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Growth and Institutions:
A Review of the Evidence

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Africa's disappointing economic performance, the East Asian financial crisis, and the weak record of the former Soviet Union have focused attention on the role of institutions in determining a country's economic growth. This article critically reviews the literature that tries to link quantitative measures of institutions, such as civil liberties and property rights, with growth of gross domestic product across countries and over time. An important distinction is made between indicators that measure the performance or quality of institutions and those that measure political and social characteristics and political instability. The evidence suggests a link between the quality of institutions and investment and growth, but the evidence is by no means robust.

> *I wish to assert a much more fundamental role for institutions in societies; they are the underlying determinant of the long-run performance of economies.*
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> North 1990: 107

The role of institutions in promoting growth in developing and emerging economies has sparked renewed interest in recent years (World Bank 1993, 1997; Stiglitz 1998). A burgeoning literature thus seeks to determine the extent to which the quality of public and private economic institutions, the particular structure of governance, and the extent of social capital (or civic engagement) affect growth. Evidence from global cross-country econometric studies is potentially important because the paucity and weakness of both macroeconomic and institutional data for many developing countries preclude robust policy interpretations on a country-by-country basis (Srinivasan 1995; Lal and Myint 1996).

If there is clear evidence that weak political and economic institutions significantly hamper growth, policymakers might propose measures that strengthen institutions in particular ways or that encourage more appropriate political structures (Aron 1996). For instance, African countries usually form a significant part of the

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cross-country samples, and the region plays a distinctive role in this literature. Many African countries possess very weak public and private institutional frameworks, and Sub-Saharan Africa has experienced the slowest economic growth of any region in the world, with poverty large and deepening.[1] Several cross-country studies of growth (for example, Easterly and Levine 1997) have found that the conventional factors of growth (labor, physical and human capital accumulation, and so on) do not fully explain Africa's experience and have turned to an institutional explanation.

Unfortunately, interpreting the evidence on growth using institutional measures is not a straightforward matter. First, the process of integrating institutions and institutional change into economic theory is of comparatively recent vintage. The growth literature does not subscribe to one overarching definition of economic, political, and social institutions, their processes of change, and their likely channels of influence on economic outcomes. Yet, as North (1990: vii) suggests, "The specification of exactly what institutions are, how they differ from organizations, and how they influence transaction and production costs is the key to much of the analysis." In the empirical literature the terms politics and institutions encompass a wide range of indicators, including institutional quality (the enforcement of property rights), political instability (riots, coups, civil wars), characteristics of political regimes (elections, constitutions, executive powers), social capital (the extent of civic activity and organizations), and social characteristics (differences in income and in ethnic, religious, and historical background).[2] Economists often rely on several of these types of indicators to capture the features of institutions, although each has a potentially different channel of impact on growth.

Second, the growth literature is burdened by a range of serious problems with data, methodology, and identification, which many authors underestimate or choose to ignore (see the survey in Temple 1999). As Heston and Summers (1996) note, there has been an astonishing proliferation of research based on the Penn World Tables data. Yet, although various studies establish statistically significant relationships, they frequently do not test the sensitivity of their results to different model specifications, data outliers, measurement errors, reverse causality between regressors and growth, and bias due to the possible omission of variables.

Finally, much of the cross-country empirical literature on growth, while loosely related to the structural growth models of Solow (1956) and Mankiw, Romer, and Weil (1992), in fact consists of reduced-form growth regressions (explained in box 1). The structural Solow growth equation (explained in box 2) includes current investment as a determinant of growth, as well as a range of other variables (such as population growth, income, and human capital). Where the variables that measure the quality of institutions enter this equation, they can be interpreted as having a direct effect on growth because they improve the efficiency of investment. Since investment is already included in the growth equation, any effects that institutional variables exert on growth through an increase in the volume of investment are indi-

Box 1. *Structural Growth Equations versus Reduced-Form Growth Equations*

In the literature on growth and institutions, it is important to distinguish between the results from *structural* models and those from *reduced-form* models.

The complete structural system for a growth model consists of at least two equations, usually derived from economic theory—typically, equations for current growth and investment. Although current investment is a determinant of current growth, there also is reverse causality. For instance, high current growth may have a demand effect on investment and may also increase saving, which in turn helps to finance investment. The variables whose value is determined within the system—namely, growth and investment—are called *endogenous* variables; those outside the system, on which the system has no influence, are called *exogenous* variables. For example, population usually is treated as *exogenous*. Examples of *lagged* endogenous variables in growth models are beginning-of-period values for income or the level of human or physical capital.

Single structural equations. Many empirical growth models are based on single structural growth equations (for example, the Solow growth equation). Since there is reverse causality between current growth and investment, it becomes important to correct for bias (or overestimation) in calculating the importance of investment for growth. Most single-equation growth studies fail to make this correction. A discussion of these issues in some of the literature on politics and institutions appears in Deaton and Miller (1996).

Reduced-form models. In reduced-form models, the endogenous dependent variable is expressed only in terms of exogenous variables and parameters. For example, endogenous investment on the right-hand side of the equation is replaced by a set of variables fully determining investment. Thus the reduced form describes the results of interactions among the endogenous variables but not the simultaneous interactions themselves. The important disadvantage of these models, generally speaking, is that one loses the ability to distinguish the different channels of influence on growth (for example, to quantify the effect of investment on growth). Moreover, in many single-equation reduced-form growth equations in the literature, the set of variables determining investment is incomplete or contains other current endogenous variables.

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rect. A separate investment equation would be necessary to ascertain the direct effects of institutional variables on the volume of investment.

However, no problem arises in connection with the simultaneity of investment and growth when reduced-form growth regressions are used because these regressions omit the investment variable and replace it with the set of variables that determine investment. For sufficiently general models, this approach should capture both the influences on the volume of investment and the efficiency of investment (that is, both the direct and indirect influences on growth). Unfortunately, therefore, when institutional quality variables are included, the different effects of institutions on growth are conflated and difficult to disentangle. Furthermore, in practice these models are rarely sufficiently general.

This review examines a range of influential studies in the heterogeneous literature on growth and institutions, both to obtain a better understanding of the linkages involved and to assess critically the sometimes strong claims made by the authors. It argues that a sensible interpretation of the effects of politics and institutions on eco-

Solow's model of economic growth is based on the premise that output in an economy is produced using a combination of labor (L) and capital (K), under constant returns, so that doubling inputs results in a doubling of output. Modern versions of the story distinguish between physical and human capital. The quantity of output (y) is also determined by the efficiency (A) with which capital and labor are used, or

(1) $$y = Af(L,K).$$

With the further assumption of competitive markets, the growth rate of the economy, then, is a weighted sum of the growth rates of the efficiency parameter, g_A (sometimes called technical progress), of the labor force, g_L, and of the capital stock, g_K, where the weights on the latter two are the shares of payments to labor and capital in gross domestic product:

(2) $$g_y = g_A + a_L g_L + a_K g_K$$

A critical assumption in the Solow model is that the marginal product of capital decreases with the amount of capital in the economy. In the long run, as the economy accumulates more and more capital, g_K approaches 0, and the growth rate is determined by technical progress and growth in the labor force. But in the short run, an economy that accumulates capital faster will enjoy a higher level of output.

Cross-country growth regressions study the determinants of growth by using each country's experience as a data point. Typically, there are two types of regressions: (a) those (the majority) that estimate changes in levels of output—essentially estimating equation (1) at two points in time—and (b) those that estimate equation (2), linking growth rates over several decades with technical progress (assumed constant across countries) and with labor force and capital stock growth rates.

How can country institutional differences enter into these regressions? For both categories, the quality of institutions can affect technical progress. For instance, David (1997) discusses how take-up of technology is constrained by "social capability." Thus the rate of technical progress is no longer constant across countries; rather, it depends on country-specific institutional differences. For those in the first category, the country's initial level of technical efficiency may be affected by the quality of its institutions. This in turn will affect the efficiency of investment. Regressions that neglect the role of initial technical efficiency (due to institutions) may then overstate the role of investment in economic growth. Finally, in many developing countries there are threshold levels of infrastructure, property rights, and education (all of which are sensitive to institutions) that must be met before production is feasible. The presence of these thresholds means that the constant-returns assumption may not hold. Thus, introducing country-specific institutional variables can affect the estimate of the responsiveness of output to capital (human as well as physical) in both categories of regressions.

nomic growth requires a more structural theoretical approach based on a common institutional framework.

What Is Meant by the Term "Institutions," and How Are They Measured?

Proxies for institutions were first introduced into cross-country growth and investment equations more than a decade ago, and recently this literature has experienced

a renaissance. Researchers have used diverse measures, encompassing political instability, the attributes of political institutions, social characteristics and social capital, and measures of the quality of institutions that affect economic exchange. The literature on economic growth typically has classified and treated these proxies collectively as "sociopolitical measures." This practice has tended to obscure the different channels through which institutions operate and has impoverished the interpretation of the role of institutions in growth. This is a serious flaw in analyzing developing countries, where weak institutions are implicated in low growth.

Defining Institutions

Classifying schools of thought in the relatively recent tradition of political economics, Posen (1998) indicates that the considerable influence of North (1990) and his school largely has affected political scientists and economic historians, not economists as such. Yet North provides a clear institutional framework that may be integrated with the burgeoning economic literature to provide a richer interpretation of the effect of institutions on growth. Consider the following observation:

> We have only to contrast the organisation of production in a Third World economy with that of an advanced industrial economy to be impressed by the consequences of poorly defined and/or ineffective property rights. Not only will the institutional framework result in high costs of transacting in the former, but also insecure property rights will result in using technologies that employ little capital and do not entail long-term agreements. . . . Moreover, such mundane problems as the inability to get spare parts or a two-year wait to get a telephone installed will necessitate a different organisation of production than an advanced country requires. A bribe sufficient to get quick delivery through the maze of import controls or get rapid telephone installation may exist, but the resultant shadow transactions costs significantly alter relative prices and consequently the technology employed. (North 1990: 65)

The institutional framework comprises both formal and informal constraints. North describes a continuum with unwritten taboos, customs, and traditions at one end and constitutions and laws governing economics and politics at the other. In the absence of formal rules, a dense social network leads to the development of customs, laws, trust, and normative rules that constitute an informal institutional framework (for example, see Bates 1989). Naturally, informal constraints on behavior are pervasive and important in modern economies too (David 1994, 1997).

With economic development comes a unidirectional move along the continuum as increasing specialization and the division of labor associated with more complex societies raise the rate of return to formalizing political, judicial, and economic rules

and contracts that facilitate political or economic exchanges. There is a hierarchy of such rules: from constitutions, to state and common laws, to specific by-laws, to individual contracts. Usually, the higher the rules lie in the hierarchy, the more costly they are to alter.

WHY ARE INSTITUTIONS WEAKER IN SOME COUNTRIES THAN IN OTHERS? Institutions may be weak because rules simply are absent, rules are suboptimal, or useful rules are poorly enforced. North emphasizes the cost of information, since resources are required not only to measure the attributes of a good or service in economic exchange but also to define and measure the rights that are transferred and to protect these rights by policing and enforcing agreements. The more complex is the exchange, the more costly are the institutions. Where such costs are prohibitive (given the technology), rules may not be worth devising, and ownership rights remain undefined. Of course, changes in technology or in relative prices may alter the relative gains from devising rules. Where rules do exist, they may be counterproductive (excessive import controls, for instance). Finally, useful rules may not be enforced when the costs of monitoring and enforcement prove too high. For instance, constitutions abound in Africa, but many are ineffective. Similarly, a lack of correlation between the central bank's constitutional autonomy and low inflation in developing countries is likely due to weakness of the judiciary in enforcing autonomy (Cukierman, Webb, and Neyapti 1992).

HOW IS ECONOMIC GROWTH AFFECTED BY THE INSTITUTIONAL FRAMEWORK? The structure of both formal and informal rules and the character of their enforcement are what define the incentives and wealth-maximizing opportunities of individuals and organizations. North (1990: 110) asserts, "Third World countries are poor because the institutional constraints define a set of payoffs to political/economic activity that do not encourage productive activity." Such rules affect both individuals and organizations, defined as political organizations (city councils, regulatory agencies, political parties, tribal councils), economic organizations (firms, trade unions, family farms, cooperatives, rotating credit groups), educational bodies (schools, universities, vocational training centers), and social organizations (churches, clubs, civic associations).

The institutional framework affects growth because it is integral to the amount spent on both the costs of transactions and the costs of transformation (in the production process). Transaction costs, for example, are far higher when property rights or the rule of law are not reliable. In such situations private firms typically operate on a small scale, perhaps illegally in an underground economy, and may rely on bribery and corruption to facilitate operations. Transformation costs, too, can be raised substantially because unenforceable contracts mean using inexpensive technology and operating less efficiently and competitively on a short-term horizon.

When institutions are poorly defined or there are few formal institutions, eco-nomic activities are restricted to interpersonal exchanges. In such cases, repeat activi-ties and cultural homogeneity facilitate self-enforcement. Transaction costs may be low in such an environment, but transformation costs are high because the economy operates at a very low level of specialization. Economic exchange also could operate at one remove, via social networks, but contracts still are constrained by kinship ties. It is clear, however, that firms or agents in an environment of weak institutions cannot engage in complex, long-term, and multiple-contract exchanges with effec-tive enforcement as they do in industrial economies. A basic structure of property rights that encourages long-term contracting appears essential for the creation of capital markets and economic growth.

Rules with the wrong incentives can be hard to change when the costs are too high. There may be considerable sunk costs in developing political and economic organizations that can operate in a weak institutional environment. It is conceivable that such organizations ultimately could force an improvement in institutions, but unless a certain threshold of inefficiency is reached, they are more likely to perpetu-ate and entrench the weak institutional environment. Any organizations that de-velop in this framework may then become more efficient, but more efficient at mak-ing the society even less productive.

Classifying Institutions by Empirical Measures

The political science literature has been constructing and testing measures of politi-cal instability, political and civil freedom, and the characteristics of democracy for many years (Przeworski and Limongi 1993). Kormendi and Meguire (1985) and Scully (1988) are among the first papers to explore the effect of variables describing qualitative political and civil liberties on cross-country growth and investment. More recently, the literature has adapted a number of the original indexes but is increas-ingly using disaggregated measures by country risk-rating or credit-rating agencies using subjective surveys to capture more focused economic notions of institutional quality, such as respect for property rights.

The way in which the empirical institutional measures are categorized is impor-tant for interpreting their effects. The theory-based classification adopted here dif-fers from related empirical surveys by Alesina and Perotti (1994) and Brunetti (1997) in that it distinguishes between measures that describe the attributes of institutions and those that evaluate their performance.[3]

Descriptions of the features of political and economic institutions—such as the presence or absence of constitutional rights—say nothing about how well such institutions perform. In contrast, measures of the quality of formal and informal institutions indicate how effectively the existing institutional rules or norms are implemented. For example, measures of the quality of formal institutions include

subjective rankings of the effectiveness of property rights and of the bureaucracy (that is, the ease of doing business), often drawn from cross-country surveys conducted by risk agencies. Such measures are proxies for the transaction and transformation costs of production that may affect the volume and efficiency of investment and hence growth (there also may be reverse causality from growth and investment to institutions).

It is difficult to measure informal constraints, but Putnam (1993) provides some measures of social capital that capture the extent (or perhaps the quality) of civic activity and organization. As indicated by North, informal social constraints based on the trust and norms inherent in networks and associations may influence growth both directly and indirectly (as with formal constraints). Some measures of social capital also reflect the ability of citizens to hold the state accountable. This highlights the role of external domestic and international agencies in promoting good governance, including civil society (Collier 1996). An example of such a measure is the subjective Gastil index of civil freedoms (including freedom of the press and of assembly).[4] Again, there could be a reverse causality from growth and investment to social capital.

It also is important to distinguish between the performance of formal and informal institutions and various measures of social characteristics and political instability. Clearly, although extremes of political instability leading to riots and civil war can destroy existing investment, the way in which instability affects the volume and efficiency of new investment is probably through limits on the effectiveness of formal and informal institutions. Social measures such as the degree of ethnic diversity in a country may well explain the tendency to experience political instability (or the duration of different political regimes) or could have a direct impact on the character of social capital and of formal institutions.

Thus social characteristics are perhaps more appropriate in explaining the duration of political regimes, while political instability measures and social characteristics may explain formal and informal property rights. Note again the possibilities for reverse causality, although social characteristics are fairly exogenous measures (Aron 1998).

Table 1 classifies the components of indicators of institutional measures in five categories: quality of formal institutions (typically drawn from surveys or risk ratings by investors); measures of social capital, which capture the intensity of social participation and organization; measures of social characteristics, including ethnic, cultural, historical, and religious categories; characteristics of political institutions, including constitutional rights and descriptions of the type of regime (dictatorship, democracy); and measures of political instability, including riots, strikes, civil war, duration of regime, and changes in the executive. The table also differentiates subjective measures, based on surveys and personal assessments, and objective measures,

Table 1. *Political, Economic, and Social Measures from the Empirical Growth Literature*

Institutional measure	Source	Period, country	Components of index[a]	Growth references using the measures
A. Institutional quality measures				
BERI disaggregated business risk indicators: subjective (ranked by a "permanent" panel of experts)	Knack and Keefer (1995), data from Business Environmental Risk Intelligence (BERI): private firm for potential foreign investors	Annual from 1972; about 47 countries (7 African countries); not all countries start in 1972	*Security of contract and property rights* Bureaucratic delay; nationalization potential; contract enforceability; infrastructure quality	Knack and Keefer (1995, 1997); Barro (1996a); Clague and others (1996); Hassan and Sarna (1996); Knack (1996); Lane and Tornell (1996)
ICRG disaggregated business risk indicators: subjective (ranked by staff of political risk services)	Knack and Keefer (1995), data from International Country Risk Guide (ICRG): private firm for potential foreign investors	Annual from 1982; 135 countries (34 African countries); not all countries start in 1982	*Security of contract and property rights* Rule of law; corruption in government; quality of the bureaucracy; repudiation of contracts by government; expropriation risk of private investment	Knack and Keefer (1995, 1977); Barro (1996a); Clague and others (1996); Hassan and Sarna (1996); Knack (1996); Lane and Tornell (1996); Sachs and Warner (1997)
Business International disaggregated risk indicators: subjective (ranked by local observers)	Mauro (1995), data from Business International (BI): private firm for potential foreign investors, now incorporated into the Economist Intelligence Unit	1971–79, annual; 57 countries 1980–83, annual; 68 countries (10 African countries)	*Institutional quality* Corruption index; bureaucratic efficiency: sum of three measures (efficiency of judicial system, absence of red tape and absence of corruption); political stability: sum of six measures (institutional change, social change, opposition takeover, stability of labor, relationship with neighboring countries, terrorism); institutional efficiency sums all nine	Mauro (1995); Clague and others (1996); Helliwell (1996a)

Table 1 *(continued)*

Institutional measure	Source	Period, country	Components of index[a]	Growth references using the measures
Borner, Brunetti, and Weder's political credibility index: subjective (ranked by local entrepreneurs)	Borner, Brunetti, and Weder (1995), based on own 1992–93 survey of entrepreneurs in 28 countries	1981–90; 28 countries (8 African countries)	*Political credibility* Unexpected changes in laws and policies regularly affecting business; expectation that government sticks to major announced policies; changes in uncertainties over lawmaking in the last decade	Borner, Brunetti, and Weder (1995); Brunetti, Kisunko, and Weder (1998)
Measure of contract-intensive money: objective	Clague and others (1995)	Uses available data in *International Financial Statistics* (IMF)	*Poor enforcement of contracts or property rights* M2 – C/M2; M2 is broad money, and C is currency outside banks (increases with efficiency)	Clague and others (1995, 1996)
Heritage Foundation index of economic freedom: partly subjective (but not from risk-rating agencies)	Heritage Foundation, Washington, D.C.	Annual, from 1996; 161 countries	*Dimensions of market efficiency* Trade policy; taxation; government intervention; monetary policy; capital flows and foreign investment regulations; banking regulations; wage or price controls; protection of property rights; efficiency of regulation; extent of parallel market	Ng and Yeats (1999)
Gastil's political rights index (Freedom House index): subjective (ranked, but not by local observers)	Gastil (1989, 1991), based on published and unpublished information about individual countries	Annual, from 1973; 165 countries	*Political rights measure (sometimes called "democracy")* Meaningful election of chief authority; meaningful election of legislature; fair campaigning; fair reflection of voter preference; multiple political parties; no military control; decentralized political power; informal consensus; significant opposition vote; recent shift in power through elections; no denial of self-determination of major groups	Kormendi and Meguire (1985); Scully (1988); Barro and Lee (1994); Helliwell (1994); Sachs and Warner (1995); Savvides (1995); Alesina and others (1996); Barro (1996a); Ghura and Hadjimichael (1996); Perotti (1996); Isham, Kaufmann, and Pritchett (1997)

Euromoney country risk disaggregated ratings: mixed objective (financial market conditions) and subjective (ranked by average of evaluations of international panel of 35 bankers and analysts)	*Euromoney* (various issues)	Annual, from 1970 (35 African countries) Disaggregated data from 1992 (changed methods of calculation of index in 1987)	*Components of country risk* Economic performance projections; political risk (subjective); debt indicators; debt in default or rescheduled; average of Moody or Standard and Poor credit ratings (part subjective); access to bank lending; access to short-term finance; access to capital markets (part subjective); discount on forfeiting *Property rights proxy ("political risk")* Risk of nonpayment or nonservicing of payment of goods, services, loans, trade-related finance and dividends and of nonrepatriation of capital	
Institutional Investor rating of risk of default on sovereign debt: subjective (ranked by international panel of bankers)	*Institutional Investor* (semiannual publication)	March and September, from 1979; more than 100 countries (25 African countries)	*Property and contracts rights* Credit rating	Clague and others (1996)

B. Social capital measures

Gastil's civil liberties index (Freedom House index): subjective (ranked, but not by local observers)	Gastil (1989, 1991), based on published and unpublished information about individual countries	Annual, from 1973; 165 countries	*Civil liberties measure* No censorship; open public discussion; freedom of assembly; freedom of political organization; guaranteed socioeconomic rights; no gross inequality; no government indifference; no political terrorism; rule of law in political cases; freedom of religion; free trade unions; freedom of business; guaranteed personal rights; freedom of private organizations	Scully (1988); Levine and Renelt (1992); Barro and Lee (1994); Helliwell (1994); Sachs and Warner (1995); Savvides (1995); Alesina and others (1996); Barro (1996a); Ghura and Hadjimichael (1996); Perotti (1996); Isham, Kaufmann, and Pritchett (1997)

Table 1 *(continued)*

Institutional measure	Source	Period, country	Components of index[a]	Growth references using the measures
Gastil-Wright economic freedom ratings: subjective (ranked, but not by local observers)	Wright (1982)	One year only; 165 countries	*Economic freedom* Freedom of property; freedom of association; freedom of movement; freedom of information	Spindler (1991)
Banks's government purges and peaceful demonstrations: objective	Banks (1975 onward)	1970 onward; currently more than 190 countries	*Social capital measures* Purges: any systematic elimination by jailing or execution of political opposition within the ranks of the regime or the opposition Antigovernment demonstrations: any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly antiforeign nature	Easterly and Levine (1997)
World Values Survey: subjective (surveys)	Inglehart (1994a); indexes in Knack and Keefer (1997)	1981, 1990–91 surveys of countries; more than 43	*Cultural values* Thrift; determination; hard work; obedience; religious faith; respect *Social capital measures* Associational relationships; trust	Inglehart (1994b); Helliwell (1996a, 1996b); Knack and Keefer (1997)
Putnam's social capital and local government and institutional performance measures: mixed objective and subjective (local surveys)	Putnam (1993)	1860–1987; Italian regions	*Civic community* Preference voting; referendum turnout; newspaper readership; number of sports or cultural associations *Institutional performance* Reform legislation; day care centers; housing and urban development; statistical and information services; legislative innovation; cabinet stability; family clinics; bureaucratic responsiveness; industrial policy instruments; budget promptness; local health unit	Helliwell and Putnam (1995)

			spending; agricultural spending *Local government performance* Implementation of 15 communal facilities including sports, sewers, libraries, trash collection, water system, school transport, day care centers	

C. Social characteristics

Taylor and Hudson's ethnolinguistic fractionalization measure: objective	Mauro (1995), based on data from Taylor and Hudson (1972)	1960; 113 countries (12 African countries)	*Ethnolinguistic fractionalization* Probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group	Many studies, including Mauro (1995); Perotti (1996); Easterly and Levine (1997); Collier (1999)
Easterly and Levine's ethnic diversity and tension measures: objective	Easterly and Levine (1997) data set, from various sources	Specific years as indicated; more than 75 countries	*Measures of ethnic tension* Racial tension in 1984; proportion of population belonging to minorities at risk in 1990; percentage of population not speaking country's official language at home; percentage of population belonging to separatist movements in 1960 and 1975	Easterly and Levine (1997)
Adelman-Morris index of social development: objective, plus subjective exclusion of two indicators	Adelman and Morris (1968)	1957–62; 73 countries (26 African countries)	*Social development and capability* Size of traditional agricultural sector; extent of dualism; extent of urbaniza- tion; character of basic social organiza- tion; importance of indigenous middle class; extent of social mobility; extent of literacy; extent of mass communication; crude fertility rate; degree of moderniza- tion of outlook	Temple and Johnson (1998)
Barro's measures of colonial status and religious affiliation: objective	Barro (1996a)	138 and 136 countries, respectively	*Social requisites for democracy* Colonial status based on most recent ruler after 1776; religious affiliation by majority religion in a seven-way breakdown (proportion of population)	Barro (1996a)

(Table continues on the following pages.)

Table 1 *(continued)*

Institutional measure	Source	Period, country	Components of index[a]	Growth references using the measures
D. Political characteristics				
Clague, Keefer, Knack and Olsen's political regime indicators: objective	Clague and others (1996), constructed from Banks (1979), Gurr (1990) to 1986 and extrapolated to 1990 with *Europa Yearbook*	Around 1969–90	*Type and duration of political regime* Dictatorship, almost dictatorship, intermediate category, almost democracy, and democracy; type of regime based on rankings from summing outcomes from Gurr's and Banks's measures of executive competitiveness, selection, and legislative effectiveness; duration variables refer to numbers of consecutive years spent in regimes, resetting variables when status changes	Clague and others (1996)
De Vanssay and Spindler's constitutional rights indicators: objective	De Vanssay and Spindler (1992)	OECD plus non-OECD countries	*19 constitutional variables* Bill of rights; right to privacy; right to unionize; political attributes, such as whether supreme court has final constitutional authority	De Vanssay and Spindler (1992)
Bates and others' measures of political transition: objective	Bates and others (1996), work in progress	1970–91; 49 countries (all African)	*Measures of political transition* Executive scale; legislative scale (further scales in progress)	None as yet
Bollen's democracy measure: objective	Bollen (1990), drawing on Banks (1979) and Taylor and Hudson (1972)	1960, 1965; more than 110 countries	*Political components ("democracy")* Three concerning political liberties, three concerning political rights	Many studies, including Helliwell (1994); Barro (1996a)
E. Political instability				
Taylor and Jodice's and Banks's political instability indicators: objective	Persson and Tabellini (1994), using Taylor and Jodice (1983, 1988) and Banks (various issues)	Annual, from 1960; 136 countries	*Political instability and characteristics* Number of revolutions, successful coups, unsuccessful coups, and political assassinations; number of changes in the composition of the executive; number of riots and demonstrations; number of regular and irregular government transfers	Alesina and Rodrik (1994); Persson and Tabellini (1994); Alesina and others (1996); Isham, Kaufmann, and Pritchett (1997)

Barro's political instability measures: objective	Barro and Wolf (1989), using Banks (various issues); and Barro and Lee (1994) for wars measure	Average 1960–85, or subsamples	*Political instability* Counts of revolutions; coups and revolutions per year; assassinations per million population a year; strikes *Wars* Number of years a country has experienced a war between 1960 and 1985	Barro (1991); Murphy, Schleifer, and Vishny (1991); Ojo and Oshikoya (1994); Sachs and Warner (1995); Caselli, Esquivel, and Lefort (1996); Levine and Zervos (1996); Easterly and Levine (1997)
Gupta's index of sociopolitical instability: objective	Gupta (1990), using data from Taylor and Jodice (1983)	1960–82; 104 countries	*Political instability* Number of political demonstrations, riots, political strikes, deaths from political violence, assassinations, armed attacks, political executions, successful coups d'état, unsuccessful coups d'état; nature of government	Hassan and Sarna (1996)
Alesina and others' measures of executive turnover: objective	Alesina and others (1996), with underlying data from Taylor and Jodice (1983) and Banks (various issues)	1950–82, annual; 113 countries (42 African countries); some countries start in 1960	*Propensity for government change* Total government changes, major government changes (regular and coups), and irregular changes (successful coups); the propensity is estimated by regression analysis	Alesina and others (1996)
Alesina and Perotti's index of sociopolitical instability: objective	Alesina and Perotti (1996), using data from Taylor and Jodice (1988)	See above	*Sociopolitical instability* Political assassinations; violent deaths per million population; successful coups; unsuccessful coups; democracy	Alesina and Perotti (1996); Perotti (1996)
Collier's civil war indicators: objective	Collier (1999), based on data in Singer and Small (1994)	1816–1992; 92 countries (13 African countries)	*Duration of civil wars (monthly)* Defined on three criteria: military action, active government participation, and effective resistance by each side	Collier (1999)

a. In most cases, the institutional indexes are constructed as simple (unweighted) averages of all or some of the underlying components and are ordinal indexes. Gastil's indexes of political and civil liberties are weighted subjectively, but these weights are not reported. For the following indexes, the unknown weights are assigned by techniques such as factor analysis: Putnam's indexes, the Adelman-Morris index, Gupta's index, and the Alesina and Perotti index. Bates's measures of political transition employ Gutman scales. In some cases, simple counts are used: Collier's civil war indicators, Barro's political instability measures and colonial measures, De Vanssay and Spindler's constitutional indicators, Taylor and Jodice's and Banks's political instability measures, and Clague and others' political regime duration measures.

based on factual observations and economic data. Risk indicators typically comprise a weighted mix of both types of measures (for example, see *Euromoney* issues of the 1990s). The table also tries to assess the coverage of Africa for these indexes, although in most cases the data on Africa are very limited.

Important Concerns about Institutional Measures

As indicated earlier, adjustments to control for problems of endogeneity and ordinality are appropriate.

Endogeneity

The important distinction between endogenous and exogenous variables is described in box 1. In general, one would expect a country's institutional structure to remain the same over time, in which case institutional variables might be considered fairly exogenous to growth. In many developing countries, however, institutional quality periodically can deteriorate sharply as a result of political instability, terms of trade or climate shocks, policy reversals, or even fiscal austerity programs. In this case, far from being exogenous, institutions may deteriorate in periods of low growth.

More alarming, subjective measures of institutions provided by the risk-rating agencies and widely used in the literature to capture economic and political efficiency may be influenced both by recent measures of growth (Haque, Mark, and Mathieson 1996) and by political events (Brewer and Rivoli 1990). Moreover, these indexes may be subject to biases through herd effects and hysteresis, meaning that bankers' judgments are too optimistic (or too pessimistic) for long periods (Somerville and Taffler 1995).

Ideally, to reduce endogeneity problems, institutional quality should be measured at the beginning of the period on which the research is concentrating. For example, if growth is averaged over 10 years, the institutional variables should be measured before—or at the beginning of—the decade. In the studies considered here, few authors take the question of endogeneity seriously. Frequently, they use indexes of institutional quality that are subjective ratings of risk compiled by private firms such as Business Environment Risk Intelligence (BERI) and International Country Risk Guide (ICRG). Typically, researchers use the endogenous middle-of-the-period ICRG index for 1982 or its components for 1960–90 or 1970–90 cross-country growth regressions (for example, Knack and Keefer 1995). The problem with the earlier BERI index for 1972 is that it covers few countries and thus reduces the samples significantly, with resulting insignificance for institutional measures (Barro 1996a).

Ordinality

Many of the institutional indexes used in table 1 are ordinal indexes. An ordinal index ranks countries on some criterion without specifying the degree of difference between countries and associates a number with the rank position (that is, 2 is second). To be used meaningfully in a growth regression, however, such an index needs to be transformed into a cardinal index, which is an index where the degree of difference matters, not just the ordering. There is no reason to presuppose that the transformation from an ordinal to a cardinal index should be one-for-one (that is, linear): for instance, the difference in the quality of the judiciary in the United States and South Africa may be much smaller than that between South Africa and Zaire, even though the same differential is measured on an ordinal scale of 1 to 10. Such possible nonlinearities, however, can be addressed using various techniques (for example, see Barro 1996a).

A separate vexing question is the often-arbitrary aggregation of different components of many of the indexes. Typically, components are simply added or averaged with the same weights (see table 1). When there are many components, factor analysis—a technique that aggregates components with unknown weights—is a convenient and superior alternative (Temple and Johnson 1998). At the least, the weighting assumptions employed should be tested (as in Knack and Keefer 1995).

Correlation with Growth

Correlations between institutional variables and growth suggest a relationship but not the direction of causality. Causality can run in both directions, from good institutions to growth and from improved growth to better institutions. Given the poor data for African countries, the relative state of African institutions can be gauged from credit-rating measures, where coverage is fairly complete and some intra-African comparisons are possible.

Simple Correlations between Institutions and Growth

The matrix in table 2 shows the degree of correlation between real per capita growth and a range of empirical institutional variables. The institutional variables are organized under headings that correspond to those in table 1. The same variables are listed in the left column and along the top. Where a column and a row meet, the statistic presented is the degree of correlation between the two variables. The shaded squares in the matrix suggest that the correlation is statistically significant at the 1 percent level. For instance, ethnolinguistic fractionalization (or ELF), measured in 1960 and entered under the heading of social characteristics, has a (statistically

Table 2. *Correlation Matrix for a Range of Institutional Variables and Real Per Capita Gross Domestic Product Growth, 1980s*

Variable	(1) GYP80	(2) BERI70	(3) BERI80	(4) BUREAU	(5) CORRUP	(6) ICRG	(7) TELEPH	(8) PURGE70
Number of countries in sample	112	42	44	63	101	101	106	100
Growth 1980–89								
(1) Real per capita growth	1.00							
Institutional quality								
(2) BERI index, 1970–79[a]	0.23	1.00						
(3) BERI index, 1980–89[a]	0.37	0.95	1.00					
(4) Bureaucracy index, 1980–83[a]	0.33	0.81	0.88	1.00				
(5) Corruption index, 1980–89[a]	0.37	0.86	0.89	0.87	1.00			
(6) ICRG index, 1980–89[a]	0.46	0.85	0.88	0.81	0.87	1.00		
(7) Log (telephones per 1,000 workers), 1970–79	0.33	0.83	0.84	0.82	0.71	0.75	1.00	
Social capital variables								
(8) Government purges, 1970–79	−0.02	−0.23	−0.29	−0.38	−0.26	−0.22	−0.07	1.00
(9) Antigovernment demonstrations, 1970–79	0.14	0.33	0.30	0.23	0.22	0.31	0.31	0.05
Social characteristics[b]								
(10) Ethnolinguistic fractionalization, 1960[c]	−0.30	−0.25	−0.35	−0.32	−0.36	−0.32	−0.52	−0.06
(11) Racial tension, 1984[d]	0.23	0.44	0.48	0.43	0.47	0.48	0.59	−0.03
(12) Home language not official language (percent)	−0.23	−0.49	−0.54	−0.40	−0.40	−0.37	−0.57	0.01
(13) Minorities at risk, 1990 (percent)	−0.16	−0.07	−0.22	−0.16	−0.17	−0.24	−0.44	−0.08
(14) Separatist movements, 1975 (percent)	−0.16	−0.21	−0.30	−0.36	−0.27	−0.25	−0.48	−0.08
Characteristic of political institutions								
(15) Constitutional change, 1970–79[e]	−0.09	−0.01	−0.20	−0.20	−0.19	−0.21	−0.18	−0.01
Political instability								
(16) Cabinet changes, 1970–79[f]	−0.03	−0.29	−0.37	0.00	−0.08	−0.13	−0.03	0.17
(17) Civil war, 1970–79[g]	−0.08	−0.39	−0.27	−0.19	−0.20	−0.32	−0.23	0.08
(18) Revolution, 1970–79[h]	−0.23	−0.28	−0.37	−0.11	−0.28	−0.38	−0.20	0.31

Note: Simple correlation coefficients in the shaded squares are significant at the 1 percent level. Note that the sample sizes differ.

a. The indexes are the BERI indexes (Knack 1996), Mauro's BI bureaucracy composite index (Mauro 1995), and the ICRG composite index (Knack 1996). The corruption index is from Knack and Keefer (1995) and is similar to the Mauro BI corruption index for 1980–83.

b. Social characteristics variables stress ethnic differences.

c. Ethnolinguistic fractionalization is on a scale of 0 to 1 (increasing).

	(9) DEMO70	(10) ELF60	(11) RACIAL	(12) HOMELA	(13) MINORI	(14) SEPAR75	(15) CONSTC	(16) CABCHG	(17) CIVWAR	(18) REVOL
	100	107	95	111	75	70	100	99	112	100
DEMO70	1.00									
ELF60	0.02	1.00								
RACIAL	0.05	−0.71	1.00							
HOMELA	−0.13	0.76	−0.55	1.00						
MINORI	−0.11	0.51	−0.51	0.45	1.00					
SEPAR75	−0.10	0.62	−0.62	0.53	0.56	1.00				
CONSTC	−0.13	0.18	−0.12	0.21	0.06	0.26	1.00			
CABCHG	−0.06	−0.09	0.02	0.00	−0.03	0.09	−0.03	1.00		
CIVWAR	0.02	0.20	−0.34	0.11	0.18	0.22	0.02	−0.19	1.00	
REVOL	−0.05	0.03	−0.12	−0.02	0.16	0.13	0.53	0.17	0.14	1.00

d. Racial tension is on a scale of 0 to 6 (decreasing).

e. Constitutional change captures the number of basic alterations in a constitutional structure or a new constitution.

f. Cabinet change refers to the number of times a premier or more than 50 percent of the cabinet is replaced.

g. Civil war is a dummy variable: 1 if war occurs, 0 otherwise.

h. Revolution is an illegal attempt to replace a government.

Source: Author's calculations and categories using data from Easterly and Levine (1997) and Mauro (1995).

significant) correlation of minus 0.3 with real per capita growth (averaged over 1980–89).

MEASURES OF INSTITUTIONAL QUALITY. The matrix shows that some earlier variables of institutional quality (the BERI 1970–79 and the Business International—BI—bureaucracy 1980–83 indexes) are positively correlated with subsequent growth (averaged over 1980–89). The degree of correlation, of course, increases when the later (more endogenous) measures are used (the BERI 1980–89, ICRG 1980–89, and corruption 1980–89 indexes).[5]

Also of interest here are the relations *among* institutional variables, which may reveal some of their more indirect effects on growth. The number of telephones per 1,000 workers (Canning and Fay 1993) might be considered a measure of public or private service provision (public in Africa) akin to the institutional measures in Putnam (1993). Interesting positive correlations are apparent with indicators of institutional quality and social capital, and negative correlations are associated with various measures of social characteristics indicating racial diversity.

Poor institutional quality in many cases also is significantly correlated with increased political instability. The correlation between low bureaucratic efficiency and increasing political instability in African and Asian economies is shown in figure 1. It is clear that the few African countries represented in the figure lie at the bottom end of the efficiency spectrum, and some countries may have moved even farther down the scale since 1983.

MEASURES OF SOCIAL CAPITAL. Few measures of social capital are included in table 2, and the construction of such measures should prove to be a growth industry in coming years. Two variables proxy for social capital in the table: first, a measure of systematic state purges of the ranks of the regime or of the opposition, which curtail civil liberties and probably inhibit the formation of social capital, and second, peaceful antigovernment demonstrations of 100 persons or more. There are weak positive correlations between social capital and growth, while there are positive and significant correlations with some measures of formal institutional performance (the bureaucracy index).

MEASURES OF SOCIAL CHARACTERISTICS. Several measures of social characteristics reflect ethnic differences. They are highly correlated with one another, and increased ethnic diversity is negatively and significantly correlated with institutional quality and service provision. Increased ethnic diversity appears to have a negative, though largely insignificant, impact on growth. However, there is unlikely to be an endogeneity problem here because ethnicity is expected to change very slowly over time.

ATTRIBUTES OR CHARACTERISTICS OF POLITICAL INSTITUTIONS. The data are rather richer for attributes or characteristics of political institutions, and the African politi-

Most
efficient

5   Singapore
                                                           Japan
                                                           Hong Kong (China)

Bureaucratic efficiency

4   Zimbabwe   Taiwan (China)
           South Africa   Malaysia

3 Angola Sri Lanka   Korea,   Côte d'Ivoire
                        Rep. of

           India
2   Kenya   Algeria

   Thailand
   Phillppines
   Pakistan
Least Zaire
efficient Liberia Bangladesh
1 Ghana   Nigeria   Indonesia   Egypt

   1   2   3   4   5

Least politically stable   Most politically stable
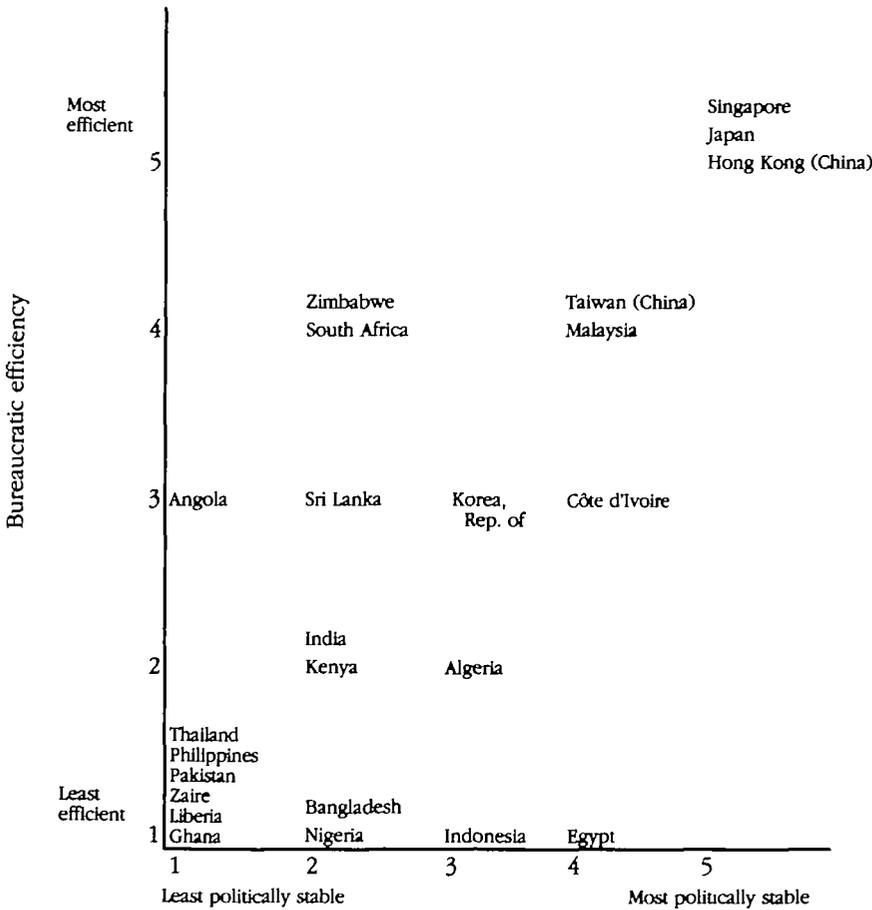
Note: The political stability index is the simple average of six Business International indexes: institutional change, social change, opposition takeover, stability of labor, relationship with neighboring countries, and terrorism. The bureaucratic efficiency index is the simple average of three Business International indexes: judiciary system, red tape, and corruption.

Source: Adapted from Mauro (1995).

cal data set being compiled by Bates and others (1996) will prove invaluable. The example given in table 2 is constitutional change, which captures the number of alterations in a state's constitutional structure or, at the extreme, a new constitution. It is not surprising that the creation of a new constitution, which has little to do with the effectiveness or the enforcement of a constitution, however well designed, is not significantly correlated with growth or with institutional efficiency. However, constitutional change seems to be a consequence (or occasionally a cause) of revolution.

POLITICAL INSTABILITY. As for political instability, real per capita growth in 1980–89 is negatively correlated with an earlier measure of cabinet changes (1970–79) and also with two related sociopolitical measures of political instability during the 1970s—revolution and civil war.

African Economic Performance and Risk Ratings

Annual or twice-yearly credit ratings that serve as rough proxies for the enforcement of property rights are presented in figures 2–4. These data have excellent coverage of Africa. However, it should be noted that recent growth has an important bearing on these ratings.

In figures 2 and 3, African countries are categorized into four groups, each reflecting different relative economic performance. Figure 2 uses the *Institutional Investor* credit ratings, which measure the risk of default on sovereign debt (see table 1). The

Figure 2. *Institutional Investor Risk Ratings for African Countries, 1980–96*
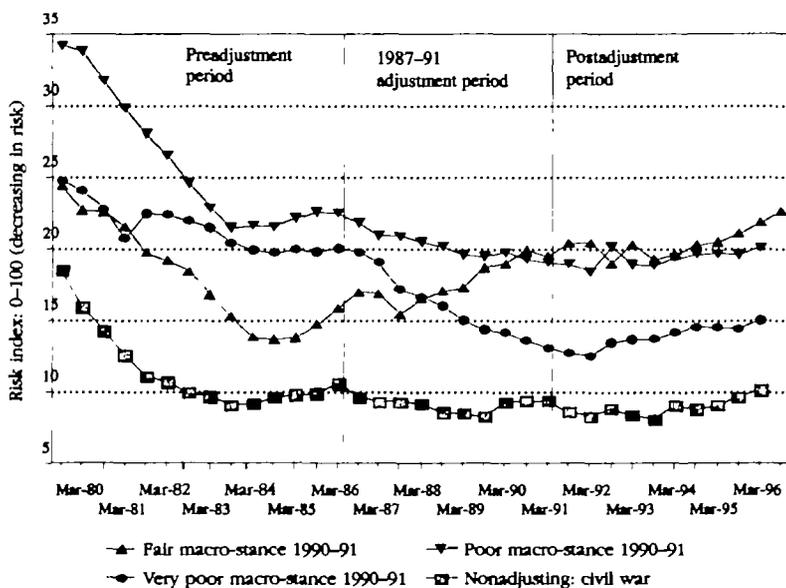
Note: Simple averages. Years in brackets after particular countries indicate the first available data point: there are thus small step effects in 1993–94. Countries are categorized as follows. *Fair:* Burkina Faso (1993), Gabon, Ghana (1992), Guinea (1993), Kenya, Malawi (1981), Mali (1993), Nigeria, Senegal, Togo (1994), Uganda. *Poor:* Benin (1993), Tanzania, Zimbabwe. *Very poor:* Cameroon (1992), Congo, Côte d'Ivoire, Mozambique (1988), Sierra Leone, Zambia. *Civil war:* Angola (1992), Ethiopia, Liberia, Sudan, Zaire.

Source: Author's calculations using data from *Institutional Investor* and country categories from World Bank (1994).

Figure 3. *Euromoney "Political Risk" Rating for African Countries, by Categories of Performance, 1992–96*
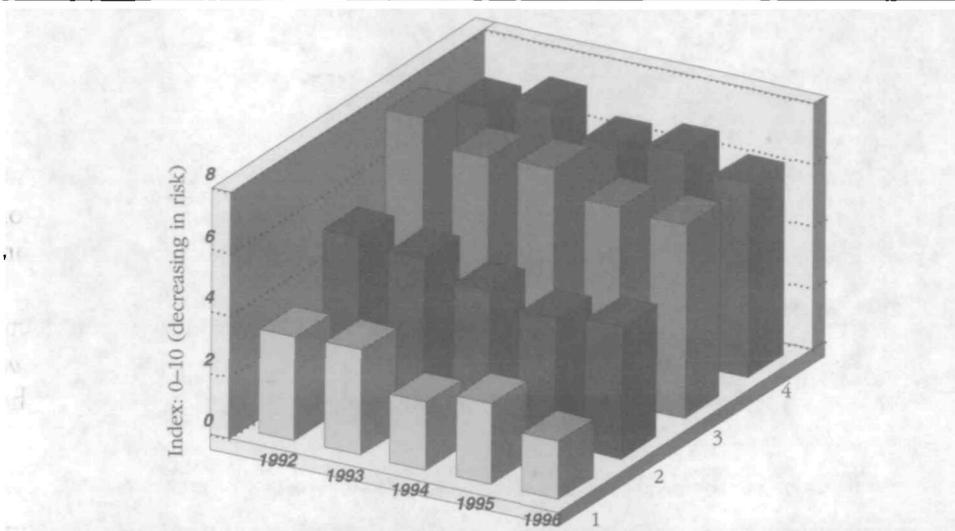

Note: Weighted averages using 1993 gross domestic product. Countries are categorized as follows. 1. Countries with civil war in the early 1990s: Angola, Burundi, Ethiopia, Liberia, Rwanda, Sierra Leone, Somalia, Sudan. 2. Countries with inflation over 25 percent during 1992–94: Equatorial Guinea, Madagascar, Malawi, Mozambique, Niger, Nigeria, Tanzania, Togo, Zaire, Zambia. 3. Countries with poor resource allocation: Cameroon, Chad, Congo, Guinea, Kenya, Lesotho, Zimbabwe. 4. Remaining countries: Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea-Bissau, Mali, Mauritania, Senegal, Uganda.

Source: Author's calculations using disaggregated data from *Euromoney* and country categories from Collier and Gunning (1999).

assessment covers economic performance in the 1980s from the standpoint of the overall macroeconomic situation in 1990–91, *after* a period of structural adjustment in 1987–91 (categories from World Bank 1994). With the caveat that the comparability of these survey indicators across time may be in doubt, in figure 2 the countries categorized as "fair" (1990–91) start from a low ratings base, before adjustment, and continue improving in the eyes of foreign investors during the 1990s. "Poor" and "very poor" countries steadily decline in the preadjustment and adjustment periods: the decline in both groups, however, shows signs of leveling off in the 1990s. Countries involved in civil war show little improvement, although Ethiopia's rating increased marginally in the mid-1990s.

Figure 3 examines political risk, the one subjective component in the *Euromoney* rating of aggregate risk. The assessment reviews economic performance in the 1990s from the standpoint of the country's macroeconomic position in 1992–94 (categories from Collier and Gunning 1999). Countries are ranked by four "hurdles" and show distinct ratings by economic performance (but the resource allocation criterion proves a weak means of distinguishing countries).

Figure 4. *Institutional Investor Risk Ratings for Africa and Emerging Markets, 1987–96*
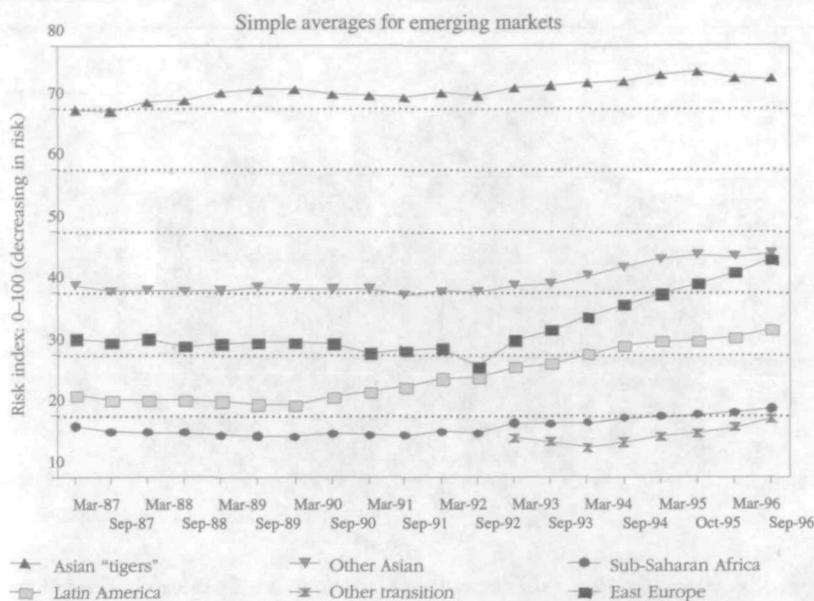
Note: Countries are categorized as follows. *East Europe:* Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia. *Other transition:* Albania, Croatia, Estonia, Georgia, Kazakhstan, Latvia, Lithuania, Russia, Ukraine, Uzbekistan, Yugoslavia. *Asian tigers:* Hong Kong (China), Republic of Korea, Singapore, Taiwan (China). *Other Asian:* Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand. *Latin America:* Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay, Venezuela. *Africa:* Angola, Benin, Burkina Faso, Burundi, Cameroon, Chad, Congo, Côte d'Ivoire, Equatorial Guinea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zaire, Zambia, Zimbabwe.
Source: Author's calculations using data from *Institutional Investor.*

From Correlation to Causation

The evidence for causation in the literature on growth and institutions may be compromised not only by deficiencies in the institutional measures but also by the poor quality of the data for other variables. Many growth regressions use data from the cross-country Penn World Tables data set (Summers and Heston 1991); almost half of the 138 countries in this set have poor-quality data, and of these, 37 are African countries.

How Do Institutions Affect Growth?

The usefulness of North's framework, in conjunction with neoclassical growth models, is that it helps to clarify the likely channels of influence on growth of measures of

institutional quality and social capital (proxies for the performance of formal and informal institutions). Box 2, on page 102, suggests how North's institutional framework could be integrated with Solow's growth model (see also Tornell 1997).

Reference has already been made to North's contention that weak institutions may have a direct effect on growth because they reduce the efficiency of investment. The efficiency effect might arise from the initial state of institutions in the model, which will affect the productivity of the existing stock of capital, or it may result from changes in institutions over time. In an environment where the enforcement of property rights is not reliable, firms will tend to be small scale, to use low-capital technology, and to have short-term horizons. Second, there could be an indirect effect on growth resulting from a decline in investment—a variable that is already in the Solow model—such as increased transaction costs through bribes and rent seeking.

Most studies in the literature have used reduced-form growth models in which the direct and indirect effects of institutions are difficult to disentangle. Recently a few authors (such as Mauro 1995) have used Solow-type models as well as separate investment models to evaluate the role of the quality of institutions, testing the extent of social capital and the effectiveness of the laws on property rights both for their direct effects on growth (more efficient investment) and for their indirect effects (larger volume of investment).

The three remaining categories of institutional measures in table 1—political characteristics, political instability (duration), and social characteristics—are often included in growth and investment models as proxies for institutions. However, the observation that measures of political instability are only weakly significant—or insignificant—in growth regressions when the quality of institutions is controlled for, while evidence for "democracy" measures is generally weak in growth regressions, has led authors such as Clague and others (1996) to use these measures instead to model property rights. Similarly, Barro (1996b) recently suggested using indicators of political stability as a determinant of property rights. Finally, Barro (1996a) suggests that what may influence the evolution of a political regime itself are persistent social characteristics such as ethnic diversity, religious or colonial heritage, and past growth.

Findings from Models of Growth

Most of the institutions and growth studies considered here are cross-sectional regressions, that is, they use data from many countries for one period only (which may be an average of years). Increasingly, however, growth analysts are turning to panel data, which cover a range of countries for two or more consecutive periods (ideally, the periods are averages of 7 to 10 years, close to business-cycle frequencies).[6]

ACCOUNTING FOR POLITICAL CHARACTERISTICS, POLITICAL INSTABILITY, AND SOCIAL CHARACTERISTICS. Studies that use objective measures of democracy (that

is, attributes, not performance) tend to find inconclusive results in growth regressions because democracy, acting through various channels, may have both positive and negative implications for growth (Alesina and Rodrik 1994; Helliwell 1994; Alesina and others 1996). On the positive side, transparency and accountability may enhance economic and other rights, including respect for contracts. On the negative side, the consensus required by democratic institutions, or interest group lobbies, may delay responses to shocks and implementation of legislation. A problem with using a single cross-section is that it is difficult to distinguish between changes, their different durations, and the different kinds of dictatorships. Growth performance may be poor during periods of democratic transition because the government must confront the economic legacy of a collapsed regime and the attendant political instability (Alesina and Perotti 1994). Finally, democracy tends to be correlated with high-income countries, good institutions, and an educated workforce. The effects are difficult to disentangle.

Variables used to indicate political instability generally suffer from endogeneity problems. Although, for example, political instability may reduce the volume and efficiency of investment and thus hamper growth, negative income shocks may also promote political instability. Alesina and others (1996) model the effects of executive instability by first measuring the probability of a change in government for three definitions of change (every change in government, major changes in government, and coups d'état) and then estimating the relationship between growth in per capita income and a range of variables, including the probability of a change of government. They find apparently robust results indicating that high executive turnover has a negative impact on growth (but see a methodological critique in Deaton and Miller 1996). Bienen, Londregan, and van de Walle (1993), however, examine the reverse causality and find that current and lagged growth rates inhibit the transfer of power. Londregan and Poole (1990) assume, plausibly, that the current rate of growth and the probability of a coup are not simultaneously linked but also, perhaps less plausibly, that past coups have no effect on current income. They too find that income growth inhibits coups.

Simpler counts of revolutions and coups appear to influence growth negatively, but these effects disappear when property rights are controlled for (Barro 1996a). Aggregate indexes of riots, demonstrations, and assassinations do not appear to affect growth in these estimates, but they may reduce investment and saving (Alesina and Perotti 1996). Here they may proxy for ineffective property rights. Svensson (1998) finds a link between political instability and the quality of property rights. He also finds that when property rights are included in the investment equation, the political instability variables cease to be significant.

Similarly, Clague and others (1996) find that the characteristics and stability of political regimes (type and duration) appear to be important determinants of the quality of economic institutions. This research highlights the tradeoff between credibility and executive flexibility as a possible explanation for why some democratic

regimes do not deliver the goods, while some longer-lived autocratic regimes do. Using annual data to account for frequent changes of regime, the paper finds that short-lived democracies are least likely to ensure adequate property rights, while longer-term democracies offer better protection for property and contract rights than any other type of regime of any duration.

Barro (1996a), who evaluates with panel data the role of social characteristics in determining political regimes using proportions of the population by religion, rates of urbanization, colonial heritage, ethnic differences, income inequality, and social indicators such as life expectancy, actually forecasts which countries are likely to experience declines and improvements in future democracy. That none of the above variables is significant (except an indicator for countries in the Organization of Petroleum-Exporting Countries) may be related to Barro's neglect of the *duration* of democratic and other regimes, which Clague and others (1996) emphasize. Several of these variables also have been shown to be relevant in Solow-type growth equations, although with doubtful robustness (Temple 1999).

ACCOUNTING FOR SOCIAL CAPITAL AND QUALITY OF INSTITUTIONS. In early work examining the influence of institutions on growth, Kormendi and Meguire (1985) and Scully (1988) used cross-sectional growth regressions and Gastil's indexes of civil and political rights. In these two studies, Gastil's indexes are transformed so as to address the ordinality problem. Kormendi and Meguire's paper suggests an indirect effect on growth through investment, but because the measure of civil rights is measured contemporaneously with growth and other variables, endogeneity problems arise, and no definite causal relation is established. Scully's study examines whether civil, political, and economic rights have a direct efficiency-enhancing effect on growth, and again, the evidence is mixed and is compromised by endogeneity problems.

More recently, Isham, Kaufmann, and Pritchett (1997) find that purely political rights (a measure of the quality of democracy) and type of political regime (attributes) have no effect on the rates of return to World Bank–financed government investment projects but that civil rights are significant—which we classify as a possible "social capital" proxy in table 1. However, the indexes are both ordinal and endogenous.

An interesting paper by Knack and Keefer (1997) examines informal institutions using measures of trust and civic norms drawn from the World Values Surveys (see Inglehart 1994a). The authors find that in reduced-form growth regressions, singly and together, trust and civic norms are positively associated with growth and claim a causal role. Specification tests for the robustness of these results find that they are fairly insensitive to changes in specification, exclusions of influential observations, and the use of additional regressors. In the Solow regressions (not reported), these variables lose significance or become insignificant. This could suggest that the in-

vestment relationship where both variables, but especially civil norms, prove to be important fully captures their (indirect) impact on growth. However, as with other studies surveyed here, the endogeneity of these ordinal indexes and their measurement error raise doubts about a robust causal role for these measures. There probably is considerable measurement error here: some groups are oversampled (higher-status groups), which the authors try to correct for, but the five survey questions comprising the civic performance measure may not have been answered truthfully, while the question regarding trust is ambiguous.

The authors also test another proxy for social capital (following Putnam 1993): associational activity or membership in groups, again using World Values Surveys data. They find no significance for these measures and perverse relations in some cases, but this measure is flawed because it fails to reflect the intensity (or quality) of membership. Thus the authors' conclusion that declining social capital reflects declining trust and civic norms rather than declining associational life may be too strong.

Finally, Knack and Keefer (1997) examine the impact of trust and civic norms on the quality of formal institutions and report positive and significant links, although it should be noted that there are endogeneity problems. They also find evidence that income equality and low ethnic divisions are linked with trust and civic cooperation.

Clague and others (1995) use an innovative objective measure of contract enforcement that they call contract-intensive money for 96 countries during 1969–90. They describe this stock of money as the amount that is held on deposit in banks and other financial institutions. They reason that where third-party enforcement of contracts is not reliable and insecure property rights hamper or preclude the use of assets as collateral for loans, banks and financial intermediaries will not profit from providing low-cost retail banking services or from offering incentives to attract deposits. In such cases, where there are few advantages to holding money on deposit and customers also face the risk of nonrecovery, individuals will hold a lower proportion of their assets in such accounts. The authors are at pains to show that this measure is not just an indicator of financial development but that it is also highly significant in an investment equation (controlling for financial depth), suggesting an indirect influence on growth.[7] They fail to find evidence for a direct or efficiency influence on growth.

The remaining studies all use data from the risk-rating agencies referred to earlier to assess the effects of institutional variables on investment and growth: the ICRG, BERI, and BI. They generally show that measures of corruption and weak institutions have the expected negative effect on investment and growth, while efficient bureaucracy and observation of the rule of law effectively support the achievement of these objectives.

Mauro (1995) reports results from three regressions: an investment equation, a reduced-form growth regression, and an extended Solow growth equation. As expected, he finds that efficient bureaucracy (although not corruption) indexes are significant in an investment equation (and hence influence growth indirectly) and

demonstrates their importance in a broad range of simple correlations with investment for different periods and different types of investment. In reduced-form regressions the bureaucracy index is robustly significant, but corruption is insignificant. In a Solow model bureaucracy is barely significant, and corruption is insignificant. With a broader set of variables, including political instability measures, the significance of bureaucracy diminishes further. Mauro attempts to address the endogeneity problems with both the institutional variables and investment, but in neither case is the institutional index significant. It is surprising that the Solow model lacks a robust institutional "efficiency" link with investment, but this absence may be due to the ordinality, aggregation, and endogeneity problems discussed earlier.

Helliwell (1996b) is one of the few studies where the institutional variables are arguably not too endogenous, since a bureaucracy index for 1981–83 for some Asian countries is related to average growth for the subsequent decade. In a reduced-form growth equation, the institutional linkages surprisingly do not show up (investment is absent, and the institutional variables are "free to take all the credit"). The answer may lie with measurement and ordinality problems.

Knack and Keefer (1995) and Knack (1996) use two institutional indexes in growth regressions capturing security of contract and property rights, the ICRG index from 1982, and the earlier and hence less endogenous BERI index (from 1972). They report some results without statistics to support them. It appears that both institutional indexes are significant in investment regressions during 1974–89 and 1960–89, confirming an indirect effect on growth through factor accumulation. There also appears to be weak evidence for a direct efficiency effect on growth.

Lane and Tornell (1996) address two commonly omitted variables—natural resource abundance and institutions—and attempt to explain why some resource-rich countries have lower growth rates than resource-poor countries. They report reduced-form growth and investment regressions, and their results focus on the effects of weak property rights (reflected in estimates of the ICRG risk indicator) and an increase in manufacturing concentration. The coexistence of weak institutions and powerful industrial groups affects growth and investment negatively and significantly.

A 1960–90 panel study by Barro (1996a) uses a Solow model and the ordinal ICRG and the earlier BERI indexes of property rights. With an endogenous rule of law index (dated 1982), he finds a consistently positive and significant effect on growth. But, unfortunately, probably due to reduced sample size using the less endogenous BERI index, it is rendered only marginally significant (although not too different in value). In the same study, Barro transforms Gastil's political rights index into three categories—high, middle, and low measures of the quality of democracy—and finds that the middle level of democracy most favors growth. The implication is that where a moderate amount of political rights already has been extended, a further increase could actually diminish growth, perhaps due to pressures for income redistribution.[8]

What We Know and What We Don't

The more recent literature suggests that the appropriate institutional variables to include in investment and growth regressions are those that capture the *performance* or *quality* of formal and informal institutions rather than merely describe the characteristics or attributes of political institutions and society or measure their political instability. Reinforcing this view, evidence suggests that the characteristics and duration of political regimes are important in determining whether countries have well-enforced and well-defined property rights, demonstrating a possible link between political stability and investment and implying that inefficient political institutions with high transaction costs may result in weak property rights and thus discourage economic growth. Barro (1996a) has attempted to model such political characteristics as a function of cultural, social, and historical variables (including indicators for colonialism), although not with particularly conclusive results.

The performance or quality measures for formal and informal institutions include respect for contracts, property rights, trust, and civil freedom. Evidence suggests that the quality of institutions has a robust and significant indirect relationship to growth via its effect on the volume of investment. There also is evidence, although it is weak, for a direct relationship between institutions and growth.

Thus better-performing institutions may improve growth by increasing the volume of investment—for example, by eliminating bureaucratic red tape and rent-seeking costs—and (more weakly) by improving the efficiency of investment, say, by enforcing well-defined property rights. Similarly, the promotion of social capital strengthening informal institutions may positively influence growth both directly and indirectly.

It is important to highlight the simultaneous relationship between growth, investment, and institutions. However, most of the studies in this survey ignore simultaneity issues and have other methodological problems found in cross-country growth studies in general (see Temple 1999). In particular, they often deal inadequately with endogenous institutional measures, while there are aggregation biases and other problems with the institutional measures used. Thus a definite positive conclusion on the links between growth and institutions is difficult to pin down, suggesting that the claims for causality should be treated with caution.

Although the results are suggestive, many commentators are skeptical because of the problems that plague cross-country studies. However, it is possible to take a more constructive view of this literature, from which a great deal already has been learned. Recent literature is paying increasing attention to many of the methodological difficulties, and the result is more thorough specification and other tests, more attention to endogeneity issues, and more guarded and less cavalier policy conclusions. There are limited data in the institutional sphere, but the construction of

more subtle empirical measures for institutions is by now a growth area in itself. Admittedly, the growth and institutions models are highly stylized, but this frontier research area may well yield stronger conclusions in the future.

To the extent that these tentative results are reinforced by later, more careful research, this would underline the importance of the state in facilitating the development and enforcement of an independent and effective judiciary, in refraining from predatory actions that discourage saving, investment, and production, and in extending civil and political rights that promote the development of social capital.

Although the limited evidence reveals the likelihood of linear relationships between various efficiency measures of institutions and growth, Barro (1996a) finds evidence suggesting that after a certain threshold, further extension of political rights could retard growth, perhaps due to pressures for income redistribution, and even argues against the desirability of exporting democratic institutions to developing nations (for example, countries such as Mexico and Malaysia). This conclusion probably is overstated, and another interpretation can be considered. It is possible that Barro is picking up strong effects from a subset of authoritarian and relatively recently fast-growing countries that have exploited the "catch-up" phase and increasing returns to scale and now are entering a mature period of slower growth. Increased demand for democracy could be due to the consequences of slowing growth (for example, recent trade union demands in the Republic of Korea) as well as to exposure to democratic rights through internationalization and higher standards of living. However, it also is possible that countries like South Africa that have a high potential for catch-up and have recently extended political rights may suffer delays in implementation and setbacks to economic reform under participatory politics.

The complex area of institutional change lies outside the scope of this review. A crucial problem for developing countries is to achieve institutional credibility via third-party enforcement. Even if a neutral state is able to monitor property rights and enforce contracts effectively, the question arises as to who guards the guards. Many observers are skeptical that constitutional reform will be capable of restraining the tyrannical exercise of power. Others believe that the permanent extension of civil and political liberties may serve to restrain the state.

Clearly it is important initially to match the state's role to its capabilities as well as to foster growth by invigorating institutions. In the context of law reform, Posner (1998) believes that fairly modest fiscal expenditures may secure reforms that could enhance economic growth, thereby generating further resources to proceed with deeper reforms, and so on, in what he describes as a virtuous circle. Other authors agree that a less costly and more rapid reform involves enacting efficient rules to be administered by less-than-efficient institutions, rather than wholesale, expensive, and time-

consuming reforms of the institutions themselves (Hay, Schleifer, and Vishny 1996). However, a more sophisticated legal reform will be required to protect civil. and political liberties.

Whether such profound institutional change and development can be rapidly achieved and sustained is uncertain. Institutionalists tend to emphasize the slow pace of change. Indeed, North's sobering view is that "creating a system of effective enforcement and of moral constraints on behavior is a long, slow process that requires time to develop if it is to evolve—a condition markedly absent in the rapid transformation of Africa from tribal societies to market economies" (North 1990: 60).

Notes

1. Recent evidence on Africa's growth performance is recorded in Collier and Gunning (1999), Easterly and Levine (1997), Elbadawi and Ndulu (1995), and Sachs and Warner (1997), while Ravallion and Chen (1997) provide a recent analysis of poverty and distribution.

2. Characteristics of political regimes often are called measures of democracy. By contrast, Bates and others (1996) stress that their scales of detailed features of political institutions do not measure "democracy": they measure the attributes rather than the performance of institutions. (Such measures do clarify the scope for political reform, however.)

3. Alesina and Perotti (1994) categorize variables as definitions of democracy (civil and economic liberties and competitiveness of elections) and political instability (sociopolitical instability, executive turnover, and the risk-agency measures of corruption and bureaucracy). Brunetti (1997) categorizes political variables into democracy, government stability, political violence, policy volatility, and subjective perceptions of politics.

4. Gastil's (1991) subjective rankings of civil liberty and political liberty have been constructed annually since 1973 for a large number of countries using various public sources, including newspaper reports, human rights reports, and U.S. State Department reports to Congress on human rights in countries that receive U.S. aid (see Scully 1987 for further discussion). Political rights rankings are based on criteria reflecting the degree to which citizens have control over government, while civil rights rankings use criteria reflecting individual rights relative to the state (see the criteria in table 1).

5. An examination of the underlying data shows that in practice the ICRG measures of Knack and Keefer (1995) are predominantly measured *later* in the 1980s, that is, 1984/85–89 (this is especially true for African countries).

6. It remains controversial whether panel studies can better address the vexing problem of endogenous regressors. For discussion on this, see Caselli, Esquivel, and Lefort (1996) and Arellano and Bover (1995). Moreover, Pritchett (1998) argues against the usefulness of panel data for investigating long-term growth rates in developing countries, given the great instability in their growth rates over time.

7. The authors find that the results are somewhat sensitive to the exclusion of outliers but find no evidence of reverse causality in the measure of contract-intensive money.

8. Given the very limited variation in the institutional indexes for African countries, often with serious endogeneity problems, there probably is little to gain on the role of institutions from studies focused solely on Africa, such as the panel data studies of Ghura and Hadjimichael (1996) and Savvides (1995) and the cross-sectional growth study of Sachs and Warner (1997).

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