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Institutional Governance and Economic Growth, with special reference to Sub-Saharan Africa.

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Abstract
This econometric study attempted to provide additional evidence on the relationship between the quality of institutions and economic growth in developing countries. Using a Barro-type growth model, the study also examined whether the growth performance of sub-Saharan African countries was a consequence of institutions of governance. A newly assembled data set consisting of six governance clusters, namely voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption, was combined into an overall quality of institutional governance index (QIGI) based on equal weighting. The empirical results suggested that institutional quality had a positive impact on growth which was at least as strong as that of physical capital. Moreover, the study revealed that government effectiveness, measuring the quality of public service delivery and the competence of bureaucrats, was the most robust predictor of economic growth. It could also be concluded that governance may at best provide a partial explanation for sub-Saharan Africa's growth rates. A major policy implication emanating from the findings was that the development of institutions was crucial to the achievement of sustained economic growth in developing countries and these institutions could not operate effectively without good governance.

INTRODUCTION

"Policymakers, civil society groups, aid donors, and scholars around the world increasingly agree that good governance matters for development. This growing consensus has emerged from a proliferation of empirical measures of institutional quality, governance, and the investment climate, and accompanying research showing the strong development impact of good governance." (World Bank Institute, 2009, pp.1). In addition, strong institutions and governance are crucial for meeting the Millennium Development Goals (MDGs) of halving poverty by 2015. The lessons learnt from countries' own experience, particularly in Sub-Saharan Africa, give a more solid basis for judging the effect of institutional governance on economic growth. Noman and Stiglitz (2008) claimed that the relatively lower growth performance of Sub-Saharan African countries had been subject to debates and alternative critics about its weak institutional and political governance, unfortunate location (geography), or history (colonial legacy), especially after the failure of getting prices right, privatising and liberating the magic of the market.

Until recently, empirical studies showing the importance of institutions as an explanation of economic growth have been scarce. This has been mainly due to a lack of appropriate data measuring the quality of institutions. However, there has been a resurgence of interest in this subject, including research into the sources of institutional differences across countries,

the channels through which institutions may affect economic performance, and the quantitative importance of these links. This study, therefore, intends to evaluate the ability of specific institutional measure(s) of governance and other growth related factors to explain economic growth performance across regionally selected developing countries at a particular point in time, with emphasis on whether Sub-Saharan African countries' lower growth performance relative to other regions is a consequence of weak institutional governance.

One major significance of the apriori positive relationship between economic growth and institutional governance will be that policymakers will have to focus on the availability of the necessary structures conducive to a good quality of governance of their country's institutions in order to ensure a reasonable rate of economic growth. The next section provides definitions of the main constructs, followed by the underlying theoretical foundations, critical literature review and limitations of past research. We then elaborate on the methodology used for the study before discussing the results and concluding.

DEFINITION OF CONSTRUCTS

Institutions are strikingly absent from growth theory as it is assumed that the needed institutional environment is there, within which economic agents make optimal decisions. North's (1990) widely cited definition describes institutions very broadly as the formal and informal constraints on political, economic, and social interactions. From this perspective, good institutions which guarantee property rights and minimize transaction costs, are viewed as establishing an incentive structure that reduces uncertainty and promotes efficiency; hence contributing to stronger economic growth rates.

However, much of the recent research into determinants of economic growth has adopted an intermediate definition of institutions - in terms of measures of 'quality of governance of institutions' or simply referred to as 'institutional governance'. 'Institutional governance' is the main independent or causal variable of this study as it is the presumed cause or determinant or antecedent (Tharenou, Donohue, and Cooper, 2007). This concept of good governance is relatively new and it first appeared in 1989 in the World Bank's report on Sub-Saharan Africa, which characterised the crisis in the region as a 'crisis of governance' (World Bank, 1989). A good governance system puts further requirements on the process of decision-making and public policy formulation. It extends beyond the capacity of public sector to the rules that create a legitimate, effective and efficient framework for the conduct of public policy and it implies managing public affairs in a transparent, accountable, participatory and equitable manner.

Kaufmann, Kraay, and Mastruzzi (2005), KKM, defined governance as the traditions and institutions by which authority in a country is exercised for the common good. This included three main dimensions, namely the political dimension - the process by which those in authority are selected, monitored, and replaced; the economic dimension - the government's capacity to effectively manage its resources and implement sound policies; and the institutional respect (social) dimension - the respect of citizens and the state for the institutions that govern economic and social interactions among them. Subsequently, six main clusters - with two measurable concepts corresponding to each of these three

dimensions of governance, as illustrated in Figure 1 below have been defined as political dimension (voice and accountability, and political stability and absence of violence); economic dimension (government effectiveness, and regulatory quality); and the social dimension (rule of law, and control of corruption).

Figure 1: Dimensions and Clusters of Governance

Source: Author's (based on KKM, 2005)

According to the World Bank's definition (2004), economic growth refers the quantitative change or expansion in a country's economy and it is conventionally measured as the annual percentage increase in Gross Domestic Product (GDP) or Gross National Product (GNP). An economy can either grow extensively by using more resources such as physical, human or natural capital, or grow intensively by using the same amount of resources more efficiently. Intensive economic growth may lead result in higher income per capita and improvement in the standard of living of an economy's population. Economic growth is the dependent variable of this study as it is presumed to be influenced by another variable; that is, the effect or outcome (Tharenou, Donohue, and Cooper, 2007).

THEORETICAL DEBATE

The aim of growth theory is to explain the determinants of growth rates within a country and the reasons for differences in growth rates and per capita incomes across countries. There have been two periods of intense work on growth theory: the first in the late 1950s and 1960s created the neoclassical growth theory known as Solow's model (1956), and the second in the late 1980s and 1990s resulted in the endogenous growth theory.

Mankiw, Romer, and Weil, (MRW), (1992) revived the Solow (1956) growth model, which had come under increasing challenge from the development of the new endogenous growth models. MRW specified an 'augmented Solow model' that added a human capital term, H, to a basic Cobb-Douglas production function as follows:

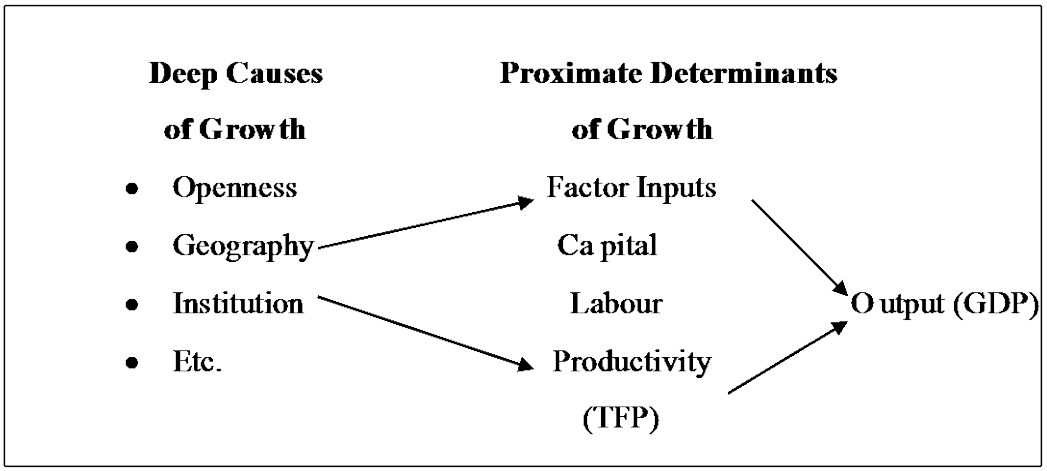
$$Y(t) = K(t)^{\alpha} H(t)^{\lambda} [A(t) L(t)]^{1-\alpha-\lambda}$$

$$0 < \alpha + \lambda < 1$$

where Y: Output; K: Physical Capital; H: Human Capital; A: Level of Technology; L: Labour; t: time.

Human capital is the knowledge acquired by workers, often the result of specific investments in education, training, and self-learning. To keep their model manageable, MRW assumed that physical and human capital depreciate at the same rate. MRW showed that physical capital and human capital per effective worker would expand as long as the amount of investment is large enough to more than offset the need to equip new workers, cover depreciation, and exceed the rate of labour-augmenting technological progress.
Whilst on one hand, changes in inputs (capital and labour) and productivity can be seen as the proximate determinants of output growth, on the other hand, an increase in output requires either an increase in input or a higher level of productivity. The resulting framework can be summarised in Figure 2.

Figure 2: The Economic Growth Framework



Source: Author's compilation

It is worth pointing out that investments in inputs and changes in productivity are themselves caused by something deeper – the deep causes of growth of which 'institution' is a prominent candidate that has recently received considerable attention. Other candidates include 'geography' and 'openness of the economy'.
Barro and Sala-i-Martin (1995) surveyed the empirical work on economic growth and examined the large number of independent variables that have been included in different specifications of growth models such as investment and trade variables, measures of human capital, and measures of the quality of political institutions and democracy and indicators of political stability.

CRITICAL LITERATURE REVIEW: INSTITUTIONS – GROWTH NEXUS

In the 1990s, institutions regained the attention that had been assigned to them by the earlier economists as a result of several experiences at that time, namely the lower-than-expected performance of the African and Latin American economies after the adoption of market-oriented reforms. It is also well known that over the last several decades the economic performance of Sub-Saharan Africa, taken as a whole, has been comparatively low. This weak performance is reflected in low and sometimes negative growth levels of GDP per capita relative to other developing regions, a significantly negative African dummy variable in cross-country growth regressions, and in comparatively low levels of various

measures of human development like life expectancy and education. Artadi and Sala-i-Martin (2003) go as far as to call this lack of growth 'The Economic Tragedy of the XXth Century'.

A sizeable literature has emerged that tries to explain the economic performance of Sub-Saharan Africa relative to the rest of the world. Bloom and Sachs (1998) highlighted the role of adverse geography and the disease environment in Africa. Easterly and Levine (1997) focused on the large amount of ethnic and linguistic diversity in Africa and its impact on policy as a possible cause of slow growth. Sachs and Warner (1997) found that poor economic policies have played an important role in the slow growth, most importantly Africa's lack of openness to international markets. Ndulu and O'Connell (1999), Collier and Gunning (1999), and Acemoglu, Johnson, and Robinson (2001) have examined the impact of institutional governance on economic growth.

Building on the correlation between institutional quality and economic growth, recent analyses have also attempted to address the possibility of reverse causality from growth to institutions, and the relative significance of institutions compared with other influences on economic growth, such as trade openness, geographical factors, and economic policies. Rodrik, Subramanian, and Trebbi (2002) estimated the respective contributions of institutions, geography, and trade in determining income levels around the world. Their results indicated that the quality of institutions overrides everything else. Controlling for institutions, geography had, at best; weak direct effects on incomes, although they had a strong indirect effect by influencing the quality of institutions. Similarly, trade was found to have a significant effect on institutional quality but it had no direct positive effect on income.

While institutions clearly influence growth, higher incomes increase the demand for participation, accountability, and transparency; and also provide the public resources that can be devoted to improving them. Ideally, one should recognise the two-way relationship between institutions and economic growth. Chong and Calderon (2000) confirmed that there is reverse causality between economic growth and institutional quality.
Knack and Keefer (1997) suggested that while poor countries had advantages because of low-cost access to advanced technology, these potential advantages were squandered in countries with poor institutional frameworks. Poor countries are falling back rather than catching up and their deficient institutions can explain this divergence. By using various indicators of institutional governance, including the rule of law and pervasiveness of corruption, they found that institutions are powerful determinants of the ability of countries to benefit from the 'catch-up' effect.

Kaufmann and Kraay (2002) found that per capita incomes and the quality of governance (measured as the average of the six clusters of institutions) were strongly positively correlated across countries. Using an empirical strategy, they separated this correlation into a strong positive causal effect running from better governance to higher per capita incomes, and a weak negative causal effect running in the opposite direction from per capita income to governance. They pointed out that elite influence and state capture may account for the

surprising negative effects of per capita incomes on governance.
Fuje (2008) explored another transmission channel-aggregate technical efficiency - through which institutions affect economic growth in Sub-Saharan Africa. Using clusters of institutions, it was found that control of corruption had no relation with growth and that the political dimension of governance (voice and accountability, and political stability and absence of violence) had no relation to technical efficiency. However, the economic dimension of governance (regulatory quality and government effectiveness) influenced technical efficiency, implying that Sub-Saharan Africa's economic performance can partly be attributed to ineffective institutional governance.

Recent work on growth and institutions identified the deep structural determinants of countries' growth performance. In contrast, the earlier growth models focused on the main proximate causes of growth. Results from empirical analysis suggest the existence of the economic growth-institutions nexus but statistical support is not uniform across all indicators of institutional quality. Depending on the institutional variables chosen, the group of countries in the analysis, and the time period of the study; the results are mixed.

LIMITATIONS OF PAST RESEARCH

The main criticisms in the literature has been levelled against institutional governance indicators in the sense that they are far from being exogenous, contain measurement errors and may be subjected to reverse causation. As highlighted earlier, institutions are both a cause and consequence of better economic performance. Economies are not exogenously endowed with institutions; rather, good institutions require time and resources to develop, suggesting that richer countries are more likely to enjoy good institutions. Care must be exercised in the empirical assessment so as not to capture reverse causality - that stronger economic performance is itself likely to contribute to better institutions; by identifying a good set of instruments for measuring institutions. Moreover, endogeneity can be an outcome of spurious correlation. Governance indicators may capture the effect of some missing variables, causing the familiar omitted variable bias.

Several attempts have been made to deal with the endogeneity of institutions by using an instrumental variables (IV) approach. Mauro (1995) instrumented for corruption using ethno linguistic fractionalisation, which is not such a good instrument if growth is accompanied with emergence of a centralised state and integration via markets. Moreover, as Easterly and Levine (1997) argued, the further problem with ethno linguistic fractionalisation is that it can directly affect performance by causing political instability. Hall and Jones (1999) used distance from equator as an instrument to proxy 'Western Influence'. Acemoglu, Johnson, and Robinson (2001) who used mortality rates of colonial settlers as an instrument for institutional quality, appears to be one of the best attempts to solve the endogeneity problem.

On the other hand, KKM (2010) argued that margins of error in the six clusters of governance data do not mean that these cannot be used to make comprehensive cross-country benchmarking at a particular point in time or over time. In fact, they encouraged researchers to use the estimated margins of error to make appropriate use of imperfect information. After taking margins of error into consideration, they found it possible to still

make meaningful cross-country and over-time comparisons: almost two-thirds of all cross-country comparisons in 2009 result in highly-significant differences (at 90 percent confidence levels), and more than one-quarter of countries show a significant change in at least one of the six governance measures during the decade 2000-2009.

Thomas (2006) dismissed the six governance indicators as an elaborate and unsupported hypothesis because of their supposed failure to demonstrate construct validity. Tharenou, Donohue, and Cooper's (2007) definition of construct validity makes reference to whether a measure relates to other measures in ways predicted by an underlying theory of the construct and if a measure captures what it really is supposed to measure, scores on that measure should be more related to scores on other similar constructs (convergent validity) and not, or less, related to scores on dissimilar constructs (discriminant validity). In their response to Thomas (2006), KKM (2007) explained that the various individual components of the governance indicators were quite highly correlated with each other within each of the six governance indicators and the margins of error associated with the estimates of governance were non-trivial; thereby demonstrating convergent validity. Had the pairwise correlations among the individual data sources been low, then the estimated margins of error for country estimates would have approached infinity; which was not the case. KKM (2007) further argued that discriminant validity was not a useful criterion in this context of measuring governance across countries in the sense that different dimensions of governance were, in reality, likely to be correlated across countries, and so the individual proxies that were used to measure these would also be correlated. In fact, KKM (2007) viewed these validity criteria as ambiguous in assessing the quality of empirical measures because of the confirmatory biases that they impart to subsequent empirical analysis.

METHODOLOGY

A review of the literature on institutional governance and its relationship with economic growth with special reference to Sub-Saharan Africa, has revealed that a wealth of cross-country indicators of various aspects of governance existed, and strongly suggest that institutional governance, through various channels, has a major positive impact on economic growth.

The focus of this study is to use an aggregated index for the six governance clusters of KKM, referred as quality of institutional governance index (QIGI) as a proxy for the institutional governance measure *(main independent variable)* in the growth equation, to explain the economic growth performance *(dependent variable)* across regionally selected developing countries at a particular point in time, with the subsequent inclusion of the regional dummy variable for Sub-Saharan Africa to capture the region's growth performance. The hypotheses of this study are, therefore, as follows:

Hypothesis 1: *Institutional Governance is positively related to Economic Growth.*
Hypothesis 2: *Institutional Governance is positively related; but Sub-Saharan African regional dummy is negatively related, to Economic Growth.*

For the purpose of this research study, a single equation econometric model dealing with cross-sectional growth regressions will be considered. The estimation will be carried out

using the Ordinary Least Square (OLS) multiple regression procedure (Gujarati, 2004). This method will help to compare results of other similar cross-section studies in the literature.
Institutional governance data are available biennially over the period 1996 to 2002, thereafter on an annual basis up to 2011. Given the adverse global effects of the financial crisis on economic growth in the aftermath of 2007, it is considered appropriate that the period 1999-2002 be selected for evaluation purposes. In this regard, all variable data will be averaged over this four-year period as part of a normalisation process in order to avoid the selection of an abnormal year and to smooth out any possible fluctuations in the data over the period under consideration.

Based on the review of the empirical literature, a cross-sectional study of the economic growth performance for a sample of fourty-two (42) developing countries selected from different regions of the world over the selected sample period 1999-2002 has been undertaken. The selection of 42 out of a total of 154 developing countries (as per the International Monetary Fund's country classification) was made on a regional basis after subdividing these countries into four heterogeneous categories, namely negative, low, moderate, and high-growth countries; based on their relative average growth performance over the sample period. This criterion will cater for any selection bias and will ensure a restricted variability in the data employed.

To examine the relative importance of institutional governance as a determinant of economic growth performance, a simple econometric framework, standard Barro-type growth regression, will be adopted. The model regresses the macroeconomic outcome (economic growth) for country 'i' on a measure of its institutions and a set of standard growth variables. The model to be used for a cross-section estimation of growth is described with the following specification:

$$Y_i = \alpha + \lambda X_i + \theta (INST)_i + \varepsilon_i$$

where: Y = average economic growth in each country for the sample period; X = economic variables that explain economic growth; INST = measure of institutional governance; α = intercept term; λ, θ = parameters of interest and ε = error term with mean zero.
To ensure consistency with the empirical literature regarding the determinants of economic growth, the above growth model can be stated as follows:

Growth rate = f [Initial Income, Physical Capital, Human Capital, Trade Openness, Government Size, Geography, Institutional Governance, Regional Dummy]

The proxies to be used for the respective determinants of economic growth in this particular study are described in Table 1 below and the above-specified model (in same order) will be as follows:

GDPPCG = f {GDPPC; GCF; (LIFEX, ALR); OPEN; GGFCE; (TROPICS, LANDLOCK, COASTDENS); QIGI; SSA}

Table 1: Description of variables

Abbreviations	Description of Variables	Data Source	Expected Sign
GDPPCG	Average Gross Domestic Product Per Capita Growth rate (Annual %)	WDI	Not Applicable
GDPPC	Gross Domestic Product Per Capita (initial year only)	WDI	Negative
GCF	Average Gross Capital Formation (% of GDP)	WDI	Positive
LIFEX	Life Expectancy at birth, total (years)	WDI	Positive
ALR	Literacy Rate, adult total (% of people ages 15 and above)	WDI	Positive
OPEN	Openness: Sum of Average Exports and Average Imports (% of GDP)	WDI	Positive
GGFCE	Average General Government Final Consumption Expenditure (% of GDP)	WDI	Uncertain
TROPICS	Approximate fraction of a country's land area subject to tropical climate	GSM	Negative
LANDLOCK	Dummy variable (1=country is landlocked; 0 otherwise)	GSM	Negative
COASTDENS	Coastal Population Density (persons per km^2)	GSM	Positive
QIGI	Quality of Institutional Governance Index	KKM	Positive
SSA	Dummy variable (1=country is located in sub-Sahara Africa; 0 otherwise)	WDI	Negative

Source: Author's compilation

Data Sources

WDI : World Development Indicators

GSM: Gallup, Sachs, and Mellinger (1999)

KKM: Kaufmann, Kraay, and Mastruzzi

Table 1 gives an indication of the expected sign for the independent variables. Although the anticipated signs of the coefficients of a few variables seem obvious according to theory, yet they are not definitive. Regression results may sometimes suggest opposite to expected signs. This may arise because regression results are sensitive to the quality of data used as well as the inclusion and statistical significance of certain other explanatory variables. Moreover, the signs of certain variables are ambiguous from scratch. It is, therefore, impossible to predict with certainty the signs of the independent variables.

It is worth highlighting that a common view in the literature is that countries in Sub-Saharan Africa (SSA) have weaker growth performances relative to other regions. Hence, the use of a regional dummy for SSA to try and explain this phenomenon. It equals '1' for Sub-Saharan African countries found in the selected sample of 42 developing countries and '0' for other developing countries. The list of SSA countries has been obtained using the World Bank classification. We expect a negative sign on the coefficient of SSA in order to account for the alleged slower pace of growth in the SSA region relative to other regions. However, its statistical (in)significance matters because an answer to the second hypothesis of our study depends on it. Although negative, the literature has witnessed cases of both significant and insignificant SSA dummies.

FINDINGS AND EMPIRICAL ANALYSIS

In order to empirically verify these assertions, we estimate several different specifications of our proposed model using Ordinary Least Squares (OLS). Appendix 1 contains regression results for three different specifications. Regression A provides results for the basic model

proposed in our methodology section. It can be seen that the model explains a fair amount of approximately 60 per cent of the variation in the growth rate. Most of the independent variables are statistically insignificant, except GDPPC99, GFCF, and QIGI. The latter three variables also have coefficients with the expected signs. Holding the other explanatory variables constant, the estimated coefficient of – 0.37 on the initial level of income is significant at around 6 per cent and implies a conditional rate of convergence of around 37 per cent per year. Similarly, both the GFCF and QIGI variables are highly significant and following a unit increase they cause the growth rate to increase by around 0.33 per cent and 0.58 per cent respectively, implying that the impact of the institutional goveranance measure was found to be as strong as that of physical capital. This is a crucial result because we find evidence of a positive relationship between institutional quality (QIGI) and economic growth (GDPPCG); thus supporting the first hypothesis of our study.

Regression B was run with the objective of improving the statistical significance of the explanatory variables and most importantly to try find an answer to the second hypothesis of our study, concerning the growth performance of sub-Saharan countries. This specification has a fairly high amount of explanatory power with the independent variables taken together accounting for 71 per cent of the variation in the growth rate. All the variables except two are statistically significant. Except LIFEX, all the coefficients are as expected. The SSA dummy is negative and highly significant. Its coefficient has the correct sign confirming the slower pace of growth in sub-Saharan Africa relative to other regions but the interpretation of the coefficient's magnitude is somewhat problematic. We obtained a significantly negative African dummy just as in Barro (1991) and Easterly and Levine (1997) suggesting that Africa's growth responds to variables different from those explaining it elsewhere. This implies that though the regressors are able to account for some of the lower-than-expected growth performance of SSA countries, our regression does not explain all of it.

In regression C, we performed a sensitivity analysis with the 6 governance clusters, both in level and one-period lag form. There is evidence to suggest that the government effectiveness (GE) governance cluster, measuring the quality of public service delivery and the competence of bureaucrats, is highly significant and positive. Specifically, an improvement by one rank on its underlying score is estimated to raise the growth rate on impact by 14.7 percentage points. Hence, government effectiveness (GE) is the most robust predictor of economic growth among the set of governance clusters in our sample of developing countries and over the sample period, 1999-2002.

CONCLUDING REMARKS

The main objective of this study was to empirically assess the contribution of the quality of institutions to economic growth in a sample of 42 developing countries over the period 1999-2002. A secondary objective was to determine if sub-Saharan Africa's slower pace of growth relative to other regions is a consequence of its weak institutional governance. Using a newly assembled data set consisting of subjective ratings for six governance clusters to capture institutional quality, we found that institutions are an important factor in explaining cross-national variations in economic growth. When the quality of institutional governance

index is incorporated into a Barro-type growth model, it is a highly significant predictor of economic growth. This confirms our claim that a positive relationship exists between institutions and economic growth model. In addition, the individual cluster of governance, 'Government Effectiveness' was found to the most robust predictor of economic growth.
In relation to the second hypothesis, we find the sub-Saharan Africa dummy to be significantly negative. This means that our results leave unexplained a good deal of the relatively weak growth performance of countries in sub-Saharan Africa, that is, the analysis does not fully capture the characteristics of the typical African country that lead to below-average economic growth. Whether weak institutional governance is a source of Africa's lower-than-expected growth performance is debatable. Institutional governance may at best provide only a partial explanation for Africa's slow pace of economic growth relative to the other regions.

One major policy implication emanating from our findings is that the development of institutions is critical to the achievement of sustained economic growth in developing countries and those institutions cannot operate effectively without good governance. This means that policymakers who want to improve the economic growth performance of their countries should focus on the quality of governance in their institutions, the so-called 'quality of institutional governance'. In particular, our study suggests that government effectiveness - forming part of the economic dimension of governance - is the governance cluster that needs careful attention from those policymakers aiming to enhance the growth rates of developing countries.

This study suggests that, henceforth, institutions should not be ignored in any properly specified model of economic growth. Thus, future researchers in this field should model a well specified 'institutional production function', where all the essential inputs are identified and accounted for. Moreover, this should allow them to investigate interactions between the governance clusters and suggest possible patterns of substitutability and complementarity among pairs of these institutional indicators. Another possible extension would be to investigate which institutional governance characteristic is more important and relevant to which region of the world, especially which factors better explain Sub-Saharan Africa's economic growth performance.
(4,475 words)

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APPENDIX 1: OLS Regression Results

	Dependent variable: GDPPCG		
	REGRESSION		
Independent variables	**A**	**B**	**C**
CONSTANT	-3.876 (-1.7047) [0.098]	4.9541 (1.6473) [0.110]	5.1621 (1.9850) [0.056]
GDPPC99	-0.3673 (-1.9448) [0.061]	-0.2471 (-1.5271) [0.137]	-0.2307 (-1.5317) [0.135]
GFCF	0.32917 (4.2204) [0.000]	0.24497 (3.8612) [0.001]	0.20569 (3.6416) [0.001]
LIFEX	-0.030061 (-0.89415) [0.378]	-0.16479 (-3.6452) [0.001]	-0.16867 (-4.0258) [0.000]
ALR	-0.019117 (-1.0000) [0.325]	0.0014087 (0.073957) [0.942]	
OPEN	-0.8679 (-0.10302) [0.919]		
OPENTOT2000		0.7007 (1.0067) [0.322]	0.1167 (1.8434) [0.075]
GGFCE	-0.030018 (-0.55290) [0.584]	-0.083576 (-1.8588) [0.73]	
GGFCELAGPS			0.012473 (1.6002) [0.119]
GGFCECCLAG			-0.029274 (-3.1608) [0.003]
QIGI	0.5814 (3.5440) [0.001]	0.70641 (4.9215) [0.000]	
GE			0.77799 (5.2900) [0.000]
TROPICS	0.80859 (1.0235) [0.314]		
COASTDENS	0.0011704 (0.44108) [0.662]	0.0037969 (1.7592) [0.088]	0.004579 (2.3738) [0.024]
LANDLOCK	-1.0435 (-1.1541) [0.257]		
LATITUDE		0.028871 (1.7979) [0.082]	
SSA		-2.6577 (-2.6499) [0.013]	-3.2739 (-3.7459) [0.001]
R-Bar-Squared	0.59812	0.71003	0.75352
F-statistic	7.1020 [0.000]	11.0394 [0.000]	14.9270 [0.000]
Number of Observations	42	42	42

Source: Author's Computations
Note: t-statistic: ( ) ; p-value: [ ]