

*The Lewis Model After 50 Years:  
Assessing Sir Arthur Lewis's Contribution to Development Economics and Policy*

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**Does Political Structure Really Matter?  
Evidence on Political Structure, Financial Development and Economic  
Growth<sup>#</sup>**

by

**Alun Dwyfor Evans, Christopher J. Green and Victor Murinde**

**Evans: Bank of America**

**Green: Department of Economics, Loughborough University**

**Murinde: The Birmingham Business School, University of Birmingham**

***Correspondence to:***

Victor Murinde

The Birmingham Business School

The University of Birmingham

Edgbaston

Birmingham B15 2TT

United Kingdom

Tel: 0121-414-6704; Fax: 0121-414-6238

E-mail: V.Murinde@bham.ac.uk

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**Does Political Structure Really Matter?  
New Evidence on Political Structure, Financial Development and Economic Growth**

*Abstract*

This paper investigates the importance of political structure in the economic growth process, within a growth model. Based on a translog production function, the model incorporates human capital and financial variables, and is further augmented with variables that underpin key hypotheses on political structure. The model is estimated and tested using a comprehensive panel of 82 countries over 21 years. The main findings are four. First, we reaffirm that financial and human capital play an important role in economic growth as well as physical capital. Second, economies with greater political rights and civil liberties experience faster rates of *per capita* growth than do authoritarian regimes. Third, military conflict imparts a deleterious influence on economic growth. Fourth, we identify and provide unified evidence for the existence of a clear channel through which political structures do not merely affect the growth rate but more particularly the economic process through which growth occurs: societies with a higher degree of political rights and civil liberties use their factors of production more effectively. The implications of this study therefore are that political structure really matters for economic growth, and deserves as much attention as do human capital and financial variables.

**JEL Classification:** A12, H11, O11, O57

**Keywords:** Political structure, financial development, economic growth, translog production function

## 1. Introduction

Sir Arthur Lewis placed his landmark paper, “Economic development with Unlimited Supplies of Labour” (Lewis, 1954) firmly in the classical tradition of economics. In this tradition, one of the main questions of interest is how economies can grow endogenously over time through capital accumulation. Even before the publication of Solow’s neo-classical growth model (Solow, 1956), Lewis was critical of the neo-classical approach, as he believed that it could be relevant only to the few industrialised countries that had already accumulated sufficient capital to absorb the bulk of the available labour force, and not to the vast majority of (developing) economies where labour was, practically, in unlimited supply. In Solow’s paper the supply of labour is fixed and capital accumulation is therefore limited by diminishing returns to capital. Sustained growth can only occur with the aid of some exogenous force such as population growth or technical change. As Lewis argued, in a definitive critique of this approach (which of course predated Solow’s paper!), this effectively treats the main forces of interest as being exogenous. Nevertheless, it was Solow’s paper that set much of the research agenda for understanding economic growth in the following epoch, with Lewis’s work being familiar to development specialists rather than at the centre of the mainstream.

The resurgence of modern growth theory is usually dated from Romer’s work (Romer, 1986) in which he described a model that does allow for sustained growth in output per head to take place endogenously. In Romer’s model, the labour force is fixed but output growth can occur without diminishing returns to capital because of human capital externalities in the investment process which raise the productivity of all factors of production. In this respect, endogenous growth theory can be said to offer an alternative view of unlimited labour, relevant to more fully-employed economies: labour supply behaves “as if” it were unlimited because of the externalities generated through capital accumulation.

Indeed, Barro and Sala-i-Martin (1995) have characterised the “new” growth theory as representing a revival of the classical tradition.<sup>1</sup> However, an important difference between Lewis’s work and the new growth economics is that the core of the Lewis model is a two-sector approach to understanding growth: labour is “unlimited” in part because of the structural differences between the traditional and modern sectors (Lewis, 1979). In contrast, endogenous growth can and invariably does take place within a single sector<sup>2</sup>.

These paradigms of the growth process can be enriched in several ways, particularly by introducing the role of finance in growth following the seminal contributions of McKinnon (1973) and Shaw (1973). A more recent but equally important innovation, stemming particularly from work by Bilson (1982), is the recognition by economists that the internal political process of a country may be directly relevant to the growth process. The nature of the political process and the degree of social cohesion in a country are both likely to influence the speed and efficiency with which human capital can be increased, Romer-externalities realised, and financial deepening extended beyond the capitalist sector to the population as a whole. Although Lewis presented his original work first and foremost as a contribution to economic analysis, he also emphasized the historical and political roots of economic development. His American Economic Association presidential address singled out the interconnections between economics and government as one of the key distinguishing features of the subject of development economics (Lewis 1984).

It is now generally recognised that political and governance structures can play an important role in different aspects of economic performance. Barro and Sala-i-Martin (1995) give an overview of the evidence; Plumper and Martin (2003) discuss a theoretical rationale for a relationship between the level of democracy and economic performance. Lensink,

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<sup>1</sup> It is interesting but perhaps fruitless to speculate how much quicker these developments might have occurred had Lewis rather than Solow become the main research paradigm in the 1950s and 1960s.

<sup>2</sup> For a two-sector endogenous growth model see for example Mulligan and Sala-i-Martin (1993).

Hermes and Murinde (2000) find robust evidence that political risk in developing countries leads to capital flight and negatively affects economic growth by depriving the domestic economy of essential capital. Developing countries suffer particularly from poor governance and social and political instability; under these conditions the prospects for improved economic performance are relatively bleak.

In general, the theory of the relationship between political structure and economic growth comprises three schools of thought. According to the “conflict perspective” school, full political and civil rights are incompatible with economic growth. However, the “compatibility perspective” view is that political liberty is positively related to economic development. The “sceptical perspective” school rejects the existence of any relationship between political structure and economic growth. With respect to the first two schools, the literature suggests that differences in political environments affect countries’ economic performance via the following channels: strength of nationhood; degree of continuity in political leadership; administrative competence of government; and general stance of economic policy, particularly government spending and tax. See Evans (1997) and de Haan and Siermann (1994). The empirical literature on these issues is divided<sup>3</sup>. In addition, the literature has been criticised in surveys by Sirowy and Inkeles (1990) and de Haan and Siermann (1994). The basis of these criticisms derive from specification issues underlying the measurement of political regimes, particularly where these measures take the form of dummy variables. There exists dissatisfaction that proxies for political systems may not adequately measure their strict relevance to economic factors. Moreover, results have been

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<sup>3</sup> Political liberals propose that increased political and civil rights foster improved rates of economic growth. Others scholars, however, claim that economic success in certain regions is due to the political stability created by authoritarian regimes. However, some countries have progressed substantially under military rule, as in South Korea, while in some countries military rule has debauched the economy, as in Argentina, Ghana and Nigeria. IMF (1994) argues that in Africa political instability in itself is sufficient to explain mediocre economic performance, but as seen in Nepal stability does not necessarily provide any guarantee of growth.

found to be sensitive to the use of cardinal or dichotomous dummy variables, and there has been little consideration of the robustness of basic results.

In this paper, we combine growth theory with political economy to test empirically the validity of the three contrasting views on the role of government and political structures in the growth process. The paper offers five main contributions. First, we control for the impact of key economic variables suggested by the theory of growth, using as our primary model the translog production function. However second, we also explore the appropriate functional form of our model of growth, and experiment with the most efficient ways of estimating it; specifically, we estimate Cobb-Douglas and translog functional forms in cross-section and panel data formats. Third, we augment these standard models to include the effects of different political regimes and region-specific parameters in a way that overcomes the limitations of previous studies. A host of political variables are applied, many of which aim to replicate past studies by drawing on the political ranking of economies as measured by the Comparative Survey of Freedom project (Gastil, 1989). Fourth, measures are proposed to test the implications of military conflict on economic growth. Fifth and finally, we carry out non-nested encompassing tests of the different political variables following the approach in Evans, Green and Murinde (2002) and Bleaney and Nishiyama (2002).

The main innovations in our paper stem from the fact that our empirical analysis draws on both the traditional neoclassical growth model and endogenous growth theory. The translog production function enables a richer specification of the relationships among growth and factor inputs than the Cobb-Douglas approach as it allows for interactions among factor inputs. The factor inputs we consider are: labour, physical capital, human capital, and a monetary factor. The basic model is then augmented with political economy variables that underpin key hypotheses on political structure. The model is estimated and tested using a comprehensive panel of 82 countries over 21 years.

The rest of the paper proceeds as follows. In Section 2, Cobb-Douglas and translog functional forms of a simple production function are used to generate a simple growth model, which is then augmented with surrogates for political structure. The data and econometric methodology are outlined in Section 3, paying particular attention to past specifications of political variables. The empirical results are described in Section 4. Section 5 concludes.

## 2. The model

We invoke an overall theoretical framework for economic growth in order to tease out the impact of political structure, given that there are other important factors that are traditionally known to influence the growth process; for example, human capital and finance. The baseline specification we consider is a 4-factor Cobb-Douglas production function:

$$Q_n = AK_n^\alpha L_n^\beta HC_n^\gamma RB_n^\delta \varepsilon_i \quad (1)$$

where  $n$  denotes country ( $n = 1, \dots, N$ );  $Q$  is output;  $A$  is an overall efficiency factor and includes the level of technology;  $K$  is capital stock;  $L$  represents labour force;  $HC$  corresponds to human capital;  $RB$  is real balances; and  $\varepsilon$  is a stochastic term which is unobservable and is assumed to be serially uncorrelated and normally distributed with a zero mean and unit variance. The Cobb-Douglas exhibits constant returns to scale, but a steady increase in output per head is nevertheless possible because of the externalities created by the existence of human capital (and real balances) as separate factors of production (Barro and Sal-i-Martin, 1995).

Each variable is transformed to determine its rate of growth. First, all variables are expressed in natural logarithms:

$$q_{nt} = \log Q_{nt}; \quad k_{nt} = \log K_{nt}; \quad l_{nt} = \log L_{nt}; \quad hc_{nt}^x = \log HC_{nt}^x; \quad rb_{nt}^x = \log RB_{nt}^x.$$

where superscript  $x$  denotes distinct human capital and real balances variables. Differentiating (the log of) each factor with respect to time, and defining:  $\Delta q_{n,t} = q_{n,t} - q_{n,t-1}$  (etc) gives:

$$\Delta q_{n,t} = \alpha_1 \Delta k_{n,t} + \alpha_2 \Delta l_{n,t} + \alpha_3 \Delta hc_{n,t}^x + \alpha_4 \Delta rb_{n,t}^x \quad (2)$$

By extending the baseline model in (1) and (2) to allow for interactions among factor inputs, we obtain a translog production function, which enables a richer specification of the relationships among growth and factor inputs than the Cobb-Douglas function<sup>4</sup>. Specifically, we use a general translog function, following Berndt and Christensen (1972):

$$q_{nt} = \alpha_{0n} + \sum_i \alpha_{in} v_{int} + 0.5 \sum_i \sum_j \beta_{ijn} v_{int} v_{jnt} \quad (3)$$

where  $q_{nt}$  = log of aggregate output in country  $n$  ( $= 1, \dots, N$ ) at time  $t$  ( $= 1, \dots, T$ );  $v_{int}$  = log of the  $i$ 'th ( $i = 1, \dots, I$ ) factor input in country  $n$  at time  $t$ ;  $\alpha_{in}, \beta_{ijn}$  are the parameters of the production function.

We convert (3) into *per-capita* terms by subtracting the (log of) labour input (which we take to be  $v_4$ ) and defining:  $y_{nt}$  = log of output per unit of labour in country  $k$  at time  $t$ ; and  $f_{int}$  = log of the  $i$ 'th factor input per unit of labour ( $i = 1, \dots, 3$ ) in country  $n$  at time  $t$ . We then derive:

$$y_{nt} = \alpha_{0n} + \sum_i \alpha_{in} f_{int} + 0.5 \sum_i \sum_j \beta_{ijn} f_{int} f_{jnt} \quad (4)$$

on the assumptions that:

$$\sum_i \alpha_{in} = 1; \quad \beta_{44n} = \sum_{i=1}^3 \sum_{j=1}^3 \beta_{ijn}; \quad \beta_{4jn} = -\sum_{i=1}^3 \beta_{ijn}; \quad n = 1, \dots, N$$

which are sufficient for (3) to exhibit constant returns to scale. We impose these assumptions primarily to facilitate comparison with more traditional models based on the Cobb-Douglas

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<sup>4</sup> We try to address the criticism that existing studies which employ the Cobb-Douglas specification ignore factor input cross-substitution possibilities. We believe this is a valid criticism given the likely interaction between say, physical and human capital.

approach. Although equation (4) is technically equivalent to constant returns to scale in (3) (Kmenta, 1967), we do not regard this as restrictive, because we explicitly include in the model produced factors other than physical capital, ie: human capital and money. The inclusion of human capital is consistent with endogenous growth theory. The monetary variable is inspired by the theory on “money in the production function”, but it also has the potential for interacting with other inputs (say capital) in the context of the McKinnon-Shaw complementarity hypothesis and debt intermediation view. Finally, we form a growth rate regression, by differentiating (4) with respect to time, and adding a disturbance term, to obtain:

$$\Delta y_{nt} = \alpha_{0n} + \sum_i \alpha_{in} \Delta f_{int} + \sum_i \sum_j \beta_{ijn} \Delta f_{int} f_{jnt} + \varepsilon_{nt} \quad (5)$$

where, as before,  $\Delta y_{nt} = y_{nt} - y_{nt-1}$ , etc.; and  $\varepsilon_{nt}$  are the regression disturbances.

Seven main variables form the basis of the production function which we estimate: aggregate income; the four factors of production: labour, physical capital, human capital, money, initial income and political structure. We include initial income because, as Temple (1999) points out, direct differentiation of the production function eliminates initial conditions. This leaves the main problem as that of explaining the rate of technical change. Mankiw, Romer and Weil (1992) propose that this be done mainly by including human capital as a second produced factor. However, initial conditions do appear in the model by Mankiw, Romer and Weil (1992), because it is tied down by the inclusion of long-run equilibrium conditions. In our model, we include two produced factors: human capital and money; but we do not impose equilibrium conditions. Therefore, as long as each economy is operating on its production function, (5) could be estimated without reference to initial income. We nevertheless include initial income for two reasons. First, wherever possible, we are interested in comparing our model with previous studies which, irrespective of theoretical foundation, have invariably included initial conditions in order to examine the

question of convergence. Second, although our specification includes, in principle, all relevant factors of production, given the difficulty, in practise, of measuring political structure, human capital and money, we would still anticipate that there may be variables omitted from the model. The nature of growth models is such that that omitted variables are an endemic problem in testing growth theory. There is a broad consensus that initial conditions are important for growth, even if the precise reasons for their importance are less well agreed (Evans, 1997; Temple, 1999). Insofar as initial conditions are important, then they are correlated with changes in factor inputs. Thus, in our model, initial conditions serve two purposes: first, to check for convergence, and second to capture any omitted factors of production. Of course, initial income is not itself a factor of production, but in this paper, we have treated it symmetrically with the factors of production, so as to allow for the possibility of interactions between the initial conditions and the changes in factor inputs.

Equation (5) broadly follows Evans, Green and Murinde (2002). The main innovation we make here is to consider the significance of political variables in the context of cross-substitution possibilities. Political variables do vary over time but the data are in the form of indices, including 0-1 dummies. Therefore, these variables are entered in the same way as initial income; ie. in levels and not in levels and rates of change. However, we do allow for possible interactions with other factor of production. Thus, the equation we estimate can be written more fully as:

$$\begin{aligned}
\Delta y_{nt} = & \alpha_{0n} + \alpha_{1n} \Delta k_{nt} + \alpha_{2n} \Delta h_{nt} + \alpha_{3n} \Delta m_{nt} + \alpha_{4n} y72_n + \beta_{11n} (k_{nt} \Delta k_{nt}) + \\
& \beta_{12n} (k_{nt} \Delta h_{nt} + h_{nt} \Delta k_{nt}) + \beta_{13n} (k_{nt} \Delta m_{nt} + m_{nt} \Delta k_{nt}) + \beta_{14n} (y72_n \Delta k_{nt}) + \\
& \beta_{15n} (pol_n \Delta k_{nt}) + \beta_{22n} (h_{nt} \Delta h_{nt}) + \beta_{23n} (m_{nt} \Delta h_{nt} + h_{nt} \Delta m_{nt}) + \\
& \beta_{24n} (y72_n \Delta h_{nt}) + \beta_{25n} (pol_n \Delta h_{nt}) + \beta_{33n} (m_{nt} \Delta m_{nt}) + \beta_{34n} (y72_n \Delta m_{nt}) + \\
& \beta_{35n} (pol_n \Delta m_{nt}) + \beta_{44n} (y72_n pol_n) + \varepsilon_{nt}
\end{aligned} \tag{6}$$

where:  $k_{n,t}$  = physical capital per unit of labour;  $m_{n,t}$  = real money balances per unit of labour;  $h_{n,t}$  = human capital per unit of labour;  $y72_n$  = initial income per unit of initial of labour

(1972); and  $pol_{n,t}$  is a specific measure of political structure. The exact empirical counterparts of these variables are defined in Section 3.

Equation (6) offers a relatively parsimonious parameterization of the model, with no more coefficients to estimate than is common in Barro regressions, and obviously fewer than in country-by-country estimations advocated by Lee, Pesaran and Smith (1997). The quadratic terms give additional curvature to the function, and allow for a range of production possibilities, including individual country differences arising from the interaction terms. Since initial income is included in the model, individual country effects may also depend on initial conditions. Likewise, although the political variables are measured in index form they do not merely act like shift dummies, increasing or decreasing the rate of growth in comparison with the benchmark. The interaction terms with the economic factors of production allow for the possibility that the whole shape of the production function may be influenced by political factors. We can therefore test whether regime and governance differences have different effects on different factors of production and therefore on growth. For example, it is possible that conflict would have a greater impact on growth through its effect on physical capital rather than on human capital. Finally, the use of panel data enables us to allow for further differences in the aggregate production function across countries in the form of unobservable individual country effects (Islam, 1995).

In general, therefore, an important innovation of this study is to estimate the relationships among output growth and political factors with panel data and the translog functional form. It is conjectured that this specification is likely to represent the most rigorous examination of the underlying data as it considers both the total dataset and the interactive relationships between independent parameters. Clearly the translog offers more parameters than the Cobb-Douglas. Moreover, it has a specific advantage in the modelling of human capital. Several researchers have argued that the Cobb-Douglas is inappropriate for

modelling the productive contribution of education in particular and human capital in general. See, *inter alia*, Lau (1979) and Psacharopoulos and Arriagada (1986). The point is that human capital is typically embodied in other factors of production; its effect therefore arises in large part through its interaction with these other factors, especially as factors are renewed: young workers enter the labour force, or old capital replaced. It would be better to analyse these effects with a more flexible functional form than the Cobb-Douglas, but, as far as we are aware, ours is the first analysis of the determinants of growth to take this point on board.

### **3. Data and econometric methodology**

#### **3.1 *Production function variables***

The advantages of panel data over a cross-section scarcely need emphasizing. A panel allows us to control properly for the heterogeneity of individual countries, both through the estimation procedure, and through the model specification (Baltagi, 2001). It gives more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency, particularly in diagnostic testing. With specific reference to this study, cross-section data neglect 95% of the total dataset. Moreover, virtually all empirical studies of money-in-the-production-function have been confined to individual country time-series data. See the seminal work of Sinai and Stokes (1989) and the review in Evans (1997). The use of panel data to test political structure hypotheses constitutes a further contribution of this paper.

The panel consists of data from 82 countries (listed in Appendix Table A1) covering 21 years from 1972-1992; in terms of equation (6), this is a panel of  $N (=82)$  countries, and  $T (=21)$  years. There is a trade-off between availability of data in the time domain and that in the cross-section. For some countries, data are long-standing and up-to-date. For others, the

data are of more recent origin or are severely unreliable. The time period was chosen to cover a sufficiently long period as to be able to examine the convergence issue in a way comparable to earlier studies. The cross-section was selected so as to include a comprehensive sample of income groups and geographical spread. The majority of the data derives from The World Bank tables (WBT); but additional data were extracted from the Barro-Lee database, International Financial Statistics, UNESCO, and the Summers-Heston Penn World tables (PWT). Various adjustments were made to the data to ensure compatibility among the different sources. In addition, local currency data were converted to US dollars using the real exchange rate (RER) calculated as:

$$RER = SP^* / P \quad (7)$$

where  $S$  is the spot exchange rate against dollars,  $P^*$  is the US price deflator, and  $P$  is the price deflator of the home country.

The traditional growth variables, output, capital and labour are relatively straightforward to measure. GDP and labour force are taken from the WBT, with initial GDP being that for 1972. Physical capital is estimated from gross investment (from the WBT) using the perpetual inventory method with a depreciation rate of 5%, following, for example, King and Levine (1994) and Romer (1989). Several possible empirical counterparts of "money" and human capital have been suggested in the literature. In our earlier research, we experimented with 2 different definitions of money, and 3 of human capital (Evans, Green and Murinde, 2002). In that work, we did find differences among the estimated parameters of the model depending on which measures of money and human capital were used, but it was not possible to determine which of these, if any, were superior. However, most of the differences in the coefficients were quantitative rather than qualitative. Therefore in this paper, to avoid an excessive taxonomy of different variables, we concentrate on just a single

measure each of money and human capital<sup>5</sup>. For “money”, we use a credit measure, defined as the ratio of domestic credit to GDP, following, for example, King and Levine (1993a). For human capital, we use secondary school enrolment rates following numerous authors, for example: Barro (1991), and Roubini and Sala-i-Martin (1992). Mnemonics for the variables in the model including the political variables are shown in table 1.

[Insert Table 1 about here]

### 3.2 *Political analysis data*

Our key contribution concerns the role of political factors. For these, we follow recent empirical studies which employ Gastil's ranking of countries as a proxy for political structure (Gastil, 1989). Gastil has created two measures of political freedom. The first measure, *political liberty*, is based on the degree to which individuals have control over those who govern; the second, *civil liberty*, attempts to measure the rights of the individual. These Gastil measures of liberty have most frequently been applied as dichotomous variables, i.e. (0-1) dummy variables. Certain authors, e.g. Marsh (1988) and Helliwell (1992), employ the variable as if the data were cardinal. This is criticised by de Haan and Siermann (1994) as “spurious cardinality”, but is supported by Bollen (1990).

Most of the empirical studies that apply Gastil's rankings use samples which begin in the 1960's. However, Gastil's measurements are available from 1972 only. Given a likely positive relationship between income levels and democracy, using a measure of democracy from the middle or end of the sample period runs the risk that a possible negative effect of democracy on growth is masked by the reverse effect of income level on democracy (de Haan

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<sup>5</sup> Evans (1997) reports a complete taxonomy of results for the present model with the same 2 measures of money and 3 of human capital as used by Evans, Green and Murinde (2002). Once again there are some differences in the parameter estimates. However, for the central issue of this paper, which is the interaction between political and economic variables and economic growth, the differing definitions of money and human capital have no material impact on our findings.

and Siermann, 1994). Helliwell (1992) countered this problem by using two more long-standing indices: those of Bollen (1980) and Pourgerami (1991).

A further estimation issue is whether the characteristics (and ranking) of a political regime are measured at a single point in time (point measurement) or over a period of time (period measurement). Sirowy and Inkeles (1990) argue that point measurement suffers from severe weaknesses, most notably that it makes no allowances for subsequent changes in the character of a political regime. The longer the estimated time period, the more likely it is that this assumption will be violated. Most studies have tended to neglect this change over time (see for example Marsh, 1988 and Weede, 1983a). In empirical estimation, period measurement is to be preferred as it considers democratic characteristics for exactly the same period for which the dependent variable is assessed.

Eight measures are applied as proxies for political structure and these incorporate political rights, civil liberties and periods of conflict. In this context, the present study differs from its predecessors in three ways. Firstly, by applying a wide array of variables for the political environment, it explicitly tests for the robustness of past findings. Secondly, it provides a comparative analysis of dichotomous and cardinal measures. Thirdly, by using panel data, the time element is incorporated into the model and the point measurement problem is overcome.<sup>6</sup>

### ***3.3 Political rights and civil liberty***

Data for political rights and civil liberties are obtained from the Comparative Survey of Freedom project, which is an annual publication of countries' political rankings.<sup>7</sup> Political rights and civil liberties are ranked from 1 (the highest degree of liberty) to 7 (the lowest).

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<sup>6</sup> As Sloan and Tedin (1987), we criticise the "point measurement" approach as 37 of the 82 economies in this study have changed political regime (as defined by Gastil, 1990) during the time-period.

<sup>7</sup> These political rankings are often credited to Gastil (1989,1990). However, in recent years, the co-ordination of the survey has transferred to McColm (1993) and Karatnycky (1994).

As the data are available for a broad cross-section of countries and the rankings have been constructed annually since 1972, the data are suitable for both cross-section and panel data estimation. *Political rights* measures the extent of political freedom that individual agents possess in their respective economies. A checklist of political rights sets out the factors considered to represent comprehensive political rights within an economy. See Appendix Table A2. Countries are then marked according to their conformity with each item in the checklist and the results converted into a set of cardinal rankings (table 2). *Civil liberty* differs from political freedom in that it is not directly linked to the party system of government (Bilson, 1982). As with political rights, it begins with a checklist (Appendix table A3) which is then converted into a set of cardinal rankings (table 3). For further details see Gastil (1990)<sup>8</sup>.

[Insert Tables 2 and 3 about here]

There are some well-known drawbacks of the rankings in the Comparative Survey of Freedom.<sup>9</sup> First, the indices are subjective and a *perceived* political regime may not necessarily behave in a manner consistent with its ranking. Second, since the index is restricted to a one-digit 7 point scale, it is unlikely that two economies with the same ranking are exactly equally open or repressive. Third, Bilson (1982) argues that there is no presumption that the index is linear with respect to the hypothetical concepts of political rights and civil liberties. Hence, there is no presumption that a move from a ranking of 1 to 2 involves the same reduction in political rights or civil liberties as a move from 6 to 7.3.1.2. Nevertheless, it is probably the broadest and most widely recognised set of measures of

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<sup>8</sup> Evans (1997) reports the complete scores for each country for 1972-1992.

<sup>9</sup> An index of "political credibility" has been constructed from a sample of entrepreneurial judgements in 28 developing countries (Borner et al, 1995). This latter index proved to be highly correlated with economic growth and able to explain 50% of the variation in per capita growth in the countries sampled between 1981 and 1990. However, the small size and selective nature of the sample may limit the academic use of the index. Moreover, indices that have only recently been constructed are of little use in explaining historic differentials in growth and shed no light on such phenomenon as the "Asian growth miracle".

political rights, and it has been collected on a more-or-less consistent basis over more than three decades.

### **3.4 Measures of conflict**

Past empirical analyses have examined the stability of the political process vis-à-vis democracy, liberty, revolutions and assassination (see Barro, 1991), government changes (see Alesina *et al.*, 1992) and income inequality. However, none of these variables are explicit tests of the factors of the productive process. An alternative to these measures is a parameter that directly reflects the relationship between political stability and, among other things, capital stock and labour force. One such measure is an assessment of conflict and war on national territory.<sup>10</sup> The logic behind applying this parameter is that home territory conflict destroys much of productive capital stock, particularly in urban areas, and reduces the labour force (through male fatalities), if conflict spills over to the civilian population. Hence, conflict is generally considered to be especially detrimental to the growth process. In addition, it is important to distinguish between conflict within a national territory (civil war) and conflict outside national boundaries. In the post world war II world, civil war has been a recurrent problem in many countries with typically devastating effects, but in many cases conflict outside national boundaries has had less destructive effects on an economy's productive capacity, especially for the winners. Furthermore, conflict requires increased military spending at the expense of growth-enhancing factors.<sup>11</sup>

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<sup>10</sup> An alternative variable widely applied in empirical analysis is defence and military expenditure as a percentage of total GDP. See the theoretical modelling in Berthelemy *et al* (1995), or cross-country empirical analysis in Faini *et al.* (1984), or country-specific studies in Chletsos and Kollias (1995).

<sup>11</sup> A counter argument states that military spending can promote economic growth by contributing to technological development, establishing specialised organisations that create new skills in short supply, fosters R&D, helps in the process of modernisation, and creates demand for industries which may suffer from underemployment of capital (Deger and Sen, 1983). Further benefits of military spending are also suggested by Weede (1983b) and Marsh (1988). While these hypotheses may be empirically supported, the underlying argument in this study is that military conflict, which often imposes both unbudgeted and unaffordable expenditure to an economy, will, in the long-run, deny the private sector the necessary growth-enhancing investment.

Barro and Lee (1994) and Easterly and Rebelo (1993) constitute the only prominent empirical studies to have applied “war” as an explanatory variable. Barro and Lee (1994) apply two war parameters: a dummy variable for countries that participated in at least one external war over their estimated time period and a dummy variable for the fraction of time a country has been involved in military conflict. Easterly and Rebelo’s (1993) dummy variable is specified as the number of war casualties *per capita*.

In this study, military data is applied from the Bruno and Easterly (1996) data set. Our data are arranged as a dichotomous dummy variable for each year from 1960 to 1994, but excludes Australia, Ireland, New Zealand and Papua New Guinea. All other countries conform to the country-sample in this study. We assigned a value of unity to a country if it was involved in any domestic territory conflict in the sample period. The remaining countries were all assigned a value of zero. This rule of thumb was used as there seems little to be gained from attempting to determine a relationship between length of conflict and economic growth. Central to this study is the hypothesis that conflict destroys a nation's productive resources. This could occur in either a 1-year or a 10-year conflict, is strongly country-specific and dependent on military spending and capabilities. The precise relationship between the length and severity of a conflict and its impact is outside the scope of this study.<sup>12</sup> We did however construct a second variable using data from the beginning (1960) of Bruno and Easterly’s (1996) dataset, under the hypothesis that economic growth would be negatively related to conflict which occurred during and before the sample period.

The political rights and civil liberties variables are applied as a test of Kormendi and Meguire (1985), Marsh (1988), Scully (1988) and Barro (1989).<sup>13</sup> These constitute prominent studies of the Comparative Survey of Freedom rankings. Controversy surrounds

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<sup>12</sup> It is conceded that the military variable does not measure the seriousness of wars (reflected in expenditures, casualties, or the destruction of property) or the outcomes.

the “correct” specification for political parameters, i.e. as a dichotomous dummy variable as in Kormendi and Meguire (1985) and Scully (1988) or a cardinal variable (Marsh, 1988; Barro, 1989). This study provides a direct examination of this and other specification issues, e.g. small country sample (Kormendi and Meguire, 1985), lack of synchronisation of sample period and political measure (Kormendi and Meguire, 1985; Scully, 1988), and changing democratic character (Scully, 1988). Further dichotomous dummy variables are employed to test the influence of military conflict on growth. Eight variables proxy for the political climate.

Our main hypothesis is based on the “compatibility” perspective, which advocates that full political rights and civil liberties generate the conditions most conducive to economic development. Open political systems present citizens with fundamental safeguards against governmental intrusion and introduce conditions that encourage competition and predictability. This, it is argued, generates the necessary motivation to work, save and invest (Claude, 1968)<sup>14</sup>. The variables and specific hypotheses thus implied are listed in Table 4.

[Insert Table 4 about here]

Following Barro (1991) and Barro and Lee (1994), regional dummy variables for Latin America, Sub-Saharan Africa and south-east Asia were also included in the unrestricted equation. Regional dummy variables are included on the basis that growth rates in these regions are either far lower or higher than the total sample mean growth rate of 0.85% (Evans, 1997)<sup>15</sup>. The mean average growth rate in Latin America is -0.26%, 1.11% below the mean level. In Sub-Saharan Africa, the average real growth rate is -0.77%. This is 1.62%

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<sup>13</sup> The variables employed in Scully (1988) differ somewhat from Kormendi and Meguire (1985) as the former takes averages and derives dichotomous variables from these time-series averages.

<sup>14</sup> Aside from the openness of government, many studies argue that smaller government, measured by government expenditure as a proportion of GDP, is beneficial to the growth process. On this issue, see Landau (1986) and Ram (1986).

<sup>15</sup> The total sample mean growth rate is 0.85% *per annum*. The mean for Latin America is -0.26%; for Sub-Saharan Africa, it is -0.77%. In contrast, the mean for south-east Asia is 4.69%.

lower than the total mean growth rate. In contrast, south-east Asia reports an average real growth rate of 4.69%, 3.84% above the mean. The inclusion of these regional dummies may capture social and cultural factors that may not necessarily be explicated in the underlying model.<sup>16</sup> If enough explanatory variables have been included to explain why growth is below or above average in these regions, then the estimated coefficients of the dummy variables should not differ significantly from zero (see Barro and Sala-i-Martin, 1995).

### 3.5 *Estimation and testing procedures*

The model to be estimated (equation 6) can be written more compactly as:

$$\Delta y_{nt} = \alpha_0 + \sum_i \alpha_i z_{int} + u_n + \varepsilon_{int}; \quad n = 1, \dots, N \quad \dots 8$$

We estimated (8) using the random effects model, but we report a range of diagnostics, including the Hausman test. Together, the diagnostics suggest that the model is not misspecified and that the random effects method is the appropriate estimator. We estimated 8 separate versions of equation (8) corresponding to the different definitions of the political structure variables (table 4). Using the trans-log specification as the maintained hypothesis, we next checked the validity of the trans-log over the Cobb-Douglas by deleting all the interaction terms, re-estimating the log-linear (Cobb-Douglas) model and performing F tests on the 8 separate versions of the model to check the significance of the omitted interactions.

The 8 different versions of the model constitute a set of non-nested hypotheses, since each political variable amounts to a particular measure of the impact of the countries' political structure on economic growth<sup>17</sup>. We therefore used the J test of Davidson and MacKinnon (1981) to compare the validity of each of these 8 specifications. As argued by

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<sup>16</sup> Distinct from regional analysis, Milner and Westaway (1993) present empirical evidence of economic growth and country geographic characteristics, e.g. size, population, area, etc.

<sup>17</sup> It could be argued that the political and civil liberties variables and, more strongly, the conflict variables are not necessarily mutually exclusive. We would accept this point but argue that it is not possible to include

Mizon (1984), J tests can be interpreted as (variance-) encompassing tests. Consider as an example, a comparison between two variables: basic political rights (PR: H1, table 4) and civil rights (CR: H2, table 4). We first estimate the model with PR ( $H_0^1$ ) and then test if CR increases the explanatory power of the model. We then estimate with CR ( $H_0^2$ ) and test if PR increases the explanatory power of the model. If  $H_0^1$  is accepted and  $H_0^2$  rejected, we would conclude that PR variance-encompasses CR. In that event, CR would be a redundant variable in the model; and the data would be consistent with political rights being more relevant than civil rights. If however,  $H_0^2$  is accepted and  $H_0^1$  rejected, the data would be consistent with a a civil liberties' interpretation. If both null hypotheses are accepted, or both rejected the outcome is less clear, as it would imply that the data are consistent with either or both variables (respectively) contributing to growth. However, as Davidson and MacKinnon (1993) pointed out, this ambiguity is inherent in any non-nested testing procedure. We did pairwise J-tests on all the 8 political variables, making  $8C2 = 28$  tests in all. Finally, we tested down the general trans-log by deleting insignificant variables a more specific preferred model (Hendry, 1995).

## 4. Empirical results

### 4.1 *Diagnostics*

We look first at the results of diagnostic tests. The test of functional form as between the translog and the Cobb-Douglas decisively reject the Cobb-Douglas (table 5). It is quite clear that growth modellers need to include these quadratic terms which give a more flexible form to the underlying production function.

[Insert Table 5 about here]

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all 8 variables and their interactions simultaneously in the model and test down because of lack of degrees of freedom and poor conditioning of the regression.

The J-test results for the translog specification show that all but one of the tests are inconclusive in the sense that  $H_0$  is (nearly) always rejected (table 6). For any pair of variables, this implies that neither one on its own can be interpreted as properly measuring the true underlying political variable. The only exception is in the comparison between the two conflict variables where, surprisingly perhaps, we find that previous conflicts do not contribute to explaining economic growth if current conflicts are already included. Since there are no qualitative differences between the parameter estimates of these two versions of the model, this is quite an optimistic result as it suggests that the adverse effects of old conflicts may not cast a very long shadow on economic performance: of course it needs to be remembered that our data for “current” conflicts already covers a period of up to 20 years.

[Insert Table 6 about here]

It is perhaps disappointing that the J-tests are largely indecisive, but not necessarily surprising, given the difficulties involved in measuring these political concepts. Some of the variables we have used have also been used in other studies as noted earlier. Therefore, our results suggest that previous researchers may have over-estimated the importance of their own findings, except where they have performed substantial diagnostics as to the robustness of the variable definitions used. However, the inconclusiveness of the J-tests may also be attributable to the fact that J-tests do not necessarily perform well in finite samples, particularly if the two competing models are very different (Davidson and MacKinnon, 1993). This suggests that more detailed investigation of the measurement issue is an important item for future research.

The estimated models and further equation-specific diagnostics are shown in table 7. We report the general and then the preferred (simplified) model for each of the definitions of political structure in turn. Overall, the model appears to fit the data very well. Few of the coefficients in each unrestricted model are insignificant, and the coefficients in the restricted

model are mostly sensibly signed. All the estimates satisfy a battery of diagnostics, including the Hausman test, suggesting that the model is well-specified and constitutes a good and plausible description of the data.

#### **4.2 Production function**

The coefficients of the standard economic part of the production function are plausible and robust across different definitions of the political variables. There are virtually no sign changes in these parameters as the political variables change, apart from initial income in one or two instances. Therefore, even though the J-test results were inconclusive the robustness of the general economic parameters confirms that the underlying model is sound, as indeed we found in our earlier study (Evans, Green, and Murinde, 2002). As far as the linear part of the model is concerned, the capital stock is significantly positive at the 1% level and its coefficient ranges from 0.39 to 0.43. The “credit in the production function” hypothesis is supported as domestic credit enters significantly positive at the 1% confidence level. Most of the human capital coefficients are negative but these are all insignificant<sup>18</sup>.

The translog formulation enables us to investigate complementarities among factors of production. Here we find that the interactions between physical and human capital are negative, implying a surprising lack of complementarity between these factors, and providing evidence against the embodiment and learning-by-doing hypotheses. In contrast, the interactive terms for credit and human capital interactions are generally positive, providing evidence of complementarity between financial development and human capital, and suggesting that a developed financial system is an essential complement to a developed educational system in the growth process. Overall though, the human capital coefficients are not supportive of the primary role given to education within endogenous growth theory.

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<sup>18</sup> Evans, Green and Murinde (2002) report some negative coefficients on human capital, as do Lau *et al* (1991) and others.

The evidence on convergence is somewhat mixed with  $Y72$  significant, but only 2 out of 8 of the estimated coefficients in the preferred model being negative. However, as emphasized earlier, in the present set-up, initial income stands in for omitted variables as much as it represents a precise test of the convergence hypothesis. The interaction terms vary in sign in an interesting way. The negative interaction with physical capital and with human capital implies that there may be convergence in respect of the productivity of physical capital and human capital. Meanwhile the positive interactions with credit suggest that there is divergence in respect of the productivity of finance. The signs for capital and credit are broadly consistent with endogenous growth theory, but those for human capital are harder to explain in these terms.

[Insert Table 7 about here]

We found significant coefficients on all the regional dummy variables<sup>19</sup> indicating that, notwithstanding the satisfactory diagnostics, the underlying model does not fully explain the systematic variation in growth rates across these regions. As would be expected, we find negative coefficients for Latin America and sub-Saharan Africa; and positive coefficient for south-east Asia.

### **4.3 Political Structure**

The impact of the political structure variables is summarized in table 8. The estimates of the political parameters are consistent with our main hypothesis, and suggest that economies with relatively free political and civil regimes fare better in the growth process than those which repress these freedoms. With only one exception (CL2: hypothesis 6, table 4), all the coefficients on the linear variables support this hypothesis. Given that CL2 is a dichotomous variable this finding provides tentative support for studies which argue that dichotomous dummy variables may produce loss of information and misleading results.

However, we should also remember that CL2 could not be rejected according to the J-tests. Overall though, these results provide firm evidence for the compatibility perspective that full political rights and civil liberties generate the conditions most conducive to economic development. They are also consistent with the classical school which argues that political rights and liberty are vital preconditions for economic progress. These results are less consistent with (neo-classical) theories of development which argue that the state's primary role in economic growth is to develop policies designed to substitute public for private resources whenever the latter are insufficient or not forthcoming.<sup>20</sup>

[Insert Table 8 about here]

The results are consistent with the findings by Scully (1988), Sirowy and Inkeles (1990), Alesina *et al.* (1992) and Sachs and Warner (1995), particularly that “open” economies grow at a strikingly faster rate than “closed” nations. They are not consistent with the theory of “political authoritarianism” as espoused by Marsh (1988) and suggest that a pertinent policy issue for international agencies is to attempt to transform authoritarian states into democracies that allow for free elections, multiple political parties, and adherence to a meaningful legislative framework

Both “war” variables advance negative and significant coefficients, implying that conflict has a destructive effect on productive resources. Military conflict places a strain on an economy's absorptive capacity and puts pressure on the available supplies of capital, skilled labour and foreign exchange (Chletsos and Kollias, 1995). Military spending also competes with investment for internally-borrowed funds. This puts pressure on interest rates and reduces private investment. A similar argument is proposed by Deger (1985, 1986), who

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<sup>19</sup> These are not reported in table 7, but are available from the authors on request.

<sup>20</sup> Care is required in defining government policy and resources. As Grier and Tullock (1989) note, the central problem in assessing political factors on growth is defining the relevant types of government activity that are proxied. Government production of basic valuable public goods (e.g. roads, property

suggests that military conflict is financed by three forms of savings: that emanating from the foreign sector, government fiscal surplus and private or non-governmental surplus of income over expenditure. It follows that any increase in military expenditure, *ceteris paribus*, must be at the expense of investment. These findings concur with Easterly and Rebelo (1993), but are at odds with Barro and Lee (1994). As disparate proxies for *war* are employed in these analyses, a direct comparison may prove somewhat misleading.

Also of particular interest in this study is the behaviour of the political variables when they interact with other parameters. The signs of these interaction terms are remarkably uniform across the different definitions and do display an equally remarkable and consistent complementarity as between the effectiveness of factors of production and open, democratic, and peaceful societies. For example the negative sign on the capital-political rights (*KPR*) interaction shows that when increased capital is accompanied by simultaneous improvements in political rights (increasing  $\Delta k$  and decreasing *PRI*), the improved political rights enhance the effectiveness of the capital stock in producing growth. Likewise improved political rights enhance the effectiveness of human capital (*SSPR*) and the effectiveness of financial markets (*CRPR*). As we report in our earlier work (Evans, Green and Murinde, 2002), the interactions in the production functions are notoriously difficult to “get right”. See also Lau *et al* (1991). Therefore, the uniformity and consistency of this sign pattern across the regressions is an extraordinarily strong finding in favour of an impact of political structures on growth, not just as “manna from heaven” shifting up the growth rate directly by some means, but more importantly, on the underlying economic process by which growth takes place. According to these findings political rights, civil liberties and peace are important because they improve the performance of all factors of production as well as having the usual direct effect on growth identified by several earlier researchers.

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rights) will clearly be growth-enhancing. Government regulation of economic activity (e.g. excessive

These findings therefore support the work of Kormendi and Meguire (1985), who found that the effect of civil liberty on growth operates mainly through the investment channel. Indeed, the inclusion of the "freedom" variable by Kormendi and Meguire (1985) virtually eliminates the effects of all other variables in explaining investment. Barro (1989) Pourgerami (1988) and Helliwell (1992) also find that fewer political rights are associated with lower investment in physical capital. The mechanism through which political and civil repression adversely affects capital accumulation may be explicated by standard corporate finance theory. Greater uncertainty about future net returns (caused by political and/or social unrest) makes investors demand higher yields on their investment. If investment opportunities are constant over time, a demand for higher returns implies fewer economically viable investment projects.

Our results also suggest that military conflict reduces the effectiveness of capital investment. This may be explained by the fact that military conflict requires commitment to increase defence expenditure, which consumes scarce resources and re-allocates valuable inputs into armaments production (Deger, 1985). This finding is in contrast to Weede (1983a) and Marsh (1988). Deger (1985) further argues that autonomous defence expenditure reduces growth rates in LDE's. If LDE's spend less on the military, resources could be allocated to more highly productive investments, which would increase economic growth rates.

The results for interactions between political rights and human capital concur with Helliwell (1992): democracy has a positive effect on subsequent schooling. However, the interactions between conflict and human capital (SSW1 and SSW2) have counterintuitive signs in our results, suggesting that conflict increases the effectiveness of human capital. In contrast, Deger (1985) argues that given an upper limit to national budgets, an increase in

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regulation and bureaucracy) will probably slowdown economic growth.

military expenditure could be at the expense of education spending.<sup>21</sup> This may be because there are also interactions between conflicts and the nature of the political regime which are evidently not captured in this model.

Overall, though, these findings support, extend, and unify the work of various authors who have found linkages between investment and civil liberties (Kormendi and Meguire, 1985), or between education or human capital and civil liberties (Helliwell, 1992). In general we find a clear and decisive link between political structures, as measured here, and growth and, in a new finding, between political structures and the determinants of the growth process. The clarity of these results also suggests the merits of our approach in utilizing panel data and “period” measurement (rather than “point” measurement) of political regimes and civil liberties.

## **5. Conclusion**

The main findings are four. First, we reaffirm that financial and human capital play an important role in economic growth as well as physical capital. Second, the results suggest that politically open economies (in terms of political rights and civil liberties) experience faster rates of *per capita* growth than authoritarian regimes. Third, both definitions of military conflict impart a deleterious influence on economic growth. Fourth, we identify and provide unified evidence for the existence of a clear channel through which political structures do not merely affect the growth rate but more particularly the economic process through which growth occurs. Societies with greater political and civil liberties use their factors of production more effectively than do authoritarian and repressive regimes. The implications of this study therefore are that political structure really matters for economic growth, and deserves as much attention as do human capital and financial variables.

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<sup>21</sup> Sivard (1977) estimates that a 15% reduction in military expenditure in certain LDE's is sufficient to

Our results support the “compatibility theory” of economic growth and political structure. Politically open societies, which have complete political and civil liberties and live at peace with themselves and others engender economic conditions that are conducive to higher investment, more effective financial markets and education. The full provision of social capabilities enables individuals to create and exploit more effectively economic opportunities and contributes to improving prosperity. This study thereby endorses much of the liberal theories of the old classical school of economics.

Despite the results, more research is required on this issue, particularly in more depth on the channels through which the political regime affects the growth process. Furthermore, richer measures of the political framework need to be developed. However, we believe that show clearly the importance of political structures for growth and development.

Finally, returning to Lewis’s concerns, it could be argued that our results are contrary to the interpretation sometimes given to “Unlimited Labour” that political improvement would follow economic development. However, Lewis clearly understood that governance structures are important, as we argued at the outset, and we make the bold claim that the results of this paper, though achieved with neoclassical means, nevertheless fall firmly into the classical tradition that Lewis espoused 50 years ago.

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support programmes of increasing primary school provision and extending literacy to all adults.

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**Table 1. Variable Definitions and Menmonics**

	<b>mnemonic</b>	<b>Definition</b>	<b>Source</b>
<b>Income</b>	Q	GDP	WBT
<b>Labour force</b>	L	Labour force	WBT
<b>Physical Capital</b>	K	Perpetual inventory method with 5% depreciation rate	WBT
<b>Money</b>	M-M2	M2 money = currency + demand deposits + time and savings deposits	WBT and IFS
	M-CR	Domestic Credit	IFS
<b>Human Capital</b>	H-PS	Primary school enrolment rate	UNESCO
	H-SS	Secondary school enrolment rate	UNESCO
	H-PE	Public expenditure on education	UNESCO
<b>Exchange rates, prices, PPP</b>			PWT

**Table 2 Ranking of political rights**

<b>Ranking</b>	<b>Description</b>
1	Economy has a fully competitive electoral process
2	As ranking 1, however factors may exist to doubt the absolute equality of the electoral process
3	Less effective implementation of democratic process than 1 and 2
4	Ditto 3, but government may have been selected outside the public view by various faction leaders
5	No effective voting processes in place, however strive for consensus among a variety of groups in society
6	No competitive electoral processes are permitted, however ruler(s) may Respond to certain popular desire (e.g. Islamic beliefs)
7	Power is controlled by political despots only

**Table 3 Ranking of civil liberties**

Ranking	Description
1	Government has no influence on press output; the courts protect the individual; private rights are respected and persons are not imprisoned for their opinions
2	As 1, however the police and courts have a more authoritarian tradition
3	Political prisoners <i>may</i> exist and there will be an element of censorship in the media; the police have a wide range of powers
4	The media is heavily censored, free speech is limited and torture may be be Prevalent
5	Little or no free press; police and the courts have seemingly total control on social order; political prisoners and torture is commonplace
6	Political prisoners exist; the media is under government supervision; there is no right of assembly; travel is likely to be restricted. Private conversation may be relatively free; underground literature is published and illegal demonstrations take place; torture may be commonplace
7	There exists pervading fear, little (if any) independent expression is permitted, no public expressions of opposition emerge, and imprisonment and/or execution for political beliefs is common

**Table 4 Hypotheses for panel data political analysis**

Hyp.	Description	Variable Specification
1	Higher classification of political rights is negatively related to growth ( <i>PR</i> )	Political rights time-series
2	Higher classification of civil liberties equates to lower growth ( <i>CL</i> )	Civil liberties time-series
3	Full political rights has a positive impact on growth ( <i>PR1</i> )	Dummy variable =1 if political rights <2; otherwise 0
4	An absence of political rights has a negative impact on growth ( <i>PR2</i> )	Dummy variable =1 if political rights >5; otherwise 0
5	Full civil liberties has a positive impact on growth ( <i>CL1</i> )	Dummy variable =1 if civil liberties <2; otherwise 0
6	An absence of civil liberties has a negative impact on growth ( <i>CL2</i> )	Dummy variable =1 if civil liberties >5; otherwise 0
7	Conflict (current) on national territory has a negative effect on growth ( <i>W1</i> )	Dummy variable =1 if country engaged in conflict (1972 to 1992); otherwise 0
8	Conflict (preceding and current) on national territory negatively effects growth ( <i>W2</i> )	Dummy variable =1 if country engaged in conflict (1960 to 1992); otherwise 0

**Table 5 Functional Form Test: Cobb-Douglas vs. Translog**

Explanatory Variables	<i>F</i> -test (at the 5% level)		
	Calculated Value	Critical Value	Result
CR, SS and PR (12,1623)	21.662	1.758	REJECT NULL
CR, SS and CL (12,1623)	21.231	1.758	REJECT NULL
CR, SS and PR1 (12,1623)	18.480	1.758	REJECT NULL
CR, SS and PR2 (12,1623)	21.423	1.758	REJECT NULL
CR, SS and CL1 (12,1623)	21.274	1.758	REJECT NULL
CR, SS and CL2 (12,1623)	21.421	1.758	REJECT NULL
CR, SS and W1 (12,1623)	25.396	1.758	REJECT NULL
CR, SS and W2 (12,1623)	21.951	1.758	REJECT NULL

**Table 6 Panel Data: Encompassing Tests for Political Parameters (Translog)**

Hypotheses	J-test stat	Result <sup>a</sup>	Hypotheses	J-test stat	Result	Hypotheses	J-test stat	Result
<b>PR and CL</b> H0: CL with pv of PR <sup>b</sup> H1: PR with pv of CL	8.90*** 3.04***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL and CL2</b> H0: CL2 with pv of CL H1: CL with pv of CL2	5.22*** 5.26***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR2 and W1</b> H0: W1 with pv of PR2 H1: PR2 with pv of W1	5.73*** 8.89***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and PR1</b> H0: PR1 with pv of PR H1: PR with pv of PR1	7.70*** 3.99***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL and W1</b> H0: W1 with pv of CL H1: CL with pv of W1	5.90*** 8.81***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR2 and W2</b> H0: W2 with pv of PR2 H1: PR2 with pv of W2	5.85*** 6.46***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and PR2</b> H0: PR2 with pv of PR H1: PR with pv of PR2	8.45*** 4.83***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL and W2</b> H0: W2 with pv of CL H1: CL with pv of W2	5.93*** 6.39***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL1 and CL2</b> H0: CL2 with pv of CL1 H1: CL1 with pv of CL2	6.64*** 6.79***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and CL1</b> H0: CL1 with pv of PR H1: PR with pv of CL1	7.98*** 4.90***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR1 and PR2</b> H0: PR2 with pv of PR1 H1: PR1 with pv of PR2	5.49*** 5.76***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL1 and W1</b> H0: W1 with pv of CL1 H1: CL1 with pv of W1	5.83*** 8.99***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and CL2</b> H0: CL2 with pv of PR H1: PR with pv of CL2	9.01*** 5.97***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR1 and CL1</b> H0: CL1 with pv of PR1 H1: PR1 with pv of CL1	4.28*** 4.46***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL1 and W2</b> H0: W2 with pv of CL1 H1: CL1 with pv of W2	5.58*** 6.35***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and W1</b> H0: W1 with pv of PR H1: PR with pv of W1	7.88*** 8.42***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR1 and CL2</b> H0: CL2 with pv of PR1 H1: PR1 with pv of CL2	6.08*** 6.42***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL2 and W1</b> H0: W1 with pv of CL2 H1: CL2 with pv of W1	5.99*** 8.98***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>PR and W2</b> H0: W2 with pv of PR H1: PR with pv of W2	8.15*** 5.96***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR1 and W1</b> H0: W1 with pv of PR1 H1: PR1 with pv of W1	5.81*** 8.98***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>CL2 and W2</b> H0: W2 with pv of CL2 H1: CL2 with pv of W2	6.29*** 6.85***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1
<b>CL and PR1</b> H0: PR1 with pv of CL H1: CL with pv of PR1	5.06*** 4.52***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR1 and W2</b> H0: W2 with pv of PR1 H1: PR1 with pv of W2	5.78*** 6.56***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>W1 and W2</b> H0: W2 with pv of W1 H1: W1 with pv of W2	7.24*** 1.25	H <sub>1</sub> $\hat{I}$ H <sub>0</sub> H <sub>1</sub> accepted
<b>CL and PR2</b> H0: PR2 with pv of CL H1: CL with pv of PR2	4.71*** 4.68***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR2 and CL1</b> H0: CL1 with pv of PR2 H1: PR2 with pv of CL1	6.43*** 6.34***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1			
<b>CL and CL1</b> H0: CL1 with pv of CL H1: CL with pv of CL1	5.07*** 4.87***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1	<b>PR2 and CL2</b> H0: CL2 with pv of PR2 H1: PR2 with pv of CL2	4.83*** 4.87***	H1 $\hat{I}$ H0 H0 $\hat{I}$ H1			

Notes: \*\*\* significant at the 1% level; \*\* significant at the 5% level; \* significant at the 10% level.

<sup>a</sup> where  $\hat{I}$  denotes "encompasses".

<sup>b</sup> pv is predicted value.

**Table 7a Panel Data Estimation of Political Parameters (Translog)**

Dependent variable: GDP per worker, 1972-1992 (82 economies)

Var.	EQUATION										
	(1)	(2)	Var.	(3)	(4)	Var.	(5)	(6)	Var.	(7)	(8)
C	0.001 (0.10)	0.001 (0.14)	c	-0.034 (-2.83)5	-0.032 (-2.75)5	c	-0.057 (-3.38)5	-0.056 (-3.35)5	c	-0.054 (-3.22)5	-0.058 (-3.42)5
Y72	-6E-06 (-1.30)	-7E-06 (-1.32)	Y72	.5E-06 (1.04)	.5E-06 (1.01)	Y72	-.3E-07 (-0.05)	-.6E-07 (-0.11)	Y72	.1E-05 (2.72)5	.1E-05 (3.61)5
K	0.076 (0.59)	0.022 (0.32)	K	0.079 (0.61)	0.005 (0.08)	K	0.134 (1.06)	0.145 (1.74)*	K	0.049 (0.37)	0.018 (0.22)
CR	0.528 (7.46)5	0.533 (7.85)5	CR	0.612 (8.12)5	0.617 (8.44)5	CR	0.418 (5.89)5	0.404 (6.08)5	CR	0.562 (7.69)5	0.541 (8.04)5
SS	-0.152 (-1.07)	-	SS	-0.176 (-1.22)	-	SS	-0.261 (-1.90)*	-0.107 (-2.33)Û	SS	-0.225 (-1.64)*	-0.104 (-2.27)Û
PR	-0.012 (-6.50)5	-0.012 (-6.54)5	CL	-0.005 (-2.17)Û	-0.005 (-2.23)Û	PR1	0.031 (2.88)5	0.032 (2.93)5	PR2	-0.006 (-0.84)	-
K <sup>2</sup>	-0.007 (-0.67)	-	K <sup>2</sup>	-0.005 (-0.51)	-	K <sup>2</sup>	.6E-03 (0.06)	-	K <sup>2</sup>	-0.002 (-0.13)	-
CR <sup>2</sup>	-0.012 (-5.49)5	-0.012 (-5.45)5	CR <sup>2</sup>	-0.013 (-5.51)5	-0.012 (-5.48)5	CR <sup>2</sup>	-0.006 (-2.63)5	-0.006 (-2.79)5	CR <sup>2</sup>	-0.020 (-7.28)5	-0.020 (-7.35)5
SS <sup>2</sup>	-0.008 (-0.87)	-	SS <sup>2</sup>	-0.010 (-1.11)	-	SS <sup>2</sup>	-0.011 (-1.19)	-	SS <sup>2</sup>	-0.009 (-1.00)	-
KY72	-4E-04 (-4.67)5	-1E-04 (-6.21)5	KY72	-1E-04 (-4.82)5	-1E-04 (-6.33)5	KY72	-7E-05 (2.74)5	-6E-05 (-2.97)5	KY72	-E-04 (-5.85)5	-1E-04 (-7.87)5
KCR	0.028 (9.29)5	0.027 (9.48)5	KCR	0.027 (9.15)5	0.027 (9.32)5	KCR	0.023 (7.40)5	0.023 (8.65)5	KCR	0.029 (9.37)5	0.030 (9.67)5
KSS	-0.010 (-1.87)*	-0.014 (-3.35)5	KSS	-0.010 (-1.85)*	-0.013 (-2.90)5	KSS	-0.011 (-2.01)Û	-0.011 (-2.03)Û	KSS	-0.012 (-2.24)Û	-0.014 (-2.60)5
KPR	-0.022 (-3.58)5	-0.022 (-3.63)5	KCL	-0.019 (-2.40)Û	-0.019 (-2.42)Û	KPR1	0.171 (4.23)5	0.185 (4.73)5	KPR2	-0.092 (-3.44)5	-0.089 (-3.62)5
CRY72	.5E-06 (3.08)5	.6E-05 (3.10)5	CRY72	.4E-05 (1.97)Û	.4E-05 (2.01)Û	CRY72	.1E-05 (0.59)	-	CRY72	.4E-05 (2.26)Û	.4E-05 (2.16)Û
CRSS	0.027 (6.52)5	0.027 (6.62)5	CRSS	0.027 (6.44)5	0.028 (6.52)5	CRSS	0.028 (6.35)5	0.027 (6.46)5	CRSS	0.029 (6.78)5	0.027 (6.97)5
CRPR	-0.024 (-4.34)5	-0.023 (-4.30)5	CECL	-0.041 (-5.12)5	-0.041 (-5.08)5	CRPR1	0.198 (4.62)5	0.214 (6.65)5	CRPR2	-0.167 (-5.51)5	-0.167 (-5.57)5
SSY72	-6E-05 (-2.22)Û	-6E-05 (-2.25)Û	SSY72	-6E-05 (-1.65)*	-6E-05 (-2.08)Û	SSY72	.5E-05 (-1.47)	-.3E-05 (-1.23)	SSY72	-4E-05 (-1.58)	-
SSPR	-0.015 (-2.03)Û	-0.018 (-3.08)Û	SSCL	-0.018 (-1.65)*	-0.021 (-2.87)5	SSPR1	0.033 (0.63)	-	SSPR2	-0.023 (-0.73)	-
R2	.70	.70	R2	.69	.69	R2	.69	.69	R2	.69	.69
SE	0.097	0.097	SE	0.099	0.098	SE	0.098	0.099	SE	0.098	0.099
Haus <sup>a</sup>	25.34	23.75	Haus	8.56	4.89	Haus	6.06	1.88	Haus	8.106	3.903
RS2 <sup>b</sup>	1.16	2.97	RS2	1.19	1.99	RS2	0.27	0.04	RS2	3.39	3.06
RS3	1.54	2.63	RS3	1.36	2.39	RS3	0.33	0.42	RS3	3.16*	2.48
LM <sup>c</sup>	4.20	4.21	LM	4.00	4.00	LM	1.58	1.59	LM	1.57	1.58
AU1 <sup>d</sup>	3.76	3.09	AU1	3.31	3.65	AU1	2.91	2.16	AU1	2.65	2.12
AU2	4.45	4.14	AU2	4.23	3.92	AU2	3.94	2.09	AU2	3.87	3.82
F <sup>e</sup>	-	0.49	F <sup>e</sup>	-	0.64	F <sup>e</sup>	-	0.52	F <sup>e</sup>	-	0.75

Notes: Figures in parentheses are *t*-statistics calculated using robust standard errors (White, 1980).

5 significant at the 1% level; Û significant at the 5% level; \* significant at the 10% level.

<sup>a</sup> The Hausman test is distributed as a  $\chi^2$  statistic. The critical value at the 5% level at 12 df. = 21.0; at 13 df. = 22.4; at 14 df. = 23.7; at 17 df. = 27.6.

<sup>b</sup> *Test of functional form*: RESET tests were carried out by including the square (2) and the cube (3) of the predicted values of each regression as additional explanatory variables. *F* values are reported above for the tests of the (joint) significance of the additional regressor(s). \* indicates significance at the 5% level where the critical value of the squared parameter (2) = 3.75; critical value of cubed parameter (3) = 3.00.

<sup>c</sup> *Test for Heteroskedasticity*: The LM test is distributed as a  $\chi^2$  statistic. The critical value at 82 df. = 104.14.

<sup>d</sup> *Test for Serial Correlation*: The Breusch-Godfrey LM test is distributed as a  $\chi^2$  statistic. At the 5% level, the critical value at 1 df. = 3.84; at the 5% level, the critical value at 2 df. = 5.99.

<sup>e</sup> *F-Test*: The critical value at (3,1623) = 2.60; at (4,1623), the critical value = 2.37; at (5,1623), the critical value = 2.21.

**Table 7b Panel Data Estimation of Political Parameters (Translog)**

Dependent variable: GDP per worker, 1972-1992 (82 economies)

EQUATION											
Var.	(9)	(10)	Var.	(11)	(12)	Var.	(13)	(14)	Var.	(15)	(16)
c	-0.056 (-3.74)5	-0.056 (-3.87)5	c	-0.060 (-3.82)5	-0.057 (-3.21)	c	-0.043 (-3.33)5	-0.043 (-3.41)5	c	-0.043 (-3.45)5	-0.043 (-3.51)5
Y72	.3E-06 (0.51)	.3E-06 (0.56)	Y72	.1E-05 (3.41)5	.1E-05 (3.36)5	Y72	.7E-06 (1.93)*	.8E-06 (2.07)Û	Y72	.7E-06 (1.90)*	.8E-06 (2.04)Û
K	0.145 (1.14)	0.112 (1.40)	K	0.106 (0.84)	0.091 (1.13)	K	0.046 (0.38)	0.084 (1.04)	K	0.081 (0.64)	0.114 (0.85)
CR	0.406 (5.89)5	0.389 (6.24)5	CR	0.576 (7.93)5	0.583 (8.30)5	CR	0.435 (6.43)5	0.396 (6.75)5	CR	0.440 (6.41)5	0.376 (6.45)5
SS	-0.255 (-1.85)*	-0.099 (-2.16)Û	SS	-0.239 (-1.73)*	-0.127 (-2.77)5	SS	-0.132 (-0.89)	-0.204 (-7.00)5	SS	-0.204 (-1.35)	-0.204 (-6.77)5
CL1	0.024 (1.85)*	0.024 (1.89)*	CL2	0.006 (0.77)	-	W1	-0.030 (-4.15)5	-0.030 (-4.16)5	W2	-0.024 (-3.53)5	-0.024 (-3.46)5
K <sup>2</sup>	-0.191 (-0.17)	-	K <sup>2</sup>	-6E-03 (-0.05)	-	K <sup>2</sup>	-0.012 (-0.24)	-	K <sup>2</sup>	-0.009 (-0.26)	-
CR <sup>2</sup>	-0.007 (-2.88)5	-0.007 (-3.26)5	CR <sup>2</sup>	-0.018 (-7.00)5	-0.018 (-7.09)5	CR <sup>2</sup>	-0.008 (-3.23)5	-0.030 (-4.16)5	CR <sup>2</sup>	-0.008 (-3.30)5	-0.008 (-3.37)5
SS <sup>2</sup>	-0.010 (-1.16)	-	SS <sup>2</sup>	-0.008 (-0.93)	-	SS <sup>2</sup>	0.004 (0.38)	-	SS <sup>2</sup>	-0.271 (-0.25)	-
KY72	-8E-05 (-2.98)5	-8E-05 (-3.90)5	KY72	-1E-04 (-6.29)5	-1E-04 (-8.13)5	KY72	-1E-04 (-5.57)5	-1E-04 (-5.87)5	KY72	-1E-04 (-5.61)5	-1E-04 (-6.34)5
KCR	0.024 (7.94)5	0.024 (9.22)5	KCR	0.027 (8.79)5	0.027 (9.15)5	KCR	0.018 (5.76)5	0.018 (5.86)5	KCR	0.021 (6.88)5	0.023 (8.80)5
KSS	-0.011 (-1.98)Û	-0.012 (-2.30)Û	KSS	-0.011 (-2.02)Û	-0.012 (-2.15)Û	KSS	-0.002 (-0.40)	-	KSS	-0.004 (-0.81)	-
KCL1	0.167 (3.68)5	0.169 (3.93)5	KCL2	-0.035 (-1.34)	-0.047 (-1.96)Û	KW1	-0.206 (-8.40)5	-0.210 (-8.75)5	KW2	-0.146 (-5.89)5	-0.147 (-6.44)5
CRY72	.3E-06 (0.13)	-	CRY72	.5E-05 (2.51)Û	.4E-05 (2.44)Û	CRY72	.7E-05 (3.94)5	.7E-05 (3.85)5	CRY72	.7E-05 (3.58)5	.6E-05 (3.42)5
CRSS	0.027 (6.28)5	0.026 (6.57)5	CRSS	0.030 (7.21)5	0.031 (7.33)5	CRSS	0.022 (5.15)5	0.019 (5.47)5	CRSS	0.024 (5.41)5	0.020 (5.46)5
CRCL 1	0.275 (5.34)5	0.278 (7.01)5	CRCL 2	-0.156 (-5.27)5	-0.161 (-5.53)5	CRW1	-0.098 (-4.06)5	-0.102 (-4.27)5	CRW2	-0.097 (-3.91)5	-0.102 (-4.17)5
SSY72	-2E-05 (-0.72)	-	SSY72	-5E-05 (-1.76)*	-4E-05 (-1.60)	SSY72	-3E-05 (-1.07)	-	SSY72	-3E-05 (-1.26)	-
SSCL1	-0.019 (-0.26)	-	SSCL2	-0.020 (-0.60)	-	SSW1	0.098 (2.76)5	0.097 (3.20)5	SSW2	0.057 (1.67)*	0.069 (2.38)Û
R2	.69	.69	R2	.69	.69	R2	.69	.70	R2	.69	.69
SE	0.098	0.099	SE	0.099	0.098	SE	0.098	0.097	SE	0.098	0.098
Haus <sup>a</sup>	7.35	3.08	Haus	8.41	4.18	Haus	5.53	4.95	Haus	6.24	5.89
RS2 <sup>b</sup>	0.62	0.01	RES2	1.11	0.51	RES2	0.09	0.42	RES2	0.20	0.01
RS3	0.84	0.70	RES3	1.21	0.52	RES3	0.79	0.70	RES3	0.27	0.06
LM <sup>c</sup>	1.58	1.58	LM	1.57	1.57	LM	1.45	1.45	LM	1.55	1.56
AU1 <sup>d</sup>	3.10	2.19	AUT1	2.43	2.42	AUT1	1.65	2.33	AUT1	2.58	3.65
AU2	3.25	2.44	AUT2	2.92	2.51	AUT2	2.38	2.58	AUT2	2.63	2.49
F <sup>e</sup>	-	0.55	F <sup>e</sup>	-	0.27	F <sup>e</sup>	-	0.59	F <sup>e</sup>	-	0.65

Notes: Figures in parentheses are *t*-statistics calculated using robust standard errors (White, 1980).

5 significant at the 1% level; Û significant at the 5% level; \* significant at the 10% level.

<sup>a</sup> The Hausman test is distributed as a  $\chi^2$  statistic. The critical value at the 5% level and at 13 df. = 22.4; at 14 df. = 23.7; and at 17 df. = 27.6.

<sup>b</sup> Test of functional form: RESET tests were carried out by including the square (2) and the cube (3) of the predicted values of each regression as additional explanatory variables. *F* values are reported above for the tests of the (joint) significance of the additional regressor(s). The critical value of the squared parameter (2) at the 5% level = 3.75; and the cubed parameter (3) = 3.00.

<sup>c</sup> Test for Heteroskedasticity: The LM test is distributed as a  $\chi^2$  statistic. The critical value at 82 df. = 104.14.

<sup>d</sup> Test for Serial Correlation: The Breusch-Godfrey LM test is distributed as a  $\chi^2$  statistic. At the 5% level, the critical value at 1 df. = 3.84; at the 5% level, the critical value at 2 df. = 5.99.

<sup>e</sup> *F*-Test: The critical value at (4,1623), the critical value = 2.37; at (5,1623), the critical value = 2.21.

**Table 8 Summary of translog panel regression results**

<b>Variabl e</b>	<b>Sig. Level</b>	<b>Equation no.</b>	<b>Variable</b>	<b>Sig. level</b>	<b>Equation no.</b>
<i>PR</i>	(-) 1%	1,2	<i>CRPR1</i>	(+) 1%	5,6
<i>CL</i>	(-) 5%	3,4	<i>KPR2</i>	(-) 1%	7,8
<i>PR1</i>	(+) 1%	5,6	<i>CRPR2</i>	(-) 1%	7,8
<i>CL1</i>	(+) 10%	9,10	<i>KCL1</i>	(+) 1%	9,10
<i>W1</i>	(-) 1%	13,14	<i>CRCL1</i>	(+) 1%	9,10
<i>W2</i>	(-) 1%	15,16	<i>KCL2</i>	(-) 10%	12
<i>KPR</i>	(-) 1%	1,2	<i>CRCL2</i>	(-) 1%	11,12
<i>CRPR</i>	(-) 1%	1,2	<i>KW1</i>	(-) 1%	13,14
<i>SSPR</i>	(-) 5%	1,2	<i>CRW1</i>	(-) 1%	13,14
<i>KCL</i>	(-) 5%	3,4	<i>SSW1</i>	(+) 1%	13,14
<i>CRCL</i>	(-) 1%	3,4	<i>KW2</i>	(-) 1%	15,16
<i>SSCL</i>	(-) 10%	3	<i>CRW2</i>	(-) 1%	15,16
	(-)1%	4	<i>SSW2</i>	(+) 10%	15
<i>KPRI</i>	(+) 1%	5,6		(+) 5%	16

**Appendix Table A1. Sample Countries**

<b>Low income</b>	<b>Middle (low) income</b>	<b>Middle (high) income</b>	<b>High income</b>
Bangladesh	Bolivia	Algeria	Australia
Benin	Cote d'Ivoire	Argentina	Austria
Burkina Faso	Dominican Republic	Barbados	Belgium
Burundi	Ecuador	Chile	Canada
Cameroon	Egypt	Colombia	Denmark
Central African Republic	El Salvador	Costa Rica	Finland
Ethiopia	Guatemala	Fiji	France
The Gambia	Honduras	Gabon	Germany
Ghana	Morocco	Greece	Ireland
India	Nicaragua	Jamaica	Israel
Indonesia	Papua New Guinea	South Korea	Italy
Kenya	The Philippines	Malaysia	Japan
Madagascar	Senegal	Mexico	The Netherlands
Malawi	Swaziland	Oman	New Zealand
Mali	Zambia	Panama	Norway
Myanmar		Paraguay	Spain
Nepal		Peru	Sweden
Nigeria		Portugal	United Kingdom
Rwanda		South Africa	United States
Sierra Leone		Suriname	
Sri Lanka		Trinidad and Tobago	
Tanzania		Tunisia	
Togo		Turkey	
		Uruguay	
		Venezuela	

**Appendix Table A2:**

**A “checklist” of factors considered to represent comprehensive political rights within an economy (specific to Gastil, 1990)**

- Chief authority regularly elected by a meaningful process
- Legislature recently elected by a meaningful process; the alternatives are:<sup>22</sup>
  - (a) no choice and no possibility of rejection
  - (b) no choice but some possibility of rejection
  - (c) government or single-party selected candidates
  - (d) choice possible only among government-approved candidates
  - (e) relatively open choices possible only in local elections
  - (f) open choice possible within a restricted range
  - (g) relatively open choices possible in all elections
- Fair election laws, campaigning opportunity, polling and tabulation
- Fair reflection of voter preference in distribution of power
- Multiple political parties
- Recent shifts in power through elections
- Significant opposition vote
- Free of military or foreign control
- Major group of groups denied reasonable self-determination
- Decentralised political power
- Informal consensus; de facto opposition power

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<sup>22</sup> These alternatives reflect variations in the extent to which political systems offer citizens or subjects a chance to participate through electoral choice. These variations were found in the course of the survey monitoring.

**Appendix Table A3:**

**A “checklist” of factors considered to represent comprehensive civil liberties within an economy (specific to Gastil, 1990, p. 36)**

- Media/literature free of political censorship
  - (a) Press is independent of government
  - (b) Broadcasting is independent of government
- Open public discussion
- Freedom of assembly and demonstration
- Freedom of political or quasi-political organisation
- Non-discriminatory rule of law in politically relevant cases
  - (a) Independent judiciary
  - (b) Security forces respect individuals
- Free from unjustified political terror or imprisonment
  - (a) Free from imprisonment or exile for reasons of conscience
  - (b) Free from torture
  - (c) Free from terror by groups not opposed to the system
  - (d) Free from government-organised terror
- Free trade unions, peasant organisations, or equivalents
- Free businesses or co-operatives
- Free professional or other private organisations
- Free religious institutions
- Personal social rights: including those to property, internal and external travel, choice of residence, marriage and family
- Socio-economic rights: including freedom from dependency on landlords, bosses, union leaders, or bureaucrats
- Freedom from gross socio-economic inequality
- Freedom from gross government indifference or corruption.