappointing 40% in 1870 increased to 100% in 1900 (Ringer, 1979, p. 207). Many educational historians argue that the democratization of British society was the key driving force behind these changes.

Williamson (1985) sees the increase in the supply of skills as the key reason for the fall in inequality. Thus to the extent that mass schooling contributed to this increase in the supply of skills, the education policies were a key factor in reducing inequality. This is summed up by Lindert and Williamson (1985) who write that "the rate of skill deepening reached impressive levels in the era following the educational reforms of the 1870s, coinciding with the drop down Britain's Kuznets Curve." They continue: "The American correlation looks similar, though the turning points come later, well into the 20th century." Moreover, the data already reported in the previous subsection suggest that the reduction in income inequality was faster than the compression in earnings inequality, which is consistent with the view that higher and more progressive taxation, and more transfers to the poor, played a key role in reducing inequality.

In the US too, increased schooling seems to have been a crucial factor reducing earnings inequality. The proportion of high school graduates which stood at 4% in 1890 reached 12% in 1930 (Goldin and Katz, 1999; see also Williamson and Lindert, 1980). Further, in line with our approach, Heidenheimer (1981, p. 273) notes that the sevenfold increase in the electorate between 1824 and 1840 was the driving force for the emergence of the common school movement, but notes that "entitlement remained closely linked to enfranchisement. When the blacks were excluded from voting following the Reconstruction period, Southern countries spent about ten times as much per child for teachers' salaries in the white as in the black schools."

Overall, we can summarize our discussion by quoting Easterlin (1981):

> To judge from the historical experience of the world's 25 largest nations, the establishment and expansion of formal schooling has depended in large part on political conditions and ideological influences. . . . A major commitment to mass education is frequently symptomatic of a major shift in political power and associated ideology in a direction conducive to greater upward mobility for a wider segment of the population.[6]

3. A Model of Growth and Inequality Dynamics

The Environment

We now explore the implications of political reform on growth and inequality. Consider an infinite-horizon non-overlapping generations model with bequests. A continuum of agents of mass 1 live for only one period and each begets a single offspring. A proportion λ of these agents are "poor," while the remaining $1 - \lambda$ form a rich "elite." Throughout the paper superscript p will denote a poor agent and r will denote a rich agent (or member of the elite). We will treat all poor agents as identical, and all members of the elite will also be identical. Initially, political power is concentrated in the hands of the elite, but $\lambda > \frac{1}{2}$, so if there is full democracy, the median voter will be a poor agent.

There is a unique consumption good y with price normalized to unity, and a unique asset, h (which should be thought of as a combination of human and physical capital and land). We begin our analysis of the economy at time $t = 0$ where each poor agent has capital h_0^p and each member of the elite has $h_0^r > h_0^p \geq 1$.

There are two methods of producing the final good, both linear in capital. The first is a market technology, $Y_t^m = AH_t^m$, where H_t^m is the amount of capital devoted to market production. The second is an informal sector technology, $Y_t^h = BH_t^h$, where H_t^h is the amount of capital used in the informal sector. Naturally, we have $H_t^h + H_t^m = H_t \equiv \int h_t^i di$. We assume that $A > B$, thus market production is always more productive. The presence of the informal sector ensures an equilibrium tax rate less than 100%, because unlike the market sector, it is untaxable. A high value of B implies that only limited taxes can be levied on income.

We assume that all agents have identical preferences defined over their own consumption and "educational bequests" given by

$$u^i(c_t^i, e_{t+1}^i) = \begin{cases} (c_t^i)^{1-\gamma}(e_{t+1}^i)^\gamma & \text{if} \quad e_{t+1}^i > 1 \\ (c_t^i)^{1-\gamma} & \text{if} \quad e_{t+1}^i \leq 1 \end{cases} \tag{1}$$

for $i = r, p$ and $\gamma \in (0, 1)$. Here c_t^i is the consumption of a member of group i alive in period t, and e_{t+1}^i is the investment in the offspring's education. These preferences imply a constant savings rate equal to γ, and an indirect utility function linear in income. Both the consumption and bequest decisions are made at the end of the individual's life. The form of the utility function implies that there is a minimum amount of bequest, $e_{t+1}^i = 1$, and when the agent cannot afford this amount, he will leave nothing to his offspring. This nonconvexity captures the feature that very poor agents will not be able to accumulate assets (Galor and Zeira, 1993).

The offspring's human capital is given by

$$h_{t+1}^i = \max\{1; Ze_{t+1}^{i\ \beta}\}, \tag{2}$$

where $Z > 1$, and also $\beta < 1$, guaranteeing that accumulation does not continue indefinitely. The presence of $\max\{1; .\}$ in (2) implies that, even in the absence of any investment, there is a minimum amount of human capital that each agent would have.

Post-tax income is given by $\hat{y}_t^i \equiv (1 - \tau_t)Ah_t^i + T_t$, for $i = p, r$, where τ_t is the tax rate on income, and $T_t \geq 0$ is the transfer that the agent receives from the state. We assume throughout that taxes and transfers cannot be person-specific, hence T_t and τ_t are not indexed by i. The government budget constraint therefore implies $T_t = \tau_t AH_t^m$, where we used the fact that only capital used in market production, H_t^m, can be taxed.

The λ poor agents, though initially excluded from the political process, can overthrow the existing government and take over the capital stock in any period $t \geq 0$. We assume that if a revolution is attempted, it always succeeds. Revolution provides a window of opportunity for a large-scale redistribution of assets away from the rich to the poor, so the poor take over control of the capital stock of the economy, but a fraction $1 - \mu$ of the capital stock gets destroyed in the process.[7] Therefore, if there is a revolution at time t, each poor agent receives a per-period return of $\mu AH_t/\lambda$ in all future periods: total income in the economy is μAH_t and is shared between λ agents. A low value of μ means that a revolution is very costly.

Finally, in each period the elite have to decide whether or not to extend the franchise. If it is extended, the economy becomes a democracy, and now the median voter, a poor agent, sets the tax rate.[8] We assume that if voting rights are extended, they cannot be rescinded, so the economy always remains a democracy.[9]

The analysis can be simplified by exploiting two features of the model. First, the capital allocation decision takes a simple form: if $\tau_t > \hat{\tau} \equiv (A - B)/A$, then all agents allocate their capital to the informal sector, thus $H_t^m = 0$. If, on the other hand, $\tau_t \leq \hat{\tau}$, then $H_t^m = H_t$ is a best-response. No voter would ever choose $\tau_t > \hat{\tau}$, so we can restrict attention to $\tau_t \leq \hat{\tau}$ and $H_t^m = H_t$, which reduces the number of actions to be considered. Second, all members of the elite have identical preferences, so we can treat them as one player. Also, all poor agents have the same preferences, and when it comes to whether or not to participate in a revolution, there is no "free-rider problem," because if an agent does not take part in the revolution, he can be excluded from the resulting redistribution.[10] So, we can treat all poor agents as one player. Thus each period can therefore be represented as a game between two players, the elite and the poor; and the presence of human capital accumulation allows us to study how political transition interacts with the dynamics of inequality.

The timing of events within a period is as follows:

1. Education bequests are received.
2. The elite decide whether or not to extend the franchise.
3. The poor decide whether to initiate a revolution. If there is a revolution, they share the remaining output of the economy. Otherwise, the political system decides the tax rate (i.e., a poor median voter if there is democracy, and a rich agent if not).
4. The capital stock is allocated between market and home production, and consumption and bequest decisions are made.

Notice that there is no possibility of choosing redistribution to prevent a revolution, because taxes are set after the revolution decision within the period.[11]

Analysis

As noted above, the preferences in (1) imply a constant savings rate: $e_{t+1}^i = \gamma \hat{y}_t^i$ if $\gamma \hat{y}_t^i > 1$, or $e_{t+1}^i = 0$ if $\gamma \hat{y}_t^i \leq 1$. So if an agent can afford it, he will invest a fixed proportion of his post-tax income in the education of his offspring; but when his income is below a minimum, he will consume all of it. At this stage we make the following assumption.

ASSUMPTION 1. $\gamma A < 1$ *and* $(\gamma B)^\beta Z > 1$.

The first part implies that, with no taxation ($\tau_t = T_t = 0$), an agent with the minimum level of human capital, $h_t^i = 1$, will leave no education to his offspring, thus $h_{t+1}^i = 1$ also. It is therefore possible for some households not to accumulate while others do so. The second part of the assumption guarantees that when accumulation of human capital takes place, and even if the rate of return on human capital is $B < A$, a steady-state level of human capital $h_{SS} > 1$ can be reached. This second part will not only enable accumulation by the rich in the absence of taxation, but also ensure that taxation will never be severe enough to stop accumulation.

In all of our analysis, we consider only initial conditions such that

$$h_{SS}^r > h_0^r > (\gamma A)^{-1},$$

where h_{SS}^r is the steady-state value of the rich agents' human capital. The first part of the inequality ensures that we start with less than steady-state human capital, thus there will be *growth* (rather than decumulation of capital). The second inequality ensures that rich agents are beyond the point of nonconvexity, and are able to leave positive bequests to their offspring. We think of the periods $t < 0$ as governed by a different technology so that no one accumulates and inequality is stable.

Equilibrium Dynamics without the Threat of Revolution

We first analyze accumulation and inequality in the absence of the threat of revolution.

Case 1: Autocracy and only the rich accumulate   Since we have the elite in control of the political system (no democracy), $\tau_t = 0$. Suppose also that $h_0^p < (\gamma A)^{-1}$; then given Assumption 1, we have that $h_t^p = 1 \ \forall t > 0$, and the poor are unable to accumulate. The rich, on the other hand, accumulate and the human capital dynamics for this group are given by $h_{t+1}^r = Z(e_{t+1}^r)^\beta = Z(\gamma A h_t^r)^\beta$. This dynamic equation has a unique steady state:

$$h_{SS} = \left((\gamma A)^\beta Z\right)^{\frac{1}{1-\beta}}. \tag{3}$$

Since $(\gamma B)^\beta Z > 1$ by Assumption 1, and $A > B$, we have that $h_{SS} > 1$.

Inequality in this economy can be measured by the income ratio of the rich to the poor: $y_t^r / y_t^p = A h_t^r / A = h_t^r$. On the way to the steady state, h_t^r is increasing, so inequality is increasing too. Finally, the steady-state level of aggregate income is

$$Y_{SS}^1 = A\left[\lambda + (1-\lambda)\left((\gamma A)^\beta Z\right)^{\frac{1}{1-\beta}}\right].$$

Case 2: Autocracy and all agents accumulate   Suppose $h_0^r > h_0^p > (\gamma A)^{-1}$ and $\tau_t = 0$. Then $h_{t+1}^j = Z(\gamma A h_t^j)^\beta$ for $j = r$ and p. Since $h_0^p > (\gamma A)^{-1}$, the poor will also be able to accumulate, and $h_t^p > 1 \ \forall t$. This implies that both groups will converge to the same steady state, h_{SS}. Since the poor start with less human capital and converge to the same level, along this equilibrium path, inequality is decreasing. The steady-state level of aggregate income is given by

$$Y_{SS}^2 = A\left((\gamma A)^\beta Z\right)^{\frac{1}{1-\beta}} > Y_{SS}^1.$$

Therefore, this economy converges to a more equal distribution of income and also to a higher level of aggregate output than the previous case (recall that, in case 1, a fraction of the agents were unable to accumulate, causing a partial poverty trap).

Case 3: Democracy   We now consider the dynamics under democracy. In this case, the poor median voter sets the maximum tax rate, $\tau_t = \hat{\tau} \equiv (A - B)/A$. Accumulation dynamics are then determined by

$$h_{t+1}^j = \max\left\{1, Z(\gamma[Bh_t^j + (A - B)H_t])^\beta\right\} \tag{4}$$

for $j = r$ and p. The second part of Assumption 1, $(\gamma B)^\beta Z > 1$, is sufficient to ensure $h_{t+1}^r > 1$ if $h_t^r > 1$. Therefore, taxation will not stop accumulation by the rich. This does not, however, guarantee that the poor accumulate. If $h_0^p > (\gamma A)^{-1}$, so that in the absence of redistributive taxation the poor would be able to accumulate, they will also be able to accumulate when they receive transfers. Now consider the more involved case where $h_0^p < (\gamma A)^{-1}$ so that the poor are unable to accumulate without transfers. Suppose $h^p = 1$; then equation (4) implies that the capital of the rich converges to the steady-state level

$$h_{SS}^D = \gamma Z[(A(1 - \lambda) + \lambda B)h_{SS}^D + (A - B)\lambda]^\beta.$$

It is straightforward to see that h_{SS}^D is uniquely defined and $h_{SS}^D < h_{SS}$. Let also Y_{SS}^D denote the steady-state level of output when $h^p = 1$; thus $Y_{SS}^D = A[\lambda + (1 - \lambda)h_{SS}^D]$, which is strictly less than Y_{SS}^2 and Y_{SS}^1.

Whether the poor will ever be able to accumulate capital in this case depends on the following condition:

(Condition 1) $\gamma[B + (A - B)((1 - \lambda)h_{SS}^D + \lambda)] > 1.$

Condition 1 states that, when $h_t^p = 1$ and $h_t^r = h_{SS}^D$, redistributive taxation is sufficient to enable the poor to accumulate. To see this, note that the term in square brackets is the post-tax income of a poor household with $h_0^p = 1$: he receives an after-tax return B on his human capital and the total per capita transfer given that $h_t^p = 1$ and $h_t^r = h_{SS}^D$. Condition 1 is necessary and sufficient for accumulation by the poor. If it holds, at some point the rich will have a high enough level of income (human capital) so that redistributive taxation will enable the poor to grow richer. When it is violated, there exists no $h_t^r \leq h_{SS}^D$ that will generate enough tax revenue to enable accumulation by the poor.

If Condition 1 holds, then the poor will start accumulating and the economy converges to Y_{SS}^2 with both the poor and the rich converging to h_{SS}, so inequality will also decrease as in the previous case. On the other hand, when the poor do not accumulate, inequality, given by

$$\frac{\hat{y}_t^r}{\hat{y}_t^p} = \frac{(A - B)((1 - \lambda)h_t^r + \lambda) + Bh_t^r}{(A - B)((1 - \lambda)h_t^r + \lambda) + B},$$

will increase despite increased transfers to the poor. Further, when Condition 1 holds, it is also possible for the poor to start accumulating from period $t = 0$, so that inequality falls monotonically. The necessary and sufficient condition for this is as follows:

(Condition 2) $\gamma[Bh_0^p + (A - B)((1 - \lambda)h_0^r + \lambda h_0^p)] > 1,$

which ensures that, at time $t = 0$, the after-tax income of the poor times the savings rate (γ) is greater than 1, thus $\gamma\hat{y}_0^p > 1$. It is useful to notice that whenever $h_0^p \leq 1$, Condition 1 is less restrictive than Condition 2 because $h_0^r < h_{SS}^D$.

We can now summarize equilibrium dynamics without the threat of revolution. Let h_{SS} be defined as in (3), then:

PROPOSITION 1. *Suppose that Assumption 1 holds, $h_0^r \in ((\gamma A)^{-1}, h_{SS})$, and the political system is controlled by the elite. Then, we have $\tau_t = 0$ and:*

(1) *If $h_0^p \le (\gamma A)^{-1}$, then $h_t^p = 1 \ \forall t > 0$, h_t^r monotonically converges to h_{SS}, aggregate output converges to Y_{SS}^1, and inequality increases monotonically.*
(2) *If $h_0^p > (\gamma A)^{-1}$, then both h_t^p and h_t^r monotonically converge to h_{SS}, aggregate output converges to $Y_{SS}^2 > Y_{SS}^1$, and inequality decreases monotonically.*

PROPOSITION 2. *Suppose that Assumption 1 holds, $h_0^r \in ((\gamma A)^{-1}, h_{SS})$, and the political system is democratic. Then we have $\tau_t = \hat{\tau}$ and:*

(1) *If $h_0^p > (\gamma A)^{-1}$, then both h_t^p and h_t^r monotonically converge to h_{SS}, aggregate output converges to $Y_{SS}^2 > Y_{SS}^1$, and inequality decreases monotonically.*
(2) *If $h_0^p \le (\gamma A)^{-1}$ and Condition 2 holds, then inequality is monotonically decreasing, and h_t^p and h_t^r converge to h_{SS}, and aggregate output converges to Y_{SS}^2.*
(3) *If $h_0^p \le (\gamma A)^{-1}$ and Condition 1 fails to hold, then inequality increases monotonically, $h_t^p = 1 \ \forall t > 0$, and h_t^r converges to h_{SS}^D. Output converges to $Y_{SS}^D < Y_{SS}^2$.*
(4) *If $h_0^p \le (\gamma A)^{-1}$ and Condition 1 holds and Condition 2 fails to hold, then there exists $\hat{t}$ such that $h_t^p = 1 \ \forall t \in (0, \hat{t})$, and h_t^p is growing $\forall t \ge \hat{t}$. Inequality is increasing until $\hat{t}$ and decreases thereafter. Aggregate output converges to Y_{SS}^2.*

There are a number of features to note. First, in the absence of redistributive taxation, there is no Kuznets curve: inequality is always increasing or decreasing. But, a Kuznets curve is possible when the political regime is democratic (Proposition 2): when the rich are not sufficiently wealthy, the transfers from them to the poor will not ensure accumulation, and inequality will increase. But when the rich become sufficiently wealthy, transfers reach a crucial threshold, the poor start accumulating, and inequality falls. Thus in this model, redistributive taxation is key for the Kuznets curve. This configuration of the Kuznets curve is not totally compelling, however; western societies did not start out as democratic and were not so when inequality was increasing, and there was no redistributive taxation. We will see that the Kuznets curve arises for a larger set of parameter values when we add the possibility of revolution and franchise extension to an economy with the elite in power, and this, we believe, is a much more plausible explanation for the Kuznets curve.

Second, inequality and especially the poverty of the masses are harmful to development. When the poor have $h_0^p > (\gamma A)^{-1}$, the economy converges to the higher steady state Y_{SS}^2, whereas otherwise it may get stuck in the lower steady state with per capita income Y_{SS}^1. This relation between inequality and prosperity applies both for a democracy and an autocracy. This result is a direct consequence of the nonconvexity in the accumulation technology as in Galor and Zeira (1993).

Finally, in this model democracy is good for economic performance, if it enables accumulation by the poor, but detrimental otherwise. In the absence of democracy, $h_0^p < (\gamma A)^{-1}$ condemns the economy to the lower level of steady-state output Y_{SS}^1; but with democracy, the conditions for "stagnation" are much more stringent. On the other hand, if there is democracy but the poor cannot accumulate, the economy converges to Y_{SS}^D which is strictly less than Y_{SS}^1. So the impact of democracy on performance is ambiguous. With some of the costs as emphasized by Alesina and Rodrik (1994) and Persson and Tabellini (1994), democracy would have an ambiguous effect even when it enables the poor to accumulate. Therefore, the empirical results that show no robust correlation between democracy and growth should not be too surprising.

The Threat of Revolution

We now analyze an economy which starts with the elite in power. If the revolution constraint never becomes binding (e.g., if μ is very small), then the equilibrium dynamics of Proposition 1 will apply. If, on the other hand, revolution becomes a real threat, the rich have to redistribute to the poor in order to prevent a revolution. Given the timing we have assumed, a promise to redistribute by the elite is not credible, thus it would not prevent revolution. The only way to make a credible commitment is to transfer political power to the poor; i.e., *to extend the franchise*. Therefore, when the revolution constraint becomes binding, the franchise is extended and the dynamics of Proposition 1 are replaced by those of Proposition 2 where the median voter is a poor agent.

We can now derive the revolution constraint which comes from comparing the payoff of a poor agent under elite rule to what they would get after a revolution:

$$\frac{h_t^r}{h_t^p} \leq \frac{\lambda(1-\mu)}{\mu(1-\lambda)}. \tag{5}$$

When (5) holds, there will be no revolution at time t. There are two points to note about this revolution constraint. First, the higher is μ, the tighter is the revolution constraint, which is fairly intuitive. Second, the higher is λ, the less tight is (5); this is because the benefit of the revolution is to take over the wealth of the rich, and when there are fewer of them with the same income level (i.e., h_t^r is given), the return from revolution falls. Therefore, the threat of revolution is more serious when a society has more inequality (a larger gap between h_t^r and h_t^p) and is less segmented (λ relatively low).[12]

Case 1: The threat of revolution when only the rich accumulate   In this case, the economy converges to Y_{SS}^1 with increasing inequality on the way with the poor trapped at $h_t^p = 1$. If (5) is not binding at the point of steady state (which has maximal inequality), it will never bind. Thus we have the following condition:

(Condition 3) $h_{SS} > \dfrac{\lambda(1-\mu)}{\mu(1-\lambda)}.$

If Condition 3 holds, the threat of revolution will become effective at some point as the rich accumulate. If it fails to hold, then we can ignore the revolution constraint.

Case 2: The threat of revolution when all agents accumulate   In this case, inequality is decreasing, so it is highest at time $t = 0$. Then we have the following condition:

(Condition 4) $\dfrac{h_0^r}{h_0^p} < \dfrac{\lambda(1-\mu)}{\mu(1-\lambda)}.$

If Condition 4 is satisfied, there is no revolutionary threat at time $t = 0$, and since inequality is lower after this point, there is never any threat of revolution thereafter. The configuration in which Condition 4 fails to hold but Condition 3 does is of interest. In this case, if the poor are excluded from the accumulation process, at some point they will want to force redistribution. If, in contrast, they are also accumulating along the development path, they will not see revolution as a worthwhile activity.

When the revolution constraint binds, the elite have no choice but to extend the franchise. We then have to ensure that the extension of the franchise generates sufficient redistribution to stave off a revolution. The necessary condition for this is: $(A - B)((1 - \lambda)h_t^r + \lambda h_t^p) + Bh_t^p \geq A\mu[(1 - \lambda)h_t^r + \lambda h_t^p]/\lambda$. The left-hand side is what a poor agent gets after redistributive taxation, and the right-hand side is what he gets with revolution. We are particularly interested in whether this condition holds at the point where the revolution constraint binds while the poor are not accumulating. Equation (5) implies that $h_t^r = [\lambda(1 - \mu)]/[\mu(1 - \lambda)]$ at this point. So to ensure that in this case franchise extension prevents a revolution, we need to impose another condition:

(Condition 5) $A(\lambda - \mu) \geq B(1 - \mu)$.

4. Results: Implications for Growth and Democratization

We now combine the analysis of the previous subsections and outline a number of possible paths of development. Throughout we assume that the elite start in power and Assumption 1 holds.

Result 1: The Kuznets Curve

Suppose the economy starts in case 1, and Conditions 1, 3, and 5 hold. Then at $t = 0$, the rich accumulate and the poor do not. At $\hat{t}$, inequality reaches a critical threshold, $h_{\hat{t}}^r \geq [\lambda(1 - \mu)]/[\mu(1 - \lambda)]$, the revolution constraint binds, and the elite extend the franchise. From this point on, the poor also start to accumulate, inequality falls, and aggregate output converges to Y_{SS}^2.

In our view, this sequence of events corresponds to the experience of Britain, France, Sweden, and Germany (in 1919), where after a period of increased inequality accompanied by wars and depressions, the threat of revolution intensified. This forced the extension of the franchise and increased redistribution. As a result, inequality declined. This case is the main focus of our analysis. In the rest of this section, we outline alternative paths of development to contrast with the Kuznets curve.

Result 2: Autocratic Disaster

Suppose the economy starts in case 1, and Condition 3 does not hold. Then, the rich start to accumulate at time $t = 0$, but the poor do not accumulate. The revolution constraint never binds, the economy remains an autocracy with high inequality, and converges to aggregate output Y_{SS}^1.

This is the path of an economy where initial inequality is high, but the poor do not pose a revolutionary threat. This might be because of the absence of a well-developed civil society or other factors making it hard for the poor to organize, implying a small μ. If μ were large so that revolution became a real threat, this economy could democratize, redistribute to the poor, and reach a higher level of income. Therefore, contrary to conventional wisdom, political and social instability may sometimes be good for growth. In particular, whether this instability hinders or enhances growth depends on which case the economy is in.

Result 3: East Asian Miracle

Suppose the economy starts in case 2 and Condition 4 does not hold. Then, all agents accumulate starting at time $t = 0$, inequality declines, and the revolution constraint never binds. Aggregate output converges to Y^2_{SS}.

   In this case, along the development path the poor segments of the society are sharing in the benefits of rising average per capita income, and therefore do not find it worthwhile to instigate social unrest.

   This last case reminds us of Taiwan and South Korea. In the early postwar period, both countries were in a situation very similar to that of the Philippines except that, as in the case of the autocratic disaster, inequality was much higher in the Philippines than in the other two countries.[13] In all three, political power was concentrated in the hands of an elite, not unlike nineteenth-century Britain. In Britain, per capita income and inequality grew and political transition took place. In the Philippines, aggregate income stagnated at a high level of inequality, and there was no political transition. In contrast to these cases, Taiwan and South Korea experienced fast growth but no democratization,[14] and inequality fell somewhat.[15] Our model suggests that this may have been because benefits of growth were equally shared between different social classes in South Korea and Taiwan, so the poor did not organize, and the elite did not have to extend political power to wider groups until much later. (See also the discussion in Rodrik (1994) and Campos and Root (1996) in support of such a view.)

Result 4: Revolution

Suppose we are in case 1, Condition 3 holds, but Condition 5 does not. Then the rich start to accumulate at time $t = 0$ and the poor do not. The revolution threat binds at time $\hat{t}$ when $h^r_i \geq [\lambda(1 - \mu)]/[\mu(1 - \lambda)]$, and a revolution takes place.

   The main difference of this case from the Kuznets curve is that B is large relative to A. This implies that there is only a limited ability to tax the rich in a democracy, and it is more profitable for the masses to take over the means of production. As a result, a revolution takes place along the equilibrium path. This case is similar to prerevolutionary Russia where social unrest increased, and attempts to bring more moderate groups, such as the Mensheviks, to power were unsuccessful.

5. Extensions

In this section we informally discuss some extensions, focusing especially on those which are relevant for the model of section 3.

Heterogeneity Among the Rich

It is straightforward to extend the model so that there is a distribution of asset levels, $G_t(h)$, among the rich, with lower support $\underline{h} > 1$. In this case, $H_t = \lambda h^p_t + (1 - \lambda)\int h dG_t(h)$. The rest of our setup and results remain unchanged, except that now the tax rate may be positive even when the elite are in power. First, suppose that $G_t(h)$ is skewed to the right. In this case, the median rich agent would like a zero tax rate, and none of our results needs to be modified. In particular, given decreasing returns to human capital, all rich agents converge to the same level of human capital, h_{SS}. In contrast, if $G_t(h)$ is

skewed to the left, then the median rich may set a positive tax rate. Whether the revolution constraint becomes binding or not depends on this tax rate. If $G_t(h)$ is sufficiently skewed, then this tax may be high enough to ensure accumulation by the poor and avoid the revolution constraint. The interesting feature is that in this case the amount of conflict among the elite has an impact on the conflict *between* the elite and the poor.

Imperfect Substitution Among the Rich and the Poor

We can think of the rich agents supplying skilled labor and the poor supplying unskilled labor, with imperfect substitution between these two types of labor. For example: $Y_t = A(\lambda h_t^p)^\alpha((1 - \lambda)h_t^r)^{1-\alpha}$. In this case, differences in λ would have another, perhaps more intuitive, effect on the likelihood of revolution. When λ is high, unskilled wages will be depressed, so a given h_t^r/h_t^p would translate into a higher level of income inequality.

Costs of Redistributive Taxation

In order to make our point in the simplest model, we have assumed redistributive taxation to be without distortions. It is straightforward to see that if this assumption is relaxed, then a democratic society would actually tend to an income level $Y_{SS}^3 \leq Y_{SS}^2$. Whether this inequality is strict or not will depend on a number of other features, which are not crucial for our story. This case would strengthen the conclusion that the lack of robust correlation between democracy and growth may not be surprising.

Targeted Taxes and Transfers

We have not allowed the transfer T_t to be negative or person-specific, implying that the elite preferred no intervention. With person-specific transfers or lump-sum taxes used to subsidize production, the elite, when in power, would want to use their political power to redistribute in their favor (one can interpret the Corn Laws, or Combination Acts which outlawed unions in nineteenth-century Britain in this light). In doing this, however, they have to respect the revolution constraint again: a high tax on the poor would make a revolution worthwhile. The interesting implication is that, in this case, the elite will often tax the masses just enough to make them indifferent between the existing system and a revolution, making increasing inequality more likely in an autocracy. This may fit the example of some African cases where state power appears to have been used more often to redistribute from one group to another.

Why is Democracy Irreversible?

We have assumed that once the elite extend the franchise, they cannot rescind it. This is clearly unrealistic, since there are examples of coups which have restricted the political participation of the masses. In Acemoglu and Robinson (2001) we analyze the issue of coups in detail. We show that if inequality is not too large, it may be incentive-compatible for the elite to never undertake a coup. Nevertheless, the possibility of coups may limit the amount of redistribution.

Here, we can also note that the irreversibility of democracy relates to the question of why the poor are initially excluded from the political process. Part of the answer

appears to be that political power depends on wealth (e.g., Ades and Verdier, 1993). The elite, initially, are much wealthier than the masses, and can use their wealth in order to control the political process. Once the franchise is extended, the distribution of income and wealth becomes more equal, implying that the masses now possess the resources to take part in the political process, and making a return to autocracy much harder. We could easily introduce this in our model by making μ a function of the income level of the poor, for example, $\mu(y^p)$ (with the restriction that $\mu(y^p) \leq \bar{\mu}$ so that democracies do not necessarily lead to a revolution). In this case, once the franchise is extended and y^p increases, the poor are much better organized, so even if inequality falls, the threat of revolution does not totally disappear.

This reasoning also suggests a reason why South Korea and Taiwan may have started the democratization process over the past ten years. Our simple model predicts that they should remain an autocracy forever. Yet, if we think of political power as related to income, at some point μ will increase sufficiently so that the elite have to extend the franchise, despite the low level of inequality. With this modification, our approach predicts that, as in the case of South Korea and Taiwan in practice, economies which start with relatively low inequality should experience high growth and no democratization for a while, and then, once the masses become sufficiently wealthy, social unrest should force democratization.

Forward-Looking Elites

Finally, in our model the agents are "myopic" because they live only one period and do not care about the dynamics after they die. If we introduce more general kinds of altruism or long horizons for the agents, this aspect will change. In this case, one might conjecture that the elite may accumulate slower than otherwise in order not to hit the revolution constraint. Intuitively, the members of the elite may realize that if they collectively have assets worth $H^* = \lambda(1 - \mu)/\mu$, the revolution threat will become active. So they may stop accumulation at some level less than H^*. The important point to note, however, is that this requires some kind of coordination from the "state." If each member of the elite is deciding individually, he would ignore his impact on the aggregate stock of assets, and thus would "free-ride" by accumulating more. Such behavior by all the members would take the economy to H^*.

6. Concluding Remarks

In this paper we have proposed a political economy theory of the Kuznets curve. The historical and contemporary evidence suggests that the downward segment of the curve is driven by political reforms and their subsequent impact. In turn these political changes are induced by the rising social tension and political instability that arises from the increased inequality on the upward segment of the curve. Nevertheless, as the empirical evidence has established, such a curve does not characterize all development paths. Our model suggests two circumstances where development would not induce a Kuznets curve. Firstly, if inequality is very low initially so that all agents could invest, development could occur without heightened social tensions and political reform could be avoided. In this part of the parameter space a country would experience rapid economic development without growing inequality or political reforms. We argued that this situation captures well some of the post World War II growth experi-

ences in East Asia.[16] Secondly, when civil society is very unmobilized even widening inequality may not be sufficient to force political reform. Such a country experiences increasing inequality, poor growth, and no political reform. We argued that this situation seems to capture well some of the recent development experiences in sub-Saharan Africa and perhaps Asian countries such as the Philippines.

There are directions in which it would be interesting to extend the analysis. For example, democratizations in eastern Europe since 1989 have been followed not by falling inequality, but rather by rapidly rising inequality. At first sight this seems inconsistent with our analysis. Unlike the democratizations we consider, the goal of redistributing income was not part of the forces pushing towards democracy in these countries. Rather, political freedom itself was the goal and was highly valued, despite the fact that people understood that the severe compression of the income distribution under socialist institutions would be unwound. To capture this phenomenon within our framework one must extend the model to take into account that people may have preferences over nonmaterial aspects of regimes (we take some steps in this direction in Acemoglu and Robinson, 2000c).

References

Acemoglu, Daron and James A. Robinson, "Democratization or Repression?" *European Economic Review* 44 (2000a):683–93.

———, "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective," *Quarterly Journal of Economics* CXV (2000b):1167–99.

———, "A Theory of Political Transitions," CEPR discussion paper 2277, forthcoming in the *American Economic Review* 91 (2001): 938–963.

———, "A Conflict Based Approach to Political Development," unpublished (2000c).

Ades, Alberto and Thierry Verdier, "The Rise and Fall of Elites: Economic Development and Social Polarization in Rent-Seeking Societies," unpublished paper, DELTA (1993).

Aghion, Philippe and Patrick Bolton, "A Trickle-Down Theory of Growth and Development," *Review of Economic Studies* 64 (1997):151–72.

Alesina, Alberto and Roberto Perotti, "Income Distribution, Political Instability and Investment," *European Economic Review* 40 (1996):1203–25.

Alesina, Alberto and Dani Rodrik, "Distributive Politics and Economic Growth," *Quarterly Journal of Economics* 109 (1994):465–90.

Anand, Subir and Ravi M. Kanbur, "Inequality and Development: A Critique," *Journal of Development Economics* 41 (1993):19–44.

Banerjee, Abhijit V. and Andrew F. Newman, "Occupational Choice and the Process of Development," *Journal of Political Economy* 101 (1993):274–98.

Bénabou, Roland, "Unequal Societies: Income Distribution and the Social Contract," *American Economic Review* 90 (2000):96–129.

Briggs, Ara, *The Age of Improvement*, London: Penguin (1959).

Cameron, Charles and Sunita Parikh, "Riot Games: A Theory of Riots and Mass Political Violence," paper presented at the Annual Meeting of the American Political Science Association, Washington, DC, 1 September (2000).

Campos, J. Edgar and Hilton L. Root, *The Key to the Asian Miracle: Making Shared Growth Credible*, Brookings Institution, Washington, DC (1996).

Deininger, Klaus and Lyn Squire, "New Ways of Looking at Old Issues," *Journal of Development Economics* 57 (1998):259–87.

Deirmeier, Daniel and Jan A. Van Mieghem, "Spontaneous Collective Action," unpublished paper, Kellogg Graduate School of Management, Northwestern University (2000).

Easterlin, Richard A., "Why Isn't the Whole World Developed?" *Journal of Economic History* 41 (1981):1–19.

Engerman, Stanley L. and Kenneth L. Sokoloff, "The Evolution of Suffrage Institutions in the New World," unpublished, Department of Economics, UCLA (2000).

Engerman, Stanley L., Elisa Mariscal, and Kenneth L. Sokoloff, "Schooling, Suffrage, and the Persistence of Inequality in the Americas, 1800–1945," unpublished working paper, UCLA (1998).

Evans, Eric J., *The Forging of the Modern State: Early Industrial Britain*, *1783–1870*, New York: Longman (1983).

Feinstein, Charles H., "The Rise and Fall of the Williamson Curve," *Journal of Economic History* 48 (1988):699–729.

Fields, Gary S., "The Kuznets Curve: A Good Idea, But . . . ," unpublished working paper, Department of Economics, Cornell University (1995).

Fields, Gary S. and George H. Jakubson, "New Evidence on the Kuznets Curve," unpublished working paper, Department of Economics, Cornell University (1993).

Galor, Oded and Joseph Zeira, "Income Distribution and Macroeconomics," *Review of Economic Studies* 60 (1993):35–52.

Goldin, Claudia and Lawrence F. Katz, "The Returns to Skill in the United States across the Twentieth Century," NBER working paper 7126 (1999).

Grossman, Herschel I., "A General Equilibrium Theory of Insurrections," *American Economic Review* 81 (1991):912–21.

———, "Production, Appropriation and Land Reform," *American Economic Review* 84 (1993):705–12.

———, "Robin Hood and the Redistribution of Property Income," *European Journal of Political Economy* 11 (1995):399–410.

Heidenheimer, Arnold J., "Education and Social Security Provisions in Europe and America," in P. Flora and A. J. Heidenheimer (eds.), *The Development of the Welfare State in Europe and America*, Transaction Books (1981).

Kuznets, Simon, "Economic Growth and Income Inequality," *American Economic Review* 65 (1955):1–28.

Lee, Stephen J., *Aspects of British Political History, 1815–1914*, London: Routledge (1994).

Lichbach, Mark I., "Contending Theories of Contentious Politics and the Structure–Action Problem of Social Order," *Annual Review of Political Science* 1 (1998):401–24.

Lindert, Peter H., "Unequal English Wealth Since 1670," *Journal of Political Economy* 94 (1986):1127–62.

———, "Modern Fiscal Redistribution: A Preliminary Essay," University of California at Davis, Agricultural History Center working paper 55 (1989).

———, "The Rise in Social Spending, 1880–1930," *Explorations in Economic History* 31 (1994):1–37.

———, "The Comparative Political Economy of Mass Schooling before 1914," unpublished, Department of Economics, UC Davis (2000).

Lindert, Peter H. and Jeffery G. Williamson, "Growth, Equality and History," *Explorations in Economic History* 22 (1985):341–77.

Lipset, Seymour M., *Political Man: The Social Bases of Politics*, Garden City, NJ: Anchor Books (1960).

Maddison, Angus, *Monitoring the World Economy, 1820–1992*, Paris: OECD (1995).

Mitch, David, "The Role of Human Capital in the First Industrial Revolution," in J. Mokyr (ed.), *The British Industrial Revolution: An Economic Perspective*, San Francisco: Westview Press (1993).

Moore, Barrington, *The Social Origins of Dictatorship and Democracy*, Boston, MA: Beacon Press (1966).

Morrisson, Christian, "Historical Evolution of Income Distribution in Western Europe," in A. B. Atkinson and F. Bourguignon (eds.), *Handbook of Income Distribution*, Amsterdam: North-Holland (1999).

Muller, Edwin N. and Mitchell A. Seligson, "Inequality and Insurrections," *American Political Science Review* 81 (1987):425–51.

North, Douglass C. and Barry R. Weingast, "Constitutions and Commitment: Evolution of the Institutions Governing Public Choice in 17th Century England," *Journal of Economic History* 49 (1989):803–32.

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

Perotti, Roberto, "Political Equilibrium, Income Distribution and Growth," *Review of Economic Studies* 60 (1993):755–76.

Persson, Torsten and Guido Tabellini, "Is Inequality Harmful for Growth? Theory and Evidence," *American Economic Review* 84 (1994):600–21.

Piketty, Thomas, "Income Inequality in France, 1901–1998," unpublished paper, CEPREMAP, Paris (2000).

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

Ringer, Fritz, *Education and Society in Modern Europe*, Bloomington: Indiana University Press (1979).

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

Rodrik, Dani, "King Kong Meets Godzilla: The World Bank and the East Asian Miracle," in A. Fishlow et al. (eds.), *Miracle or Design? Lessons from East Asia*, Washington, DC: Overseas Development Council (1994).

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

Schultz, T. Paul, "Inequality in the Distribution of Personal Income in the World: How it is Changing and Why," Yale University, Economic Growth Center discussion paper 784 (1998).

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

Williamson, Jeffrey G., *Did British Capitalism Breed Inequality?* Boston, MA: Allen & Unwin (1985).

Williamson, Jeffrey G. and Peter H. Lindert, *American Inequality: A Macroeconomic History*, New York: Academic Press (1980).

Notes

1. The idea that increased inequality leads to political unrest is plausible. It also receives support from recent empirical studies. For example, Alesina and Perotti (1996) and Muller and Seligson (1987) find a positive association between income inequality and political instability.

2. In Acemoglu and Robinson (2000b) we also provide detailed evidence that alternative theories of democratization (such as intra-elite competition) do not account for the timing and the form of the series of franchise extensions in Britain, nor do they give a good account of the process of democratization in other countries.

3. See Feinstein (1988) for some caveats about this.

4. Piketty's (2000) recent investigation of inequality in twentieth-century France shows that inequality changes little over time. However, his work does not examine the period between 1870 and the turn of the century where other works do find falling inequality and which is the period most relevant for our analysis.

5. This seems to have stemmed primarily from idiosyncratic factors such as from the non-conformist religious backgrounds of many immigrants; see Easterlin (1981).

6. See Engerman et al. (1998) and Lindert (2000) for more evidence on the importance of political reform from educational expansion.

7. The assumption that the elite receive nothing after a revolution is only for simplicity. The functional form assumption that the poor receive a fraction μ of the assets of the economy is also inessential. Instead, the important feature is that revolution is more attractive to the poor in a more unequal society.

8. Notice that democratization is all-or-nothing. Extending the franchise to only a segment of the citizens would not be useful in this model: if the poor become the majority, then the consequences are the same as in the all-or-nothing case, and otherwise, the reform has no commitment value.

9. Coups do of course happen. Nevertheless, once voting rights are extended and political parties are formed, it is relatively costly for any group to exclude the rest from the political process. We discuss coups in Acemoglu and Robinson (2001).

10. Although there is no free-rider problem, there may be a coordination issue whereby each poor agent expects others not to take part in the revolution, and prefers not to do so himself. We ignore this equilibrium because it entails the adoption of strategies which are weakly dominated. Our simple approach to overcoming the collective action problem stems from our belief that differences in the way the collective action problem were solved is not a key determinant of the facts we are trying to explain. Moreover, our reading of the historical evidence is that revolutions do generate private benefits to participants. We therefore do not propose a more detailed micro-theoretic model of how the collective action is resolved. Recent interesting work on models of collective action includes Deirmeier and Van Mieghem (2000), Cameron and Parikh (2000), and see the useful survey by Lichbach (1998).

11. This implies that we are focusing attention in the case of $q < q^*$ in terms of the analysis of Acemoglu and Robinson (2000b).

12. In other, also plausible, models, the threat of revolution could be increasing in λ as it may be easier to overthrow a small elite. Comparative statics with respect to this variable are not essential to our results.

13. The Gini coefficient was 0.34 in 1965 in South Korea and 0.31 in 1964 in Taiwan, whereas it was 0.45 in the Philippines in 1957 (Fields, 1995).

14. A process of democratization is now occurring rapidly in the Philippines, South Korea, and Taiwan. Nevertheless, for the purposes of the present study it is interesting to understand the prolonged undemocratic regimes in these countries as opposed to the experiences of much faster democratization in Britain and other developing countries such as India, Colombia, and Turkey. To get a sense of how delayed democratization was in these countries, observe that prior to its democratization, per-capita GDP increased by a factor of 6.89 (over the period 1960–1990). During the period 1820–1870, the same figure for Britain was 2.75 (in fact, Britain did not reach the figure 6.89 until 1929—all data from Maddison, 1995). Section 5 discusses how a simple extension of our model can account for delayed, rather than no, democratization in South Korea and Taiwan.

15. For example, the average Gini coefficient over the period 1965–1970 was 0.34 for South Korea and 0.32 for Taiwan, and these averages fell to 0.33 and 0.30, respectively, for the period 1981–1990; see Campos and Root (1996), Table 1.1, or the data in the Deininger and Squire dataset. These changes are small enough, however, that they may be simply due to measurement error.

16. This may also help explain why historians find countries such as Norway experienced declining inequality during the nineteenth century. Norway never experienced feudalism, or had a landed aristocracy, and as a result land and income distribution was relatively egalitarian to start with.