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Macroeconomic Determinants of Growth: Further Evidence on the Role of Political Freedom*

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Researchers have long suspected that societies with high levels of political freedom exhibit higher levels of economic growth than those in which such freedoms are abridged. The present study reexamines Kormendi and Meguire's (K-M) data and provides additional evidence to support the hypothesis that there is a significant positive relationship between political freedom and the macroeconomic performance of nations. In doing so, the present study uses a much more comprehensive measure of political freedom than the one employed by K-M. In addition, the present study implements the Goldfeld-Quandt test to check for heteroscedasticity. The results confirm the positive relationship between political freedom and economic growth.

I. Introduction

The majority of studies that have sought to explain economic growth of nations have accounted for such growth by examining changes of factor inputs and technology. By and large, however, non-economic determinants of economic growth are omitted. One reason for this omission has been the fact that the bulk of macroeconomic studies have taken the institutional frame work as given. In addition, measures of the institutional framework are considered ordinal and difficult to observe, and comparable and reliable data series for such measures have not been easily available (Pourgerami and Djeto (1992)).

Kormendi and Meguire (hereafter referred to as K-M) (Kormendi and Meguire (1985)) made a pioneering effort and developed a model that allowed them to examine both the economic and non-economic determinants of growth. Specifically, K-M tested several economic hypotheses related to growth and, in addition investigated the effect of political freedom on economic growth. Results obtained from their model showed that civil liberties have a relatively modest effect on the growth of output and a strong impact on investment.

Gupta (1988) re-examined the K-M data and argued that their empirical results suffered from problems of aggregation and heteroscedasticity. He subsequently divided the K-M data into two sub-samples, one representing developed countries (all members of the OECD) and the other representing developing countries and obtained results that showed that civil liberties had

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an insignificant impact on the growth of output. He also remarked that although the measure of civil liberties had a significant effect on investment, its inclusion as a regressor did not significantly improve the explanatory power of the model. In addition, the impact of the civil liberties measure on economic growth seemed to be greater for the full sample than for the developing countries. Grier and Tullock (1989) used pooled cross-section/time series data on 113 countries to examine the effect of several economic and non-economic variables (including those used by K-M) on economic growth. They determined that the effect of the variables used in the K-M study on economic growth varied "widely across identifiable groups of countries, with evidence supporting the convergence hypothesis apparent only in the OECD country sample" (Grier and Tullock (1989), p. 259). In regard to the effect of the institutional framework on growth, they found political repression or the lack of civil liberties to have a significant negative impact on economic growth only in Africa, and Central and South America. The results they obtained appeared to suggest that there is no single empirical model of secular growth that can be applied to all countries and regions of the world. They concluded that what Abramowitz (1985) calls "social capabilities" are more important determinants of growth than can be implied from K-M's highly aggregated results. In a recent study using the K-M data and methodology, Pourgerami and Djeto (1992) found a positive link between political freedom and the growth of output. In place of K-M's measure for civil liberties, they used an indicator of political development that incorporates measures of political democracy, civil liberties and human rights. In addition, Pourgerami and Djeto (1992) disaggregated the data into developed and developing countries, and also corrected for heteroscedasticity.

The summer 1993 issue of the *Journal of Economic Perspectives* (published by the American Economic Association) is devoted to a symposium on democracy and development. Several authors examine the growth-democracy issue. The existing literature is examined thoroughly and the general conclusion of the symposium participants is that researchers presently do not know whether "democracy fosters or hinders economic growth" (p. 64). Further research is recommended.. The present paper hopes to provide empirical evidence that can be used to re-examine the democracy-growth relationship. Specifically, we shall examine the impact of political freedom on economic growth using the data and methodology of K-M. In place of the measure for civil liberties, however, we use the political democracy index (PDI), a much more comprehensive measure of political freedom. In using this measure, we hope to throw additional light on the role of the institutional framework on economic growth. Following Gupta (1988), and Pourgerami and Djeto (1992), the data will be disaggregated and the estimations will consist of a sample representing all forty-six countries (excluding Taiwan because of missing data on the PDI) and one for developing countries. In Section II, we briefly examine the K-M model. Section III discusses the empirical results. The summary and conclusion are presented in Section IV.

II. The Theoretical Model

In this section the model will be outlined and briefly examined. The model used by K-M consists of a single equation specified as follows:

$$MDY = f(YPC, MDPOP, SDY, SRM, MDM, MDGX, MDEXX, MDINF),$$

where MDY = the mean annual rate of growth of output; YPC = the 'initial' per capita income; MDPOP = the mean annual rate of population growth; SDY = the standard deviation of real output growth; SRM = the standard deviation of money supply shocks; MDM = the mean of money supply growth; MDGX = the mean growth rate of the ratio government spending to output; MDEXX = the mean growth of exports as a proportion of output; MDINF = the mean growth in the rate of inflation. As was done by K-M, we also examine the impact of the mean investment to income ratio (MIX) on economic growth. That effect is expected to be positive (+). In addition, the PDI will be used to measure political freedom. In K-M's model, a measure for civil liberties is included. The PDI in this study is supposed to serve as a comprehensive measure of the level of political freedom. Its effect is expected to be positive (+). The expected effects of the variables are YPC (-); MDPOP (±); SDY(+); MDM (0); MDGX (-); MDEXX (+); and MDINF (±). Kormendi and Menguire (1985), Gupta (1988), Grier and Tullock (1989), and Pourgerami and Djeto (1992) examine the hypotheses and the reasons for the effects of each variable on output growth. Below we summarize those hypotheses.

The initial per capita income, YPC, is expected to have a negative effect on the growth of output. This expectation is related to the convergence hypothesis. According to standard neoclassical theory, given any starting point, countries with lower initial capital-labor ratio, and as a result, lower per capita output, are expected to encounter faster growth relative to the more advanced or developed countries because of diminishing returns to investment in a given technology. The transfer of knowledge from the advanced to the developing countries also has the same effects. Convergence, thus, implies that those countries which have higher initial per capita income are expected to experience lower growth in the future compared to other countries, as a consequence of diminished returns to increased investment under any given technology.

K-M note that according to neoclassical growth theory, growth in the population should affect the growth of output positively. The steady state rate of growth of output should equal the rate of growth of the labor force plus the growth rate of exogenous technology, implying a one-for-one effect of population growth on output growth. K-M caution, however, that in the transition to the steady state, the effect of population growth on income growth may be less than one-for-one if either the accumulation of capital or labor force growth fails to keep up with population growth.

The standard deviation of real output growth (SDY) is used by K-M to measure the risk of aggregate technology and to test Black's (1979) hypothesis. According to Black, in their choice of technology, countries effectively face a positive risk-return trade-off. Economic agents would collectively opt for riskier technologies only if they were convinced that these technologies would yield greater returns and as a result, higher rates of output growth. Black's hypotheses posits that MDY and SDY should be positively correlated.

According to Barro (1976, p. 4), monetary variation should have a negative effect on the rate of economic growth. K-M use the standard deviation of money supply shocks (SRM) to measure monetary variation. Barro's hypothesis states that variability in the money supply adds noise to the process of extracting the right relative price signals required for the efficient allocation of resources. The monetary disturbances produce noise that increases the level of uncertainty

of the real rate of return on investment projects.

The expected null effect of the mean of money supply growth (MDM) on MDY is based on the rational expectations macro-models developed by Lucas (1972, p. 17), and Barro (1976, p. 4). These hypotheses assume neutrality of real output with respect to anticipated monetary policy. The implication of monetary neutrality is that output growth is unrelated to the anticipated rate of growth of the money supply.

The mean growth of the ratio of government spending to output (MDGX) is included as a regressor to test 'supply side' theories which theorize that the tax revenues required to underwrite increased public spending will distort economic incentives, reduce efficiency in the economy, and lead to a reduction in the level of output. Hence, countries with greater mean growth of government spending as a percentage of output should encounter slower income growth.

The mean growth of exports as a proportion of output (MDEXX) is used to measure the degree of openness of the economy. It has been argued that countries which severely restrict international trade fail to effectively exploit their comparative advantage and as a result, reduce the level of aggregate output. Thus, more open economies should, over time, experience higher rates of economic growth. It is hypothesized, then, that countries with higher mean rate of growth of exports as a proportion of output (MDEXX) are expected to encounter greater economic growth.

According to the Tobin-Mundell effect, economic agents tend to reduce their real money balances in favor of real capital as a result of higher anticipated inflation. In periods of more rapid growth in anticipated inflation, then, the Tobin-Mundell effect would predict increased shifts from real money balances to real capital, resulting in increased output growth. K-M measure growth in anticipated inflation by the mean growth in inflation (MDINF). According to the Tobin-Mundell hypothesis, countries that have higher MDINF should encounter higher growth in output. Stockman (1981), however, argues that in a 'cash-in-advance' economy, higher levels of anticipated inflation will constrain economic activity, and as a result, higher anticipated inflation should lower output growth.

In addition to the variables described above, K-M also included the mean investment to income ratio (MIX) as a regressor to capture the effect of capital formation on the growth of output. That effect is expected to be positive. The inclusion of MIX, however, may cause problems of multi-collinearity. If an independent variable affects the growth of output solely through the investment-output ratio, then including MIX in the estimation as a regressor should eliminate that variable's effect. If, on the other hand, a variable affects output solely through the return on investment, then including MIX as an explanatory variable should reduce its standard error and leave the variable's coefficient the same.

Several of the authors that have studied the relationship between political freedom and the growth of output have come to the conclusion that political democracy and growth are incompatible. Research done by Heilbroner (1963), Bhagwati (1966), Andreski (1969), and Kahn (1979) point to an incompatibility between a democratic institutional framework and economic growth. Bhagwati, for example, argues that poor countries face a 'cruel choice' between swift and sustained economic growth and political freedom. It is argued that, during the early stages of economic development, managing a political system democratically is 'chaotic' and 'wasteful' and that extremely poor, highly deprived, and struggling societies cannot afford the time it takes for their democratic institutions to develop and mature. Thus, economic development should be allowed

to take off at the expense of political freedom until society has achieved a relatively high standard of living.

Some scholars, however, object to the democracy-growth incompatibility hypothesis. In 1970, Lewis rejected the view that rapid economic growth is guaranteed under an autocratic governmental system. He argued that development represents a process in which individuals attempt to gain control over the human environment through the accumulation of knowledge, which allows them to have greater freedom of choice and equality of opportunity for all citizens. He concluded that economic growth does not require that governmental systems be autocratic and that rapid economic growth does not necessarily increase societal happiness and freedom. In a 1974 study, Dick was unable to find any empirical evidence to support the hypothesis that societies with autocratic governments grew relatively faster than those with competitive political systems. Vorhies and Glahe (1988) found empirical evidence to support a positive correlation between measures of socio-economic development and political freedom. Scully (1988) determined that societies in which citizens' political rights and civil liberties are protected grew faster than those in which these freedoms were abridged. In a similar study, Pourgerami (1988) found political democracy to have a positive effect on economic growth and concluded that political freedom provides citizens with the opportunity to more effectively participate in economic development. Pourgerami and Djeto (1992) stress that increased levels of political freedom will allow citizens to "expand the range of socio-economic opportunities and to establish greater control over the human environment in order to improve material well-being" (1992, p. 129). Recently, the United Nations stated that "freedom is a necessary condition to liberate the creative energies of the people to pursue a path of rapid economic development" (UNDP (1992), p. 27).

K-M's measure of civil liberties (CL) does not adequately capture the level and extent of political freedom in a society. Although the measure CL is "derived from a subjective combination of factors such as freedom of expression and conscience, due process in criminal procedure, absence of political prisoners, independence of the judiciary, and the like" (1985, p. 154), it fails to incorporate other crucial characteristics of a free society. The PDI, developed by Bollen (1980, 1993), is the measure of political freedom used in the present study. Bollen defined political democracy as "the extent to which the political power of the elite is minimized and that of the nonelite maximized" (1980, p. 372). In his measure of political democracy, he emphasized those variables that determine the power relationships between the ruling elite and the mass of the people. To determine the impact of elections on the power of nonelites, he included elections and measures of political freedoms in the PDI. In each country, political liberties endow citizens with the ability to either freely support government policies or oppose them. If individuals are provided with freedom of speech, a free press, and freedom of opposition, then agents have greater opportunities to mobilize and oppose government policies. Consequently, citizens can influence the decisions made by the ruling elite. Additionally, these liberties permit individuals to organize political parties to compete for leadership positions in the country's political system. In countries in which these liberties are abrogated, the political power of the ruling elite is maximized at the expense of the masses.

PDI is based on political liberties and popular sovereignty. Bollen indexes political liberties by freedom of the press, freedom of speech, and the right of citizens to organize political parties to compete to capture the apparatus of government. He indexes popular sovereignty by fairness

of elections, method of selecting the chief executive of the country, and method of legislative selection and effectiveness. PDI scores range from 0 to 100, with higher values indicating increased levels of political freedom in a society. The countries used in the present study and their respective PDI values are given in the appendix.

III. Empirical Results

In this section, we provide the results of estimating a modified K-M model that includes PDI instead of the civil liberties measure used in the K-M study. Our first task is to test for heteroscedasticity. In estimating ordinary least squares regression models as in the current study, it is assumed that the variance of the error term is constant. This assumption of homoscedasticity is frequently violated especially in cross-sectional studies. For example, in this study we include countries that have widely varying per capita incomes. It is possible that countries that have low incomes adopt more widely varying policies than do higher income countries. Thus, in a model where macroeconomic performance is a dependent variable, the error variances associated with low income countries may be much higher than error variances associated with high income countries. If this is the case, then heteroscedasticity exists and appropriate correction for the problem is called for. Application of the Goldfeld-Quandt test shows that heteroscedasticity exists.

In order to obtain unbiased estimates, appropriate correction for heteroscedasticity is undertaken.[1] In the subsequent estimates, we use weighted least squares regressions.[2] We report the results of estimating the K-M model for the full sample and for developing countries. The results are presented in Tables 1 through 4. In Tables 1 and 2, the dependent variable is MDYj (the mean growth of real aggregate output in country j) and in Table 3 and 4, the dependent variable is MIXj (the mean investment to income ratio in country j). In Table 1, which reports the results for the full sample, the estimated coefficients of the economic variables are consistent with expectation. YPC, MDPOP, SRM, SDY, MDEXX, AND MDINF all have their expected signs and are also statistically significant. Equation 1, Table 1 contains the variables MIX and PDI. The former has the expected sign and is significant, but the latter, while it has the expected sign, is not significant. When equation 1 (Table 1) is re-estimated without the variable MIX, PDI is now significant at the 5% level.

1. Our null hypothesis is that error variances are constant, i.e., the null hypothesis is that homoscedasticity exists. The alternative hypothesis is that error variances vary across countries depending on values of YPC. We implement the Golfeld-Quandt test using the data discussed previously. To conduct the test, we first arrange the observations on all variables in order of increasing magnitude of YPC. We then divide the sample into two sub-samples; one for those observations associated with high values of YPC and the other for those observations associated with low values of YPC, but omitting a number of central observations. In our case, the first sub-sample (N_1) includes 21 countries that have values of YPC$\geq$1.5. The second sample (N_2) includes 20 countries with values of YPC$\leq$0.98. Five countries whose values of YPC range between 0.99 and 1.4 are omitted. We then fit two regression equations for the two sub-samples (N_1 and N_2). The sum of the squared residuals for the two regressions are then obtained. We denote the sum of squared residuals from N_1 and from N_2 as SSR_1 and SSR_2 respectively. If the error process in normally distributed, then the ratio of the two sums of squared residuals, SSR_2/SSR_1 is distributed as an F-statistic. If the calculated statistic is greater than the critical value of F, then we reject the null hypothesis of homoscedasticity.
2. The weight applied to each observation in the weighted least squares approach is YPC.

Table 1 Regression Estimates of the Effects of Political Freedom on Macroeconomic Growth *(Full Sample) Method of Estimation is Weighted Least Squares.**

Dependent Variable: MDYj

Independent Variables	1	2	3	4	5
Intercept	0.0280 (3.472)a	0.0342 (4.382)a	0.0360 (4.369)a	0.0151 (1.967)c	0.220 (3.071)a
YPCj	-0.0075 (-5.593)a	-0.0075 (-5.375)a	-0.0078 (-5.285)a	-0.0082 (-5.730)a	-0.0084 (-5.603)a
MDPOPj	0.7126 (5.286)a	0.7346 (5.245)a	0.8258 (5.746)a	0.7385 (4.995)a	0.7607 (4.956)a
SRMj	-0.1255 (-2.837)a	-0.1160 (-2.530)b	-0.0522 (-1.341)	-	-
SDYj	0.3191 (2.133)b	0.3783 (2.471)b	-	0.0686 (0.492)	0.1391 (0.989)
MDEXXj	0.0755 (1.340)	0.0841 (1.436)	0.1308 (2.220)b	0.0763 (1.247)	0.0801 (1.258)
MDINFj	-0.3385 (-1.444)	-0.4760 (-2.031)b	-0.4072 (-1.645)	-	-
PDIj	0.0001 (1.043)	0.0001 (2.330)b	0.0002 (2.897)a	0.0002 (3.488)a	0.0003 (5.976)a
MIXj	0.0711 (2.070)b	-	-	0.0751 (2.086)b	-
R^2	0.7782	0.7525	0.7128	0.7173	0.6858
ADJ.R^2	0.7302	0.7069	0.6686	0.6738	0.6465
n	46	46	46	45	46
d.f.	37	38	39	39	40
SSR	0.00313	0.00349	0.00406	0.00399	0.00444

Notes: * Values to t statistics are shown in parentheses below the coefficients.
[a]significant at the 1% level.
[b]significant at the 5% level.
[c]significant at the 10% level.

Equations 3-5 are variations of equation 1 with the variables SRM, SDY, MIX and MDINF left out. In all these equations, PDI has its expected sign and is significant.

The results for the developing countries are reported in Table 2. YPC, MDPOP, SRM, and SDY have significant effects on the growth of output. Political democracy and investment also have significant impacts on MDY. It should be noted that the inclusion of MIX as a regressor appears to weaken the effects of some of the variables.

Table 2 Regression Estimates of the Effects of Political Freedom on Macroeconomic Growth (*Developing Countries*)* Method of Estimation is Weighted Least Squares.

Dependent Variable: MDYj*

Independent Variables	1	2	3	4	5
Intercept	0.0083 (0.4938)	0.0271 (1.719)	0.0457 (3.037)a	0.0061 (0.396)	0.0197 (1.227)
YPCj	-0.0102 (2.359)b	-0.0058 (-1.397)	-0.0098 (-2.343)b	-0.0131 (-4.094)a	-0.0112 (-3.234)a
MDPOPj	0.6407 (2.285)b	0.6891 (2.258)b	0.5213 (1.584)	0.5903 (2.093)b	0.7714 (2.547)b
SRMj	-0.1182 (-1.816)c	-0.1508 (-2.183)b	-0.0547 (-0.891)	-	-
SDYj	0.5595 (2.262)b	0.6231 (2.323)b	-	0.2699 (1.314)	0.2822 (1.234)
MDEXXj	0.1071 (1.288)	0.1209 (1.335)	0.0977 (0.978)	0.0864 (1.004)	0.1200 (1.269)
MDINFj	-0.0109 (-0.029)	-0.4184 (-1.185)	-0.3074 (-0.792)	-	0.0574 (0.1405)
PDIj	0.0001 (1.462)	0.0002 (1.916)c	0.0002 (1.863)c	0.0002 (2.644)b	0.0002 (3.883)a
MIXj	0.1436 (2.116)b	-	-	0.1476 (2.415)b	-
R^2	0.8173	0.7692	0.7000	0.7748	0.7057
ADJ.R^2	0.7313	0.6794	0.6053	0.7037	0.06322
n	26	26	26	26	26
d.f.	17	18	19	19	20
SSR	0.00136	0.00171	0.00223	0.00167	0.00219

Notes: * Values to t statistics are shown in parentheses below the coefficients.
[a]significant at the 1% level.
[b]significant at the 5% level.
[c]significant at the 10% level.

Table 3 Regression Estimates of the Effects of Political Freedom on Investment, MIX (*Full Sample*)* Method of Estimation is Weighted Least Squares.

Dependent Variable: MIXj

Dependent Variables	1	2	3	4	5
Intercept	0.0872 (2.467)b	0.0993 (3.3572)a	0.0836 (2.332)b	0.1290 (5.039)a	0.1372 (9.601)a
YPCj	-0.0002 (-0.030)	0.0003 (0.041)	-0.0028 (-0.432)	-0.0002 (-0.025)	-
MDPOPj	0.3107 (0.489)	0.2840 (0.452)	0.4903 (0.779)	0.5981 (0.960)	-
SRMj	0.1332 (0.641)	-	0.2545 (1.4132)	-	-
SDYj	0.8327 (1.201)	1.0715 (1.845)c	-	-	-
MDEXXj	0.1207 (0.455)	0.1093 (0.416)	0.1526 (0.599)	0.2747 (1.080)	-
MDINFj	-1.9337 (-1.821)c	-1.9528 (-1.853)c	-	-1.7135 (-1.591)	-
PDIj	0.0010 (3.627)a	0.0009 (4.362)a	0.0013 (4.540)a	0.0009 (3.998)a	0.0009 (5.251)a
R^2	0.4938	0.4884	0.4437	0.4437	0.3852
ADJ.R^2	0.4006	0.4096	0.3741	0.3741	0.3712
n	46	46	46	46	46
d.f.	38	39	40	40	44
SSR	0.07176	0.07253	0.07987	0.07886	0.08715

Notes: * Values to t statistics are shown in parentheses below the coefficients.
[a]significant at the 1% level.
[b]significant at the 5% level.
[c]significant at the 10% level.

Table 4 Regression Estimates of the Effects of Political Freedom on Investment, Mix (*Developing Countries*)[*] Method of Estimation is Weighted Least Squares.

Dependent variable: MDYj

Independent Variables	1	2	3	4	5
Intercept	0.1018 (2.122)b	0.0869 (1.910)c	0.0697 (1.494)	0.1384 (10.844)a	0.1166 (3.650)a
YPCj	0.0393 (3.413)a	0.0344 (3.318)a	0.0210 (1.805)c	-	0.0351 (3.414)a
MDPOPj	0.4224 (0.426)	0.5014 (0.508)	1.0900 (1.058)	-	0.1396 (0.155)
SRMj	-0.2244 (-0.985)	-	0.1278 (0.614)	-	-
SDYj	0.9514 (1.312)	0.5514 (0.919)	-	-	-
MDEXXj	-0.1114 (-0.328)	-0.1901 (-0.577)	-0.0595 (-0.155)	-	-0.2240 (-0.687)
MDINFj	-3.1572 (-2.842)b	-2.8331 (-2.672)b	-	-	-3.0177 (-2.910)a
PDIj	0.0004 (1.449)	0.0006 (2.766)b	0.0008 (2.934)a	0.0008 (3.636)a	0.0005 (2.649)b
R^2	0.6607	0.6425	0.4783	0.3552	0.6266
ADJ.R^2	0.5288	0.5295	0.3478	0.3284	0.5332
n	26	26	26	26	26
d.f.	18	19	20	24	20
SSR	0.01783	0.01879	0.02743	0.03390	0.01963

Notes: * Values to t statistics are shown in parentheses below the coefficients.
[a]significant at the 1% level.
[b]significant at the 5% level.
[c]significant at the 10% level.

In K-M's (1985, p. 155) equation 9, MIX is specified as the dependent variable and YPC, MDPOP, SDY, SRM, MDEXX, MDINF and CLD (the measure for civil liberties) as explanatory variables. Estimation results of that equation are unsatisfactory because only the intercept term and the CLD term are significant. In our re-estimation of that equation, we replace CLD with PDI. Replacing CLD with PDI improves the results slightly as SDY and MDINF become significant. PDI, which replaced K-M's CLD, is also significant (see Table 3). The results for the developing countries are reported in Table 4. Replacement of CLD with PDI does improve the results. The variable YPC becomes significant at the 5% level or better, and MDINF also becomes significant. The results contained in Table 1 through 4 (equations 1-5) provide adequate evidence to support the hypothesis that political freedom has a positive impact on economic growth. The results appear to show that the effects of PDI are stronger when the dependent variable is MIX than with MDY. A primary explanation for the apparent stronger effects of PDI when the dependent variable is MIX lies in the lag structure characterizing macroeconomic relationships. Increased investments result in higher rates of economic growth. However, this occurs with a lag. Thus, while changes in the PDI directly influence the levels of investment, the effect on economic growth is only realized with a lag. This may explain the relatively weaker relationship between PDI and MDY. Changes in the behavior of economic agents in response to changes in political freedom can only be expected to translate to economic growth after some time.

IV. Conclusion

A re-examination of K-M's data has provided additional evidence to support the hypothesis that there is a positive relationship between political freedom and economic growth. Societies that choose politically more open governmental systems offer their economies a much more enabling environment for growth. Thus, societies struggling to generate enough resources to be able to eliminate a cycle of poverty and deprivation do not necessarily have to face a 'cruel choice' between human welfare improvement and the institution of politically competitive governmental systems. These results have affirmed the argument that political freedom will expand the range of opportunities available to the individual, providing him with the wherewithal to become more effectively involved in the process of development and the alleviation of poverty. The failure for policymakers to understand that political freedom and economic growth are compatible could cause them to continue to pursue repressive policies in the hopes of achieving rapid economic growth.

Appendix

Tests for Heteroscedasticity: Results

A. High Income Sub-sample (N_1):

MDYj = 0.052(t=3.28) - 0.0084 YPCj(t=-4.25) + 1.05 MDPOPj (t=7.32)
- 0.167 SRMj(t=-2.50) + 0.153 SDYj(t=0.87) + 0.115 MDEXXj(t=1.20)
- 0.069 MDINFj(t=-2.66) - 0.000 PDIj(t=-0.06) + 0.0182 MIXj(t=0.45);
SSR_1 = 0.00017; R^2 = 0.9255.

B. Low Income Sub-sample (N_2):

MDYj = 0.0002(t=0.01) - 0.018 YPCj(t=-1.35) + 0.472MDPOPj (t=1.34)
- 0.0833 SRMj(t=-1.08) + 0.54 SDYj(t=2.13) + 0.215 MDEXXj (t=2.47)
+ 0.5575 MDINFj(t=1.05) + 0.00005 PDIj(t=0.56) + 0.25 MIXj(t=3.24);
SSR_2 = 0.00106; R^2 = 0.7101.

The ratio of the sum of squared residuals, $((SSR_2)/(SSR_1))$ = 0.00106/0.00017 = 6.23.
Under the null hypothesis, the calculated ratio will be distributed as an F-statistic with 11 degrees of freedom in the numerator and 12 degrees of freedom in the denominator. The table of the F-distribution shows that the critical value of the F-statistic at the 1% level of significance is 4.40, which is less than the calculated ratio of the sum of squared residuals. Thus, we reject the hypothesis of homoscedasticity.

Country	PDI	Country	PDI
Argentina	6	Japan	100
Australia	100	Korea, South	33
Austria	100	Mexico	56
Belgium	100	Netherlands	100
Bolivia	0	New Zealand	100
Brazil	39	Nicaragua	17
Burma	11	Norway	100
Canada	100	Paraguay	33
Chile	6	Peru	72
Colombia	72	Philippines	33
Denmark	100	Portugal	94
Dominican Rep.	72	South Africa	56
Ecuador	83	Spain	83
El Salvador	6	Sri Lanka	83
Finland	94	Sweden	100
France	100	Switzerland	100
Germany (FRG)	89	Taiwan*	..
Greece	94	Thailand	67
Guatemala	44	Turkey	11
Honduras	17	United Kingdom	100
Iceland	100	United States	100
Ireland	100	Uruguay	17
Israel	94	Venezuela	89
Italy	100		

Notes: * Taiwan is not included in the estimations because of missing data.
The data used in the estimations are the K-M data set and can be found in Kormendi and Meguire (1985). Data on the PDI are obtained from Bollen (1993). For a thorough examination of how the PDI is determined, see Bollen(1980, 1993). The countries used in the study are given in the appendix above.

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