Political Institutions and Economic Policies: Lessons from Africa
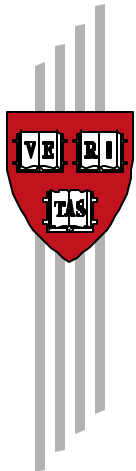
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Political Institutions and Economic Policies: Lessons from Africa[†]

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Abstract

Scholars, activists, and policy makers have argued that the route to economic growth in Africa runs through political reform. In particular, they prescribe electoral accountability as a step toward economic reform, seeing it as inducing the choice of publicly beneficial as opposed to privately profitable economic policies. To assess the validity of such arguments, we first characterize a set of political institutions that render political elites accountable and derive their expected impact on the policy choices of governments. Using ratings of macro-economic policy produced by the World Bank and ratings of corrupt practices produced for private investors, we explore the relationship between institutional forms and policy choices on both an African and global sample. While key elements of the model find empirical support, the central argument receives mixed support in the data. Political institutions have a stronger influence on policy making in Africa than elsewhere and variation in African institutions and in the structure of African economies account for differences between policy choices in Africa and those made in the rest of the world. Political accountability however does not influence the choice of macro-economic policies in the manner suggested by reformist arguments; although it does appear to lead to less political predation.

Introduction

Writing a half-decade ago, Easterly and Levine (1997) spoke of Africa's "Growth Tragedy." What Easterly and Levine described in 1997 remains true today: Africa poses the development challenge of our time.

According to data from the World Bank, while incomes in Africa averaged three times those in East Asia and the Pacific in 1960, incomes in Africa are now half those of the latter region. In periods of rapid development – such as the 1960s – growth rates in Africa have lagged behind those in other regions; in periods of slow growth – such as the 1980s – growth rates in Africa have not only lagged but actually turned negative. In recent decades, Africa has therefore become poorer, both relative to other regions and in absolute terms. Table 1 below shows the growth rates of the economies of the world, divided by region and by time period. Africa's growth tragedy, it can be seen, has been deep and sustained.

Table 1 about here

Many reasons have been offered for Africa's performance. Some, such as Sachs and Warner (1997), focus on Africa's natural endowment: its tropical location, its resources, and its location in global markets. Others, such as Easterly and Levine (1997), point to its cultural endowment, and in particular to the number and fractionalization of ethnic groupings within African countries. A growing number of others point to political factors and emphasize in particular the properties of governance in Africa. This essay elaborates, investigates, and debates this last interpretation.

BACKGROUND

In an effort to explain variations in the rates of economic growth, scholars have fit a variety of equations to cross-national data (Barro and Sala-i-Martin 1995). Whatever the type of equation they employ – whether based on a Solow-like, Barro-like, or endogenous growth model – many have found that an "Africa dummy" – a variable that takes on the value 1 if a

nation is located on the African continent – helps to account for the residual variance in the world sample.

In 1991, Barro found that even controlling for the level of public consumption and a measure of the distortion of markets, the regional dummy for Africa remained significant and negative (Barro 1991). While controlling for measures of trade openness and fiscal restraint, Barro and Lee (1994) replicated this result. And even while controlling for openness, fiscal restraint, and financial depth, Easterly and Levine (1997) found a significantly lower rate of growth among Africa nations (see also Collier and Gunning 1999).

The evidence of an "African" affect also comes from the subjective ratings of the world's economies made by international investors. Investors appear to base their judgments on such economic fundamentals as the level of foreign reserves, fiscal balance, and debt. But, as reported by Collier and Pattillo (1999), even allowing for such factors they place an additional "discount" on Africa's economies. A significant and negative "Africa dummy" consistently enters equations that attempt to account for the scores conferred upon nations by those who rate their attractiveness for foreign investors (Collier and Pattillo 1999).

When scholars attempt to account for this "Africa dummy," they frequently turn to non-economic factors. Easterly and Levine (1997) emphasize Africa's ethnic diversity. Clarifying their findings, Collier (1999) stresses the importance of forms of government: ethnic make-up, he finds, affects rates of growth, but only in nations that lack democracy. The unexpectedly low rates of growth of the nations of Africa may thus come not from their ethnic diversity, but rather from their lack of democratic forms of politics.[1]

In a thoughtful investigation of Africa's economic performance, Ndulu and O'Connell (1999) decompose the sources of growth between the accumulation of factors and the growth of total productivity. They attribute a portion of the lag in African growth rates over the period 1960-1994 to high levels of fertility, and therefore to a low ratio of labor force to population (see also Bloom and Sachs 1998); another portion, they attribute to the slow accumulation of physical and human capital. They report, however, that fully two-thirds of Africa's shortfall "is accounted for by slow growth in the residual" (p. 45). In

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[1] Barro (1994) also explored the impact of levels of democracy. Changes in his measure (derived from Gastil 1982) significantly relate to changes in growth rates, with the "middle level of democracy [being the] most favorable to growth" (Barro 1994, p. 19). Even controlling for the level of democracy of their governments, however, Barro finds that the African cases exhibited a significantly lower average rate of growth.

interpreting this finding, Ndulu and O'Connell note that "A distinctive feature of the post-1973 experience is a collapse in physical capital accumulation which goes nearly to zero in the 1973-74 period (and is already negative for 1989-94)." While stressing that "the causal linkages … have only begun to be addressed," they emphasize that the downturn corresponded to a period of "consolidation of authoritarian rule" (p. 45).

Students of growth thus increasingly point to politics when addressing Africa's poor economic performance. In doing so, they join policy makers, especially those in the World Bank. The Bank has increasingly taken the lead in international lending in the continent. As recounted in a history of its lending to Africa (Kapur 1997), as the Bank expanded its role, it launched livestock schemes, dairy farms, small-holder cooperatives, outgrower schemes, inland fisheries, and resettlement programs. Its in-house evaluations revealed a distressingly poor level of performance, however: "More than any other task the Bank had undertaken, its engagement in Sub-Saharan Africa sapped the institution's […] confidence" (Kapur 1997, p. 720). And a primary reason for its failures, the Bank determined, was that the governments in Africa had adopted policies that created a highly adverse economic environment. As stated in the famed "Berg Report", economic growth in Africa had been undermined by "domestic policy inadequacies" (World Bank 1981, p. 1.6).

In a major study of Africa's economic performance, the World Bank (1989) set aside arguments based upon un-forcastable shocks, such as droughts, or external factors, such as declining terms of trade, and instead focused upon systematic and internal forces that lowered the rate of return on investments and the rate of growth of its economies. At the core of Africa's economic crisis, it argued, lay poor public policies and the lack of "political will" to correct them.[2] In an effort to promote development in Africa, the World Bank therefore promoted "policy dialogue" with governments (Please 1984). And in these dialogues it increasingly prescribed the reform of political institutions.

Like the economics community, the World Bank thus came to posit political causes for Africa's poor economic performance.[3] Calling for "efficiency," "transparency," and above all "accountability" (Ibid.), "good governance," it proclaimed, "is central to creating and sustaining an environment which fosters strong and equitable development, and it is an

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[2] See for example "Adjustment in Africa – Reforms, results, and the road ahead," *World Bank Policy Research Bulletin,* March-April 1994 Volume 5, Number 2.
[3] See also World Bank (1981, 1989, 1991, 1994, 2000).

essential component to sound economic policies" (World Bank 1991, p. 1.). The Bank thus joined the chorus of scholars and intellectuals who trace Africa's poor economic performance to the nature of its politics (e.g. Ake 1996, Achebe 1987)).

Lying at the root of the political critique of economic management in Africa is the belief that narrowly based governing elites promote public policies that distort the economy. Political elites, it is held, not only accrue private advantage from public office; they also inflict collective damages. The result is what the World Bank called "inefficiency" (Ibid.), others called "rent seeking" (van de Walle, 2001), and still others "corruption" (Bayart, Ellis et al. 1999). Distorting the macro-economy, they generate short-term benefits, but at the expense of low rates of savings and investment and rising deficits in international markets. By adopting unbalanced budgets and monetizing the debt that results, governments can allocate public benefits to themselves and their supporters, but at the expense of private savings. By overvaluing their currencies, they can import capital equipment and consumer goods more cheaply, but at the expense of those who produce goods for export. By distorting interest rates, they can cheapen the costs of borrowing, but at the expense of reduced savings and high levels of capital flight. And absent the possibility of political punishment, governments may face few incentives to better manage the macro-economy or to act as guardians of the collective welfare.[4]

In confronting Africa's "growth tragedy," then, both scholars and policy makers emphasize its political origins, placing particular emphasis on the government's lack of accountability – something, they argue, that enables corrupt governments to survive and economically irrational policies to remain in place. Qualitative accounts and case studies lend credibility to such arguments. In both Nigeria and Ghana, for example, military governments, which were immune to electoral challenge, engaged in the wholesale looting of the national treasury, helping to promote the decline of the national economy. In Nigeria, the government of General Abacha diverted over $2 billion of Nigeria's export earnings from the oil industry to private bank accounts abroad. In Ghana, the government of General Acheampong generated massive budgetary deficits and accommodated them so

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[4] See van de Walle, who explores the manner in which distortionary policies, which might weaken the economy, nonetheless serve "the interests of state elites' (Ibid., p. 62) – elites that have proven to be "remarkably durable" (Ibid., p. 46), being immune to political challenge.

laxly that it debased the national currency, sending Ghana in a downward growth spiral from which it has taken decades to recover (Leith and Lofchie 1991).

Also relevant are the policy choices of such civilian heads of state as Nkrumah in Ghana and Kaunda in Zambia, both of whom presided over single party systems and remained, as a result, sheltered from effective electoral accountability. The government of Nkrumah seized the earnings of export agriculture to finance dozens of import substituting firms. The firms remained privately profitable because they were protected. The result was an inefficient transfer of resources from consumers to the political elites that dominated their boards and management (Killick, 1978). In Zambia, Kenneth Kaunda, president of both the government and ruling party, maintained an overvalued exchange rate that transferred the hard currency earned from copper exports to state-owned enterprises (Bates and Collier 1991). In both instances, the policies imposed a tax on exports. Because of the single party system, the exporters could not organize in opposition to the government policies. And the policies undermined the capacity and desire to generate foreign earnings, thereby generating a rise in trade deficits and international debt.

Such qualitative accounts render plausible the arguments of those who posit a causal link between political accountability and the economic choices of governments. In the absence of accountability, rent seeking and corruption appear to run unchecked; and so too, apparently, do distortions in the prices and imbalances in the accounts of the macro-economy.

The question remains, however: while persuasive, are such arguments valid? We address this question in the remaining portions of this paper, subjecting the arguments to both logical and empirical scrutiny. We begin with the logic. Building upon the work of Barro (1973) and Ferejohn (1986) (see also Adam and O'Connell 1999; Ndulu and O'Connell 1999; Persson and Tabellini 2000; and Mesquita et al. 2000), we offer a model that establishes links between policy choice and institutional structures. We then turn to the evidence. Employing data from both African and global samples, we explore whether the relationships implied by the model do in fact prevail in the empirical record and thus test the arguments that link institutional structures to the policy choices of governments.

A Model

To aid our investigation, we construct a model that links a government to its economy; we constrain the government, rendering it dependent upon the support of a "selectorate" of private citizens; and we then analyze its behavior and in particular the nature of the policies it would choose in equilibrium.

THE ECONOMY

We think of an economy containing N individuals, indexed by $i \in \{1,2,\ldots N\}$ in which production is governed by an agent – the government – that manages the transformation between public goods – denoted by π – and private goods –denoted by ϕ – subject to the constraints that $f(\pi,\phi) \leq 1$ and π, $\phi = 0$. The function $f(\pi,\phi)$ captures the ease with which the agent can transform public into private goods. The income of each player – the government and all others – is written as $y_i = \pi + \phi_i$, where ϕ_i denotes individual i's allocation of the private good and $\Sigma_i \phi_i = \phi$. We use ϕ_a to denote the allocation retained by the agent and $\phi_{-a} = \Sigma_{-a} \phi_i$ to denote the sum of allocations distributed among others. By convention the allocations $\{\phi_i\}$ are ordered with ϕ_a appearing first.[5] The government's output then is described by the (N+1)-dimensional vector $(\pi, \{\phi_i\})$. The private good ϕ is the locus of rivalry in this economy: rivalry between the government and other non-governmental actors as well as between the non-governmental actors themselves.

The maximum level of public goods that can be produced, conditional upon the production of some ϕ, is $\pi(\phi) = \pi(\phi \mid f(\pi, \phi) = 1)$. Similarly, the maximum level of private goods that can be secured, conditional upon the production of some π, is $\phi(\pi) = \phi(\pi \mid f(\pi, \phi) = 1)$. We assume throughout that $\pi_\phi < -1/N$; that $\phi_\pi < 0$ and $\phi_\pi(0) = 0$; that $\pi_{\phi\phi} < 0$; and that $\phi_{\pi\pi} < 0$. Production sets are therefore convex. The total income of the economy is $\Sigma_i y_i = N\pi(\phi) + \phi$, a function that decreases in ϕ. Total income is greatest, then, when the government refrains from transforming public into private goods (or alternatively, uses divisible assets to produce public goods).

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[5] We also use $\{\phi_a, \phi_{-a}\}$ and $\{\phi_a, \mathbf{0}\}$ to denote the vectors in which the agent receives allocation ϕ_a and in which ϕ_{-a} and 0 denote vectors of private allocations to principals that sum to ϕ_a and 0 respectively.

Within this framework, we can unambiguously characterize a choice of policy either by the quantity of public goods produced, π, or by the quantity of rent extracted, ϕ.

THE POLITY

To analyze the process of policy choice, we assume that the government, acting as an agent, implements a set of policies that apportion resources between π (a public good) and ϕ (private goods). The agent can retain some of the private goods for her own consumption (i.e. generate and consume political rents). Alternatively, she can distribute such goods to influential followers.

The government confronts two streams of future satisfaction. One is the reward of holding office, which it discounts for political risk -- at a rate conditional upon its strategy -- and time -- at rate $\delta \in [0,1)$. The other is the most rewarding alternative offered in the private sector, whose per-period value is given by $\underline{v}$ and which is also discounted for time. We treat $\underline{v}$ as exogenous and time-invariant and we assume that it is of less value to the government than the most attractive gains that can be made from the unconstrained use of office. Insofar as the rewards from holding office exceed those from alternative employment, the government seeks to retain office.

We call a set of principals whose support is sufficient to return the government to office the government's selectorate, denoted by $\boldsymbol{M}$. We assume that in any polity the selectorate is a strict subset of the principals and that it is of fixed size.[6] The selectorate may refer for example to an electoral constituency or to some group of powerful actors within the government (perhaps the military).[7] Following the logic in Ferejohn (1986) we assume that the government is incapable of credibly committing to honor its promises. It is the power of the selectorate to reward (or to punish) governments for meeting (or failing to meet) their expectations that generates incentives for governments to pursue certain policies. We study equilibria in which each member of the selectorate sets performance criteria and then acts to re-select the incumbents if and only if the outcome $(\pi, \{\phi_i\})$ satisfies these criteria. If a sufficient number, $\boldsymbol{M}$, of principals chooses not to re-select the government –

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[6] With a slight abuse of notation we also use $\boldsymbol{M}$ to denote the cardinality of the set $\boldsymbol{M}$.
[7] As is clear from our definition, there may be many selectorates that can form from different subsets of a polity.

alternatively, if the government fails to satisfy the demands of **M** principals – then the government is dismissed with some positive probability.

THE GAME

The game between the citizens and their government is played over an infinite number of periods of fixed length. In each period we distinguish three phases of play. In a first phase each citizen has the option unilaterally to select a minimum satisfaction level, $y_i = \pi + \phi_i$, that represents the lowest level of performance that she will tolerate before voting to dismiss the government. In the second phase, the government chooses a mixture of public and private goods and an allocation of the latter between herself and selected principals $(\pi, \{\phi_i\})$. In the third phase of play, principals choose non-cooperatively whether to take some costless action to return the government to office. If the members of some set of principals of size **M** each choose to return the government to office, they succeed in doing so. Should the government fail to satisfy the selectorate, it remains in power with probability $q \in (0,1)$ even if it loses the support of its selectorate. Otherwise, with probability 1-q, the government is dismissed and a new one is installed. In either case, play returns to the first phase in which principals can again choose performance criteria for the new term of office (see Figure 1)

Within this framework, we look for an equilibrium in which principals employ a retrospective voting rule with cutoff points $\{y_i\}$ and the government undertakes actions that are feasible; that meet the demands of some set of **M** principals; and that leave no reason for any principal to alter her personal threshold in an effort to increase her well-being.

Figure 1: [Game Tree] Near Here.

ANALYZING THE GOVERNMENT'S BEHAVIOR

We begin the analysis by noting three benchmark values for π.

The Government's Ideal. Like all actors in the model, the government seeks to maximize a combination of her private income plus the level of public goods in the economy. Given its objective, the government, if unconstrained, would choose $\phi_{-a}=0$ and a level of π for

which slope of $\pi(\phi)$ is -1. We label the (unique) value for π for which $\pi_\phi(\phi) = -1$ as π_{min} and write the corresponding value $\phi(\pi_{min})$ as ϕ_{min}. The government's ideal output is then $(\pi_{min}, \{\phi_{min}, \mathbf{0}\})$. π_{min} is the least amount of a public good that the government would wish to produce, if unconstrained. Note that π_{min} will always exceed zero because of the properties of the transformation function, which render it increasingly costly to transform public into private goods.

Participation Constraint. Should the government choose to ignore the demands of its constituency, it would then choose its ideal output, $(\pi_{min}, \{\phi_{min}, \mathbf{0}\})$. If, in consequence, the government fails to attain the support of any set of $\boldsymbol{M}$ principals, then the cost of this choice of action, with probability $(1-q)$, is the future stream of payoffs that results from the loss of office. A second benchmark value for π, which we label π_{max}, is thus the maximum value of π that can yield benefits to the government that, conditional upon its re-selection, are at least as good those it could gain from choosing opportunistically and suffering the consequences of dismissal. Again we define the corresponding value $\phi_{max} = \phi(\pi_{max})$. π_{max} sets an upper bound on the level of collective goods that a government, behaving strategically, would be willing to produce while seeking to remain in office.

Assuming that the government consumes all private goods, this upper bound is given by the largest feasible value of π that satisfies:

$$\boldsymbol{p} + \boldsymbol{f}(\boldsymbol{p}) \geq [\boldsymbol{p}_{\min} + \boldsymbol{f}_{\min} + \underline{v}\frac{\boldsymbol{d} - \boldsymbol{d}q}{1-\boldsymbol{d}}]\frac{1-\boldsymbol{d}}{1-\boldsymbol{d}q} \qquad (1)$$

The proof for this claim is given as Lemma 1 in the Appendix. We note that some π_{max} always exists to satisfy (1) and that $\pi_{max} \geq \pi_{min}$.[8]

Note that the upper bound is thus determined by the government's discount rate and the probability that an unsatisfied selectorate will fail to remove the government from office.

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[8] Both facts follow from the feature that π_{min} itself satisfies Equation 1. π_{max} then must be at least as great as π_{min}. This follows from the fact that $\boldsymbol{p}_{\min} + \boldsymbol{f}(\boldsymbol{p}_{\min}) < [\boldsymbol{p}_{\min} + \boldsymbol{f}(\boldsymbol{p}_{\min}) + \underline{v}\frac{\boldsymbol{d} - \boldsymbol{d}q}{1-\boldsymbol{d}}]\frac{1-\boldsymbol{d}}{1-\boldsymbol{d}q}$ if and only if $\underline{v} > \boldsymbol{p}_{\min} + \boldsymbol{f}(\boldsymbol{p}_{\min})$, which is excluded by the assumption that the agent could achieve a higher payoff outside of office than she could ever do in office in each period.

π_{max} is increasing in δ, and decreasing in q and $\underline{v}$. It is also decreasing in the ease of private goods production.[9]

Feasibility Constraint. A third benchmark is the value of π below which the costs that result from the distortion that arises from the transformation of public benefits into private goods becomes too great to allow the government to compensate any set of M players through private transfers. It is given by the value of π for which the slope of $\pi(\phi)$ is $-1/(M+1)$, or, if no such point exists, by $\pi(0)$.[10] We call this value π_*, and again define the corresponding value $\phi_*=\phi(\pi_*)$. Note that since $\pi_{\phi\phi}<0$, we have that $\pi_*>\pi_{min}$.

When π is greater than π_*, then the government can find M players that will be willing to accept a reduction in π in exchange for some feasible increase in ϕ. When π is at or is less than π_* it becomes technically infeasible for the government to reduce the production of π and compensate its selectorate for the loss. π_* is increasing in M and decreasing in the ease of private goods production: it relates properties of the economy to the ability of the agent to "buy off" some set of M players by transforming public goods into distributive benefits.

The upper panel of Figure 2 illustrates the relationship between feasible choices of public and private goods. Along the frontier of the production possibility set, the increased production of distributive benefits implies the decreased production of public goods. The convexity of the set captures the notion that the more that is taken from the economy the more costly it becomes to engage in further extraction. Were the government unconstrained, it would choose at the point where the slope of the frontier, $\pi_\phi=\phi_\pi=-1$. This point is marked by π_{min} and ϕ_{min}. π_{min} is the lowest amount of the public good that we would ever expect the agent to wish to produce. We have also marked the point on the frontier where the slope is given by $\pi_\phi=-1/(1+M)$ (or by $\phi_\pi=-(1+M)$), which corresponds to the points π_* and ϕ_*. It is possible for the government to satisfy some M constituents by reducing the amount of public goods produced and allocating the increased private good

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[9] This effect works through the determinants of π_{min}.

[10] We prove this as Lemma 2 in the Appendix.

among the constituents if and only if π is greater than π_*. If π lies below π_* then it is impossible for the government to reduce π further and still compensate **M** individuals sufficiently to retain office. In the lower panel we graph the single period utility to the government of choosing different points. This graph attains its maximum at π_{min} and ϕ_{min}. Given values for q, δ and $\underline{v}$, the graph may be used to locate the pair (π_{max}, ϕ_{max}). $\pi_{max} + \phi_{max}$ denotes the minimum level of per-period utility that the government would ever be willing to accept and still be induced to satisfy the demands of its selectorate. With $\pi_{max} \geq \pi_{min}$ this implies that there is no way to induce the government to produce more public goods than π_{max}.

Figure 2: [Production Possibility Sets and Benchmark Values] Near Here

EQUILIBRIUM PROPERTIES

These benchmark values of π help us to describe the equilibrium of this game.

Claim: It is a subgame perfect stationary equilibrium for each principal, *i*, to demand $\underline{y_i}^* = \pi^*$ in each period and for the government to produce $(\pi^*, \{\phi(\pi^*), \mathbf{0}\})$ in each period, where $\pi^* = \min(\pi_*, \pi_{max})$; and for the selectorate to re-select the government.[11]

In equilibrium therefore:

   a) An accountable government produces positive amounts of the public good.
   b) An accountable government satisfies its selectorate by supplying public goods.
   c) An accountable government consumes all private goods; it does not share them.

A statement of the proof of this claim appears in the Appendix.[12]

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[11] This claim is stated in terms of on-the-equilibrium path behavior rather than of strategies. A more formal statement of the equilibrium and a proof is provided in the Appendix.

[12] While formally this equilibrium is not unique, most of the other stationary subgame perfect equilibria that we have identified are similar to that stated in the text with substantively uninteresting variations over the demands of agents not in the agent's selectorate. In Claim 2 in the Appendix we demonstrate that it is a general characteristic of stationary equilibria of this game that no private goods are allocated to principals (see also Ferejohn (1986), Proposition 6). Depending on the information available to the principals, both regarding each others' choice of cut-off point and each others' actions to return the principal, other equilibria may also exist in which principals succeed in achieving collective action to set higher demands on the agent, constraining her to produce π_{max}.

To grasp the intuition, consider first the case where $\pi_* = \pi_{max}$. Assume the principals demand $y_i^* = \pi^* = \pi_*$. The least cost way to provide **M** principals with income that satisfies their performance criteria is to produce π_*, i.e. to reward them with public goods. Consider attempts by the government to satisfy the **M** principals by shifting from π_* to a combination of public and private goods. To generate more ϕ for each of **M** principals, without reducing its own consumption of ϕ, the government would have to produce less π. But by the definition of π_*, this transformation would be infeasible. The government therefore meets the performance criteria of the **M** members of the selectorate by producing π_* (while consuming ϕ_*). As the government is better off than were she to leave office (since $\pi_* = \pi_{max}$), the government therefore satisfies its participation constraint; it is therefore willing to provide π_*. And as all the principals now derive their utility solely from the consumption of public goods, none can benefit from being an element of **M**; by the same token, none can benefit by altering her performance criterion. Furthermore no member of the selectorate whose performance criterion is met has an incentive to attempt to remove the incumbent from office. The output $(\pi_{max}, \{\phi_{max}, 0\})$ therefore persists in equilibrium.

Consider next the case where $\pi_{max} = \pi_*$. In this case, assume that the members of **M** demand $y_i^* = \pi^* = \pi_{max}$. Since $\pi_{max} = \pi_*$, it is feasible for the government to satisfy their demands; and the cheapest way for the government to produce $y_i = \pi_{max}$ for **M** players is to produce output $(\pi_{max}, \{\phi_{max}, 0\})$. The government secures $\pi_{max} + \phi_{max}$ and therefore satisfies its participation constraint. And since the utility of the principals derives solely from public goods, there is no incentive for any principal to alter her performance criterion. Again, no member of the selectorate whose performance criterion has been met has an incentive to attempt to remove the incumbent from office.

DISCUSSION

This model provides logical underpinnings to the arguments of those who address the institutional foundations for the behavior of governments in Africa. Governments that are politically accountable provide more public goods and enjoy less private benefits from office than they would like. Disciplined by the prospect of dismissal by the selectorate, they refrain from the full use of their powers to convert public goods into private benefits.

The model thus fills in the logical steps between political institutions, political incentives, and economic policy choices and by so doing provides a foundation for the arguments of scholars and policy makers regarding the economic impact of politics upon policy formation and economic development in Africa. It also generates predications, rendering such arguments testable.

Empirical Testing

Recall that Equation 1 helps to define π_{max}. When $\pi_{max} \leq \pi_*$, then the equilibrium level of public goods, $\pi^* = \pi_{max}$:

(1) depends on, q, the competitiveness of the electoral system: the more competitive the electoral system, the more policy should favor π as opposed to ϕ.

(2) depends on the discount rate of the policy maker, δ: the less certain the policy maker of future rewards, the less she will sacrifice private goods for the creation of π.[13]

When $\pi_* \leq \pi_{max}$, additional implications follow. The equilibrium level of public goods, $\pi^* = \pi_*$:

(3) depends upon the marginal rate of transformation between the public good and the private goods: the easier it is to redirect public goods into private benefits, the higher will be the level of extraction of resources by agents.

(4) depends on $\boldsymbol{M}$: the larger the constituency that must be satisfied for a government to remain in power, the more the government will cultivate political support by producing π rather than ϕ.[14]

It is possible to refine further the predications of the model, and in particular the first hypothesis, which stresses the impact of political competition upon the choices of

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[13] This comparative static result is shown in Claim 3 in the Appendix.
[14] Claim 4 in the Appendix demonstrates that this hypothesis from the model holds interchangeably for the size of the government's constituency and the number of veto players in the political process.

governments. In this model, the government is forward looking; it is induced to forgo immediate gratification out of a regard for the future rewards that it can reap from office. For electoral competition to induce policy restraint, then, political competition must place the government's future at risk. The logic of the model thus implies that:

> (1a) the competitiveness of the electoral system impacts upon the government's choice of policy *when it enjoys a finite term of office and may stand for multiple terms in office.*[15]

The model thus yields propositions that, if its assumptions and logic are valid, should find empirical confirmation. To test the model and thus the foundations of the arguments that it distills, we seek measures of policy choice and information concerning the properties of political institutions in Africa. We also extend the analysis to a global sample of countries drawn from the same sample period.

DEPENDENT VARIABLES

To study the impact of institutions on policy choices, we employed two measures. The first measure comes from the International Country Risk Guide (ICRG) produced by Political Risk Services (PRS)[16] and is derived from ratings given the government by a panel of international investors. Each year, a PRS panel scores governments on a series of dimensions, each capturing elements of political, economic and financial risk to investors. We use this data to construct a composite index. For each country, our measure QUAL (for quality; see below) combines ratings of the government's likelihood of defaulting on its loans, delaying in its payments, reneging on its contracts, or engaging in expropriation. To produce the measure, we weight each rating by the loading derived from an un-rotated principal components factor analysis of the relationship between the several dimensions. The resulting score provides a measure of the quality of government, by which is meant the level of restraint shown by those who command public power over the private economy.

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[15] Indeed we may expect unraveling if the number of terms in office is finite. The unraveling problem may be solved through well-institutionalized party politics or with post-office rewards. These extensions are not considered here.
[16] http://www.countrydata.com/wizard/.

The second measure derives form the World Bank's Country Policy and Institutional Assessment (CPIA), an annual evaluation of the conduct of governments that have loans outstanding with the Bank. The CPIA provides a measure of the government's tendency to generate a sustainable macro-economic environment, free of major policy distortions. The Bank's rating covers the policy performance of the government in twenty specific areas, grouped into four major categories (see Table 2). Scoring the country's performance in each area from 1, for low, to 5, for high, the Bank calculates an aggregate score, or CPIA, which is the un-weighted average of the rating in each of the twenty areas.

Table 2: [Country Policy and Institutional Assessments (CPIA)] About Here

It is important to realize that the CPIA, while informative, is flawed. The CPIA measures deviation from the set of policies that make up the so-called Washington Consensus.[17] The desirability of these policies is open to challenge (Easterly 2001; Stiglitz 2002).[18] There are also technical concerns with the measure. It mixes assessments of policies with outcomes; it assigns equal weights to each policy; and the policies in Category IV are largely irrelevant to the arguments of this paper.[19] Furthermore, the measure is both bounded and categorical, albeit with approximately 30 categories, and therefore produces a distribution of errors that could complicate statistical inference.[20]

Two features of these measures warrant mention and emphasis. The first is that they correlate with growth, strongly and significantly. The evidence appears in Table 3, in which we combine a Barro-like growth regression (which includes the policy ratings) with an empirical model of policy choice (which includes a measure of growth) into a single system of equations using three stage least squares.[21] The coefficients on QUAL and CPIA in the growth regressions provide measures of the relationship of policy to growth that are corrected for bias arising from endogeneity.

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[17] See Williamson (1990, 1999).

[18] There is less doubt, of course, concerning the desirability of expropriation. The simple correlation between the two dependent variables is .56.

[19] Regressing the aggregate score against measures of macro-economic balances -- levels of government consumption, fiscal deficits, inflation and so on -- shows the measure to yield highly significant relationships with objective measures of policy choices and enhances our confidence in the measure. As the ratings cover a longer duration than do the objective measures, we therefore employ them.

[20] See the discussion below.

The results of this table are of considerable significance for the arguments of this paper and we elaborate upon them further at a later stage. What is important at this point is that they confirm the relevance of our measures of policy choice to an analysis of the determinants of economic growth and thus their relevance to the problem we seek to address.

Table 3 [Growth and Policy] About Here

A second feature of these measures is highlighted in Table 4. As can be seen from the data contained in that table, the policy choices of governments in Africa are rated by investors and the World Bank more negatively than are the choices of governments in the rest of the world.

Taken together, these two features offer an assurance that should we shed light on the relationship between the nature of political institutions and these measures of policy choice, we will have gained insight into the determinants of Africa's growth performance.

Table 4 [Summary Statistics for Dependent Variables] About Here

INDEPENDENT VARIABLES

The data come from the files of the Africa Research Program (ARP) at Harvard University[22]; the Database on Political Institutions (DPI) compiled by Beck et al. (2001); the data compiled by Przeworski, Alvarez et al. (2000); and data released by the World Bank (2000). Table 5 reports the definitions and distributions of these measures and the sources from which they were drawn.

Table 5: [Data definitions, sources and summary statistics.] About here.

Hypothesis 1 emphasized the importance of q, or the level of competition. Drawing on data from the Africa Research Project and the DPI, we employ a measure of electoral COMPETITIVENESS. By the rules governing the creation of this measure, a polity

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[21] The variables used in this table are described below. See Table 5 for summary statistics.

receives a score of 1 if there is no executive in place; 2 if there is a non-elected executive; 3 if there is an elected executive but no electoral competition; 4 if there is an elected executive, competition between candidates but not between parties (because opposition parties are banned); 5 if there is an elected executive, competition between candidates but not between parties (even though opposition parties are legal); and 6 if there is an elected executive, with competition between candidates backed by opposing parties taking place during the electoral campaign. A score of 7 is accorded in the DPI if the executive's vote share is less than 75%.

As noted in hypothesis (1a), the degree of competitiveness should affect the behavior of governments only when the government faces the prospect of re-election. We therefore created a variable, which we call RISK. RISK takes on a value of 1 when the government is serving a finite term and when it can serve multiple terms, and thus succeed itself; failing either condition, the measures takes the value 0. By interacting this variable with our measure of electoral competitiveness, we discriminate between incumbents who confront the necessity of electoral competition, should they wish to remain in office, and those who do not.

Hypothesis 2 emphasized the role of the government's discount rate. Affecting the value the government places upon future benefits from office is its assessment of institutional risk. We therefore constructed a measure a measure that we call:

PROSPECTS: To produce a measure of the expected probability of regime survival, we drew on Przeworski et al.'s classification of regime types (Przeworski et al., 2000): institutions were either coded as democratic (DEM) or as dictatorial (AUTOC). We then calculated the probability of a regime collapse, which could take one of two forms: a regime in state DEM in time t could switch into state AUTOC or a regime in state AUTOC could in turn switch to state DEM -- $p_{DA}(t)$ and $p_{AD}(t)$, respectively. For countries in state DEM in any given year, $p_{DA}(t \mid I_{t-1})$ represents an estimate of the probability of regime collapse; for countries in state AUTOC in any given year, $p_{AD}(t \mid I_{t-1})$ provides the corresponding measure, where I_{t-1} denotes the information that individuals can draw upon to estimate these probabilities.

In estimating these probabilities, we used Cox proportionate survival models that drew on information from 1950 up to time t–1 , I_{t-1}. The information to estimate $p_{AD}(t \mid I_{t-1})$

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[22] http://africa.gov.harvard.edu.

and $p_{DA}(t|\ I_{t-1})$ in I_{t-1} included the length of time in the present state and the previous year's income levels and growth. We used three cubic splines to allow a flexible functional form for $p_{AD}(t|\ I_{t-1})$ and $p_{DA}(t|\ I_{t-1})$.[23]

Hypothesis 3 suggested that policy makers are constrained by the types of economies in which they function. In particular, if economic agents are able to protect themselves from predation by reducing production or by moving their assets, then extractive policies will yield fewer benefits to government.

We employ two measures. To capture the extent to which the assets of economic agents are moveable, we employ a measure of the financial depth of the economy, given by the size of M2 relative to GDP. Since the CPIA measure is based in part on financial depth, we enter this measure only into equations in which QUAL constitutes the dependent variable. For the equations with CPIA we substitute a measure of the dependency of the economy on PRIMARY COMMODITIES, which provides an alternative proxy for the mobility of economic assets.

As indicated by Hypothesis 4, if the constraint π_* binds in equilibrium, then the degree to which a government will create π depends upon the size of the selectorate: The DPI's rating of the degree to which the executive's party is *regionally based* provides a measure of constituency size $\boldsymbol{M}$. In accordance with the logic of the model, we expect regionally based governments (which we denote REGIONAL) to seek the creation of private goods to a greater extent than governments whose constituency is more broadly distributed. The same logic suggests that the larger number of veto points within the institutions of government, the more likely policy makers will be to promote the creation of collective goods. The variable, CHECKS, is based upon the number of checks, and thus the number of veto players within the structures of government.[24]

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[23] The method we used to produce estimates of $p_{AD}(t|\ I_{t-1})$ and $p_{DA}(t|\ I_{t-1})$ were those developed by Beck, Katz and Tucker (1998).

[24] We employed the DPI variable, CHECKS2.

CONTROL VARIABLES

We included a series of variables that contain information on the wealth of the country, the degree of urbanization, and the development of human capital. We also included a dummy variable that records whether or not a country is experiencing a civil or international war on its soil. Data for the first three variables come from the World Bank's development indicators (World Bank 2000); that for the last from Przeworski, Alvarez et al. (2000).

As a final control we add an African dummy in the pooled regressions that employ the global dataset. This variable provides an important check on our argument. For if our reasoning provides an accurate theory of the policy preferences of Africa's governments, then the coefficient on the African dummy should fail to attain statistical significance.[25]

ESTIMATION

We first estimate each model using a pooled sample of observations. We then re-estimate each model introducing country specific effects and the lag of the dependent variable. Since a fixed effects structure which includes a lagged dependent variable may introduce bias in finite samples (Nickell 1981), we report a third version of each model that employs the Anderson-Hsiao technique, using first differenced instrumental variables.[26]

RESULTS AND DISCUSSION

In Tables 6 and 7 below, we present three sets of results. Table 6 presents results for QUAL for both an African and a world sample. Table 7 presents similar results for CPIA. In the case of QUAL, the analysis is based upon data from 72 nations, of which 24 are from Africa; the samples cover the period 1985-1990. In the case of CPIA, the global sample includes 79 nations and the African sample 30; both cover the period 1973-1990.

We interpret positive coefficients for the variables relating to QUAL as suggesting that higher levels of the variable yield a lower tendency for the government to employ public

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[25] We remain troubled by the possible impact of policy on the supposedly independent variables. Our results are robust to the replacement of independent variables with their lags; however save in the estimates reported in Table 3, we have yet to model these endogenous relationships directly.

[26] Some may note that our methods fail to take account of the categorical and censored nature of the dependent variable. While formally categorical, the dependent variables in fact contain as many as thirty values. And although formally bounded, there is little clustering of data on the boundaries. We therefore find that employing Tobit models made little impact on our estimates.

powers to extract private benefits from the economy. In the case of CPIA, we interpret positive coefficients as suggesting that higher levels of the independent variable yield a stronger tendency on the part of governments to provide public goods.

Table 6 [Regressions for QUAL] About Here

Table 7 [Regressions for CPIA] About Here

Turning first to the control variables, we note a pronounced tendency for hysteresis in public policy: the magnitude and significance of the coefficients on the lagged dependent variables indicate that policies, once chosen, tend to persist. Evidence from the global sample suggests that low levels of political predation (i.e. high QUAL values) and macro-economic policies that in the view of the World Bank minimize distortions (i.e. high CPIA ratings) associate with higher levels of income and more rapid rates of growth. There is less evidence in the African sample for the existence of such relationships. While scattered findings suggest that richer African countries adopt more highly rated policies, there is no evidence that higher rates of growth lead to policy improvements in Africa.

The estimates underscore that governments at WAR are more likely to engage in predation and to distort the macro-economy. This finding emerges in the equations using pooled data from both the global and Africa samples and persists if a lag value of the war variable is employed. Given the frequency and extent of warfare in Africa, it casts additional light upon the policy choices made by African governments.

Of more direct interest are the findings regarding the variables whose behavior is implied by the logic of the model. In the model, the government is forward looking: it chooses economic policies out of a regard for their impact upon its political future. By such a logic, the more highly the government discounts that future, the less binding the constraints imposed by the structure of political institutions and the lower should be the ratings of its choice of policies. Already noted is the negative relationship between WAR and the policy ratings. Also relevant are the coefficients on PROSPECTS. Higher levels of PROSPECTS denote higher risks of regime collapse; and, like WAR, this variable too behaves as expected, with a negative and significant coefficient in most models. Notable is that the magnitude of the coefficients and their level of significance tend to be higher in

estimates drawn from the African sample than in those drawn from the global sample, suggesting political instability has a stronger marginal effect in that region.

The formal model underscored the importance of a second set of variables: those having to do with M, or the political selectorate. The larger the size of its core constituency, the logic suggests, the stronger the incentives for the government to reward it through the production of public goods. The results derived from the global sample strongly support the expectations generated by the model. The coefficients on REGIONAL suggest that narrowly (i.e. regionally) based governments adopt policies that are rated as more predatory by investors and more disequilibriating at the macro-economic level by the World Bank. The results from the global sample also suggest that governments that face multiple veto points – that are constrained by checks and balances – adopt policies that elicit higher ratings. This effect, measured by CHECKS, is stronger for the World Bank measure of policy distortion than for our more direct measure of predatory government. Whereas there is no support for the notion that checks and balances in Africa are effective in reducing predation (as measured using ICRG data), in equations for macroeconomic policy management, we find that the results from the Africa sample are often as strong as or even stronger than are those from the global sample.

Turning to a third set of variables – those denoting the properties of the economy -- we note that, the coefficients relating financial depth to QUAL are significant and positive in the pooled samples, suggesting that the possibility of capital flight provides a check on political predation. However, the coefficients fail to attain significance in most equations with a lagged dependent variable. Within the Africa sample, when corrected for possible bias resulting from including as a regressor a lagged value of the dependent variable, the coefficient relating the production of primary commodities and CPIA is significant and negative, suggesting that the less the mobility of the means of production, the more likely is the government to distort prices in the macro-economy. Weaker relationships prevail in the global sample and attain significance only in the equations using pooled data.

This evidence for a relationship between factor mobility and policy choice is important in its own right. It is also important in that it underscores that when attempting to explain the policy choices of governments, we should not only look at the proclivities of political elites and the institutional constraints under which they labor, but also at the

structure of the economies that they govern and the way that these political and economic structures interact.[27]

The formal model produced predictions for a last set of variables: those having to do with electoral competition. By the logic of the model, we should expect positive and significant coefficients on the interactions of the variables COMPETITION and RISK. The model makes no prediction for the impact of competitive institutions in the absence of political risk. We report results for equations containing the interactive term as well as the measure of competitiveness and results for equations in which the interactive term is entered on its own.

We find weak support for the hypothesized relationship between the interactive term and policy choice in equations in which QUAL serves as the dependent variable. The coefficient is positive and significant in estimates derived from the global pooled sample and in one of the equations employing African data. Considering also the effect of COMPETITION independent of the QUAL measure, the evidence suggests that competitive political institutions reduce government extraction if and only if they are coupled with political risk.

These results contrast with those for the CPIA measure, where the evidence runs contrary to our expectations. The data suggest that, conditional upon the presence of political risk, competitive electoral institutions may lead to *greater* effort to manipulate the macro-economy. In the global sample, we find that in the absence of political risk, electoral COMPETITION bears no relationship to policy choice. This result is consistent with our model. In the Africa sample, however, in the absence of political RISK, electoral COMPETITION relates to improved ratings of the management of the macro-economy and that this relationship remains positive, if weaker, in the presence of RISK. The implication is that we should look for mechanisms through which electoral competition alters the incentives for policy makers to manage the macro-economy other than those that are captured in our model.

Lastly, we note the African dummy in the results from the global sample in Tables 6 and 7: it is positive and it is statistically significant. Taking note of the fact that African

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[27] Insofar as the structure of economies are themselves a function of the policy choices of governments and subsequent growth rates, this analysis suggests the possibility of multiple equilibria, with some economies residing in a low-output high-extraction equilibrium and others dwelling in a high-output low-extraction equilibrium.

countries tend to be poor and slow growing; to produce high levels of primary products and to have low levels of financial depth; to have people who are illiterate and executives that are dominated by regionally based parties and little checked by other branches of government – taking all of these factors into account, the positive and coefficient on the African dummy informs us that policy making in Africa is in fact less extractive than might be expected.

Conclusion

In recent decades, scholars, policy makers and intellectuals have increasingly posited political roots for Africa's poor economic performance. A lack of political accountability, they argue, frees governments to adopt public policies that while perhaps politically advantageous in the short run are in the longer run costly to their economies.

To appraise such arguments, we first crafted a model of the argument, providing the logical linkages between the choice of political accountability and economic policy choice. Analysis of the model suggested ways of testing the arguments advanced in debates over Africa's development.

Clearly, in our empirical work, we have gained insight into the determinants of policy choice in Africa: We have been able to account for up to 50% of the variance in our measures of policy choice. We have located significant correlates of policy choice – such as literacy, urbanization, and warfare. And, we have identified key features of national economies and political institutions that bear a relationship to the policy choices of governments. Institutional checks, we found, do succeed in producing less distortionary policies. We found too that policy choices are guided by expectations regarding the durability of regimes. We also found evidence that variation in the mobility of assets within economies alters the incentives for governments to attempt to extract resources. These relations proved sufficient to account for the difference between policy choices made by governments in Africa and those made by governments in other parts of the world.

Interestingly, however, we have found mixed evidence in support of the impact of electoral accountability. The impact differed for our two dependent variables. Evidence from equations in which the ICRG ratings constituted the dependent variable suggests that democratic competition reduces the likelihood of political predation only when electoral competition is divorced from the risk of losing office. The opposite was the case in

equations employing CPIA. Electoral institutions do appear to be associated with disciplined macro-economic policy decisions in Africa, but not, it seems, because less distortionary policies improve political prospects in future competitive elections.

One possible explanation of these results would focus on economic constraints. Were the governments not constrained by the tradeoffs between p and ϕ, then they might be willing to attempt to purchase support by generating more private goods (see Figure 2). However, the fairly robust results concerning EXECREG and CHECKS, which capture the trade off that arises when the feasibility constraint is binding, indicates that the governments generally behave as if they were constrained by their inability to win political support in this manner.

A second line of analysis appears more promising. The model assumes that, conditional upon the levels of private benefits they receive, citizens favor non-distortionary policies and that governments make choices in anticipation of their preferences for the kinds of economic payoffs that such policies produce.   But evidence reported by Block (1999) and Block, Singh et al. (2001) underscore the importance of electoral cycles in Africa's economies. Such findings suggest that African governments believe that citizens prefer the outcomes generated by policies that violate the tenets of the Washington consensus. Such behavior reminds us that, at least in the short run, the impact on distribution of policy is often greater than the impact on efficiency; and even though macro-economic policy stability may promote growth, those who experience the costs of such policies may reasonably remain skeptical of their ability to enjoy the longer run benefits. The failure of the model to emphasize the distributive impact of macro-economic policy may thus account for its failure to anticipate the relationship between electoral accountability and policy choice.

Appendix: Formal Results

In the text (Equation 1) we claimed that the maximum value of π that can yield benefits to the government equal to those it could gain from choosing opportunistically and suffering the consequences of dismissal is given by the maximum value of π that satisfies:

$$p + f(p) \geq [p_{\min} + f_{\min} + \underline{v}\frac{d - dq}{1 - d}]\frac{1 - d}{1 - dq}.$$ We prove this result here as Lemma 1.

We begin with some definitions, we then state the lemma and move to the proof.

Definitions 1 [Agents' Values]

1. V_{in} is the expected value to the agent of being in office assuming that she plays optimally in all periods.

2. The valuation to an agent who in each period chooses some output $(\pi^c, \{\phi_a^c, \mathbf{0}\})$ and is subsequently returned to office is given by:

   (*) $V_{in}^C = (\pi^c + \phi_a^c) + \delta V_{in}$

3. The valuation to a player who is perpetually out of office is given by $\underline{V} = \underline{v} + \delta \underline{V} = \underline{v}/(1-\delta)$.

4. The valuation to an agent in office who chooses some output $(\pi, \{\phi_i\})$ and who subsequently loses the support of her selectorate is given by:

   (**) $V_{in}^D = (\pi_{\min} + \phi_{\min}) + \delta(qV_{in} + (1-q)\underline{V})$

Assuming stationarity, an agent's valuation of being in office, V_{in}, is given by the maximum of the valuation of an agent in office who meets the cut points of a sufficient set of principals and the valuation of an agent in office who plays a strategy that does not meet the demands of her selectorate. Hence:

   (***) $V_{in} = \max(V_{in}^C, V_{in}^D)$.

We need now to demonstrate that $V_{in}^C = V_{in}^D$ (or, alternatively, $V_{in} = V_{in}^C$) if and only if

$$p^c + f^c \geq [p_{\min} + f_{\min} + \underline{v}\frac{d - dq}{1 - d}]\frac{1 - d}{1 - dq}.$$

Lemma 1: $V_{in}^C = V_{in}^D$ if and only if $\boldsymbol{p}^c + \boldsymbol{f}^c \geq [\boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \underline{v}\dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}]\dfrac{1 - \boldsymbol{d}}{1 - \boldsymbol{d}q}$.

Proof: Begin with the *only if* part. Assume that $\boldsymbol{p}^c + \boldsymbol{f}^c \geq [\boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \underline{v}\dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}]\dfrac{1 - \boldsymbol{d}}{1 - \boldsymbol{d}q}$ but

that $V_{in}^D > V_{in}^C$. Since $V_{in}^D > V_{in}^C$ we have $V_{in} = \max(V_{in}^C, V_{in}^D) = V_{in}^D$. We can then use

(**) to solve for V_{in} to get $V_{in} = [\boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \underline{v}\dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}]\dfrac{1}{1 - \boldsymbol{d}q}$. Furthermore since $V_{in}^D >$

V_{in}^C we have from (*) and (**) that $V_{in}^D = V_{in} > (\pi^c + \phi^c) + \delta\, V_{in}$, or, $(1-\delta)V_{in} > (\pi^c + \phi^c)$.

Substituting for V_{in} and rearranging we have that : $\boldsymbol{p}^c + \boldsymbol{f}^c < [\boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \underline{v}\dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}]\dfrac{1 - \boldsymbol{d}}{1 - \boldsymbol{d}q}$

which contradicts our assumptions; hence $V_{in}^C = V_{in}^D$. For the *if* part, note that if $V_{in}^C = V_{in}^D$

then $V_{in} = V_{in}^C$. Solving for V_{in} gives $V_{in} = (\pi^c + \phi_a^c)/(1 - \delta)$. Then using the fact that with

$V_{in}^C = V_{in}^D$ we have $V_{in}^C = V_{in} \geq \boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \boldsymbol{d}\left[qV_{in} + \dfrac{1 - q}{1 - \boldsymbol{d}}\underline{v}\right]$, or

$V_{in}(1 - \boldsymbol{d}q) \geq \boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}\underline{v}$ we can substitute for V_{in} and rearrange to establish that

$\boldsymbol{p}^c + \boldsymbol{f}^c \geq [\boldsymbol{p}_{min} + \boldsymbol{f}_{min} + \underline{v}\dfrac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}]\dfrac{1 - \boldsymbol{d}}{1 - \boldsymbol{d}q}$. ‖

We further claimed in the text that the value of π below which the costs of distortion become too great to allow an agent to satisfy $\boldsymbol{M}$ players using private gains rather than public goods is given by the value of π for which the slope of $\pi(\phi)$ is $-1/(\boldsymbol{M}+1)$. We now state this claim formally as Lemma 2 and move to the proof.

Lemma 2: Consider some policy output $(\pi, \{\phi_i\})$. An alternative output $(\pi', \{\phi_{-i}'\})$ that involves lower levels of public good provision and higher levels of the private goods production and that (a) is weakly preferred by the agent, and (b) is weakly preferred by some set of $\boldsymbol{M}$ players is possible if and only if $\pi \geq \pi_*$. One that is strictly preferred by the agent or some subset of $\boldsymbol{M}$ and that is weakly preferred by the others is possible if and only if $\pi > \pi_*$.

Proof: Such an alternative would be possible if and only if for $d\pi < 0$:

(a) $f_\pi d\pi + f_\phi[d\phi_{-a} + d\phi_a] = 0$ [Feasibility Constraint]

(b) $d\pi + d\phi_a \geq 0$ and   [Agent's Compensation]

(c) $d\phi_{-a} \geq -\boldsymbol{M}d\pi$.   [Compensation Requirement for $\boldsymbol{M}$ Principals]

Solving we see that it is possible to fulfill these three conditions for some $d\pi$ if and only if f_ϕ / $f_\pi \leq 1/(M+1)$ or $\pi_\phi \geq -1/(M+1)$ which is equivalent to the condition that $\pi \geq \pi_*$. If the inequality in either (b) or (c) above is strict, then the corresponding condition is that $\pi_\phi >$ $-1/(\boldsymbol{M}+1)$. This implies that if $\pi_\phi > -1/(\boldsymbol{M}+1)$ then the agent can increase his own welfare or that of some group of $\boldsymbol{M}$ principals by reducing the production of π and that if $\pi_\phi = -1/(\boldsymbol{M}+1)$ the agent cannot reduce π and make either herself or some agents better off without making one of them worse off.

Lemma 3. Consider some policy output $(\pi, \{\phi_i\})$. An alternative output $(\pi', \{\phi_{-i}'\})$ that involves higher levels of public good provision and lower levels of the private goods production and that (a) is weakly preferred by the agent, and (b) is weakly preferred by some set of $\boldsymbol{M}$ players is possible if and only if $\pi \leq \pi_*$. One that is strictly preferred by the agent or some subset of $\boldsymbol{M}$ and that is weakly preferred by the others is possible if and only if $\pi < \pi_*$.

Proof. The proof is identical to that for Lemma 2 but with $d\pi > 0$.

To characterize equilibrium in this game we need to specify best responses for the agents and principals. If there are multiple principals with identical cut-off points the agent's choice of principals to whom she allocates private goods depends on the realization of some random variable ε.

Definition 2. (Expected income response from individual demands) Let $\rho(\{y_i\}_{i\bar{I}_{N/a}}) = E_\varepsilon(\boldsymbol{B}(\{y_i\}_{i\bar{I}_{N/a}}))$ denote the $\boldsymbol{N}$-dimensional expected income vector where $\boldsymbol{B}(\{y_i\}_{i\bar{I}_{N/a}})$ denotes the set of all $\boldsymbol{N}$-dimensional income vectors $(\pi^* + \{\phi^*_i\})$ that maximize $\pi + \phi_a$ subject to the constraints that:

   a) for some set $\boldsymbol{M}$, $\pi^* + \phi_i^* = y_i$ for all i in $\boldsymbol{M}$

   b) $f(\pi^*, \Sigma_i\phi^*_i) \leq 1$

Definition 3. (Principal's Re-selection Decision)

Let $\mathbf{D}_i(\pi,\{\phi_i\},y_i) \in \{0,1\}$ denote respectively the decisions by individual i to act to support of or against the re-selection of the incumbent, conditional upon the output of the principal and the prior demands of the agent.

Definition 4. A **stationary retrospective selection rule equilibrium**, $\langle \{y_i^*\}_{i \hat{I} N/a}, (\pi^*,$ $\{\phi^*_i\}_{i\hat{I} N}), \{\mathbf{D}_i^*\}_{i\hat{I} N/a}\rangle$, is a set of demands, $\{y_i^*\}_{i\hat{I} N/a}$, a choice of public goods production and private good allocations, $(\pi^*, \{\phi^*_i\}_{i\hat{I} N})$, and re-selection decisions by agents $\{\mathbf{D}_i^*\}_{i\hat{I} N/a}$ all employed in every period of play and such that:

1. $(\pi^*, \{\phi^*_i\}_{i\hat{I} N})$ maximizes $\pi + \phi_a$ subject to the constraints that

    a) for some set $\boldsymbol{M}$, $\pi + \phi_i = y_i^*$ for all i in $\boldsymbol{M}$

    b) $\pi + \phi_a = \pi_{max} + \phi(\pi_{max})$

    c) $f(\pi, \Sigma_i \phi_i) \leq 1$

2. $y_j^* \in \{\text{argmax}(\rho(\{y_j^*, y_j\}_{i\hat{I} N/a}))_j\}$ for all $j\hat{I} N/a$

3. for all i, $\mathbf{D}_i = 1$ if and only if $y_i \geq y_i$

Claim 1: (*Equilibrium*) $\langle \{y_i^*\}_{i\hat{I} N/a}, (\pi^*, \{\phi^*_i\}_{i\hat{I} N}), \{\mathbf{D}_i^*\}_{i\hat{I} N/a}\rangle$ is an equilibrium if $\pi^* = \min(\pi_*,$ $\pi_{max})$, $\phi_a^* = \phi(\pi^*)$, $\phi_{-a}^* = 0$, and, for all principals, $y_i^* = \pi^*$ and $\mathbf{D}_i = 1$ if and only if $y_i \geq y_i$.

Proof: Consider first the case where $\pi_* = \pi_{max}$. We wish to demonstrate that *a*) the participation constraint of the policy maker is satisfied, *b*) the output choice $(\pi_*, \{\phi(\pi_*), 0\})$ is optimal for the agent, *c*) the principals have no incentive to alter their demands and *d*) the principals have an incentive to follow the retrospective selection rule. Note first that since $\pi^* = \pi_{max}$ the participation constraint is satisfied. Note next to maximize $\pi + \phi_a$ subject to $\pi + \phi_a$ that since $\pi^* = \pi_{max}$ the policy choice that provides $\boldsymbol{M}$ players with utility $y_i = \pi_*$ and that maximizes the agent's utility involves producing π_* and allocating all of the private good to the agent. Hence the principals' demands are met purely by the public good. To check that this is optimal for the agent, we can see from Lemmas 2 and 3 that if π is greater than (less than) π_*, the agent can improve his income, while compensating principals, by reducing (increasing) π. Finally, since all utility gained by principals derives from consumption of

public goods, there are no gains attached to being an element of $\boldsymbol{M}$ and hence no reduction in demands will improve the welfare of any principal. Consider next the case where $\pi_{max} = \pi_*$. Again, since the agent consumes $\pi_{max} + \phi(\pi_{max})$ her participation constraint is met. Since $\pi_{max} = \pi_*$, the cheapest way to produce $\underline{y}_i = \pi_{max}$ for $\boldsymbol{M}$ players is to produce the output $(\pi_{max}, \{\phi(\pi_{max}), 0\})$, since, from Lemma 3 if $\pi < \pi_*$ the agent has an incentive to increase π while compensating principals in $\boldsymbol{M}$ to the point where their demands are met. Again, since all utility gained by principals derives from consumption of public goods, no reduction in demands will improve the welfare of any principal. In either case since each principal's decision to support the incumbent is costless there is in this game, no incentive to deviate from the retospective rule strategy. Sub-game perfection follows from the fact that these strategies are optimal in every time period. ¦

Claim 2: (*No Private Goods to Principals*). Any output $(\pi, \{\phi_a, \phi_{-a}\})$ with $\phi_{-a} > 0$ can not be a part of an equilibrium $\langle \{\underline{y}_i^*\}_{\hat{I}_{N/a}}, (\pi^*, \{\phi_i^*\}_{\hat{I}_N}) \rangle$

Proof. Assume that some $(\pi, \{\phi_a, \phi_{-a}\})$ with $\phi_{-a} > 0$ is an equilibrium policy output with some corresponding set of equilibrium demands, $\{\underline{y}_i^*\}$. Since in equilibrium no principal not in $\boldsymbol{M}$ will receive positive ϕ_i we have that some element in $\boldsymbol{M}$ will receive $u_i = \pi + \phi_{-a}/\boldsymbol{M}$, while players not in $\boldsymbol{M}$ receive only $u_i = \pi$. Since $(\pi, \{\phi_a, \phi_{-a}\})$ is an equilibrium strategy (and hence the agent will have selected the least cost set of principals to satisfy) it must be that all principals not in $\boldsymbol{M}$ have placed demands $\underline{y}_i = \pi + \phi_{-a}/\boldsymbol{M}$. Clearly then any player not in $\boldsymbol{M}$ could have improved his payoff by setting a lower value of $\underline{y}_i$ such as $\underline{y}_i = \pi + \phi_{-a}/2\boldsymbol{M}$. It follows that $\{\underline{y}_i^*\}$ is not an equilibrium set of demands. ¦

The next claim supports our second hypothesis:

Claim 3: π_{max} is decreasing in δ.

Proof. Recall that from Equation 1, π_{max} is given by the largest value of π that satisfies:

$$\boldsymbol{p} + \boldsymbol{f}(\boldsymbol{p}) = [\boldsymbol{p}_{min} + \boldsymbol{f}(\boldsymbol{p}_{min}) + \frac{\boldsymbol{d} - \boldsymbol{dq}}{1 - \boldsymbol{d}} \boldsymbol{v})] \frac{1 - \boldsymbol{d}}{1 - \boldsymbol{dq}}$$

Differentiating the right hand side gives:

$$-[\boldsymbol{p}_{\min} + \boldsymbol{f}(\boldsymbol{p}_{\min}) + \frac{\boldsymbol{d} - \boldsymbol{d}q}{1 - \boldsymbol{d}}\underline{v}]\left[\frac{1 - q}{(1 - \boldsymbol{d}q)^2}\right] + \underline{v}\frac{(1 - q)}{(1 - \boldsymbol{d})(1 - \boldsymbol{d}q)}$$

After rearranging we can see that this expression is negative *iff* $\underline{v} < \boldsymbol{p}_{\min} + \boldsymbol{f}(\boldsymbol{p}_{\min})$ which is true by assumption. Hence, differentiating the right-hand-side of Equation 1 implies that $\frac{\partial \boldsymbol{p}_{\max}}{\partial \boldsymbol{d}}(1 + \boldsymbol{f}_{\boldsymbol{p}}(\boldsymbol{p}_{\max})) < 0$, which -- since $\pi_{\max} \geq \pi_{\min}$ and hence

$\boldsymbol{f}_{\boldsymbol{p}}(\boldsymbol{p}_{\max}) \leq -1$ -- implies that $\frac{\partial \boldsymbol{p}_{\max}}{\partial \boldsymbol{d}} \geq 0$.

Note: The substantive interpretation of the finding in Claim 3 is that since an agent values the future more, she will be willing to accept a lower minimum per-period payoff $(\pi_{\max} + \phi(\pi_{\max}))$ without preferring to opt for her outside option. A fall in $(\pi_{\max} + \phi(\pi_{\max}))$ allows for a higher $\pi_{\max}$ and hence a higher maximum π that principals can induce the agent to produce without violating her participation constraint.

The final claim supports our fourth hypothesis.

Claim 4: Assuming that agents bargain efficiently among themselves, the extractivenss of policies will be decreasing in the size of the set of agents.

Proof. Consider the case of a set of $\boldsymbol{A+1}$ agents, or equivalently of one agent who is required to satisfy $\boldsymbol{A}$ veto players. In each case the agent's problem is to maximize the value of $\phi_a + (\boldsymbol{A}+1)\pi(\phi_a)$. First order conditions give $\pi_\phi(\phi_a) = -1/(\boldsymbol{A}+1)$. But this is the same condition as that which determines π_* in the game where a unique agent is required to satisfy $\boldsymbol{M}=\boldsymbol{A}$ arbitrary constituents. ¦

Note: This result relates to the level of extraction and not the form taken for the division of private goods. In the multiple agents case we may expect some non-degenerate division of $\phi = \phi_a$ between the $\boldsymbol{A}+1$ agents whereas in the single agent case, even though the size $\phi = \phi_a$ depends upon the size of $\boldsymbol{M}$, we expect the agent to retain all of $\phi = \phi_a$.

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Figure 1: Game Tree

Selectorate defines minimum required performance

Government chooses amount of public good and amount of and allocation of private good

Government is re-selected

New government is selected
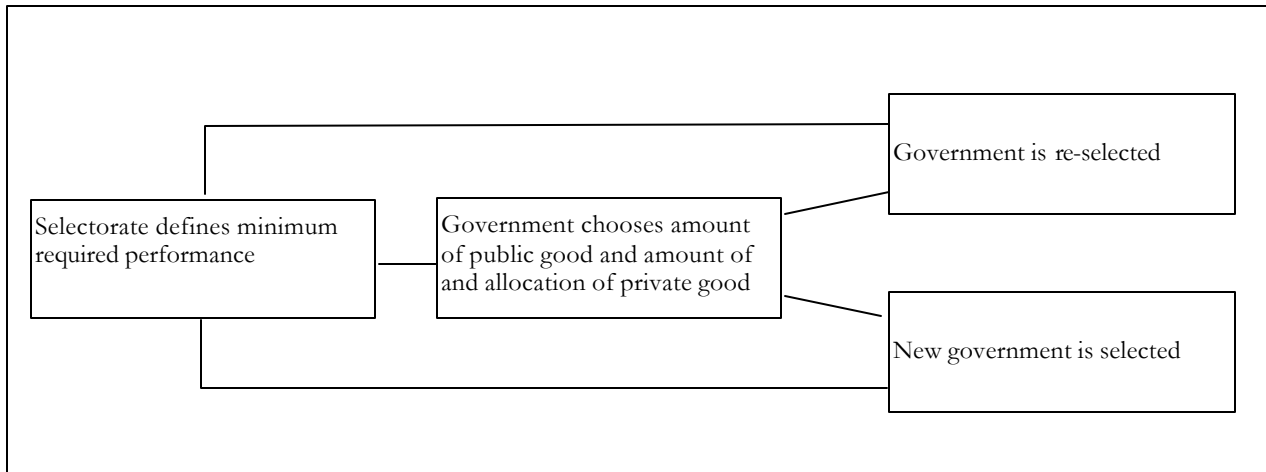
Figure 2: Production Possibility Set and Graphical Representation of p_{min}, p_* and p_{max}.

Upper panel labels:

Quantity of public good produced

π_{max}
π_*
π_{min}

Slope = $-1/(1+M)$

Slope = -1

ϕ_{max} ϕ_* ϕ_{min}

Quantity of private good extracted

Lower panel labels:

Government's single period utility as a function of ϕ, assuming she consumes all of ϕ

$\phi_a + \pi$

Maximum Utility for Government

$$\left[p_{min} + f_{min} + \underline{y}\,\frac{d - dq}{1 - d} \right] \frac{1 - d}{1 - dq}$$

ϕ_{max} ϕ_* ϕ_{min}

Quantity of private good extracted
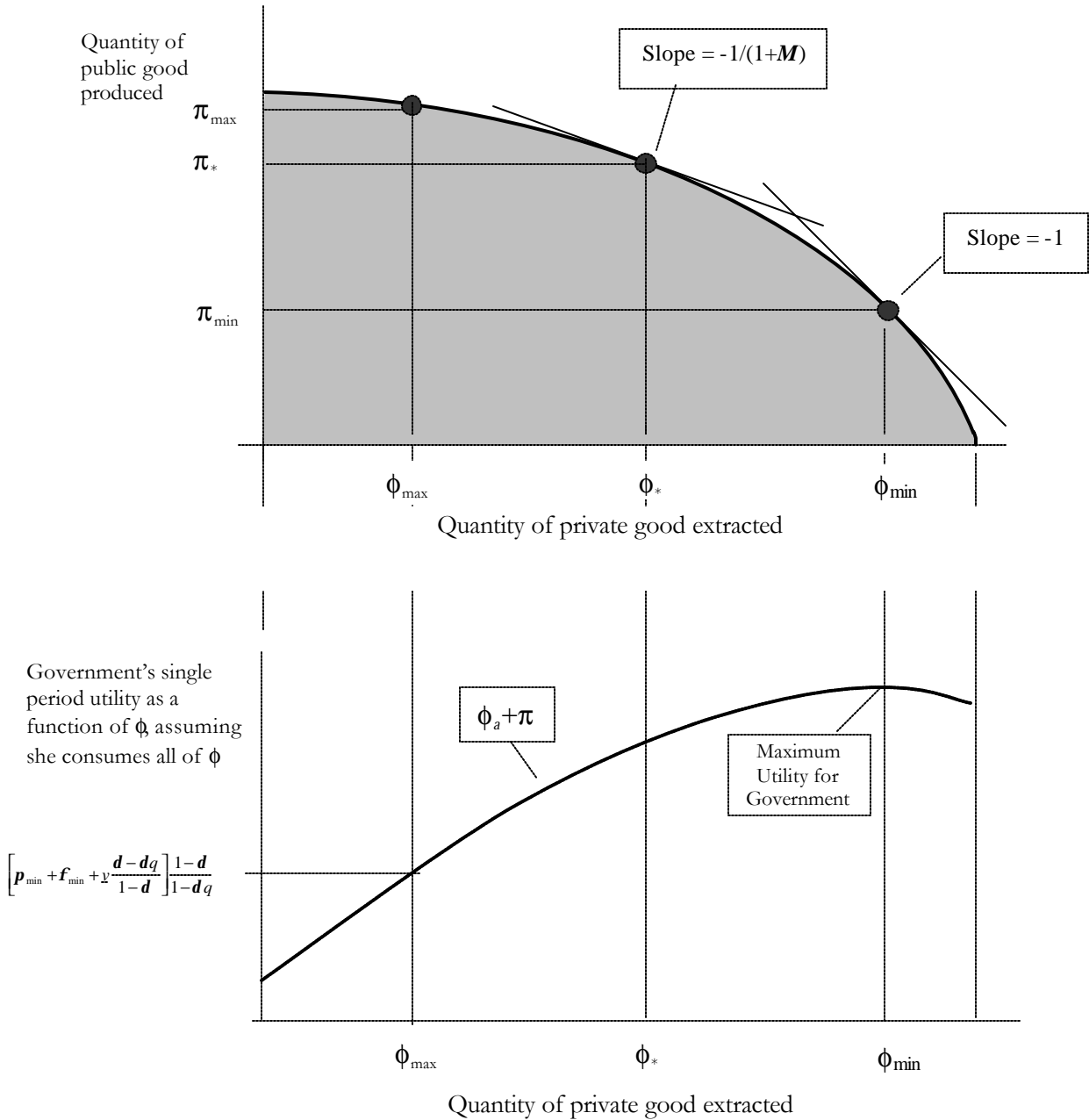
Note: In the upper panel we illustrate a production possibility frontier that describes the quantities of public and private goods that may be produced in some economy. We locate the (π_*, ϕ_*) and (π_{min}, ϕ_{min}) combinations, points at which the frontier has a slope of $-1/(1+M)$ and -1 respectively. In the lower panel we illustrate the agent's utility as a function of optimal (π, ϕ) combinations and locate the corresponding (π_{min}, ϕ_{max}) pair for a given $\underline{y}$, δ and q.

Table 1: Comparative Growth Rates

Region / Period	Sub-Saharan Africa	Latin America and Caribbean	South Asia	East Asia and Pacific	Middle East and North Africa	Industrial Economies	Total
1960-64	1.26 2.70 21	2,54 2.16 22	3.09 1.46 4	1.81 4.05 9	4.92 4.01 11	4.39 1.69 21	2.92 2.96 88
1965-69	1.6 2.49 21	2.52 1.46 22	2.6 1.73 4	4.29 2.18 9	4.66 2.34 11	3.87 1.87 21	3.07 2.27 88
1970-74	2.29 2.32 21	2.80 2.6 22	0.59 1.42 4	4.55 1.86 9	3.55 2.46 11	2.78 2.21 21	2.85 2.40 88
1975-79	-0.10 3.99 21	1.14 3.33 22	1.96 0.60 4	4.39 1.54 9	3.95 4.37 11	2.43 2.52 21	1.87 3.55 88
1980-84	-1.28 3.05 21	-2.09 2.50 22	3.33 0.83 4	3.54 2.13 9	1.18 2.05 11	1.82 1.05 21	0.27 3.00 88
1985-89	0.64 1.96 21	-1.01 2.96 22	2.50 1.68 4	3.52 3.77 9	0.43 2.97 11	1.92 1.17 21	0.89 2.79 88
1990-97	-1.55 3.41 21	0.51 2.87 22	2.22 1.03 4	4.94 2,65 9	1.03 2.41 11	1.67 1.05 21	0.89 3.11 88
Total	0.41 3.16 147	0.91 3.11 154	2.33 1.44 28	3.86 2.78 63	2.82 3.42 77	2.70 1.97 147	1.82 3.07 616

Note: The first figure in each cell is the mean; the second, the standard deviation; the third, the number of observations.
Source: Ndulu and O'Connell (2000).

Table 2: Country Policy and Institutional Assessments (CPIA)

Disaggregated Elements of CPIA Index

I. Macroeconomic Management
1. General macroeconomic performance
2. Fiscal policy
3. Management of external debt
4. Macroeconomic management capacity
5. Sustainability of structural reforms

II. Public sector management
1. Quality of budget and public investment process
2. Efficiency and equity of resource mobilization
3. Efficiency and equity of public expenditures
4. Accountability of the public service

III. Policies for sustainable and equitable growth
1. Trade policy
2. Foreign exchange regime
3. Financial stability and depth
4. Banking sector efficiency and resource mobilization
5. Property rights and rule-based governance
6. Competitive environment for the private sector
7. Factor and product markets
8. Environmental policies and regulations

IV. Policies for reducing inequalities
1. Poverty monitoring and analysis
2. Pro-poor targeting of programs
3. Safety nets

Rating scale: 1 = low; 5 = high
Source: Country Policy and Institutional Assessments, *Report on 1998 Ratings* Washington DC: The World Bank.

Table3: Growth and Policy Choice

	SYSTEM 1		SYSTEM 2	
Dependent Variables:	Growth	QUAL	Growth	CPIA
QUAL	2.152 (1.79)*			
CPIA			3.346 (3.00)***	
GROWTH		0.097 (3.91)***		0.030 (2.20)**
Lag of log GDP	-2.436 (5.21)***		-1.778 (3.68)***	
Gross domestic Investment per capita	4.617 (2.29)**		9.615 (6.34)***	
Ln(life expectancy)	12.981 (3.15)***		4.720 (1.09)	
Literacy	-0.044 (2.61)***	0.005 (2.35)**	-0.054 (3.38)***	0.010 (6.99)***
Literacy**GDP per worker	0.000 (3.00)***		0.000 (1.09)	
Government Consumption	-0.079 (2.43)**		-0.132 (4.05)***	
RISK*COMPETITIVENESS		0.018 (2.15)**		-0.024 (2.47)**
COMPETITIVENESS		0.018 (1.36)		0.015 (1.02)
PROSPECTS		-0.518 (1.11)		-1.676 (4.45)***
CHECKS AND BALANCES		0.049 (2.77)***		0.094 (4.27)***
REGIONAL				-0.184 (0.69)
NATURAL RESOURCES		0.523 (1.69)*		-0.844 (3.82)***
Lag of GDP per worker		0.000 (5.73)***		0.000 (1.07)
Urbanization		0.000 (0.15)		0.001 (0.64)
War		-0.252 (3.13)***		-0.437 (5.11)***
SSA	-2.831 (2.46)**	0.558 (4.82)***	-2.784 (3.26)***	0.225 (2.94)***
Constant	-28.091 (1.64)*	-1.555 (9.93)***	-10.198 (0.74)	2.153 (18.46)***
Observations	387	387	860	860

Notes: Absolute value of z statistics in parentheses; *significant at 10%; **significant at 5%; *** significant at 1%

- Jointly Estimated Using Three Stage Least Squares: World Sample
- These models differ from Barro's standard model in a number of ways. First, annual data is used rather than quinquennial data. Second, for reasons of data coverage, less rich education data is used: Literacy*GDP is related to Barro's interaction between GDP and human capital where literacy substitutes for Barro's aggregate human capital measure. Finally in the context of this paper our measures of QUAL and CPIA substitute for Barro's measure of market distortions, given by a measure of the black market premium

Table 4: Summary Statistics for Dependent Variables

Variable	SSA	Rest of the World	World
QUAL	-.62	.19	0
	(.53)	(1.00)	(.97)
CPIA	2.64	3.00	2.9
	(.74)	(.71)	(.74)

Note: This table reports the average scores for sub-Saharan Africa and the rest of the world for each of the three dependent variables. Standard deviations of the sample distributions are reported in parentheses.

Table 5: Data definitions, sources and summary statistics

Variable and Variable Label	Definition	Source	Units	Range	Mean
QUAL	See Text	PRS, ICRG data	Index	-2.3-1.73	0
CPIA	See Text	World Bank	Index	1-5	2.86
COMPETITION (Executive Scales)	See Text	Ferree and Singh, 2000 and Beck et al., 2000	Categorical	1-7	4.56
RISK	Is there a finite term of office? If so are multiple terms in office allowed?	Constructed from data in Beck et al., 2000.	Dummy	0-1	.63
PROSPECTS	Expectation of regime collapse: See Text	Calculated using Przeworski 2000, ACLP regime data	Probability	0-.86	.024
REGIONAL (EXECREG)	Does the executive draw its support from a regional base?	Beck et al., 2000 (EXECREG)	Dummy	0-1	.025
CHECKS	Number of veto players + 1 for each veto player whose orientation is closer to the opposition than to the government	Beck et al , 1999 (CHECKS2)	Count	1-14	2.55
FINANCIAL DEPTH	Money and quasi money (M2) as % of GDP	WDI 2000	Percentage	0-187	34
PRIMARY COMMODITIES	Primary Commodity Exports as a share of GDP	World Bank's Economics of Civil War, Crime and Violence Project.	Share	0-2.1	.16
GDP per worker	Real GDP per worker at 1995 prices.	Penn World Tables	Constant 1985 dollars	480-37089	8822
Urbanization	Share of population in areas defined as urban in each country and reported to the United Nations.	World Bank WDI 2000	Percentage	1.8-100	45.9
Literacy	Based on WDI Illiteracy measure: Adult illiteracy rate is the share of adults aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life.	World Bank WDI 2000	Percentage	.2-94.3	34.5
War on territory	Is there an international or civil war being fought on the country's territory?	Przeworski et al., ACLP data, 2000 based on Singer and Small.	Dummy	0-1	.098
Government Consumption	General Government Consumption as a percentage of GDP	World Bank: WDI 2000	Percentage	0.89-76.20	15.54
Gross Domestic Investment	Gross Domestic Investment as a share of GDP	World Bank: WDI 2000	Share	-.08 - 2.15	.24
Log of Life Expectancy	Natural log of life expectancy	World Bank: WDI 2000		3.44 - 4.39	4.09

Table 6: Regressions for QUAL

DEP VAR: QUAL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MODEL:	I	I	I	II	II	II	I	I	I	II	II	II
ESTIMATION TECHNIQUE:	Pooled	FE	AH	Pooled	FE	AH	Pooled	FE	AH	Pooled	FE	AH
SAMPLE:	Africa	Africa	Africa	Africa	Africa	Africa	World	World	World	World	World	World
INDEPENDENT VARIABLES												
RISK*COMPETITION	-0.012	0.079	0.207	-0.023	0.806	1.054	0.028	0.007	-0.028	0.021	0.099	-0.019
	(0.61)	(0.83)	(1.25)	(0.56)	(2.23)**	(1.73)*	(2.84)***	(0.37)	(0.80)	(1.93)*	(1.49)	(0.16)
COMPETITION				0.017	-0.708	-0.824				0.027	-0.120	-0.013
				(0.31)	(2.09)**	(1.46)				(1.51)	(1.45)	(0.09)
PROSPECTS	-2.432	-2.042	-1.610	-2.497	-2.295	-1.538	-0.438	-1.912	-2.616	-0.626	-1.916	-2.610
	(2.17)**	(2.51)**	(0.79)	(2.18)**	(2.86)***	(0.89)	(0.83)	(4.01)***	(2.29)**	(1.15)	(4.03)***	(2.25)**
CHECKS	0.024	0.015	0.010	0.024	0.021	0.018	0.050	0.037	0.043	0.042	0.038	0.043
	(0.63)	(0.14)	(0.07)	(0.61)	(0.20)	(0.15)	(2.44)**	(1.48)	(1.02)	(1.99)**	(1.55)	(1.04)
REGIONAL	-0.506	0.127	-0.165	-0.553	3.707	4.004	-0.776	0.002	-0.321	-0.809	0.594	-0.260
	(1.98)*	(0.16)	(0.16)	(1.86)*	(1.97)*	(1.37)	(2.97)***	(0.01)	(0.62)	(3.09)***	(1.16)	(0.29)
FINANCIAL DEPTH	0.015	-0.004	-0.003	0.014	-0.021	-0.022	0.005	0.001	0.002	0.006	0.000	0.002
	(3.26)***	(0.81)	(0.38)	(3.06)***	(2.21)**	(1.36)	(3.46)***	(0.34)	(0.35)	(3.77)***	(0.05)	(0.33)
CONTROL VARIABLES												
Per Capita GDP Growth	0.012	0.003	-0.003	0.012	0.001	-0.001	0.021	0.002	0.000	0.021	0.002	0.000
	(1.91)*	(0.65)	(0.29)	(1.84)*	(0.16)	(0.17)	(4.56)***	(0.67)	(0.02)	(4.53)***	(0.85)	(0.00)
Lag of Per Capita Income	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(2.86)***	(0.42)	(0.26)	(2.86)***	(0.65)	(0.02)	(1.77)*	(2.83)***	(0.10)	(1.66)*	(3.04)***	(0.08)
Urbanization	-0.003	0.044	0.042	-0.002	0.057	0.061	0.001	0.055	0.030	0.000	0.058	0.030
	(0.50)	(2.08)**	(0.83)	(0.43)	(2.63)**	(1.35)	(0.21)	(2.93)***	(0.61)	(0.17)	(3.08)***	(0.61)
Literacy	0.001	-0.028	0.025	0.001	-0.043	0.021	0.006	-0.008	0.003	0.005	-0.009	0.002
	(0.32)	(1.49)	(0.26)	(0.30)	(2.19)**	(0.25)	(3.64)***	(0.51)	(0.05)	(3.15)***	(0.55)	(0.04)
War	-0.319	0.039	0.239	-0.333	0.078	0.189	-0.226	-0.017	0.022	-0.231	-0.005	0.022
	(2.41)**	(0.20)	(0.68)	(2.38)**	(0.41)	(0.65)	(2.97)***	(0.14)	(0.10)	(3.04)***	(0.04)	(0.10)
Lag of Dependent Variable		0.525	0.924		0.569	0.679		0.539	1.130		0.539	1.127
		(5.23)***	(1.11)		(5.67)***	(1.10)		(9.63)***	(2.23)**		(9.65)***	(2.16)**
Africa Dummy							0.379			0.407		
							(4.64)***			(4.86)***		
Constant	-1.074	-0.171	-0.065	-1.100	1.183	-0.073	-1.546	-2.678	-0.001	-1.613	-2.469	-0.001
	(6.49)***	(0.16)	(0.60)	(5.94)***	(0.94)	(0.78)	(10.45)***	(3.41)***	(0.03)	(10.45)***	(3.10)***	(0.02)
Observations	125	103	79	125	103	79	403	331	259	403	331	259
R-squared	0.41	0.43		0.41	0.46		0.28	0.43		0.29	0.43	
Number of countries	24	24	24	24	24	24	72	72	72	72	72	72

- Absolute value of t statistics in parentheses: *significant at 10%; **significant at 5%; *** significant at 1%.
- Each equation has been estimated for African and World samples using a pooled model, a fixed effects model with a lagged dependent variable and an Anderson-Hsiao model.

Table 7: Regressions for CPIA

DEP VAR: CPIA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MODEL:	I	I	I	II	II	II	I	I	I	II	II	II
ESTIMATION TECHNIQUE:	Pooled	FE	AH	Pooled	FE	AH	Pooled	FE	AH	Pooled	FE	AH
SAMPLE:	Africa	Africa	Africa	Africa	Africa	Africa	World	World	World	World	World	World
INDEPENDENT VARIABLE												
RISK*COMPETITION	-0.015	-0.019	0.011	-0.093	-0.062	-0.060	-0.024	-0.014	-0.008	-0.027	-0.025	-0.030
	(0.76)	(0.83)	(0.25)	(2.83)***	(1.98)**	(0.75)	(2.62)***	(1.26)	(0.40)	(2.70)***	(1.90)	(1.16)
COMPETITION				0.126	0.083	0.122				0.012	0.024	0.041
				(2.95)***	(2.04)**	(1.14)				(0.80)	(1.56)	(1.34)
PROSPECTS	-2.185	-2.933	-3.444	-3.095	-3.296	-3.856	-1.807	-1.534	-1.754	-1.867	-1.549	-1.795
	(2.78)***	(5.71)***	(4.01)***	(3.70)***	(6.09)***	(4.46)***	(4.74)***	(5.52)***	(4.44)***	(4.80)***	(5.58)***	(4.58)***
CHECKS	0.186	0.091	0.105	0.182	0.072	0.094	0.112	0.035	0.069	0.106	0.027	0.061
	(4.36)***	(2.13)**	(1.23)	(4.32)***	(1.66)*	(1.10)	(5.37)***	(2.03)**	(2.05)**	(4.85)***	(1.46)	(1.75)*
REGIONAL	-0.923	-0.766	-1.123	-0.999	-0.799	-1.144	-0.539	-0.696	-1.054	-0.542	-0.700	-1.060
	(3.81)***	(4.22)***	(2.65)***	(4.14)***	(4.41)***	(2.71)***	(2.18)**	(4.19)***	(2.78)***	(2.19)**	(4.22)***	(2.81)***
PRIMARY COMMODITIES	-0.356	-0.496	-2.203	-0.347	-0.488	-2.211	-0.553	-0.059	-0.447	-0.543	-0.048	-0.450
	(1.08)	(1.05)	(2.30)**	(1.06)	(1.03)	(2.33)**	(3.54)***	(0.41)	(1.26)	(3.47)***	(0.33)	(1.28)
CONTROL VARIABLES												
Per Capita GDP Growth	0.004	0.003	0.005	0.004	0.003	0.006	0.017	0.005	0.004	0.017	0.005	0.004
	(1.01)	(1.09)	(1.24)	(1.01)	(1.09)	(1.35)	(5.40)***	(2.90)***	(1.48)	(5.40)***	(2.81)***	(1.47)
Lag of Per Capita Income	0.0001	0.0001	0.0001	0.0001	0.0001	0.00001	0.00002	0.0001	0.00001	0.00001	0.0001	0.00001
	(3.77)***	(1.07)	(0.56)	(3.34)***	(1.15)	(0.65)	(1.41)	(0.01)	(1.12)	(1.35)	(0.07)	(1.17)
Urbanization	-0.018	0.002	-0.004	-0.015	0.000	-0.003	0.001	0.012	-0.010	0.001	0.009	-0.013
	(4.35)***	(0.14)	(0.06)	(3.68)***	(0.03)	(0.04)	(0.59)	(1.56)	(0.23)	(0.59)	(1.15)	(0.28)
Literacy	0.007	0.018	0.062	0.008	0.021	0.057	0.009	0.010	0.028	0.009	0.011	0.031
	(3.42)***	(1.99)**	(0.70)	(3.79)***	(2.30)**	(0.65)	(7.05)***	(1.63)	(0.62)	(6.68)***	(1.85)*	(0.69)
War	-0.556	-0.153	-0.113	-0.679	-0.197	-0.117	-0.441	-0.177	-0.098	-0.444	-0.181	-0.099
	(3.67)***	(1.24)	(0.53)	(4.37)***	(1.57)	(0.55)	(6.24)***	(2.98)***	(0.89)	(6.28)***	(3.05)***	(0.90)
Lag of Dependent Variable		0.596	0.992		0.583	0.983		0.646	0.905		0.643	0.894
		(12.81)***	(3.01)***		(12.49)***	(2.98)***		(24.27)***	(3.88)***		(24.09)***	(3.83)***
Africa Dummy							0.158			0.161		
							(2.42)**			(2.47)**		
Constant	2.459	0.510	-0.054	2.183	0.345	-0.048	2.166	0.044	-0.008	2.152	0.018	-0.010
	(21.73)***	(1.76)*	(0.52)	(14.98)***	(1.16)	(0.46)	(21.53)***	(0.18)	(0.18)	(21.06)***	(0.07)	(0.23)
Observations	371	342	310	371	342	310	967	892	808	967	892	808
R-squared	0.27	0.55		0.29	0.55		0.19	0.52		0.19	0.52	
Number of Countries	30	30	30	30	30	30	79	79	79	79	79	79

- Absolute value of t statistics in parentheses: *significant at 10%; **significant at 5%; *** significant at 1%.
- Each equation has been estimated for African and World samples using a pooled model, a fixed effects model with a lagged dependent variable and an Anderson-Hsiao model.