Institutional Distortions, Economic Freedom, and Growth

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Two developments in the 1980s revived interest in growth theory and modified the way most economists study the determinants of growth. First, the contributions by Romer (1986) and Lucas (1988) launched a host of new growth models that abandoned the neoclassical tenet of diminishing returns to capital and introduced monopolistic competition as the underlying market form. Second, the contributions by North (1990) focused attention on institutions that shape the incentive structure which may either propel or impede productive activity within society. North and others emphasize that the existence of an implicit incentive structure drives both traditional growth models and the new models built around increasing returns.[1] These developments laid the foundation for a large body of empirical work: some studies examine and compare the aggregate growth patterns, and others seek to identify the specific factors that correlate with growth. The latter studies include numerous attempts to measure empirically the effect of institutional factors on economic development (e.g., Barro 1991, Sachs and Warner 1997).

A common thesis in the new institutional literature maintains that societies that have adopted infrastructures that favor production over diversion have typically done so through effective government (e.g., a strong judiciary and policies that secure property rights). As a result

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This paper draws on Ali (1997).

[1] Hall and Jones (1997) state this idea in terms of the infrastructure of an economy: the collection of laws, institutions, and government policies that make up the economic environment. In the expanded analytical framework, the institutional infrastructure together with the standard constraints of economic theory determine productive opportunities and economic performance.

the empirical literature on institutions devotes considerable attention to the connection between economic performance and political regimes, predominantly using the measures of political freedom and civil liberty generated by Gastil.[2] These studies offer an ambiguous and inconclusive picture as described in the survey article by Przeworski and Limongi (1993). The empirical evidence that political regimes matter for growth remains weak despite the intuitive appeal of integrating political regimes into the analysis.[3]

This paper extends the investigation of the relationship between economic growth and freedom by distinguishing between the growth effects of political freedom versus economic freedom. The approach follows the method employed by Levine and Renelt (1992), a study that evaluated the robustness of various factors that appear to be correlated with growth. This paper evaluates the robustness of the often-used Gastil indices of political freedom and civil liberty and a relatively recent index of economic freedom. The analysis evaluates both the direct effect of the political and economic freedom measures on growth as well as their indirect effects on investment for a large sample of countries. The models investigate the possible interactions between growth, political freedom, and economic freedom. Finally, the findings regarding economic freedom are related to recent studies by Easterly (1993), Mauro (1995), and Knack and Keefer (1995) that examine specific policies and institutions that distort relative prices and resource allocation.

Generally the findings shed light on the source of the conflicting findings in the literature: the impact of political regimes on economic growth can not be understood solely in terms of a broad-brush distinction between democratic and non-democratic regimes. The democratic character of a regime does not matter systematically when economic freedom is assessed independently from political freedom and civil liberty. The Gastil indices inadequately incorporate relevant factors such as the security of private property and the freedom to exchange and trade. A highly democratic country with a wide range of political freedom and civil liberty may adopt economic policies that

[2] The Gastil indices are issued annually. Notably a number of studies are lax in matching the appropriate time periods for the indices and country economic performance.

[3] The sensitivity analysis of cross-country growth equations in Levine and Renelt (1992) finds the Gastil Civil Liberties Index to be fragile with respect to model specification. Sala-i-Martin (1997) using a different criterion to determine robustness finds the Gastil Civil Liberties Index to be robust, although it has an unexpected effect: more political freedom is correlated with slower growth. Finally, Wu and Davis (1997) using log-linear methods fail to demonstrate the presence of an association between political freedom and economic growth or political freedom and the level of income.

encourage resource diversion and discourage entrepreneurship and investment. Alternatively, autocratic regimes may adopt economic policies that endow critical economic freedoms and thereby encourage investment and private initiative.

Sensitivity Analysis

The sensitivity analysis used in this paper follows Levine and Renelt (1992), who rely on the extreme bounds analysis (EBA) suggested by Leamer (1983 and 1985).

Methodology and Data Sample

The EBA evaluates three freedom variables (i.e., the "M variables" as defined in Equation 1).[4] The three M variables used are Economic Freedom (ECO), Political Freedom (POL) and Civil Liberty (CIV). The procedure first regresses Y on I and produces a "base" regression result for each variable. We then regress Y on I, M, and all linear combinations of a set of three Z variables—the ratio of total trade to GDP (TRD), the average rate of inflation (INF), and the standard deviation of the growth of domestic credit (SGCREDIT)—generating six regressions for each M variable.

The subsets of variables allow us to identify the highest and lowest values for the coefficient on M (denoted β_m), and thereby define the upper and lower bounds of β_m. The extreme upper bound is the highest value of β_m plus two standard deviations; the extreme lower bound is the lowest value of β_m minus two standard deviations. If β_m remains significant and of the same sign at the extreme bounds, we label the partial correlation between Y and the M variable "robust." If β_m does not remain significant or if it changes signs at the extreme bounds, we label the partial correlation "fragile."

$$Y = \text{constant} + \beta_i I + \beta_m M + \beta_z Z + u, \tag{1}$$

where

Y = real per capita GDP growth, or the share of investment in GDP;
I = a set of core variables always included in the regressions;
M = the variable of interest (i.e., the Economic Freedom Index or the Gastil Political Freedom Indices);
Z = a subset of variables identified by Levine and Renelt (1992) as potentially important explanatory variables of growth; and
U = a random disturbance term.

[4] The basic estimation equation adopts the notation and core variables suggested in Levine and Renelt (1992).

TABLE 1

Countries Included in the Analysis

Afghanistan	Guatemala	Oman
Algeria	Guinea-Bissau	Pakistan
Angola	Guyana	Panama
Argentina	Haiti	Papua New Guinea
Australia	Honduras	Paraguay
Austria	Hong Kong	Peru
Bangladesh	Iceland	Philippines
Barbados	India	Portugal
Belgium	Indonesia	Rwanda
Benin	Iran	Saudi Arabia
Bolivia	Iraq	Senegal
Botswana	Ireland	Sierra Leone
Brazil	Israel	Singapore
Burkina Faso	Italy	Somalia
Burma	Jamaica	South Africa
Burundi	Japan	Spain
Cameron	Jordan	Sri Lanka
Canada	Kenya	Sudan
Cen. Afr. Rep.	Korea	Suriname
Chad	Kuwait	Swaziland
Chile	Lesotho	Sweden
Colombia	Liberia	Switzerland
Congo	Luxembourg	Syria
Costa Rica	Madagascar	Taiwan
Cote D'Ivoire	Malawi	Tanzania
Cyprus	Malaysia	Thailand
Denmark	Mali	Togo
Dom. Rep.	Malta	Trinidad and Tobago
Ecuador	Mauritania	Tunisia
Egypt	Mexico	Turkey
El Salvador	Morocco	Uganda
Ethiopia	Mozambique	United Kingdom
Fiji	Nepal	United States
Finland	Netherlands	Uruguay
France	New Zealand	Venezuela
Gabon	Nicaragua	Yemen
Gambia	Niger	Zaire
Germany	Nigeria	Zambia
Ghana	Norway	Zimbabwe
Greece		

The sample includes a cross-section of 119 countries, all countries for which data are available for the years 1975 through 1989 (Table 1).[5]

The EBA examines two dependent variables, real per capita GDP growth and the share of investment in real GDP per capita. Four variables constitute I, the set of core variables always included in the EBA: the investment share of GDP (INV), the initial level of real GDP per capita in 1975 (GDP75), the secondary school enrollment rate in 1975 (SEC), and the average annual rate of population growth (GPOP).

Results of the Extreme Bounds Analysis

The core model of the EBA for real GDP growth yields the following regression results (t-statistics are in parentheses):

$$\begin{array}{lccccc} (2)\ \ GDP = -0.45 + 17.16\ INV & -0.15\ GDP75 & + 0.3\ SEC & -0.88\ GPOP \\ \qquad\qquad (-0.42)\quad (5.69) & (-1.75) & (0.02) & (-3.07) \end{array}$$

R-squared = 0.36
F-statistic = 15.4
Obs. = 114

The estimated coefficients in Equation 2 closely correspond with the findings in Levine and Renelt.[6] The EBA uses this core specification as a starting point to evaluate the effect of small changes in the conditioning information on the three freedom indices.

Table 2 summarizes the EBA results for the Economic Freedom Index and the two Gastil indices. The findings indicate that the Economic Freedom Index is robust and that both the Civil Liberty Index and the Political Freedom Index are fragile.[7] In fact, CIV and POL both prove insignificant even in the core model.

We explore possible interdependencies in these relationships in more detail in Table 3 with a model that includes interaction terms between the economic and Gastil freedom variables. For example,

[5] All the countries are not included in each model because some variable values are missing for some countries.

[6] Levine and Renelt use data for the period 1960 through 1989 in most of their analysis. Our sample begins in 1975, the first year for which data on the Economic Freedom Index are available.

[7] The Economic Freedom Index is from Gwartney, Lawson, and Block (1996). They rank countries from 0 to 10 where 0 is the least free and 10 the most free. We converted their rankings to a 0-to-1 scale. The Freedom House indices compiled by Gastil and his associates rank countries from 7 to 1 where 7 is the least free and 1 the most free. For conformity, we converted the rankings to a 1-to-7 scale and then to a 0-to-1 scale.

TABLE 2

Sensitivity Results for the Freedom Indices
Dependent Variable: Real GDP per Capita Growth Rate

M Variable	Model	β	t-stat	Sample	R^2	Other Variables	Robust or Fragile
ECO	High	0.596	3.84	93	0.491	TRD	Robust
	Base	0.448	2.63	92	0.507		
	Low	0.394	2.45	88	0.540	INF, SGCREDIT	Robust
CIV	High	0.137	0.26	111	0.409	TRD, INF	Fragile (0)
	Base	0.058	0.11	113	0.364		
	Low	−0.47	−0.83	96	0.397	TRD, INF, SGCREDIT	Fragile (0)
POL	High	0.299	0.55	110	0.402	TRD	Fragile (0)
	Base	0.235	0.43	112	0.384		
	Low	−0.569	−0.98	98	0.374	INF, SGCREDIT	Fragile (0)

Note: The "Base" model estimates the β coefficient from the regression with only the variable of interest (the M variable). The "High" model β is the estimated coefficient from the regression with the extreme high bound (β_m+ two standard deviations); the "Low" model β is the estimation of the coefficient from the regression with the extreme lower bound. The "Robust or Fragile" designation summarizes the sensitivity analysis, and if Fragile, a (0) value indicates that the coefficient is insignificant with only the core variables included.

TABLE 3

Regression Results
Dependent Variable: Real per Capita GDP Growth Rate, 1975–89

Independent Variables	Model 1	Model 2	Model 3	Model 4
C	–0.45 (–0.42)	–1.28 (–0.97)	–1.21 (–0.92)	–2.54 (–1.77)
INV	17.17 (5.69)	17.71 (5.98)	17.81 (6.08)	19.18 (5.51)
SEC	0.3 (0.02)	1.69 (0.922)	1.78 (0.97)	1.128 (0.62)
GPOP	–0.88 (–3.07)	–1.08 (–3.45)	–1.13 (–3.69)	–0.736 (–2.55)
GDP75	–0.15 (–1.75)	–0.475 (–3.66)	–0.45 (–3.42)	–0.38 (–3.01)
POL		0.095 (0.136)		
CIV		–0.085 (–0.124)		
ECO		3.375 (2.012)	3.52 (2.074)	
ECO*POL			–0.45 (–0.36)	
ECO*CIV			–0.125 (–0.101)	
TRD				0.275 (0.388)
INF				–0.003 (–1.94)
GOV				–2.76 (–0.637)
REVO				–0.331 (–0.354)
Sample	114	91	91	89
R^2	0.36	0.50	0.51	0.55

Note: t-statistics are in parentheses.

does the marginal impact of economic freedom on growth depend on the degree of political freedom?[8] The insignificance of the interaction terms in Model 3 of Table 3 indicates that the effect of economic freedom on growth is independent of the level of political freedom and civil liberty. The first column of Table 3 repeats the benchmark regression results (i.e., Model 1 in Table 3 estimates Equation 2). Model 2 adds the three freedom variables. In that case the estimated coefficient on POL is insignificant. The coefficient of CIV is insignificant and has an unexpected sign. Model 4 in Table 3 adds policy variables into the freedom-augmented model of column 2, including the ratio of government consumption to GDP (GOV), the ratio of total trade to GDP (TRD), the average inflation rate (INF), and the number of revolutions and coups per year (REVO). The regression results show that all the policy variables are insignificant except for the inflation variable.

The fact that the political stability coefficient is insignificant implies that the turnover of leaders is less important than the turnover of economic policies, as noted by Hall and Jones (1997). The fiscal policy and the trade policy variable coefficients have the expected sign but are insignificant in this context. The effect of economic freedom on growth is not sensitive to model specification, and the estimated coefficient remains significant at the 5 percent level.

The core model of the EBA for the investment share of GDP growth yields the following (t-statistics are in parentheses):

$$\text{(3)} \qquad \underset{(5.19)}{\text{INV} = 0.16} \underset{(-7.02)}{- 0.002\ \text{GDP75}} \underset{(2.30)}{+ 0.12\ \text{SEC}} \underset{(1.84)}{+ 0.016\ \text{GPOP}}$$

$$\text{R-squared} = 0.06$$
$$\text{F-statistic} = 2.50$$
$$\text{Obs.} = 116$$

Again, the estimated core model for investment in Equation 3 mirrors the findings in Levine and Renelt (1992). Table 4 provides the EBA results using the investment equation for the Economic Freedom Index and the two Gastil freedom indices. Neither the Economic Freedom Index nor the Gastil freedom indices exhibits a significant

[8] The partial correlation coefficient between economic freedom and political freedom is 0.57; the correlation between economic freedom and civil liberty is 0.56. This low correlation indicates that countries with high levels of political freedom and civil liberty do not necessarily enjoy high levels of economic freedom.

TABLE 4

SENSITIVITY RESULTS FOR THE FREEDOM VARIABLE INDICES
DEPENDENT VARIABLE: INVESTMENT SHARE OF REAL GDP

M Variable	Model	β	t-stat	Sample	R^2	Other Variables	Robust or Fragile
ECO	High	0.113	1.80	86	0.222	SGCREDIT, INF	Fragile (1)
	Base	0.102	1.83	93	0.162		
	Low	–0.003	–0.05	91	0.297	TRD	Fragile (0)
CIV	High	0.027	0.86	110	0.238	INF, TRD	Fragile (0)
	Base	0.012	0.33	114	0.034		
	Low	–0.028	–0.63	97	0.129	INF, SGCREDIT	Fragile (0)
POL	High	0.055	2.00	109	0.260	INF, TRD	Fragile (0)
	Base	0.042	1.30	113	0.048		
	Low	0.014	0.35	97	0.127	SGCREDIT, INF	Fragile (0)

NOTE: See Table 2.

coefficient in the core investment equation, and all three relationships are fragile.

The sensitivity analysis offers two main conclusions. First, the two commonly employed measures of freedom exhibit no systematic relationship to economic growth, either directly or indirectly through enhanced investment. Second, the Economic Freedom Index exhibits a robust relationship with economic growth. The absence of a reliable relationship between economic freedom and investment indicates that the growth-promoting influence of economic freedom results from promoting the efficiency of resource allocation. We now explore this implication in additional detail.

Institutional Dimensions and the Efficiency of Resource Allocation

Several studies investigate the impact of institutional distortions on resource allocation and growth. In particular, Easterly (1993) singles out policies such as tariffs, import quotas, controls on prices and interest rates, and discriminatory taxes that distort relative prices and resource allocation. Distorting the composition of the aggregate capital stock can have large growth effects, just as the tax-induced distortion of the ratio of physical to human capital affects growth (as noted by Stokey and Rebelo 1993). Easterly tests for allocative distortions using explicit proxies for price distortions and finds that input price distortions significantly affect growth, while distortions in consumption prices do not. His findings suggest a growth-retarding effect from financial repression" (i.e., credit market constraints that cause negative interest rates).

Mauro (1995) examines indices of corruption (e.g., bureaucratic dishonesty and inefficiency) and finds that corruption is negatively and significantly associated with GDP growth as well as the accumulation of physical capital. In a similar study, Knack and Keefer (1995) find that institutions that protect property rights are of crucial importance to economic growth and investment. Using subjective but direct measures of institutional quality (such as the rule of law, enforceability of contracts, risk of expropriating private property, the quality of the bureaucracy, and the prevalence of governmental corruption), they find that differences in institutional quality account for a major share of cross-country growth differences.

Equations 4 and 5 present the results from regressing Easterly's proxy for input price distortions and Knack and Keefer's Index of

Institutional Quality (labeled InputVar and IIQ respectively) against the Economic Freedom Index (ECO).[9]

(4) $$\text{InputVar} = 0.39 - 0.25\ \text{ECO}$$
$$(4.67)(-1.75)$$

R-squared = 0.054
F-statistic = 3.06
Obs. = 55

The coefficient on economic freedom is negative and significant at the 10 percent level; more economic freedom lowers input price volatility. This result indicates that enhancing economic freedom reduces relative price distortions and improves resource allocation.

(5) $$\text{IIQ} = 0.227 + 0.06\ \text{ECO}$$
$$(4.35)\quad (6.2)$$

R-squared = 0.295
F-statistic = 38.46
Obs. = 94

The estimated coefficient of economic freedom is positive and highly significant. Economic freedom tends to run hand in hand with general measures of institutional quality.

Conclusion

Empirical research into the institutional sources of economic growth has been frustrated by the lack of a consistent, robust relationship between political regimes, freedom, and development. This paper points to two sources underlying that frustration. One source is essentially definitional: the traditionally used measures of freedom, the Gastil indices, fail to capture relevant dimensions of freedom. Our measure of economic freedom appears to remedy this measurement problem and to provide a robust element for future growth

[9] The IIQ is a composite of five subjective indices that measures the quality of institutions across countries. These measures are from the *International Country Risk Guide* and cover more than 90 countries in the period 1982–90. They are the rule of law, bureaucratic quality, corruption in government, the risk of expropriating private property, and the enforceability of contracts. The first three indicators are scored on a scale of 0 to 6, while the last two are scored on a 0-to-10 scale. The higher the score the better the institutions. We standardized the original ranking into a 0-to-1 scale.

models. The second source revealed in this analysis is more substantive. Political regimes and civil liberties, as distinct from economic freedom, do not appear to matter systematically for growth. The quality of a country's economic infrastructure is not necessarily connected to its political regime or levels of civil liberties.

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