IMF Working Paper

WP/98/4   INTERNATIONAL MONETARY FUND

African Department

Economic Security, Private Investment, and Growth in Developing Countries

Prepared by Hélène Poirson[1]

Authorized for distribution by David T. Coe

January 1998

Abstract

This paper provides empirical support for the view that enhanced economic security fosters private investment and growth in developing countries. An analysis for 53 developing countries suggests that most aspects of economic security have improved since the mid-1980s; that private investment is mostly influenced by the risk of expropriation, the degree of civil liberty, and the degree of independence of the bureaucracy; and that economic growth is affected by the risk of expropriation and political terrorism in the short run, and by corruption and contract repudiation in the long run.

JEL Classification Numbers: O40

Keywords: Private Investment, Growth, Political Economy

Author's E-Mail Address: poirson@delta.ens.fr

Contents

SUMMARY

This paper provides empirical support for the view that enhanced economic security fosters private investment and growth in developing countries, based on an analysis of economic security ratings for 53 developing countries during 1984-95. The paper shows that most aspects of economic security have improved significantly, contributing to private investment and economic growth.

The implied gains from institutional reforms to improve economic security are significant. The empirical results suggest that reforms to improve economic security in specific developing country regions to "best practices" in other developing country regions could raise private investment by ½ to 1 percentage point of GDP in the short to medium term. In the longer term, the payoff in real economic growth could be on the order of ½ to 1¼ percent a year. The results suggest the following key areas for institutional reforms in developing regions: In **Africa**, the priorities are to reduce the risks of expropriation in order to raise private investment and improve the efficiency of resource allocation; to reduce corruption and the risks of contract repudiation by government in order to raise longer-term growth prospects; and to increase the scope of civil liberties and the quality of the bureaucracy in order to raise private sector confidence. In **Asia**, the priorities are to increase civil liberties to further boost private sector confidence, and to reduce corruption to raise longer-term growth prospects. In the **Western Hemisphere**, the priorities are to improve the quality of the bureaucracy in order to allow a further rise in private investment, and to reduce corruption to raise longer-term growth prospects. Finally, in the **Middle East and Europe**, the priority is to increase civil liberties to further boost private sector confidence.

I. INTRODUCTION

A secure economic environment is arguably a key factor for promoting private investment and growth in developing countries (Dhonte and Kapur, 1997). Improvements in economic security contribute to the rise of private investment by decreasing downside uncertainty on the return to investment. "Security factors" that decrease the uncertainty on the returns to investment *across* capital goods also directly bear on growth by enhancing efficiency of resource allocation, independent of their effect on private investment.

This paper provides empirical support to the view that economic security contributes to private investment and growth. The analysis uses a panel data set of economic security ratings for 53 developing countries over the 1984-95 period. Based on the informed opinion of experts, the ratings assign grade points to 12 key features of the economic and political environment affecting private investment decisions: government leadership, external conflict risk, corruption, rule of law, racial and ethnic tensions, political terrorism, civil war threats, quality of the bureaucracy (including its degree of independence from political pressure), risk of repudiation of contracts, risk of expropriation by government, political rights, and civil liberties. High ratings in all of these aspects arguably characterize economic security, that is, "an institutional framework that inspires the confidence of savers and investors and guarantees the physical security of individuals and the legal security of transactions."[2]

Most previous studies have used cross-section estimation to link economic performance to several aspects of economic security. Easterly and Levine (1997) show that ethnic divisions affect growth. Mauro (1995) shows that investment is influenced by corruption, the judiciary system, and the amount of red tape, averaged in an index of "bureaucracy efficiency." Focusing on corruption, Mauro (1996) shows that it influences investment and also directly affects economic growth. Knack and Keefer (1995) show that both growth and private investment are influenced by "institutional quality," an average of indicators of corruption, rule of law, bureaucracy quality, risk of repudiation of contracts and risk of expropriation by government.[3] They also show that neither civil unrest, nor civil liberties and political rights have a significant influence when institutional quality is controlled for. Fabricius (1997) similarly detects no impact of civil liberties and political rights on private investment, but he finds a positive influence of the other "security factors."[4] Barro and Sala-I-Martin (1995) show that, among the five aspects of "institutional quality" in the Knack and Keefer index, rule of law is the only one that bears significantly on economic growth when a variety of

---

[2]Camdessus (1996), quoted in Fabricius (1997), p. 9.

[3]Controlling for structural factors and the degree of openness to trade, Sachs and Warner (1996) confirm the positive effect of institutional quality on economic growth.

[4]Barro (1996) and Tavares and Wacziarg (1997) also find no additional effect of political rights on growth when environmental and other variables are controlled for.

environmental and other variables are controlled for.[5] Finally, Brunetti, Kisunko, and Weder (1996) show that predictability of rule making, subjective perception of political instability, security of persons and property, predictability of judicial enforcement, and corruption, averaged in a "credibility" index, bear on both economic growth and investment.

A few recent studies have used panel data estimation. Alesina and others (1992) find that political stability bears on economic growth both over time and across countries. Gyimah-Brempong and Traynor (1996) show that political stability affects savings and growth in Africa. Commander, Davoodi, and Lee (1997) confirm that bureaucracy quality affects growth both over time and across countries. Burnside and Dollar (1997) confirm that institutional quality influences growth both over time and across countries. Controlling for country effects, Servén (1997) shows that private investment is significantly influenced by the degree of civil liberties. Controlling for macroeconomic uncertainty, Hadjimichael and Ghura (1995) also find within a sample of African countries a significant influence of civil liberties and political rights on private investment.

Existing panel evidence on the link between economic security and economic performance, in particular private investment, is thus limited: studies focus on only a few aspects of economic security, or they aggregate different aspects that may not all bear similarly on economic performance (as in the index of institutional quality). Thus the results do not allow priorities to be assigned for the improvement of specific aspects of economic security. This issue is, however, important in the design of institutional reforms to foster private sector confidence in developing countries and thereby promote growth.

This study attempts to overcome these limitations by (1) considering an exhaustive list of features of the economic and political environment that affect private investment decisions; (2) using the more refined and powerful tests allowed by panel data estimation to identify the features that are most important; (3) quantifying the gains to be expected from improvements in economic security in developing countries that are still far from the best practice levels; and (4) using the results to assess the priorities for institutional reform.

The paper is organized as follows. Section II describes the data and provides an overview of trends. Section III describes the specification of the model. Section IV presents panel estimation results. Section V presents cross-sectional estimation results on relationships between economic security and growth that hold only in the long run. Section VI draws the quantitative implications of the results, and Section VII concludes.

II. DATA

Following the approach pioneered by Mauro (1995 and 1996) and Knack and Keefer (1995), this study relies on country ratings sold by private agencies to foreign investors to measure economic security. Ten ratings were extracted from various issues of the

---

[5]See also Sala-I-Martin (1997).

International Country Risk Guide (*ICRG*), including the five ratings used in Knack and Keefer (1995) to measure institutional quality.[6] Ratings of political rights and civil liberties were extracted from Freedom House publications. (See Appendix for more information on these ratings.)

Economic data were extracted from the IMF World Economic Outlook database for the period 1980-95. They were complemented by World Bank data on secondary school enrollment rates.[7] Sachs and Warner (1996) data[8] on liberalization dates were used to construct an indicator of openness to international trade (the number of years during which the country is open to trade as a percentage of the 56 postwar years in the 1944-95 period). By construction, this variable increases over time in countries that remain open. It thus proxies not only for openness but also for the confidence that there will be no trade policy reversal; one can expect this confidence to build over time the longer that the country remains open (see Sachs and Warner, 1996).

Annual data were assembled for all the variables for a sample of 53 developing economies over the period 1984-95.[9] In each case, a higher rating means an improvement in economic security. Hence, to be consistent with the view that enhanced economic security fosters private investment and growth, sample correlations between the economic security proxies, private investment, and growth should be positive. This is indeed the case in our sample (see Table A5). Strong correlations are observed between political rights, *POLRI*, and civil liberties, *CILIB* (0.85); civil war, *CIWAR*, and political terrorism, *POLTERR* (0.75); repudiation of contracts, *REPUCON*, and expropriation risk, *RISKEXP* (0.72); rule of law, *RULAW* and both *POLTERR* and *CIWAR* (0.66); and bureaucracy quality, *BUQUAL*, and corruption, *CORRUPT* (0.60). Finally, correlations between the economic security proxies and government investment are generally weak, and some are even negative. This outcome is consistent with the view that enhanced economic security matters only for private investment.

Figure 1 highlights trends in growth, investment, and economic security in the developing regions over the 1981-95 period (1984-95 for most economic security variables).

---

[6]Data were kindly provided by Michael Fabricius. An alternative source of time-series data is Business Environmental Risk Intelligence, also used in Knack and Keefer (1995), but these data are available for much fewer countries. Since Knack and Keefer (1995) find a high correlation between the ratings from the two sources, the use of one rather than the other should not make a significant difference.

[7]Piecewise linear interpolation was used for some countries with missing values,

[8]Data were kindly provided by Romain Wacziarg.

[9]The appendix gives the list of countries and their regional groupings (Table A1), the list of variables with their sources (Table A2), summary statistics (Table A3), correlations (Tables A4-A6), and regional averages (Table A7), as well as an overview of the guidelines used by ICRG and Freedom House staff to assign the country ratings.

Figure 1. Growth, Investment, and Economic Security, 1981-95
(Period averages)

a. Growth
(annual percent change in real per capita GDP)

1981-85 1986-90 1991-95

b. Government Investment
(in percent of GDP)

1981-85 1986-90 1991-95

c. Private Investment
(in percent of GDP)

1981-85 1986-90 1991-95

d. Economic Security

84 90 95
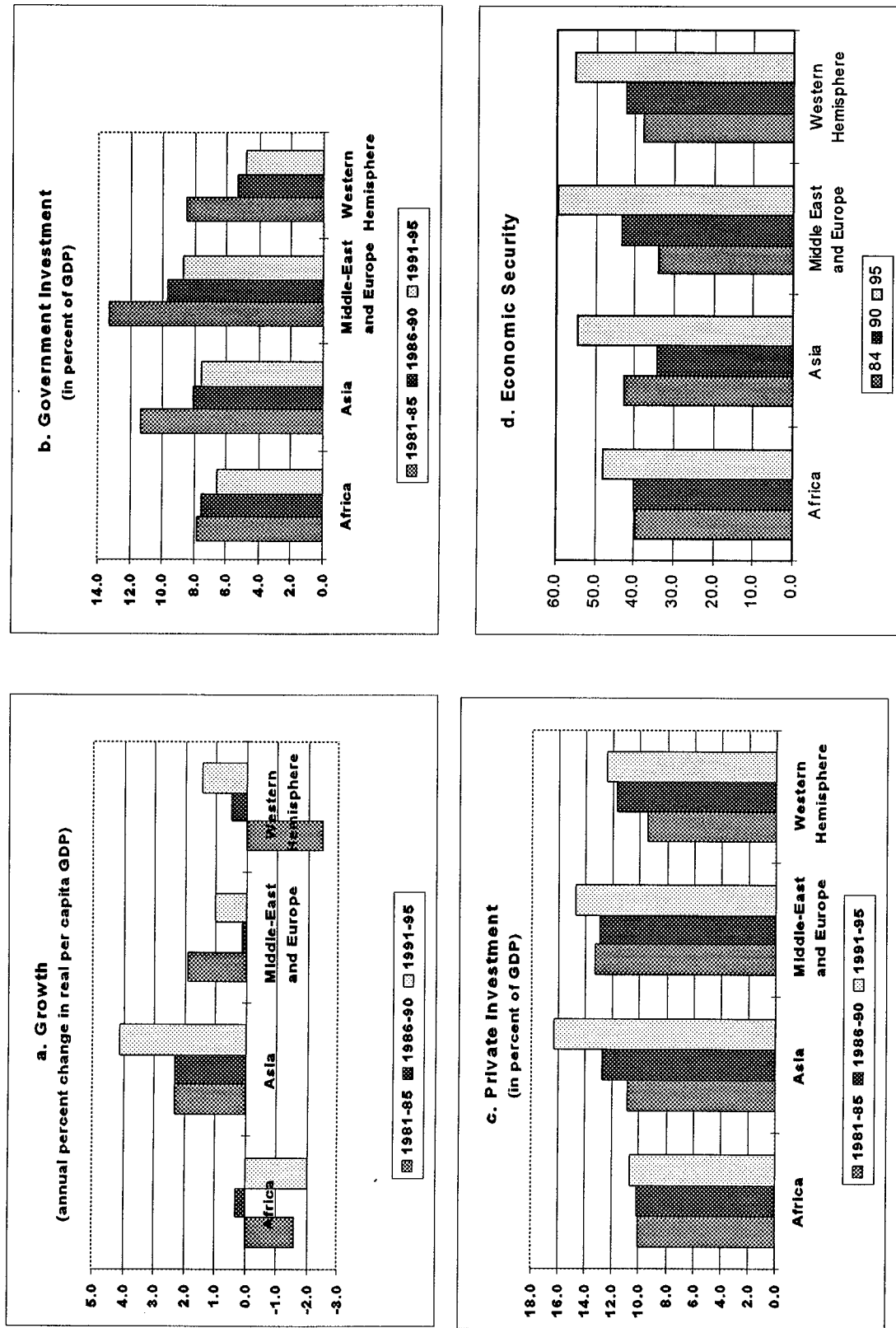
Notes: For definitions of variables and data sources, see Table A2. Economic Security is the sum of ten *International Country Risk Guide* ratings.

Growth improved in the early 1990s in non-African countries (Figure 1a). In contrast, there appeared to be a setback among African countries, whose growth again turned negative in the early 1990s.[10] The improvement in growth in the early 1990s in non-African countries was mirrored in increased private investment rates (Figure 1c), while public investment rates declined, especially in the late 1980s (Figure 1b). African countries experienced only a weak private investment recovery and a less important public investment decline. Economic security aspects other than political rights and civil liberties[11] improved substantially in all regions. The improvement was especially important in the early 1990s, but it was less important in Africa than other regions (Figure 1d).

Disaggregate trends in economic security aspects other than political rights and civil liberties confirm the general improvement (Figure 2). They also show that the relatively weak aggregate improvement in Africa is due to lack of improvement in government leadership, corruption, and bureaucracy quality. Corruption and bureaucracy quality worsened in the early 1990s in Africa. Finally, the trends show some "convergence" among developing countries in external conflict risk and degree of political terrorism: the ratings are virtually equal for all regions at the end of the period. For all other aspects of economic security, regional variation remained substantial at the end of the period.

Trends in political rights and civil liberties varied widely across regions, with no sign of a general improvement. During the early 1990s, political rights increased in Africa and Asia but declined in the Western Hemisphere and the Middle East and Europe.[12] Civil liberties declined in all regions except in the Western Hemisphere between 1994 and 1995. As a result the variation across regions in terms of these two indicators remained substantial in 1995: there was a gap in political rights between Asian and Western Hemisphere countries, on the one hand, and African, Middle Eastern and European countries, on the other; there was also a gap in civil liberties between Western Hemisphere and non-Western Hemisphere countries.

This preliminary description of the data shows that (1) correlations are consistent with the view that there are positive links between economic security, private investment, and growth in developing countries; (2) trends in economic security show improvements in all regions, although to a different extent; and (3) there remained substantial regional variation in the degree of security at the end of the period.

---

[10]The very strong deterioration observed in the early 1990s can be partly traced back to the experiences of the Democratic Republic of the Congo (formerly Zaïre) and Togo; however, even if these two countries are excluded, real per capita income in African countries dropped by an average annual rate of 1.4 percent.

[11]As measured by the sum of the ten *ICRG* ratings.

[12]As indicated in Table A1, the category "Middle East and Europe" comprises seven Middle Eastern countries, Cyprus, and Turkey.

- 9 -

Figure 2. Trends in Economic Security for 53 Developing Coutries, 1984-95
(Higher value indicates improvement)
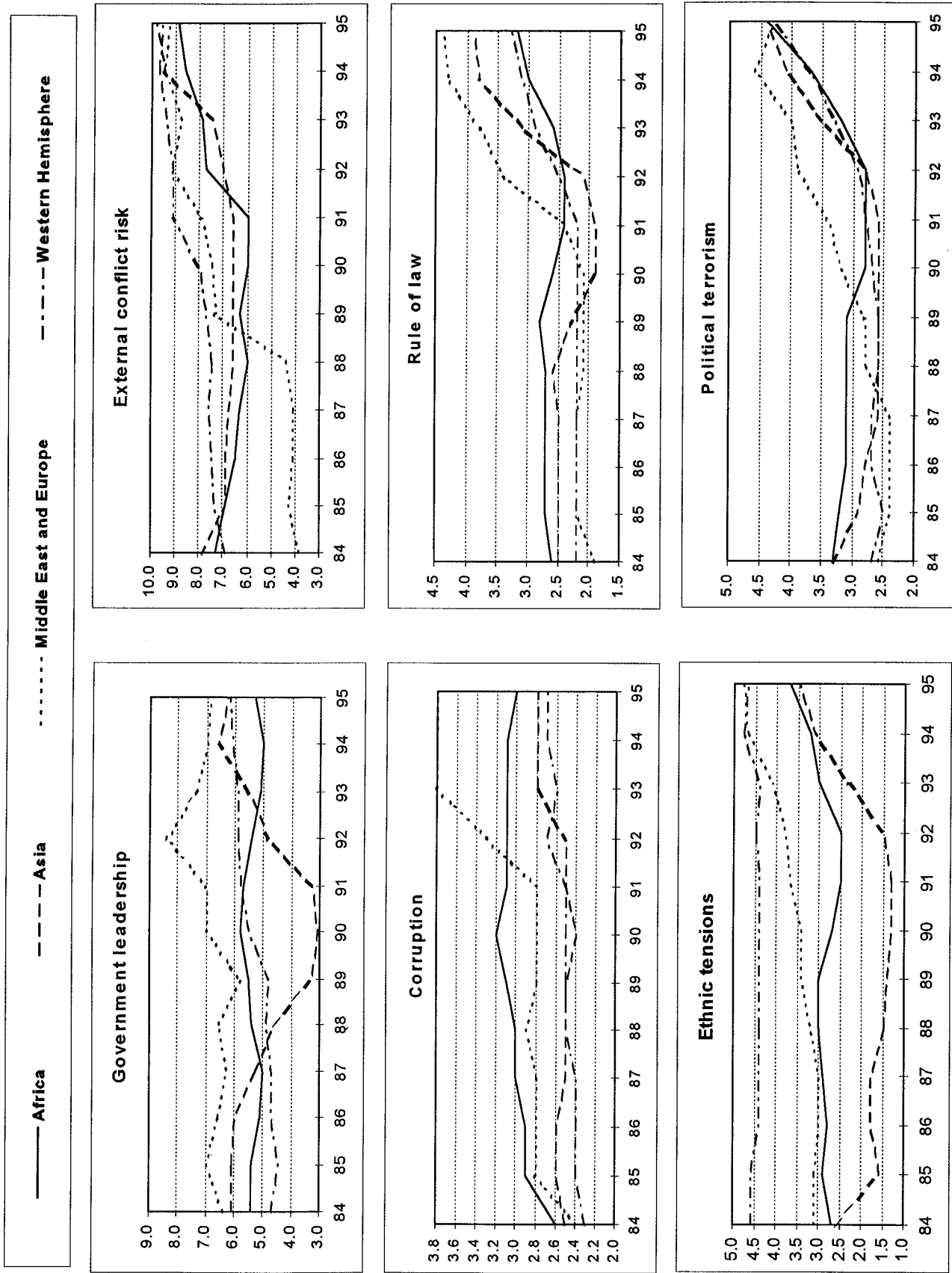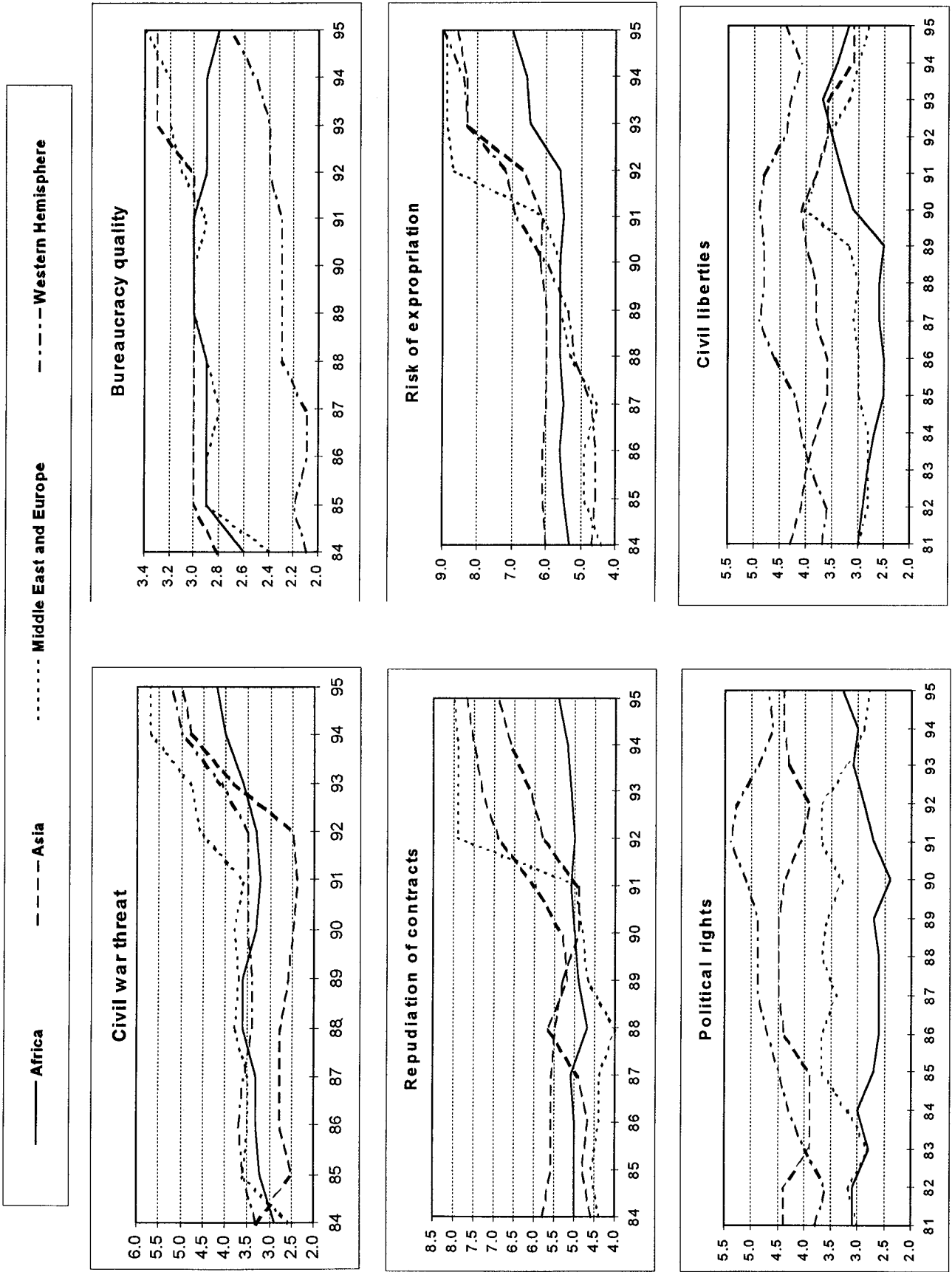
Figure 2 (concluded). Trends in Economic Security for 53 Developing Coutries, 1984-95
(higher value indicates improvement)

——— Africa   – – – Asia   ········ Middle East and Europe   –·–·– Western Hemisphere

Bureaucracy quality

Risk of expropriation

Civil liberties

Civil war threat

Repudiation of contracts

Political rights

III. MODEL

A recent theoretical argument justifies a link between economic security and private investment, at least in the short to medium term: in option-based investment models, enhanced economic security decreases downside uncertainty on the return to investment projects, thereby inducing investors to undertake projects rather than exercise their "option of waiting" (see Dixit and Pyndick (1994) and the survey by Serven (1997)). A standard argument justifies the second link between private investment and growth: in the well-known neoclassical growth model, a rise in the private investment rate for a given public investment rate increases the total investment rate, which increases, in turn, the steady state level of output per worker. This results in temporarily higher growth along the transition to the new steady state.

We capture these two links in a simple, two-equation model, with private investment and growth as endogenous variables. The panel specification of this model is as follows:

$$PIY_{it} = \alpha_1 YGPC_{i,t-1} + \alpha_2 SEC_{it} + \alpha_3 CV_{it} + \alpha_4 ESV_{it} + \alpha_t + \alpha_i + \epsilon_{it}, \tag{1}$$

and

$$YGPC_{it} = \beta_1 YLPC_{i,t-1} + \beta_2 POPG_{it} + \beta_3 SEC_{it} + \beta_4 PIY_{it} + \beta_5 CV_{it} + \beta_6 ESV_{it} + \beta_t + \beta_i + \eta_{it}, \tag{2}$$

where the subscript I denotes a given country; the subscript t refers to the year of observation; PIY is the rate of private investment; $YGPC$ is the growth rate of per capita GDP; ESV is the set of economic security variables; and CV is the set of other factors that may also have influenced private investment outcomes (including policy reforms and terms of trade changes). α_t and α_i are, respectively, the unobserved time-specific and country-specific effects in the private investment equation; similarly, β_t, β_i are the unobserved time- and country-specific effects in the growth equation, and ϵ and η are white noise error terms.

Equations (1) and (2) are set following standard specifications used in empirical studies of private investment and growth determinants in developing countries (for private investment, see Servén (1997), Ghura and Goodwin (1997), and Hadjimichael and Ghura (1995); for growth, see Easterly, Loayza, and Montiel (1997) and Ghura and Hadjimichael (1996)). Controlling for unobserved time- and country-specific effects is necessary because they may be correlated with the right-hand-side variables and thus bias the coefficients if omitted. The unobserved time-specific effects are controlled for by using year dummies. The unobserved country-specific effects are initially assumed to be random, and a Hausman misspecification test is performed. If the test leads to a rejection of the null hypothesis that the country effects are uncorrelated with the other regressors, the country effects are assumed to be fixed rather than random and are controlled for by using country dummies.[13]

---

[13]See Hsiao (1986).

As discussed above, we expect the coefficient α_4 of *ESV* in the private investment equation to be positive. In the same equation, we control for the positive effect of higher growth prospects by including the lagged value of the growth rate, *YGPC*, and for positive effects of human capital by including the enrollment ratio in secondary school, *SEC*. In addition, we control for a set of policy reform and other indicators, *CV* (including terms of trade shocks and indicators of macroeconomic uncertainty).

Turning to the growth equation, we include two standard variables, *SEC* and the population growth, *POPG*, and we control at each date for the previous level of real GDP per capita, *YLPC*. The sign of the coefficient of *YLPC*, β_1, should be negative if conditional convergence occurs. *PIY* is included to test its positive effect on growth in the short to medium term. Both *CV* and *ESV* are also included to test for their direct effect on growth, independent of their effect on private investment. The argument justifying such direct links is fairly standard: some economic or security factors included in *CV* and *ESV*, such as large public deficits, possibilities of expropriation, or policy uncertainty, may affect the uncertainty on the returns to investment *across* capital goods. An improvement in these factors by reducing uncertainty contributes to a rise in the efficiency of resource allocation. Enhanced efficiency, in turn, increases the steady state level of output per worker, thus fostering growth during the transition toward the new steady-state (see Barro and Sala-I-Martin, 1995).

In both equations (1) and (2), to address the problem that the indicators of policy reform included in *CV* cannot be regarded as truly exogenous over yearly periods, we use their *lagged* values. We use contemporaneous values of the government and private investment rates in the growth equation. The resulting simultaneity bias is corrected using a two-stage-least squares estimation procedure, where lagged values of the investment rates are included in the list of instruments, along with the other right-hand-side regressors.

IV. PANEL RESULTS

We start by estimating a base panel specification of equations (1) and (2), without *ESV*, in columns (1a) and (2a) of Table 1. In the case of private investment, the null hypothesis of uncorrelated country-specific effects cannot be rejected according to the results of the Hausman test, so the random effects model is used.[14] In the case of growth, the fixed-effects specification is statistically preferred to the random effects specification. Country-specific effects are thus controlled for using country dummies.[15] The key coefficients in the base specification are those that capture the effects of lagged growth of per capita income, YGPC,

---

[14]Ghura and Goodwin (1997), and Serven (1997) also find that the random effects specification of private investment equations is statistically preferred to the fixed-effects specification.

[15]Results of preliminary misspecification tests also showed that the fixed-effects specification was statistically preferred to a pooled ordinary least-squares specification that included a dummy for Africa (other regional dummies did not enter significantly).

Table 1. Economic Security, Private Investment, and Growth:
Panel Estimates for 53 Developing Countries, 1984-95
(Annual data)

Explanatory Variables	Private Investment		Growth	
	PIY (1a)	PIY (1b)	YGPC (2a)	YGPC (2b)
YGPC(-1)	0.151 (0.028)***	0.145 (0.028)***		
YLPC(-1)			-11.759 (2.394)***	-13.050 (2.364)***
POPG			-0.681 (0.188)***	-0.760 (0.167)***
SEC	0.008 (0.021)	0.005 (0.021)	0.026 (0.054)	0.037 (0.052)
PIY			0.304 (0.106)***	0.294 (0.105)***
GIY	-0.130 (0.048)***	-0.140 (0.049)***	0.073 (0.145)	0.080 (0.143)
OPEN	0.078 (0.022)***	0.064 (0.021)***	-0.022 (0.053)	-0.061 (0.052)
DEFY(-1)	-0.157 (0.036)***	-0.141 (0.036)***	-0.158 (0.058)***	-0.123 (0.058)**
INF(-1)	0.002 (0.004)	0.002 (0.004)	-0.012 (0.005)**	-0.010 (0.005)**
INFSD(-1)	-0.012 (0.009)	-0.010 (0.009)	-0.009 (0.012)	-0.013 (0.012)
BMY(-1)	0.030 (0.015)**	0.025 (0.015)*	0.019 (0.025)	0.003 (0.024)
REERG(-1)	-0.016 (0.07)**	-0.017 (0.007)**	0.002 (0.013)	0.001 (0.013)
DETSX(-1)	-0.017 (0.008)**	-0.016 (0.008)*	-0.026 (0.014)	-0.020 (0.013)
TTG	-0.011 (0.009)	-0.013 (0.009)	0.029 (0.016)*	0.028 (0.016)*
TTGSD	0.002 (0.022)	0.002 (0.022)	-0.060 (0.029)**	-0.062 (0.028)**
CILIB		0.431 (0.152)***		
BUQUAL		0.449 (0.252)*		
RISKEXP		0.270 (0.128)**	0.516 (0.219)**	
POLTERR				0.587 (0.216)**
Constant	10.386 (1.210)***	6.880 (1.456)***		
Adjusted R^2	0.779	0.782	0.281	0.307
Hausman test (p-value)	1.102 (0.997)	1.360 (0.998)	73.407 (0.0)	91.066 (0.0)
Observations	636	624	636	636

Notes: For definitions of variables and sources, see Table A2. Columns (1a) and (1b) provide results of random effects estimation, time dummies included. Columns (2a) and (2b) provide results of two-stage least-squares (2SLS) estimation with country dummies; lagged values of private and government investment rates as instruments, plus all the other right-hand-side regressors and country and time dummies. Coefficients of country and time dummies are not reported; standard errors in parentheses. *=10 percent level of significance; **=5 percent level of significance; and ***=1 percent level of significance. The adjusted R^2 is not an appropriate measure of goodness of fit in a 2SLS estimation. The Hausman test refers to fixed effects versus random effects estimation.

on the investment rate, *PIY*, and the investment rate on income growth. Both coefficients are positive, as expected, and significantly different than zero: private investment and growth are strongly interconnected. In contrast, we do not identify a statistically significant relationship running from government investment, *GIY*, to growth, YGPC.[16]

Control variables in the base specification of the model that significantly affect **private investment** negatively are government investment, *GIY*, the government deficit, *DEFY*, real appreciation of the exchange rate, *REERG*, and the ratio of debt service to exports, *DETSX*; private investment is positively affected by openness to trade, *OPEN*, and financial sector development, *BMY*. In the **growth** equation, the coefficients of population growth, *POPG*, and real GDP per capita, *YLPC*, have the expected negative signs and are significant,[17] while terms of trade shocks, *TTG*, have a positive effect. Three proxies for macroeconomic uncertainty —public deficit, *DEFY*, inflation, *INF*, and the variability of terms of trade changes, *TTGSD*— have significantly negative effects on growth.

In column (1b) of Table 1, we add the set of economic security variables found to matter most for private investment: civil liberties, *CILIB*, the quality of the bureaucracy, *BUQUAL*, and the risk of expropriation, *RISKEXP*. Their inclusion has little effect on the previous results. A possible interpretation of the finding for *BMY* is that economic security operates indirectly by promoting financial sector development.[18] **Once these three aspects of economic security are controlled for, none of the other measures of economic security enter significantly into the private investment equation.**[19]

Reductions in the risk of expropriation, *RISKEXP*, and in political terrorism, *POLTERR*, are found to be the most important security factors that bear on economic growth in the short to medium term (column (2b)). **Once these two aspects are controlled for, none of the other risk components are significant in the growth equation.** In particular, corruption, *CORRUPT*, and rule of law, *RULAW*, do not significantly affect growth, contrary to the results reported in the cross-country studies of Mauro (1996) and Barro and Sala-I-Martin (1995). These factors have no significant effect on growth in the short to medium term

---

[16]This generalizes a similar finding reported by Ghura and Hadjimichael (1996).

[17]The high absolute value of the coefficient on the lagged real GDP per capita reflects the downward bias that systematically affects the coefficient of a lagged dependent variable in a dynamic panel data model when the data span a relatively short time period (Hsiao, 1986). It is therefore not a reliable estimate of the convergence rate.

[18]This interpretation receives empirical support in Levine (1997). See also Fabricius (1997) for cross-country evidence on the link between economic security and financial market development.

[19]These results, together with other results discussed below, are available from the author on request.

in the average developing country. They may affect growth, but only in the long run, as examined in the next section.

V. CROSS-SECTION RESULTS

In the private investment equation, the random effects estimator gives weight both to the within- and between-country variation. But in the per capita income growth equation, the fixed-effects estimator completely ignores the between-country variation, thus allowing only the identification of relationships holding over time. Given the short time span of the data used (11 years), the fixed-effects estimation will fail to identify relationships holding only over longer time periods. In an attempt to identify such relationships in our sample, we estimate the following cross-country specification of the growth equation:

$$YGPC_i=\beta_1 Y0LPC_i+\beta_2 POPG_i+\beta_3 SEC_i+\beta_4 PIY_i+\beta_5 CV_i+\beta_6 ESV_i+\beta_7 AFR_i+\beta_8 WH_i+\eta_i, \quad (3)$$

where $Y0LPC$ represents the log of real GDP per capita in 1980 (to account for a convergence effect), and AFR and WH represent dummy variables equal to one when country I is in Africa and the Western Hemisphere, respectively. The notations are otherwise the same as in equation (2), except that the variables now represent period averages (for 1984-95). An evident drawback of the cross-country specification is that country effects cannot be identified. We can only identify regional effects by including regional dummies. Table 2 reports the results obtained, first for a base specification that excludes ESV (regression 1),and then for specifications including ESV (regressions 2-4).

Most results for the base regressors in Table 2 confirm those previously obtained. The coefficients of $POPG$, $Y0LPC$, and $DEFY$ are negative and significant at the 1 percent level. The coefficients of PIY and TTG are positive and significant at least at the 5 percent level. Some results differ. $OPEN$ now has a positive and significant coefficient. INF does not enter significantly at conventional levels. $TTGSD$ has a positive and significant coefficient. Of the two regional dummies, only AFR is significant in all regressions. In the base specification, the "growth gap" between African and non-African countries, as implied by the coefficient of AFR, is about 1.4 percent a year.

The economic security variables for corruption, $CORRUPT$, and the risk of repudiation of contracts, $REPUCON$, are both individually and jointly significant (regressions 2-4). The finding of Mauro (1996) that corruption affects economic growth in the long run is thus robust to a restriction of the sample to developing countries only. None of the other proxies for economic security enter significantly. In particular, the rule of law index, $RULAW$, does not enter significantly, contrary to the results in Barro and Sala-I-Martin (1995) and Sala-I-Martin (1997). A possible explanation is that the cross-country association between $RULAW$ and growth is not robust to a restriction of the sample to developing countries only. Also, $RISKEXP$ and $BUQUAL$, the two other security factors in the Knack and Keefer institutional quality index, do not enter significantly.

Table 2. Economic Security and Growth :
Cross-Section Estimates for 53 Developing Countries, 1984-95
(Period averages of annual data)

	YGPC (1)	YGPC (2)	YGPC (3)	YGPC (4)
Y0LPC	-0.985	1.353	-1.307	-1.624
	(0.385)***	(0.379)***	(0.391)***	(0.378)***
POPG	-1.085	-1.215	-0.928	-1.064
	(0.338)***	(0.314)***	(0.327)***	(0.305)***
SEC	0.021	0.017	0.020	0.017
	(0.016)	(0.015)	(0.015)	(0.014)
PIY	0.200	0.154	0.138	0.101
	(0.048)***	(0.047)***	(0.053)***	(0.050)**
GIY	0.061	0.022	0.042	0.008
	(0.056)	(0.054)	(0.054)	(0.051)
OPEN	0.021	0.024	0.021	0.024
	(0.012)*	(0.011)**	(0.011)*	(0.010)**
DEFY(-1)	-0.207	-0.186	-0.195	-0.177
	(0.070)***	(0.065)***	(0.065)***	(0.062)***
INF(-1)	-0.015	-0.011	-0.013	-0.010
	(0.012)	(0.011)	(0.011)	(0.010)
INFSD(-1)	0.018	0.010	0.032	0.023
	(0.038)	(0.035)	(0.036)	(0.034)
BMY(-1)	-0.005	-0.012	-0.005	-0.012
	(0.017)	(0.016)	(0.016)	(0.015)
REERG(-1)	-0.045	-0.056	-0.012	-0.025
	(0.042)	(0.039)	(0.042)	(0.039)
DETSX(-1)	0.046	0.027	0.041	0.024
	(0.018)***	(0.018)	(0.017)	(0.017)
TTG	0.203	0.231	0.200	0.227
	(0.096)**	(0.088)***	(0.090)**	(0.084)***
TTGSD	0.120	0.177	0.118	0.171
	(0.057)**	(0.056)***	(0.054)**	(0.053)***
CORRUPT		0.828		0.777
		(0.302)***		(0.286)***
REPUCON			0.581	0.531
			(0.255)**	(0.236)*
Constant	5.802	7.687	5.494	7.291
	(2.681)**	(2.561)***	(2.542)**	(2.430)***
AFR	-1.397	-2.254	-1.580	-2.369
	(0.645)**	(0.671)***	(0.616)**	(0.637)***
WH	-0.791	-0.672	-1.096	-0.976
	(0.654)	(0.603)	(0.633)*	(0.585)
Adjusted R^2	0.672	0.722	0.706	0.751
Observations	53	53	53	53

Notes: For definitions of variables and sources, see Table A2. Standard errors in parentheses. *=10 percent level of significance; **=5 percent level of significance; ***=1 percent level of significance.

The inclusion of *CORRUPT* and *REPUCON* does not alter the significance of the variables in the base specification but leads to some interesting changes in the magnitude of certain coefficients. First, the coefficient on *Y0LPC* (the convergence rate) increases in absolute value, a result also reported by Knack and Keefer (1995). Second, the coefficient on *PIY* decreases and becomes less strongly significant (although it remains significant at the 5 percent level), suggesting that *CORRUPT* and *REPUCON* also indirectly promote growth via the private investment channel. Finally, including *CORRUPT* alone leads the coefficient of *AFR* to drop further, from -1.4 in regression (1) to -2.3 in regression (2). This fall occurs because the average corruption rating is higher in Africa than in other developing regions (see Table 1 and Figure 2). Taking this into account, the estimated growth gap between African and non-African countries is even wider.

There is, however, another plausible interpretation of the drop in the coefficient of *AFR* following the inclusion of *CORRUPT* . If the *CORRUPT* rating is overestimated by a **fixed** number of points in African countries, this error would be accommodated by a drop in the coefficient of *AFR* without affecting the other coefficients. For example, an overestimation of, say, 0.5 points of *CORRUPT* in Africa would account for a drop of about 0.4 points in the coefficient of *AFR* (0.5 multiplied by 0.8, the coefficient of *CORRUPT* in the regression). Inversely, if we assume that the observed drop of 0.9 points in the coefficient of *AFR* between regressions (1) and (2) entirely reflects measurement error, we can infer the size of the corresponding error, which is about 1.1 (0.9 divided by 0.8, the coefficient of *CORRUPT*). Correcting for an error of this size would bring the average corruption rating for Africa down from about 3 points (Table 1) to only 1.9 points, far below the other regions. The actual error could be anywhere between zero and this upper bound.

Although the computations above are only suggestive, they yield plausible values, and the hypothesis that *CORRUPT* is affected by a fixed-measurement error for African countries is itself quite plausible, considering the guidelines used by ICRG staff to assign a corruption rating: the main criterion used is the degree of democracy, together with the length of time that a government has been in power continuously. Thus the lowest ratings are given to nondemocratic countries where the government has been continuously in power for more than ten years. While these criteria capture the potential corruption risk in countries like the Democratic Republic of the Congo (formerly Zaire), which is rated 0.0 on average, one can argue that they fail to capture the "true" corruption risk in many other African countries (e.g, Kenya, with an average rating of 2.9).

VI. CONCLUSION

This paper provides empirical support for the view that enhanced economic security fosters private investment and growth in developing countries. Based on an analysis of panel data on economic security ratings for 53 developing countries over the 1984-95 period, the paper shows that:

- Most aspects of economic security significantly improved, contributing to private investment and economic growth.

- Private investment is mostly influenced by the risk of expropriation, the degree of civil liberty, and the quality of the bureaucracy.

- Reductions in expropriation risks and political terrorism are the most important security factors that bear on economic growth. Corruption and contract repudiation also affect growth, but only in the long run.

At the end of the period considered, regional variation in the degree of security remains substantial (see Figure 2). Based on the coefficient estimates reported in Tables 1 and 2, the implied payoffs from adopting institutional reforms to improve economic security in specific developing country regions to the "best practice" level in other developing countries are significant.

In the short to medium term, four payoffs to closing economic security gaps can be identified. First, closing the gap in expropriation risks between African and non-African countries would increase private investment rates in African countries by about 0.5 percentage points of GDP. Second, independent of this effect on private investment, it would also directly raise African growth prospects in the short to medium term by about 1 percentage point. Third, closing the gap between degrees of civil liberty in Western Hemisphere and non-Western Hemisphere countries would increase private investment rates in the latter by about 0.6 percentage points of GDP. Finally, closing the gap in the quality of the bureaucracy between African and Western Hemisphere countries, on the one hand, and Asian and Middle East and European countries, on the other, would increase private investment rates in the former regions by about 0.6 percentage points.

In the longer term, two payoffs to closing economic security gaps can be identified. First, closing the gap in risks of contract repudiation between Middle East and European countries on the one hand, and African countries on the other, would raise growth prospects in African countries by about 1.3 percentage points a year. Second, closing the gap in corruption between Middle East and European countries on the one hand, and Asian and Western Hemisphere countries on the other, would raise longer-term growth prospects in the latter regions by about 0.8 percentage points a year. Closing this gap between Middle East and European countries on the one hand, and African countries, on the other, would raise growth prospects in African countries by 0.6 percentage points a year.[20]

A quantitative evaluation of the gains that would accrue to developing countries from improving economic security points to specific institutional reform priorities. In **African countries**, the priorities are to reduce the risks of expropriation in order to raise private

---

[20]If, as suggested by the interpretation of the results in the previous section, the "true" corruption levels are underestimated in Africa (by as much as 1.1 points), the payoff in terms of output per capita growth from closing the gap between African countries and Middle East and European countries could be as high as 1.5 percentage points a year.

investment and efficiency of resource allocation; to reduce corruption and the risks of contract repudiation by government in order to raise longer-term growth prospects; and to increase the scope of civil liberties and the quality of the bureaucracy (including its degree of autonomy from political pressure) in order to raise private sector confidence. In **Asian countries**, the priorities are to increase civil liberties to further boost private sector confidence, and to reduce corruption to raise longer-term growth prospects. In **Western Hemisphere countries**, the priorities are to improve the quality of the bureaucracy in order to allow further increases in private investment, and to reduce corruption in order to increase longer-term growth prospects. Finally, in **Middle East and European countries**, the priority is to increase the extent of civil liberties to further boost private sector confidence.

Country Ratings Methodology

Eight of the ten International Country Risk Guide (ICRG) ratings used in this study are political risk components, which are determined from available information on the basis of the following guidelines.[21]

- In general, with respect to **government leadership**, the greater the potential long-term instability of the regime, the lower the risk rating. Criteria used by *ICRG* are "a nondemocratic system where power is wielded by a nonelected monarch or president, where the leader is elected through fraudulent manipulation of the electoral system, or where the constitution allows only one political party to operate; a widely unpopular, incompetent, or weak leader (prime minister or president); coalition governments comprising more than two parties, particularly where members of the coalition have a widely differing ideological stance; and a poor or incomplete process of succession should leadership of the country suddenly become vacant."

- The higher the probability of **external conflict risk**, the lower the rating. Reasons for a lower rating encompass "invasion, border threats, geopolitical disputes, foreign-supported insurgencies, and full-scale warfare."

- Lower ratings are assigned under the **corruption** component to "countries that are usually nondemocratic, where the government has been in power for more than 10 years, high government officials are likely to demand special payments, and illegal payments are generally accepted throughout the society." It is noteworthy that, since most of the actual corruption is hidden from general view until it suddenly erupts into a major scandal, this indicator is mainly based on the first two criteria listed above, that is, the degree of democracy of the political system and "the length of time a government has been in power continuously."

- In general, lower **rule of law** ratings mean "that there is a tradition of depending on physical force or illegal means to settle claims." In assessing this component, *ICRG* staff look at the soundness of political institutions, the strength of the court system, and the provisions for an orderly succession of power.

- The **racial tensions** component encompasses the potential risk represented by racial, nationality, or language divisions. Lower ratings are given to countries where "opposing groups are intolerant and unwilling to compromise."

---

[21]All quotations in the Appendix are from Political Risk Services (1996).

- Lowest ratings are assigned under the **political terrorism** component to countries "where terrorist activity poses a threat to social stability or threatens to bring down the regime."

- With respect to **civil war threats**, lowest ratings are assigned to countries where there is a high probability that "terrorist opposition to a government or to its policies will turn into a violent internal political conflict."

- Lowest ratings are assigned under the **bureaucracy quality** component to countries where the degree of independence from political pressure of the bureaucracy is low and there is no established mechanism for recruitment and training.

Two of the *ICRG* ratings are financial risk components that are determined on the basis of published government policy documents and information reported by business and foreign banks dealing with the country in question. "In general terms, they evaluate the risks to foreign lenders and investors of official actions or attitudes that could have a negative effect on cash flow or asset disposition." The guidelines are as follows:

- Low ratings are given to countries where the likelihood of a **repudiation of contracts** by governments is high. Factors that are taken to increase this likelihood are "income drops, budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities."

- Low ratings are given to countries where the **risk of expropriation** of private investment, in the form of outright confiscation or forced nationalization, is high.

Finally, two other ratings —**political rights** and **civil liberties**— are assigned by the Freedom House staff following specific checklists. According to different categories, the country is assigned points for different aspects of the political system. Based on a standardized table, this score is then translated into the final grade, which reflects both the responses to the checklists and the judgments of the team at Freedom House.

Table A1. Countries Included in Sample and Regional Groupings

Africa (21)	Asia (8)	Middle East and Europe (9)	Western Hemisphere (15)
Botswana	Bangladesh	Algeria	Argentina
Burkina Faso	India	Cyprus	Bolivia
Cameroon	Malaysia	Egypt	Brazil
Congo, Dem. Rep. of[1]	Myanmar	Iran	Chile
Côte d'Ivoire	Pakistan	Jordan	Colombia
Gambia, The	Papua New Guinea	Morocco	El Salvador
Ghana	Sri Lanka	Syrian Arab Rep.	Guatemala
Kenya	Thailand	Tunisia	Haiti
Madagascar		Turkey	Honduras
Malawi			Jamaica
Mozambique			Mexico
Niger			Paraguay
Nigeria			Peru
Senegal			Uruguay
Sierra Leone			Venezuela
South Africa			
Tanzania			
Togo			
Uganda			
Zambia			
Zimbabwe			

[1]Formerly Zaïre.

Table A2. Definition of Variables and Data Sources

Variable	Number of Countries	Definition	Source[1]	Date Range
		Economic variables		
YGPC	53	Real GDP per capita growth (in percent)	WEO	1981-95
Y0LPC	53	Log of real GDP per capita in 1980 (using 1990 U.S. dollars)	WEO	1980-95
YLPC	53	Log of real GDP per capita (using 1990 U.S. dollars)	WEO	1980-95
PIY	53	Nominal private fixed investment in percentage of nominal GDP (using current local currency)	WEO	1980-95
GIY	53	Nominal public fixed investment in percentage of nominal GDP (using current local currency)	WEO	1980-95
DEFY	53	Nominal central government deficit in percentage of nominal GDP (using current local currency)	WEO	1980-95
BMY	53	Nominal broad money in percentage of nominal GDP (using current local currency)	WEO	1980-95
INF	53	Inflation rate (consumer price index growth rate, in percent)	WEO	1981-95
INFSD	53	Three-year moving average of the standard deviation of INF		1983-95
TTG	53	Terms of trade growth (in percent)	WEO	1981-95
TTGSD	53	Three-year moving average of the standard deviation of TTG		1983-95
REERG	53	Real effective exchange rate growth (in percent)	INS	1981-95
DETSX	53	External debt service in percentage of exports	WEO	1980-95
		Indicators of economic security		
POLRI	52	Political rights (1-7)	Freedom House	1980-95
CILIB	52	Civil liberties (1-7)	Freedom House	1980-95
GOVLEAD	53	Government leadership (0-12)	ICRG	1984-95
REPUCON	53	Repudiation of contracts (0-10)	ICRG	1984-95
CIWAR	53	Civil war threats (0-6)	ICRG	1984-95
RACTENS	53	Racial, ethnic, and nationality tensions (0-6)	ICRG	1984-95
EXTRCON	53	External conflict risk (0-10)	ICRG	1984-95
POLTERR	53	Political terrorism (0-6)	ICRG	1984-95
RULAW	53	Rule of law (0-6)	ICRG	1984-95
BUQUAL	53	Bureaucracy quality (0-6)	ICRG	1984-95
CORRUPT	53	Corruption (0-6)	ICRG	1984-95
RISKEXP	53	Risk of expropriation (0-10)	ICRG	1984-95
		Other indicators		
POPG	53	Population growth (in percent)	WEO	1981-95
SEC	53	Secondary school enrollment rate (in percent)	World Bank	1980-95
OPEN	53	Number of years open to international trade (in percentage of years in the postwar period 1944-95)	Sachs-Warner	1980-95
AFR	53	Dummy variable for African countries	WEO	1980-95
WH	53	Dummy variable for Western Hemisphere countries	WEO	1980-95

[1]WEO=World Economic Outlook database, International Monetary Fund; ICRG= Political Risk Services (1996); INS=Information Services, International Monetary Fund; Sachs-Warner=Sachs and Warner (1996); Freedom House=Freedom House (various issues); and World Bank=World Bank (1997).

Table A3. Summary Statistics for 53 Developing Countries, 1984-95
(Annual data)

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Indicators of economic security					
GOVLEAD	636	5.6	1.8	1	10
EXTRCON	636	7.3	2.4	0	10
CORRUPT	636	2.8	1.1	0	6
RULAW	636	2.6	1.2	0	6
RACTENS	636	3.3	1.5	0	6
POLTERR	636	3.1	1.5	0	6
CIWAR	636	3.7	1.5	0	6
BUQUAL	636	2.8	1.1	1	6
REPUCON	636	5.5	1.8	1	9
RISKEXP	636	6.2	1.9	2	10
POLRI	624	3.7	1.8	1	7
CILIB	624	3.5	1.5	1	7
Other variables					
Y0LPC	636	1268.9	1255.3	117.6	5963.6
YLPC (-1)	636	1312.4	1472.1	764	10888
YGPC	636	0.5	4.9	-23.5	14
YGPC (-1)	636	0.2	5.1	-23.5	14
OPEN	636	14.1	25.9	0	100
DEFY(-1)	636	4.7	5.1	-19.4	23.8
INF (-1)	636	29	58	-11.8	547.5
BMY(-1)	636	37.1	23.4	3.1	136.1
GIY	636	7.2	5	-1.8	34.5
PIY	636	11.7	6.3	0	34.4
REERG(-1)	636	-3.1	17.3	-122.2	61.5
TTGSD	636	8.2	7.3	0.3	46.3
INFSD(-1)	636	3	20.6	0.1	196.7
DETSX(-1)	636	31	19.8	-4	196.2
SEC	636	37.4	22.3	0.4	98
TTG	636	-1	12.1	-70.9	49.4
POPG	636	2.6	1.3	-3.4	11.1

Notes: For definitions of variables (including units of measurement) and data sources, see Table A2. Values for POLRI and CILIB are unavailable for Honduras, which reduce the observations to 624.

Table A4. Correlation Matrix of Growth and Private Investment with Base Regressors for 53 Developing Countries, 1984-95

	YGPC	PIY	YLPC(-1)	YGPC(-1)	SEC	POPG	GIY	OPEN	DEFY(-1)	INF(-1)	INFSD(-1)	BMY(-1)	REERG(-1)	DETSX(-1)	TTG
PIY	0.32														
YLPC(-1)	0.14	0.32													
YGPC(-1)	0.30	0.34	0.18												
SEC	0.16	0.28	0.76	0.17											
POPG	-0.25	-0.09	-0.22	-0.16	-0.26										
GIY	0.09	-0.16	-0.08	0.12	0.00	0.09									
OPEN	0.24	0.46	0.39	0.23	0.38	-0.13	-0.04								
DEFY(-1)	-0.18	-0.23	-0.37	-0.29	-0.09	0.04	0.08	-0.18							
INF(-1)	-0.13	-0.06	0.08	-0.22	0.10	-0.09	-0.17	-0.06	0.14						
INFSD(-1)	-0.10	-0.08	0.07	-0.15	0.11	-0.08	-0.16	0.03	0.07	0.71					
BMY(-1)	0.17	0.33	0.37	0.12	0.50	-0.05	0.24	0.44	0.08	-0.21	-0.23				
REERG(-1)	-0.01	0.05	0.11	0.02	0.07	-0.07	-0.12	0.06	-0.03	0.10	-0.01	0.07			
DETSX(-1)	-0.02	-0.22	-0.06	0.03	-0.01	-0.05	0.12	-0.24	0.07	0.08	0.08	-0.11	-0.13		
TTG	0.05	0.02	0.02	-0.04	0.00	0.05	-0.10	0.01	0.02	-0.02	0.02	-0.01	-0.02	-0.70	
TTGSD	-0.08	-0.25	-0.04	-0.04	-0.04	0.15	0.14	-0.19	0.07	0.01	0.06	-0.05	-0.13	0.20	-0.16

Notes: For definitions of variables and sources, see Table A2.

Table A5. Correlation Matrix of Growth and Private Investment with Indicators of Economic Security for 53 Developing Countries, 1984-95

	YGPC	PIY	GOVLEAD	EXTRCON	CORRUPT	RULAW	RACTENS	POLTERR	CIWAR	BUQUAL	REPUCON	RISKEXP	POLRI
PIY	0.32												
GOVLEAD	0.20	0.31											
EXTRCON	0.05	0.04	0.13										
CORRUPT	0.13	0.29	0.38	0.16									
RULAW	0.16	0.36	0.41	0.36	0.49								
RACTENS	0.08	0.10	0.28	0.28	0.15	0.37							
POLTERR	0.13	0.20	0.40	0.48	0.26	0.66	0.44						
CIWAR	0.10	0.19	0.47	0.46	0.39	0.66	0.42	0.75					
BUQUAL	0.14	0.40	0.37	0.12	0.60	0.43	0.06	0.28	0.30				
REPUCON	0.27	0.42	0.50	0.41	0.34	0.51	0.34	0.38	0.47	0.44			
RISKEXP	0.20	0.38	0.37	0.50	0.34	0.51	0.27	0.44	0.56	0.40	0.72		
POLRI	0.20	0.26	0.18	0.16	0.15	0.18	0.29	0.25	0.22	0.24	0.28	0.25	
CILIB	0.17	0.27	0.18	0.21	0.14	0.19	0.27	0.30	0.20	0.22	0.22	0.28	0.85

Notes: For definitions of variables and sources, see Table A2.

Table A6. Correlation Matrix of the Indicators of Economic Security with Base Regressors for 53 Developing Countries, 1984-95

	YLPC(-1)	YGPC(-1)	SEC	POPG	GIY	OPEN	DEFY(-1)	INF(-1)	INFSD(-1)	BMY(-1)	REERG(-1)	DETSX(-1)	TTG	TTGSD
GOVLEAD	0.35	0.22	0.28	0.05	0.16	0.19	-0.21	-0.19	-0.17	0.35	0.04	-0.03	0.01	0.01
EXTRCON	0.23	0.04	0.11	-0.08	-0.06	0.04	-0.21	0.12	0.09	0.03	0.07	0.08	0.05	-0.11
CORRUPT	0.29	0.11	0.24	0.04	0.14	0.13	-0.18	-0.09	-0.09	0.27	0.03	0.06	-0.03	-0.20
RULAW	0.29	0.19	0.08	0.02	-0.03	0.20	-0.31	-0.11	-0.13	0.21	0.09	-0.09	0.05	-0.15
RACTENS	0.36	0.09	0.22	-0.11	-0.06	0.08	-0.23	0.07	0.05	0.10	0.04	0.13	0.05	-0.04
POLTERR	0.27	0.14	0.05	0.09	-0.04	0.11	-0.22	-0.03	-0.05	0.12	0.05	-0.04	0.06	0.00
CIWAR	0.33	0.09	0.13	0.06	0.00	0.07	-0.24	-0.04	-0.06	0.16	0.08	-0.02	0.08	-0.09
BUQUAL	0.37	0.15	0.32	-0.02	-0.01	0.16	-0.11	-0.09	-0.13	0.27	0.02	-0.09	0.06	-0.21
REPUCON	0.42	0.29	0.34	-0.15	0.01	0.30	-0.35	-0.21	-0.15	0.31	0.06	-0.13	0.10	-0.26
RISKEXP	0.25	0.21	0.25	-0.08	-0.04	0.24	-0.15	-0.10	-0.09	0.29	0.12	-0.06	0.05	-0.25
POLRI	0.47	0.21	0.38	-0.24	-0.12	0.34	-0.23	0.15	-0.14	0.08	0.06	-0.04	0.04	-0.09
CILIB	0.45	0.18	0.37	-0.24	-0.17	0.32	-0.25	0.13	0.12	0.06	0.03	0.03	0.00	-0.09

Notes: For definitions of variables and sources, see Table A2.

Table A7. Regional Averages for 53 Developing Countries, 1984-95
(Annual data)

	Observations	Africa	Asia	Middle East and Europe	Western Hemisphere
Economic security ratings					
GOVLEAD	636	5.4	5.1	***6.9	5.3
EXTRCON	636	6.9	*7.4	6.7	**8.2
CORRUPT	636	3.0	***2.6	3.1	***2.5
RULAW	636	2.7	2.6	2.8	**2.5
RACTENS	636	2.9	***2.0	***3.6	***4.5
POLTERR	636	3.2	3.1	3.2	3.0
CIWAR	636	3.7	***3.1	**4.1	3.7
BUQUAL	636	2.9	*3.0	**3.0	***2.3
REPUCON	636	5.0	***5.7	***5.7	***5.9
RISKEXP	636	5.8	***6.7	***6.4	***6.2
POLRI	624	2.8	***4.3	***3.4	***4.8
CILIB	624	2.3	***3.7	3.2	***4.5
Other variables					
YLPC(-1)	636	615.7	***869.9	***2498.1	***1876.3
YGPC	636	-0.9	***3.0	***0.8	***0.8
OPEN	636	3.0	***26.9	***21.6	***18.4
DEFY(-1)	636	5.4	5.1	5.5	***2.9
INF(-1)	636	26.9	***7.7	***14.9	***54.8
BMY(-1)	636	25.4	***46.0	***64.7	***32.3
PIY	636	10.2	***13.9	***13.7	***11.6
GIY	636	7.0	***8.2	***9.7	***5.4
REERG(-1)	636	-6.3	***-1.0	-3.6	**-2.2
TTGSD	636	8.4	7.3	***9.7	7.7
INFSD(-1)	636	7.7	***1.7	***3.2	***18.3
DETSX(-1)	636	30.5	*27.0	***31.5	33.6
TTG	636	-0.7	-0.9	-2.0	-0.8
SEC	636	22.7	*34.4	***48.4	***47
POPG	636	3.1	*2.1	*2.7	***2.0

Notes: With Africa as reference, *, **, and ***, indicate that the regional average is significantly different at the 10 percent, 5 percent, and 1 percent confidence level, respectively . For definitions of variables (including units of measurement) and data sources, see Table A2.

References

Alesina, Alberto, and others, 1992, "Political Instability and Economic Growth," NBER Working Paper No. 4173 (Cambridge, Massachussets: National Bureau of Economic Research).

Alesina, Alberto, 1997, "The Political Economy of High and Low Growth," paper presented at the World Bank Conference on Development Economics, Washington, April.

Barro, Robert J., 1996, "Democracy and Growth," *Journal of Economic Growth*, Vol. 1 (March), pp. 1–27.

————, and Xavier Sala-i-Martin, 1995, *Economic Growth* (New York: MacGraw Hill).

Brunetti, Aymo, Gregory Kisunko, and Beatrice Weder, 1997, "Credibility of Rules and Economic Growth: Evidence from a Worldwide Survey of the Private Sector," World Bank Policy Research Working Paper No. 1760 (Washington: World Bank).

Burnside, Craig, and David Dollar, 1997, "Aid, Policies, and Growth," World Bank Policy Research Paper No. 1777 (Washington: World Bank).

Camdessus, Michel, 1996, "Integrating Africa More Fully Into the Global Economy," Statement at the Euro-African Convention, Bordeaux, France, May 13.

Commander, Simon, Hamid Davoodi, and Une J. Lee, 1997, "The Causes of Government and Consequences for Growth and Well-Being," World Bank Policy Research Working Paper No. 1785 (Washington: World Bank).

Dhonte, Pierre, and Ishan Kapur, 1997, "Towards a Market Economy: Structures of Governance," IMF Working Paper 97/11 (Washington: International Monetary Fund).

Dixit, Avinash K., and Robert S. Pyndick, 1994, "Investment Under Uncertainty," (Princeton, New Jersey: Princeton University Press).

Easterly, William, and Ross Levine, 1997, "Africa's Growth Tragedy: Policies and Ethnic Divisions," (unpublished: Washington: World Bank).

Easterly, William, Norman Loayza, and Peter Montiel, 1997, "Has Latin America's Post-Reform Growth Been Disappointing?" World Bank Policy Research Working Paper No. 1708 (Washington: World Bank).

Fabricius, Michael, 1997, "What Can Economic Security Tell Us About Deposits and Investment?" (unpublished; Washington: International Monetary Fund).

Freedom House, various years, *Freedom in the World: Political Rights and Civil Liberties* (New York: Freedom House).

Ghura, Dhaneshwar, and Michael T. Hadjimichael, 1996, "Growth in Sub-Saharan Africa," *Staff Papers*, International Monetary Fund, Vol. 43 (September), pp. 605–34.

Ghura, Dhaneshwar, and Barry Goodwin, 1997, "Determinants of Private Investment: a Cross-Regional Empirical Investigation" (unpublished; Washington: International Monetary Fund).

Gyimah-Brempong, Kwabena and Thomas L. Traynor, 1996, "Political Instability and Savings in Less Developed Countries: Evidence from Sub-Saharan Africa," *Journal of Development Studies*, Vol. 32 (June), pp. 695–714.

Hadjimichael, Michael T., and Dhaneshwar Ghura, 1995, "Public Policies and Private Savings and Investment in Sub-Saharan Africa: an Empirical Investigation," IMF Working Paper 95/19 (Washington: International Monetary Fund).

Hsiao, Cheng, 1986, *Analysis of Panel Data* (Cambridge, England, and New York: Cambridge University Press).

Political Risk Services, 1996, "The ICRG Rating System" in *A Business Guide to Political Risk* (Syracuse, New York: Political Risk Services).

Knack, Stephen, and Phillip Keefer, 1995, "Institutions and Economic Performance: Cross-Country Tests Using Alternative Measures," *Economics and Politics*, Vol. 7 (November), pp. 207–227.

Levine, Ross, 1997, "Law, Finance, and Economic Growth" (unpublished; Charlottesville, Virginia: University of Virginia).

Mauro, Paolo, 1995, "Corruption and Growth," *Quarterly Journal of Economics*, Vol. 110 (August), pp. 681-712.

———, 1996, "The Effects of Corruption on Growth, Investment, and Government Expenditure", IMF Working Paper 96/98 (Washington: International Monetary Fund).

Sachs, Jeffrey D., and Andrew M. Warner, 1996, "Sources of Slow Growth in African Economies," Discussion Paper No. 545 (Cambridge, Massachusetts: Harvard Institute for International Development).

Sala-i-Martin, Xavier, 1997, "I Just Ran Four Million Regressions," Working Paper No. 200 (Barcelona, Spain: Universitat Pompeu Fabra).

Servén, Luis, 1997, "Uncertainty, Instability, and Irreversible Investment: Theory, Evidence, and Lessons for Africa," World Bank Policy Research Working Paper No. 1722 (Washington: World Bank).

Tavares, Jose, and Romain Wacziarg, 1997, "How Democracy Fosters Growth" (unpublished; Cambridge, Massachusetts: Harvard University).

World Bank, 1997, *World Development Report 1997: The State in a Changing World* (New York: Oxford University Press for the World Bank).