Credible Commitment and Economic Growth in Africa

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Thesis submitted for the award of PhD in Political Science and International Relations

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DECLARATION

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of PhD in Political Science and International Relations is entirely my own work, that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Abstract

Many, in academic and policy circles, rightly consider economic growth to be the desideratum to positively change the plight of a large proportion of the world population. Its resonance is all the more significant for Africa, not only because the region's economic performance has been lacklustre, but also because of its implications for the very survival of states in the region. While the voluminous research on the subject of economic growth is testimony to the validity of this line of research, definitive answers to the fundamental factors that shape the economic growth trajectories of countries have not been forthcoming. Recent research, however, provides strong, theoretical and empirical evidence highlighting the primacy of institutions in explaining observed differences in levels of income among countries. More specifically, the degree to which a country's political institutions provide for a credible regime of property rights at low transaction costs ultimately defines its success on the economic sphere.

On balance, scholars have shied away from applying this, otherwise useful paradigm, to an African dataset. Research on African political economy, which predominantly focussed on political instability, had little scope to utilise positive political theories. By providing empirical evidence, whereby a all-Africa data obeys conventional economic theories, I show that I have legitimate grounds to adopt a positive political economy approach on Africa. Of the rich array of political institutions, the effects of which reverberate on the economic landscape, I select those institutions that credibly tie the hands of government from adopting opportunistic behaviour. Accordingly, institutions of credible commitment are the explanatory variables for the research. Still, further fine-tuning is unavoidable, given

the fact that the vector of credible commitment institutions comprises several elements.

I decompose the credible commitment variable into three major categories; namely institutions of delegation, rule of law, and veto players. The study reports a number of findings, which back-up our hypothesis that observed differentials in economic growth among African countries reflect corresponding differences in qualities of political institutions. For instance, there exist statistically meaningful links between Central Bank independence variables and economic growth of countries. A similar conclusion is drawn with regard to judicial independence. Additionally, using a string of proxies for the rule of law variable, I find that this dimension of credible commitment maps positively onto economic growth. As for the veto players' paradigm, it is shown that, while size and diversity in preferences of actors influence economic growth, its effects are conditional on the quality of *status quo* policies.

Chapter 1. Introduction

All existing indicators of wealth of nations and well-being of their citizens have long established that African countries have fared poorly as compared with other regions. Such regular flagship publications as the World Development Report (World Bank 2006), the World Economic Outlook (IMF 2007) and Human Development Report (UNDP 2007) have underscored Africa's dismal record along several dimensions. According to the 2007/2008 Human Development Index (UNDP 2007), all of the twenty-two countries deemed to have low levels of human development were from the African region. Detailed comparisons reveal extremely steep imbalances in quality of life between African states and other regions. For instance, Senegal's level of income, measured in terms GDP per capita (PPP $US), was only 2.98 percent of that of Luxembourg. There existed a twenty-year gap in life expectancy at birth between Senegal and Japan, while adult literacy in Senegal was a mere 1/3 of that in Georgia. I chose Senegal to highlight the staggering welfare differences, since this country was top of the pile in the low human development group. Naturally, the figures for the other countries in the group further underline the scale of African underperformance. One needs also to understand that the current disparities in well-being across countries mirror a long-standing pattern of divergence. Several African economies stagnated, even in periods when global output expanded exponentially.

Arguably, no other variable encapsulates the lacklustre performance of African countries so clearly as that explained by economic growth. To put matters into perspective, I make no claim that economic growth is a panacea for all political and economic problems of countries. Inasmuch as I uphold that the concept of underdevelopment cannot be boiled down to a single measure, economic growth

remains by far the most potent tool in bringing about better living conditions for many. Given the desperate conditions in the region, our preoccupation with economic growth in Africa becomes all the more apparent. Economic growth is, therefore, the sole dependent variable in this thesis. Within the broader research question of which factors explain observed differences in wealth of nations, studies that focussed on African underperformance featured frequently. As mentioned above, the particularly strong emphasis on investigating the stagnation of several African economies by many scholars and researchers cannot be faulted. Such lines of investigation reached their zenith when it became *de rigueur* to include an 'African dummy' in cross-country economic growth accounting.

In its mildest conceptualisation, the African dummy explicitly postulates the inapplicability of conventional scientific theories in an African context. The candidates as to why Africa is deterministically expected to under-perform range from environmental to socio-cultural conditions. Establishing whether this assertion is true or not, in all conceivable issues, is beyond the scope of this research. Though this researcher has strong reservations on the epistemological values of the African dummy approach, this issue, that is, its relevance to economic growth studies on Africa, is not the main theme of the research, is. Leaving aside issues regarding the loose theoretical underpinnings that inform the African dummy paradigm, I build and test an economic model that has been the workhorse of economic growth accounting in all contexts; namely the Solow growth model.

Essentially, the research method I apply in this thesis is a quantitative one which is based on augmenting economic models with the relevant political variables. More specifically, it is based on cross-country growth accounting framework using both cross-sectional and panel models alternatively. While the latter model allows for

a broader account of variations in data, cross-sectional models are also well-suited to this purpose in light of the fact that institutional (political) variables have limited scope for temporal variation. Both in terms of statistical significance and theoretically postulated direction of causation, the all-Africa setting replicates what other studies have found based on the Solow model. Our analysis in this regard indicates that the choice of the research method, both for the panel and cross-sectional models, was justified. Put differently, augmenting the economic models with the appropriate explanatory variables was a plausible approach.

Still, the underlying rationale for choosing the above economic models was not methodological *per se*. As shall be explained in the main body of the text, recent economic growth studies stress that political institutions had primacy in explaining long-term variations in the economic growth trajectory of countries. Notwithstanding the fact that, under short time horizons, economies respond to changes in such proximate factors as investment and technology, robust economic growth sustained over the longer-term depends very much on the quality of institutions. Africa is underrepresented in research on formal institutions partly because of conventional view that there exists little variation among African countries. Once this stumbling block that prevents us from investigating the economic effects of institutions in Africa, is dealt with, I turn my attention to such practical issues as measurement, estimation and analysis. This research differs from the two prevalent lines of debate in current economic growth studies. In contrast to those studies that assess the relative strength of institutions, geography and trade on economic growth, here the focus is squarely on the effects of institutions on economic growth. Also, given our interest in cross-country variations, I abstract away from growth diagnostic studies that attempt case-specific binding factors on economic growth.

Political institutions that provide for credible regimes of property rights at low transaction costs enable economic agents to commit to growth-promoting investments. The flip side of this statement is that when governments trade-off economic rationale for myopic political goals, be it through manipulation of policies or outright expropriation, economies face sub-optimal levels of investment and slower economic growth. In less technical terms, credible commitment is about tying the hands of governments from reneging on policy promises. As North and Weingast (1989:3) explain, in an oft-cited work, credible commitment rarely depended on governments' reputation but on a 'set of rules that do not permit leeway for violating commitments.' Credible commitment is, therefore, the explanatory variable in this study. Whether or not cross-country variations in economic growth in Africa could be mapped onto corresponding differences in political institutions of credible commitment, is the overarching research problem for this thesis. Put differently, I test whether African data lend support to propositions from positive political theory with regard to a positive nexus between credible commitment and economic growth. Because the onus was on this study to justify the legitimacy of such a line of investigation in an African context, there existed no reason to invoke an African-exceptionalism paradigm.

I decompose the credible commitment variable into three broad components, each one capturing a distinct solution to problems of credible commitment. When delegation is used as a commitment technology, policy making prerogatives are transferred from government to (quasi) independent actors. While this institution of credible commitment could be further broken down into several kinds of institutions, Central Bank independence and judicial independence are notable for their resonance on economic outcomes. The second batch of institutions of credible commitment are

organised under the theme of rule of law. Unlike the case of delegation, whereby commitment presupposed transfer of policy making authority, in this case, the executive's discretion to renege is minimised by rules of the game laid down at the outset. Thirdly, when there are multiple veto players, with diverse sets of preferences, the scope for any one political actor to change the rules unilaterally is diminished. Accordingly, the veto players variable provides us with the last institution of credible commitment for investigation in this thesis. As is discussed in the main body of the research, evidence from the analysis suggests that economic growth differences among countries in Africa can be partially attributed to variations in quality of institutions of credible commitment.

1.1) The argument of the dissertation

1.1.1) Theory

This study draws its theoretical framework from two, otherwise interlinked, sub-fields in political science. Following insights from the new institutionalism, I emphasise the role of political institutions in shaping the behaviour of political actors. However, a further fine-tuning is essential, as the new institutionalism itself consists of three, not necessarily overlapping, components. Accordingly, in line with insights from rational choice theory, our proposition in this thesis is that political institutions that tie the hands of government from reneging on policy promises were deliberate acts on the part of rational political actors with an objective of achieving specific sets of economic policies. In her presidential address to the American Political Science Association, Margaret Levi (2006:8) elaborates credible commitment as a means of constraining government officials 'from exploitative behaviour and betrayal.' A case in point is given by those situations wherein credible commitment was the raison

d'être for the political act of institutional delegation. Main proponents of rational choice theory in the new institutionalism include Margaret Levi, Douglass C. North, Kenneth A. Shepsle and Robert H. Bates. The selection of rational choice theory in this study implies that I abstract away from issues of evolution of institutions and their conflict-resolving attributes that are integral parts of historical institutionalism. Similarly, the theoretical framework of the thesis assumes away the cultural-embeddedness theme underscored by sociological institutionalism (Koelble 1995).

Consider the divide between African countries that performed better, and those that performed less well in terms of economic growth. Some characteristic features of the economies of those countries (e.g. South Africa and Cape Verde) which registered relatively better rates of economic growth include stable macroeconomic policies coupled with high rates of private investment. Contrast these with such countries as Nigeria, Ethiopia and Benin, which endured extensive political instability and expropriation of private property through populist policies. I postulate that differences in institutions of credible commitment, between the two sets of countries, partly explain the observed growth differentials. Such an approach, whereby institutional variations among countries were mapped to economic outcomes, falls within the domain of positive political economy. While some scholars (Alt and Shepsle (1990)) place the scope of this paradigm in a simultaneous treatment of both institutional evolution (equilibrium in institutions) and institutional outcomes (institutions as equilibrium), others focus primarily on the economic effects of institutions (Persson and Tabellini 2000). Here, I follow the latter approach. As shall be discussed in the chapter on the review of literature on the political economy of growth, one can identify three broad political/institutional

solutions to problems of credible commitment, namely institutions of delegation, constitutional rules and a system of veto players.

1.1.2) Research method

While the analytical method applied in this thesis is decidedly quantitative, note should be taken of the fact that qualitative studies are also suited to explaining economic growth measurement of economic growth. The essence of our analysis is that political institutions of credible commitment causally affected the economic growth trajectories of African countries. Such a proposition implicitly assumes that there exist statistically meaningful differences in the performance of African economies in the first place. I make this point since there is a tendency in conventional studies to lump together the political economy of growth of countries in Africa. In order to show that our research method is a legitimate one, I need to test the African data on a theoretically robust economic growth model. The obvious candidate in this regard is then the Solow growth model that has long been applied to explain growth performance under different contexts. The logic is that if the direction of causation and levels of significance of the proximate factors (i.e. investment, initial income and technological progress) in the Solow model could be replicated in an all-Africa data, then one has few reasons to worry about subjecting African data to established scientific theories.

The build-up of the basic Solow growth model is, therefore, a necessary factor. I produce a panel data set that consists of forty-five African countries over the period 1960-2004. As is the norm in cross-country time series growth accounting, the temporal dimension of the data is broken down into nine five-year time periods, i.e. 1960-64, 1965-69, etc. I also subject the data to a string of different estimation

techniques, so as to ascertain whether the findings were artefacts of model specification or were driven only by a few cases. As far as testing of the basic Solow model is concerned, the share of missing data was only 4.8% (that is, 78 out of 1620), and the fact that only 12 countries returned a few missing data indicates that the panel came very close to being balanced. So as to achieve our overarching objective in explaining the political determinants of growth, I then augment the basic Solow with the relevant political/institutional variables. A note of caution is in order here. In a number of instances I also use only cross-country data, as a result of data limitations on the political variables.

1.1.3) Findings

The essence of this study rests on explaining political (institutional) determinants of economic growth in Africa. Within the broad spectrum of the political variables paradigm, our focus (hence, the findings) is on those institutions that credibly commit governments to adopt/sustain growth-promoting policy regimes. To start with, formal institutions do matter in shaping political economy outcomes in Africa. While examining the relative strengths of institutional and socio-cultural factors, as they affect economic growth in Africa, was beyond the scope of this research, studies that totally dismiss the former factors and under-represent African data risk omitted variable bias and selection bias respectively. At this juncture, it is important to highlight the point that, even after I controlled for the unit effects, the findings in the economic model were concomitant with the predictions of the Solow growth model. As important as this point may be, our major interest is in the political determinants of economic growth in Africa. More specifically, I set out to establish whether empirical evidence from Africa lends support to hypotheses from positive

political theory with regard to a direct mapping from institutions of credible commitment to better economic performance of countries. Results indicate that political institutions that credibly minimise the risk of policy reneging by government did indeed explain growth differentials among the countries.

The first set of commitment technologies I investigated were institutions of delegation; namely Central Bank independence and judicial independence. I find that both political and economic independence of Central Banks were statistically significant in explaining economic growth in Africa. Also, it is shown that the rate of turnover of Central Bank governors was a strong factor associated with economic performance. With regard to judicial independence, I develop new measures of this variable by drawing on the relevant literature on the subject. Additionally, I make use of widely-applied indicators provided by the Polity data and the Freedom House civil liberties component. Coefficient estimates based on both cross-sectional and panel data endorse our proposition that judicial independence helps achieve credible commitment to policies and, hence, facilitates economic growth. Furthermore, the African data supports the view that English common law is better tuned to protecting property rights. Rules of law provided the second vector of institutional solutions to credible commitment. I decomposed this variable into a rule of law and a measure of corruption sub-components before empirically testing their significance to economic growth. I further developed a composite measure using factor analysis with principal factors method. Here also, I find that the relevant variables had a significant bearing on the economic growth trajectory of African states. A somewhat different finding was derived in the third set of institutions of credible commitment, i.e. veto players. In this case, I found that the positive effect of number and diversity of veto players

on economic growth hinges on the quality of *ex ante* economic policies. Details of the findings are provided in the relevant chapters below.

1.2) Value-added of the thesis

It is believed that this research makes a number of contributions to the literature on the political economy of growth, both in Africa and in a broader context. Firstly, and to the best of the author's knowledge, it is the only study that deals with a comprehensive list of institutions of credible commitment and their effect on economic growth. In contrast to existing studies that primarily focus on very specific institutional domain, this approach could be more informative. For instance, assume a situation wherein the degree of Central Bank independence is low in a given a country, while at the same time the country possesses a very stringent fiscal rule that limits public debt. Research that investigates either of the institutions provides only a partial picture of the economic effects of institutions of credible commitment in that country.

Secondly, it also further deepens this line of research by concentrating on an otherwise overlooked geographical location. Recall that I provide empirical evidence that justifies our research focus on Africa. Considering the findings reported even under data limitations in Africa, the study highlights the use values of research on formal political institutions in the region. Similarly, it argues that studies that underestimate cross-country diversity in Africa (either by collapsing African data into mean values or including few countries in the models) are untenable, both methodologically and analytically.

Thirdly, I introduced a number of new quantitative political variables that account for different dimensions of credible commitment in the region. In all such

cases, theoretical stipulations and practical applications on operationalising the variables were drawn from the pertinent literature. Data coverage of the political variables had only been confined to a handful of African countries prior to the present research. Nevertheless, one should note that inasmuch as I strongly argue against a dismissive view of the role of formal political institutions in Africa I also emphasise that the available data require significant refinement. What I am asserting here is that analysis, even within the bounds of the existing data, passes the statistical tests that one requires to draw inferences.

Fourthly, the economic effects of political institutions of credible commitment are in certain cases mediated through the quality of pre-existing economic policies. The discussion using the variable that accounts for the number and diversity in preferences of veto players attests this point. The study shows that an interactive term, between policy and the political variable, was more suited to explaining observed growth differentials among countries.

Fifthly, the research underscored the drawback of a partial analysis when one can deduce conflicting effects of two political institutions on a single economic outcome. For instance, I identified a scenario whereby the presence of multiple political actors with diverse interests creates a collective action problem while, at the same time, reduces the scope of the executive from reneging on policies.

1.3) Structure of the thesis

In this section, I provide an outline of the structure of the study. Accordingly, Chapter 2 provides a review essay on the political economy of growth. In addition to a statement of the research problem, I synthesise the literature with a particular focus

on political institutions that credibly commit governments to growth-friendly economic policies.

Chapter 3 introduces the research method applied in this study. It traces developments in quantitative cross-country economic growth accounting, thereby underscoring the utilities of applying both panel and cross-sectional specifications. Additionally, I highlight the comparative advantages of economic growth studies which focus on cross-country differences.

In Chapter 4, I discuss why the thesis' focus on Africa is well-justified. I develop, in particular, three major themes on this score. In order to further elaborate the research setting, I briefly discuss current research that shows that the African dummy was only an artefact of the model specification problem; empirically show how the African data replicate the global pattern in using one important political variable, and also argue that African economic growth data is not driven by the (exceptional performances) of Botswana and Mauritius.

In chapter 5, I elaborate on model specification issues, as well as definition and measurement of the economic covariates. The most important task of this part of the research is to provide empirical evidence on the basis of the Solow model, whereby the findings, based on African data, are commensurate with theoretical stipulations of conventional economic theory.

Chapter 6 presents findings and discussions on the first vector institution of credible commitment, as identified in the review essay. Accordingly, I analyse the economic effects of the institution of delegation variable, by focussing on institutions of Central Bank independence and judicial independence.

Chapter 7 deals with the second set of political institutions of credible commitment, i.e. rule of law. It empirically tests the hypothesis that institutional

variables, which tie the hands of government through rule of law and control of corruption, partially explain the observed economic growth differentials among African countries.

In Chapter 8, I concentrate on the economic growth implications of institutional differences among countries of the region, in terms of the number and diversity in preferences of veto players. This enables us to investigate the proposition that the presence of multiple veto actors with diverse preferences acts to reduce executive discretion and, thereby, to enhance commitment to policies.

Chapter 9 summarises the analysis and findings of the thesis, pinpoints its limitations, and suggests potential areas for future research.

Chapter 2. A Review Essay on the Political Economy of Growth

A general consensus has long emerged in international development debate that a lasting improvement in the lives of a large section of the world population presupposes a strong and sustained growth in developing economies. It is an indication of the importance of the issue of economic growth that ISI Web of Knowledge finds 18702 references for economic growth over the past five years. Even after allowing room for more egalitarian ways of distributing wealth to reduce poverty, the case for economic growth, as the most potent tool in enhancing the economic status of societies, remains strong (*See* Barro (1996) for the broader implications of growth; Schultz (1998) for the effects of economic growth on inequality). Consequently, the search for the preconditions of growth has become a basic research question for a wide spectrum of disciplines.

However, the economics of growth tells only part of the story. As shall be discussed in this chapter, despite the fact the strong links between economic growth and factor accumulation are very apparent, I observe that the latter variables did not fall into place automatically. Furthermore, there is no guarantee that equivalent levels of spending, in such growth-promoting factors as physical capital and human capital, shall provide comparable returns across countries. The essence of economic growth then closely correlates to the question of a country's ability to provide a conducive environment towards this end. As such, our preference for a political economy approach, in this thesis, squarely matches Olson's (1996: 19) assertion that 'a country's institutions and economic policies are decisive for its economic performance'.

Our interest in investigating the implications of institutions on economic growth is informed by, among other things, two stylised facts. Economies quite often expand and contract in response to short-term domestic or external shocks. The economic history of countries shows that such fluctuations occurred in all parts of the globe, albeit at varying rates of incidence and depth affecting national output. For instance, Hausmann et al. (2005) identify eighty episodes in which different countries experienced rapid accelerations in economic growth that lasted for at least eight years. What is notable is that sixteen African countries did go through such growth spurts. However, the subsequent economic collapses in many African countries eroded all the gains reported above. The point here is that, in order to obtain a better understanding of economic welfare of societies, one should look beyond such factors as weather effects and terms of trade shocks. Hence, it is more rewarding to concentrate on those factors which have lasting effects on the economic growth trajectory of countries.

The other stylised fact that informs our focus on institutions is related to the difference between proximate and fundamental causes of economic growth. Proximate factors that explain growth, such as physical and human capital accumulation, will have limited effects on economic growth if the incentive structure is distorted by predatory policies of governments. The long-term resource commitments that are required for sustained economic growth materialise only if the institutional fundamentals are conducive. One prominent approach in this line of research is political economics, which underlines the centrality of political institutions in determining economic performance, either directly by shaping the incentive structure or through its impact on policy choices.

Since the aim of this thesis is to provide a positive analysis of the links between a vector of institutional variables and economic growth for a sample of countries, a comprehensive synopsis of the literature on the political economy of growth serves to highlight not only the basic research question but also to elaborate the important theoretical and empirical advancements attributed to positive political economy. Needless to say, the review is selective given the rich array of insights and subsequent voluminous studies encompassed in the positive analysis of the impact of political institutions on such economic variables as growth, inequality and policies adopted. For the purposes of organisational coherence, I synthesise the chapter in an incremental way, whereby each section traces important developments that laid the groundwork for the current technically rigorous state of the art research.

While the sheer size of the literature on the subject is beyond the limits of a single study, I also confined synthesis of the literature to the thesis' main focus, i.e. institutions of credible commitment. Accordingly, section 3.1 elaborates on the basic research question and emphasises the primacy of institutions in explaining observed large variations in economic performance across different polities. An equally noteworthy development was the fact that, well before a positive analysis of impacts of institutions on economic performance gained prominence in the research agenda, useful refinements were going on with regard to institutions in political science. As such developments helped inform the former, it is imperative to include a brief summary of such studies as is provided in section 3.2. In sections 3.3.and 3.4., I provide a synopsis of literature on the credible commitment paradigm, including theoretical underpinnings and typology of such institutions. The next section reviews empirical studies on the relationships between institutions and economic growth. Last section summarises.

2.1) Statement of the research problem

Individuals and societies across the world make up heterogeneous sets of material deprivation and affluence as well as starkly contrasting fortunes in terms of capabilities and opportunities. Such variation in time and space particularly comes to the fore when I make a comparative analysis to trace the growth path of countries. Consider, for instance, disparities in terms of Gross National Income per capita based on purchasing power parity, which measures total domestic and foreign value added claimed by residents of a given country. Belgium, with a population size more than thirteen times less than that of Nigeria, commands a GNI per capita about thirty times greater. Based on the same indicator, the gap between the ninth richest country, Ireland, and Albania is about seven-fold. In the early 1950s, South Korea and Ethiopia stood comparatively on similar levels of development, which is a far cry from their current status, in which an average Korean is twenty-five times more productive than her Ethiopian counterpart. Figures on other aspects of human development, such as access to health services and education facilities, mirror a similar pattern of successes and failures.

It is also equally true that economic growth sustained over a long period of time is a *sine qua non* for a country to achieve better living standards. In a lecture given at the World Institute for Development Economics and Research, Nancy Birdsall (2006) vehemently underscores the point that not only was the world not becoming flat, as argued by Thomas Friedman (2005), but it was also the case that the 100-times income gap between the US, Europe and Japan on one side and Ethiopia, Haiti and Nepal on the other reflected the presence (absence) of economic growth for 100 years in the former (latter).

Consequently, economic growth and factors determining its rates have long been a major preoccupation for scholars. Earlier studies on the long-run growth differentials across countries closely followed the neoclassical theory in which the causal links run from rates of factor accumulation to economic growth. The standard approach along this line of thinking decomposes rates of growth of GDP into corresponding rates of growth for labour and capital and a residual amount attributed to total factor productivity (Solow 1957). A central hypothesis of the literature is the notion of diminishing returns to both labour and capital that posits relatively higher growth rates for poorer nations. Put differently, it predicted convergence between high-income and low-income countries, since initial very low levels of factor accumulation for the latter imply more returns to factor inputs.

Nevertheless, this paradigm largely failed to tally with empirical evidence, as most underdeveloped countries were unable to catch up. Not only have there been countries that entertained largely uninterrupted growth for centuries, and countries that have been unable to take-off for a long spell of time, but also a few initially poor countries have been able to make significant strides economically. Such diametrical disparities persisted even after differences in factor investments were controlled for. Pritchett (1997) includes a fourth segment, comprising countries that managed to initiate growth but failed to sustain the momentum.

In response to the inadequacies of the neoclassical approach, endogenous growth theory explains economic growth differences among countries on the basis of constant or increasing returns to human and physical capital. Following Lucas (1988,1990) and Romer (1986,1990), it argues that due to the existence of externalities or research and development-induced productivity gains realistic possibilities exist for sustained differences in both levels and rates of growth of

national income across countries. It also hypothesizes that some industries particularly allow broader room for learning-by-doing, so that countries that had a comparative advantage on those industries also perform correspondingly better in terms of economic growth. As such, endogenous growth theory attaches much more weight to the productivity with which a country utilises its human and physical capital.

The productivity parameter in turn captures both the technical efficiency level of the economy and the allocative efficiency of resource allocation. Arguably, as discussed in Olson et al. (2000), I raise at least a couple of basic shortcomings of this approach with regard to explaining empirical growth evidence. First, technology-associated productivity potentials do not alter in short time horizons so that it could not adequately explain the plight of several countries that regressed (despite initial growth). Second and more importantly, it does not explicitly endogenise the structural variables that determine factor accumulation and productivity.

For many, institutions were the foremost candidates among the list of structural factors deemed critical in explaining observed cross-country differences in economic growth (North 1992, Acemoglu et al. 2003, Rodrik et al. 2004). In a lecture given at the World Institute for Development Economics Research of the United Nations University, North (1997:2) elaborated upon the 'humanly devised constraints that shape human interaction' stating that 'a set of political and economic institutions that provides low-cost transacting and credible commitment makes possible the efficient factor and product markets underlying economic growth.' As a result, source-of-growth accounting exercises may be better modelled when they are able to account for the productivity implications of differences in institutional qualities.

The basic research questions, thus, revolved around explaining which institutions particularly matter and how the effects of the institutional variables channel into rates of growth of national output. Notable among the string of studies which emphasised the particular significance of institutions in determining economic growth were Rodrik et al. (2004), who explained that once I control for differences in institutions, the effects of geography and trade on economic growth were weak, Hall and Jones (1999) who stress the link between economic performance and social infrastructure, and Acemoglu et al. (2001) on the expropriation risk which economic agents face. The robustness of empirical research on the kinds of institutions that matter for growth and the way the relationships occur have not been insensitive to the theoretical foundations on which they were based. A striking case in point can be the great divergence between the recommendations of normative economic theory and positive political reality in terms of such economic variables as public goods provision and fiscal scale and balance.

If I go by the stipulations of normative economic theory, for instance, low levels of public deficits would have been the equilibrium fiscal outcomes for all countries. Nevertheless, empirical evidence indicates that political factors have much resonance in determining the observed levels of high and sustained deficits (Volkerink and de Haan 2001, Elgie and McMenamin 2008). As a consequence, any empirical work on growth differentials among countries presupposed a coherent theoretical framework such as that provided by positive political economy.

More specifically, the explanatory power of studies that solely rely on normative theory to deduce on the growth-governance nexus was arguably very limited for a number of reasons. To start with, if basic theoretical premises, such as individual rationality with competitive markets, had been sufficient to ensure growth-

friendly social institutions, I would have observed much less variation in types of institutions among countries. For example, socially beneficial outcomes, including solutions for some common-pool problems and secured property rights, do not automatically fall into place due to markets. Neither are different political institutions equally effective in producing those outcomes. Secondly, political systems and processes are perhaps *the* most important factors determining whether a given country is able to adopt growth-promoting economic policies.

These factors add up to highlight the strong rationale for undertaking a political explanation of economic outcomes in broader country contexts. Thirdly, the more focussed research question, of how different political governance variables impact on economic outcomes, needs to underline the endogeneity of the political institutional factors. This is a useful departure from normative studies because it emphasises that adoption of certain institutions is a conscious political outcome rather than a mechanical one. Approaches that accommodate these issues adequately provide a good springboard to study the relationships between governance and economic performance.

2.2) Institutions and institutionalism

As explained above, the overarching issues that crosscut the wide spectrum of studies on economic growth centre around two basic findings. One side of the story stresses the indispensable role which sustained and strong economic growth plays in addressing multifaceted global problems, while a correspondingly rigorous view pinpoints institutions as being fundamental in determining the growth performance of countries. I also made passing reference of the fact that, among the diverse lines of thought, positive political economy provides arguably the most plausible

explanations on the economic growth-institutions nexus. However, the development of positive political economy on growth was preceded by important refinements with regard to institutions in political science. As such, a brief summary of research on institutions will serve to highlight the building blocks of positive political economy on growth. I show that the importance of institutions in shaping individual behaviour and political outcomes is very much entrenched in current political science, to the extent that discourse on the subject is not about whether institutions matter *per se,* but is tilted more on the mechanics of the links between institutions and political economy outcomes. The presentation is organised in such a way that important concepts and practical applications of institutions are highlighted.

Institutions, and, more specifically, institutional explanations of observed regularities in human behaviour, have undoubtedly been a core preoccupation of political science for a long time. However, inasmuch as such a statement tells of a crucial line of thinking, it also risks over-generalising the otherwise notable conceptual differences with regard to institutions, including definitions of institutions. Following Crawford and Ostrom (1995), one can identify three broad approaches in which institutions are defined. Accordingly, institutions can be construed as equilibrium outcomes emerging out of the interactions of individuals bestowed with rational behaviour. This institutions-as-equlibria approach places particular emphasis on the stability of the resultant systems for such outcomes to qualify as institutions. This view is particularly encapsulated in the works of William H. Riker, who states that '… prudence in research directs the science of politics toward the investigation of empirical regularities in institutions, which, congealed tastes, are "unstable constants" amenable to scientific investigation' (1980:432). The two other approaches, namely institutions-as-norms (Coleman 1987) and institutions-as-rules

(North 1990, Ostrom 1990 and Williamson 1986) exhibit broad similarities in that both emphasise the importance of linguistic constraints on individual behaviour, but differ from the institutions-as-equlibria approach, which attaches significance to interactions among rational agents.

While the existence of different streams of institution conceptualisations is likely to have reflected on evolving empirical research on political institutions, it is also the case that the study of institutions in political theories gained momentum with what is known as the new institutionalism. March and Olsen (1984) provide an excellent account of how this line of thought can be shaped to allow better understanding of organisational factors in political life. They categorised previously predominant views in politics along five themes wherein the effects of political institutions had not been adequately accommodated within political theories. To start with, political life was considered to be contextual, in that there is a one-way causation from exogenous factors such as class, geography, ethnicity and economic conditions to specific forms of political organisations. Secondly, it was also understood in a reductionist way, in that political life was viewed as the aggregate consequence of individual behaviour, thereby attributing fewer roles onto the impact of political institutions in shaping individual behaviour.

Another factor worth noting is that when political behaviour is taken to be embedded in an institutional structure of rules and norms it leaves little room to accommodate observed utility-maximising behaviour of individuals in political life. Additionally, it was unable to explicitly account for the way in which institutions and political behaviour evolve through some form of efficient historical process. Finally, political theories preceding the new institutionalism did not explain the

instrumentalist dimension of behaviour by stipulating that political decision-making derives solely from a sense of purpose, direction, identity and belonging.

The new institutionalism can be credited with bringing the issues of institutions to the centre of political science, in the sense that the starting point for subsequent voluminous and diverse research was that institutions do matter. According to Immergut (1998), new institutionalist theory emerged as a reaction to the behaviouralist revolution in political science. A number of issues differentiate new institutionalism from behaviouralism in political science. Unlike behaviouralist views, new institutionalism asserts that expressed preferences are not necessarily identical with true preferences. For instance, there exist several instances whereby it is strategically advantageous for agents to conceal their true preferences. Another premise of new institutionalism is that not only may the sum of individual preferences not equate with public interest, but also such an aggregation could translate inefficiently and imperfectly into outcomes. As explained in Koelble (1995), new institutionalism, while having a common denominator that institutions are important, embodies diverse views with regard to the role that should be accorded to institutions, organisations and calculation of utility. It also asks how much weight ought to be given to the individual and to the institutional context.. Scholars broadly differed in terms of the analytical approaches to dealing with the causes and effects of institutions, which can be better elaborated with the three different varieties of the new institutionalism.

2.2.1) Sociological institutionalism

The basic idea behind sociological institutionalism is that, in addition to those effects shaped by institutional contexts, individual decisions are determined by

cultural and organisational fields or sectors. It provides a broad definition of institutions in that the idea of institutions encompasses rules, procedures, organisational standards and governance structures as well as conventions and customs (Powell and DiMaggio 1991). While institutions define individual behaviour, it rules out any possibility for rational actors to design institutions to meet utility-maximising objectives.

As explained in Granovetter and Swedberg (1992), individuals are embedded in numerous social, economic and political relationships, so much so that these relationships are beyond their control and cognition. Still, our knowledge of norms, preferences, motives and beliefs can often provide us only with a necessary but not a sufficient, condition to explain outcomes, since one also needs 'a model of how these individual preferences interact and aggregate'(Granovetter 1978:1421). I draw a couple of important insights when the issue of interaction and aggregation is introduced into the analysis of individual decision making. Given that groups which are considered similar on average generate different outcomes, to deduce individual dispositions from aggregate outcomes is considered wrong. Additionally, it rejects the notion that behaviour is dependent solely upon norms.

Arguably, the concept of diffusion is one of the most influential insights one gains from sociological institutionalism. Institutionalism based on organisation theory stresses that individual behaviour is characterised by bounded rationality and, therefore, their action is shaped by inter and intraorganisational processes (Zucker 1987). While its relevance extends to various social, political or technological innovations, Van den Bulte and Lilien (2001) underscore the inherent interdependence behaviour in that whether or not agents adopt others' behaviour or actions depends on the degree of their exposure to other actors' knowledge, attitudes

or behaviour concerning the innovation. A logical consequence of such a line of thought was that research increasingly focussed on questions of why and when people choose to adopt.

Additionally, as reported in Gilardi (2004), the fact that diffusion processes are characterised by an S-shaped curve (that is, adoption is slow at first before picking up higher rates later, only to slow down eventually) is not only its main result but an extremely robust one. Some of the models that include the diffusion process include threshold models (Granovetter 1978) and information cascades models (Lohmann 2000). Since I consider policies and institutions to be strictly exogenous variables in this thesis, the question of adoption discussed by the sociological institutionalism literature will be of little use. Also, its proposition on the agent-institution nexus is significantly tilted in the latter's favour (particularly in light of the focus on cultural factors).

Hall and Taylor (1998) provide a comprehensive as well as comparative assessment of sociological institutionalism. Accordingly, I can identify three major features which distinctively are attributed to sociological institutionalism. To start with, this paradigm presents a broader definition of institutions than those of historical institutionalism and rational choice institutionalism. Sociological institutionalists stress that the definition institutions should include symbol systems and cognitive scripts as well as formal rules and norms. Additionally, they argue that the effect of institutions in defining behaviour should not be restricted to purposeful actions of actors. Rather, institutions are construed as shaping basic preferences and their identity. Finally, the adoption of new institutional structures reflects actors' choices to enhance the social legitimacy of the organisations or its participants.

2.2.2) Historical institutionalism

Historical institutionalism places much more weight on understanding and explaining specific real world political outcomes while it does not reject the idea that agents are rational. In explaining policy-making process, this component of new institutionalism assumes that a historically constructed set of institutional constraints and policy feedbacks structures the behaviour of political actors and interest groups. Needless to say, research along the historical institutionalism dimension follows an inductive approach and is prone to start from very specific issues (Immergut 1998, Weingast 1996). If the idea of embeddedness, be it cultural or political, is the catchphrase for sociological institutionalism, one can say the same for the relevance of path-dependence in historical institutionalism. According to Mahoney (2000), three features define the concept of path-dependent processes. Firstly, events that occurred at early stages exhibit particularly potent effects on final outcomes. Its analogy to economic growth studies could not be more emphatic in that the idea of convergence is a central theme in growth research. The inclusion of a parameter on initial levels of income in the quantitative models is because countries which were at lower levels of income at the initial period are likely to grow faster. Hence, economic growth is path-dependent.

Secondly, the relationship between early events and final outcomes is stochastic at best. What this statement implies is that there exist no single set of initial conditions that have a decisive role on a given set of final outcome. The most important point here is that, while early events shape final outcomes, the very fact that the early events are themselves chance occurrences should instil some form of indeterminacy towards their effects on final outcomes.

Thirdly, inertia sets in once contingent historical events occur so that path-dependent processes gain deterministic characters. What shape or form this inertia takes hinges on the type of sequence analysed. For instance, in situations whereby the sequences are characterised by self-enforcing mechanisms, the likely outcome of the inertia shall be reproduce a particular institutional pattern overtime. If, on the other hand, the sequences are reactive, inertia involves reaction and counterreaction mechanisms. As such, the occurrence of one event leads another event to take place A note of caution is in order, however, for there are different interpretations of the concept of path-dependence in political science. For instance, Levi (1997:28) explains that path-dependence means 'once a country or region has started down a track, the costs of reversal are very high' while Pierson (2000:251) conceptualises path-dependence as a 'social process grounded in a dynamic of increasing returns.'

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Historical institutionalism exhibits a number of attributes which put it apart from the other two brands of new institutionalism. Methodologically, historical institutionalists are eclectic in that they apply both calculus and cultural approaches to specify the relationships between institutions and actions. Put differently, they explain that the functional view of rational choice institutionalists and cultural approach of sociological institutionalists are equally applicable. Also, historical instituionalists assign prominent role to power and asymmetrical relations of power in their analysis. Furthermore, as mentioned above, historical institutionalists are strong proponents of an image of social causation that is path-dependent. Finally, historical instituionalism does not consider institutions to be the only causal forces in politics (Hall and Taylor 1998).

2.2.3) Rational choice institutionalism

A hallmark of rational choice institutionalism is a 'search for generalizable features of political behaviour rooted in the incentive structures that individuals face' (Thelen 1999:370). To this end, studies along the lines of rational choice institutionalism apply deductive models so as to create, elaborate and refine any given theory of politics. In contrast to the two other variants of the new institutionalism, rational choice institutionalism upholds the view that rational actors design institutions intentionally so as to 'stabilise exchange relationships, to induce cooperative behaviour among self-interested individuals, and to minimise transaction costs to the parties' (Koelble 1995: 239). Furthermore, rational choice institutionalism differs from sociological institutionalism in that its major function is to provide a coherent explanation of the emergence and persistence of collective behaviour and collective action. It is such an exercise that will enable us to understand why observed culture, social norms and formal institutions exist. Given its deductive approach to analysing different issues in politics and economics, it is not difficult to discern the logic as to why rational choice institutionalism applies a number of behavioural assumptions. While acknowledging variations within this paradigm, Hall and Taylor (1996) identify four major features that often make up rational choice institutional analysis.

To start with, behavioural assumptions are part and parcel of rational choice institutional analysis. Some of these behaviours, which rational actors are expected to observe, include a fixed set of preferences and tastes, actors behaving instrumentally and consistently so as to maximise the attainment of preferences, and agents acting in a strategic manner. Such behavioural assumptions did not prevent research along this paradigm from providing plausible explanations to quite a number of economic and

political outcomes. Also, rational choice institutionalists portray a distinctive image of politics, i.e. politics as series of collective action dilemmas. The propositions that the actions of self-interested agents produce more often than not sub-optimal social outcomes and that institutions are indispensable to mediate such conflicts between individual rationality and the common good are at the heart of rational choice institutionalism.

Moreover, rational choice institutionalism strongly stresses the role of strategic interaction in the determination of political outcomes. Actors not only think strategically when choosing to behave one way or another but they also make their actions conditional on what they expect others to behave. In addition to downsizing the 'history matters' thesis of historical institutionalism, it argues that institutions structure such interactions in different ways including determining the choice set and minimising uncertainties. Fourth, institutions are created only if they facilitate the utility-maximising behaviour of actors.

The fact that a sizeable chunk of research along the rational choice institutionalism tradition focussed on American congressional behaviour is no surprise, as this paradigm (rational choice institutionalism) traces its origins to the workings of the latter. Notable among these are Riker (1980), who stressed that over the long-term, institutions as well as tastes of agents matter in shaping political outcomes, Shepsle and Weingast (1981) on how institutions transform the pure majority rule into a different legislative game, and Weingast and Marshall (1988) on how legislative institutions, as in the theory of the firm and the theory of contractual institutions, reflect goals of preferences or individuals and the relevant transaction costs. A conceptually related study, but undertaken under a different context, is that of Tsebelis (1994). Accordingly, he shows that conditional delegation of power to

international institutions, such as the European Parliament, makes it possible for the selection of one, among many possible equilibria, accelerates European integration, and diffuses responsibility for politically unpopular measures. In the broader state of things, this is an emphatic endorsement of the rational choice institutionalism paradigm in that not only do institutions shape individual behaviour but it also underlines the point that institutions are designed to achieve well set objectives.

Notwithstanding the competitive spirits among several protagonists of the three branches of the new institutionalism with regard to relevance in explaining political life, not only does each provide a different angle on viewing a problem, but it is also true that there exists a good deal of overlapping in explaining outcomes. Still, it seems the study of institutions on the basis of rational choice theory has been more amenable to positive treatment. In a review essay on comparative politics and rational choice, Bates (1997:703) looks into seven published works to argue that, while some of the criticisms directed at this theory have some seeds of truth, one way in which rational choice institutionalism contributes to political science scholarship is through analysis of 'the effect of institutions in generating equilibria in otherwise indeterminate political environments.'

He explains the numerous ways in which rational choice theory has been applied in the study of politics. Accordingly, some studies apply the tools of rational choice theory to study the self-interested behaviour of politicians who seek to fulfil their ambitions for office in the context of democratic institutions including electoral rules and strategies, budgetary expenditure and industrial regulation. Rational choice theory has also been instrumental in exposing the institutional conditions that encourage ethnic-based political organisations, which have been a growing phenomenon in recent times.

It follows, then, that political institutions, broadly referring to the set of constraints and opportunities that shape individual behaviour, determine social choice and collective action in politics and economics. The way institutions impact on political and economic outcomes can be subjected to a formal analysis with the help of positive political theory. This is because positive political theory is basically concerned with the understanding of political phenomena through the use of analytical models that crosscut different contextual settings (Austen-Smith and Banks 1998). One such application is a theoretical as well as empirical modelling of various economic outcome variables including growth and choices of policies. On the theoretical modelling dimension, for instance, a series of studies have shown that political institutions impact on economic outcomes by reducing (raising) costs of bargaining, contracting, monitoring and enforcement (North 1990, Olson 1996). I also come across several empirical positive political models dealing with a range of issues such as fiscal policy outcomes (Persson et al. 1999), security of property rights (Keefer and Knack 1997) and the stability effects of different institutions (Tsebelis 1995). A correspondingly useful strand provides a positive analysis of the effect of institutional factors on economic outcomes by accounting for the differential transaction cost implications of institutions (Dixit 2003).

At this juncture, a note of caution is in order. Because the major focus of this thesis is a positive analysis of the impact of political institutions on economic outcomes, I deliberately refrained from dealing with another important dimension of institutional study. This dimension, which, unlike positive analysis, does not rely on any formal analytic models, draws on normative insights to show, among other things, possibilities to undertake institutional engineering to come up with a set of pre-defined political outcomes. Reilly (2001) is an excellent case in point in this line

of approach in which he assesses the potentials for conflict management through engineering electoral institutions. Using electoral institutions from several countries including Australia, Papua New Guinea, Fiji, Sri Lanka, Northern Ireland and Estonia, he shows that institutional designs of electoral systems and rules that encourage centripetalism in political outcomes help manage conflicts in divided societies. Centripetalism, in this context, refers to envisaging democracy as a conflict managing mechanism in which conflicts 'must ultimately be solved via negotiation and reciprocal cooperation, rather than simple majority rule' (2001:7) whereas societies made up of politically salient and diverse ethnic groups are deemed divided. While this work is inherently normative, it does not completely rule out possibilities for a positive analysis of institutions for conflict managements.

All in all, it is now broadly accepted that institutions are crucial factors that shape a diverse set of political and economic outcomes across different contextual settings. Although political science has long acknowledged the importance of institutions in determining political life, a rigorous line of theoretical and empirical studies has come to surface after the onset of the new institutionalism. It is also posited that all its three branches, namely rational choice institutionalism, historical institutionalism and organisational institutionalism have been instrumental in providing a coherent understanding of political as well as economic outcomes. A closer look at the literature shows that the plethora of studies on the effects of institutions can be attributed to the fact that it was amenable to a positive analysis of issues in question. One can state, in a very comprehensive way, that the basic theme of these studies is that institutions matter to political and economic outcomes. To deal with more specific research questions, such as how a particular set of political institutions affect economic growth, a further refinement of the theoretical

foundations and empirical assessments is essential. I provide a brief explanation of the concept of positive analysis before I embark on a synthesis of the wider literature on the political economy of growth from the perspective of institutions of credible commitment in the next sections.

2.3) The credible commitment paradigm

2.3.1) Theoretical underpinnings

The effect of institutions on such social outcomes as production, resource allocation, and public policy materialises primarily because institutions 'constrain, direct, and reflect individual behaviour'(Alt and Shepsle 1990:1). It is now widely accepted that an important yardstick for measuring the quality of a country's political institutions is positively associated with the degree to which government is credibly committed to providing growth-promoting policy fundamentals (*See* Acemoglu et al. 2001, North 1990, Hall and Jones 1999 and Rodrik et al. 2004). The award of the 1993 Nobel prize in economics to D.C. North is a strong endorsement of the importance of this line of research. Several reasons exist as to why a credible commitment policy regime is considered a public good to any political system.

Firstly, that there is a high likelihood for governments to engage in opportunistic behaviour by reneging on commitments made to private agents goes beyond a theoretical possibility, but economic history provides numerous cases of outright expropriations of private wealth or through exorbitant tax rates or other similar policy reversals. According to Weingast (1995), the spectre of a government with the wherewithal to protect property rights being at the same time capable of confiscating private wealth, arguably represents the fundamental dilemma of an economic system. Similarly, absence of credible commitments signals uncertainties

that adversely compromise economic outcomes. Such is the importance of uncertainties that one set of utilities of institutions is to 'increase predictability, reduce uncertainty, or induce stability in human interactions' (Alt 2002:149). Unfortunately, political economy outcomes are rarely driven by normative considerations as is observed in variations in credible commitments across countries. Accordingly, below I briefly elaborate on the two broad theoretical theses on problems of credible commitment.

2.3.1.1) A time-inconsistency policy paradigm

Before it acquired wider currency in the political economics literature, the concept of credible commitment had first been used to explain hitherto unknown phenomenon that riddled western economies in the 1970s. A dominant paradigm at the time hypothesised that governments can only boost national output at the expense of higher inflation or manage to contain price spirals at the expense of output forgone, which strongly highlighted the potency of monetary policy. Empirically, such a trade-off was disproved when most economies experienced high rates of inflation and unemployment simultaneously, a situation called stagflation. Research, particularly spearheaded by the seminal works of Kydland and Prescott (1977) as well as Calvo (1978) and Barro and Gordon (1983), argued that the problem boils down to governments' reneging on policy promises. With the help of a formal model, the presentation below highlights the commitment problem. The essence of the time inconsistency of policies problem lies in the presumption, supported by empirical observation, that private agents, being rational, are able to predict the commitment problem on the part of government. As such, the macroeconomic difficulties reflect

the lose-lose outcomes emerging from governments' not credibly committing to policy promises.

Assume government maximises a social welfare function whereby social well-being declines with higher inflation, p, and positively correlates with national output. In accordance to the standard norm, equation (2.1) provides the loss function for government in that, with this type of specification social welfare is maximised when the losses, represented here by the difference between actual output and potential output (first term) and rate of inflation, is minimised.

$$U = -(y - y^*)^2 - \theta p^2 \text{ ------}(2.1)$$

I envisage output to rise by the extent with which private agents' expected level of inflation deviates from actual rates of inflation. Put differently, there exists a clear incentive on the part of government to set actual inflation rate above that expected by the private sector, and based on which the latter already commits economic resources. If actual output is then modelled as in equation (2.2), then, by substituting it into equation (2.1), I will have a loss function in either form of equation (2.3) or equation (2.4).

$$y = p - p_e \text{ ----------}(2.2)$$

$$U = -(p - p_e - y^*)^2 - \theta p^2 \text{ -----} (2.3)$$

$$L = (p - p_e - y^*) + \theta p^2 \text{ -------} (2.4)$$

As can be deduced from the model, output reaches at its optimum when inflation rate is set at zero, and more importantly, when government credibly commits to zero inflation. Needless to say, the zero inflation is the very same level that private agents use to make economic decisions. Hence, I have a maximum output level as shown by equation (2.4a).

$$L^c = (y^*)^2 \text{ --------}(2.4a)$$

$$\frac{\left(\left(p - p_e - y^*\right)^2\right) + \theta p^2}{\partial p} = 0 \text{ -------} (2.5)$$

$$p = \frac{p_e - y^*}{1+\theta} \text{ ----------} (2.6)$$

$$p^* = \frac{y^*}{\theta} \text{ ----------} (2.7)$$

$$L^d = \frac{(y^*)^2(1+\theta)}{\theta} \text{ ----------} (2.8)$$

However, governments more often than not act on the incentives to 'mislead' private agents and, hence, renege on rate of inflation *ex post*. In effect, the whole exercise reverts back to minimising the first equation by setting first differences to zero. This would have given us a solution, as shown in equation (2.6), had it not been for the critical assumption that agents are rational. It means that private agents form decisions not based on the promised level of inflation but are broadly capable of forecasting that the actual inflation rate shall be higher. The national economy then ends up in a lose-lose situation with higher than optimum rate of inflation (equation 2.7) and lower than optimum level of output (equation 2.8).

Note that the above presentation of problems of credible commitment is a very concise representation of the otherwise voluminous and mathematically rigorous models on the subject. Following Rogoff (1985), a heated debate ensued as to how political institutions help control for problems of credible commitment with, understandably, monetary policy becoming the main policy issue of concern. More specifically, the viability of delegating a policy-making prerogative to an independent and non-elected organ as an institutional remedy to time inconsistency of policies proved strong. Research that ensued along this line examined the use

values and pitfalls of delegation among different policy issues (for example, Lafont and Tirole (1994), and McCubbins, Noll and Weingast (1987)). In a parallel case, Lukas and Stokey (1983) argue that the temptations for governments to renege on policy promises and hence compromise credibility needed to be curbed through institutional rules, as in the case where the motivation on the part of government to reduce its real debt leads to a time consistency problem for optimal policy. Equally important to the time inconsistency of policy hypothesis, there also exists another theoretical proposition on problems of credible commitment.

2.3.1.2) A political instability paradigm

In the discussion above, problems of credible commitment emerge primarily as a consequence of a government's tendency to depart from policy promises made in an earlier period. Similarly, a policy reversal is likely to occur if there is a significant probability for a change in government and if the successor government's preferences are much at odds with the incumbent. For instance, Persson and Svensson (1989) discuss how a government facing defeat uses fiscal policy, public debt in this case, to influence policy at later periods, thereby leading to a problem of credible commitment. A related theoretical stipulation on problems of credible commitment as a result of political cycles is also given by Tabellini and Alesina (1990) for public debt, Alesina et al. (1996) for uncertainty in electoral outcomes, and Cukierman et al. (1992) for tax policy. Almost all the theoretical models provide results that mirror cases when the credible commitment problem originates from time inconsistency of policy of a given government. In either case, the adverse effects of problem of credible commitment emanate from the choice of economically sub-optimal policies and public goods provision and through direct impact on private

investments. Accordingly, political/institutional solutions for credible commitment problems induced by instability overlaps with those mentioned for time inconsistency of policies.

It is also worth noting that, when triggered by high frequency in government turnover, the risk for major policy U-turns comes not only from the incumbent but also from those newly installed in office. Apart from putting in place institutional constraints such as fiscal rules and delegation to non-political actors, problems of credible commitment can also be addressed if the political environment allows for broader sets of checks and balances. Studies have shown that political institutions that accommodate multiple and diverse veto players positively associate with the effectiveness of delegation (Moser 1996, Lohmann 1998). On the same note, Keefer and Stasavage (1998) show that credible commitment through delegation can only be obtained in countries where political institutions provide for checks and balances on the executive and where political instability is moderate and polarisation high. Logically, a major preoccupation for research on political economy of credible commitment rested on the fit between these theoretical stipulations and concrete evidence. We now know that, contrary to predominant views in mainstream economics, the way a country's institutions evolve and, correspondingly, the quality of its political institutions, ultimately determine its economic performance over the long-run. Here, because this study is informed by positive political economy I abstract from the former and focus on institutions as equilibrium to the political process. Next I turn our attention to institutional solutions to problems of credible commitment.

2.4) A typology of political institutions of credible commitment

2.4.1) Institutions of delegation

Notwithstanding the fact that the common denominator in all conceptualisations of delegation is a voluntary transfer of decision making authority by a principal to an agent that acts on her behalf, scholars largely remained within the confines of their research interests in defining delegation. For instance, and on a lighter side of things, to highlight the widespread nature of delegation in public life, Bendor et al. (2001) cite a story from the Bible in which God delegates some of His authority to Moses. Even the omnipotent and omnipresent deity finds delegation to His advantage. Using game theory models, they elaborate on the situations when delegations occur and what outcomes could ensue. It is shown that although in most cases principals prefer to delegate to agents who share their preferences, one also finds several real-life situations in which this is not the case. Delegation could also occur when a principal in pursuit of a specific goal lacks the skills, capacities or resources required to achieve her goals while an agent possesses the qualities which, encouraged by an incentive regime, agrees to undertake the task (Coleman 1990). Given its advantages in terms of efficiency as well as reducing uncertainty, one can understand its broader applicability to solving several political economy issues. The growing interest in research on delegation is also not difficult to understand.

Ström (2000) portrays parliamentary democracy as a series of delegation relationships. The study, while explaining that the rationale for delegation in a parliamentary democracy stems from our lack of time to decide on every political issue and also mistrust of our abilities, argues that parliamentary democracy can be described as a chain of delegation involving at least four discrete steps. This chain of

delegation includes that from voters to elected representatives; from the legislature to the executive branch; from the head of government to the heads of different heads of executive departments; and from the heads of different executive departments to civil servants. It is highlighted that the singularity principle (single or non-competing agents for each principal; a single principal for each agent) is not only one of the features that differentiates parliamentary systems from presidential ones, but that the former also enjoy better decisional efficiency and inducement towards effort. Agency problems perhaps are *the* major obstacles that different variants of delegation encounter. Without delving too much into the voluminous literature on this topic, suffice it to say that such problems occur when, among other things, principals cannot observe the actions of agents (moral hazard) and when principals do not know the competencies and preferences of agents (adverse selection). Institutional checks provide one set of remedial measures to address agency costs (Kiewiet and McCubbins 1991).

When it comes to the link between institutions of delegation and economic policy, several scholars stress that it is the former's effect on credible commitment that takes centre stage (Thatcher and Sweet 2002; Elgie and McMenamin 2005). Put differently, delegation of economic policy to an independent institution instils credibility to the policy regime, thereby enabling economic agents to commit growth-enhancing economic resources. As mentioned above, even if the issue of why countries differ in adopting such institutions is a question of high relevance to economic performance, in this thesis I take institutions as exogenous and, therefore, focus on empirical studies that test their relationship with economic outcomes. Insulating economic policies from myopic political goals through delegation is but one dimension whereby this commitment technology improves economic

performance. Delegation also ensures a transparent regime of contract enforcement and dispute resolution among economic agents and, perhaps more significantly, between government and private economic actors. It does so if the political system provides for an independent judicial framework to exist.

More specifically, by focussing here on a review of the economic implications of delegating monetary policy to an independent Central Bank and judicial independence, I abstract away from the otherwise extensive literature on other dimensions of delegation. One notable line of research, in this regard, is delegation to administrative authorities. In a study on Authorités adminstratives indépendantes in France, Elgie and McMenamin (2005) show that observed variations in degrees of independence among these institutions map into credible commitment as well as policy complexity objectives. Similarly, highlighting the point that the relationship between delegation and credible commitment is not one-to-one, Majone (2001) adds a transaction cost dimension to explain the reasons for delegation; as in Kiewiet and McCubbins (1991) who also make a closely related point. However, a comparatively stronger endorsement for credible commitment, as a rationale for delegation, is provided in Gilardi (2002). The common theme of these studies is the search for rationale behind observed levels and variations in delegation to different entities. In this thesis, however, I consider institutions of credible commitment to be strictly exogenous. Such an approach is informed by our overarching theme, i.e. analysing the implications of these types of institutions on economic growth in Africa. A more focussed list of justifications, on Central Bank independence and judicial independence, is given in Chapter Six.

2.4.1.1) Central Bank Independence

A broad spectrum of studies in political science and economics debate the pros and cons of delegation of decision making by political actors to independent agencies as a remedy for politically-motivated inefficiencies in government decision making. In a study on the American legislature, Epstein and O'Halloran (1999) report that legislatures are more inclined to delegate policy-making authority to the executive when targeting of benefits is difficult. Additionally, legislatures delegate broader powers to the executive in complex policy areas and when the costs of ill-informed policies are considered high. Delegation to nonmajoritarian institutions, a reference to those public institutions which '(a) possess and exercise some grant of specialised public authority, separate from other institutions, but (b) are neither directly elected by the people, nor directly managed by elected officials' (Thatcher and Sweet 2002: 2), is often closely identified with the unique positions Central Banks hold in economic policy making. Some scholars were sceptical not on the usefulness of delegation to non-majoritarian institutions *per se,* but its operational sustainability, citing possible political interventions, as in those between independent Central Banks and diverse coalition governments (Bernhard 1998), partisan identification of political actors (Weingast and Moran 1983); and relationships between wage-setting unions and inflation-setting Central Banks (Calmfors and Driffill 1988 and Iversen 1998).

Still, problems of operational sustainability were not the only anomalies scholars identified with regard to Central Bank independence. One of these problems is the democratic deficit thesis discussed in Elgie (1998, 2001) in which the study looked into Central Bank reforms in different European states, and the institutional architecture of the European Central Bank, to highlight possible scenarios whereby

Central Bank independence could compromise democratic accountability. Others relax the assumptions that political actors were poised to renege on decisions to delegate or tamper with the independence of Central Banks. Rogoff (1985), for instance, applies the envelope theorem (a mathematical theorem used to reduce computational complexity) to explain that an independent Central Bank head might not share the social welfare objective of stabilising output, but still manages to stabilise prices and hence avoid the time-consistency problem. He argues that legally binding the Central Bank to a focussed set of objectives (which is one of the identifying principles of Central Bank independence) or choosing a conservative head, reduces the Bank's ability to respond to unforeseen shocks. This line of argument seems applicable across many other institutions of credible commitment as well, in that rarely do models of credible commitment deal with situations when policy changes enhance economic efficiency.

The likelihood that Central Bank independence lowers otherwise necessary flexibility in policy, as stipulated in Rogoff (1985), can still be tackled in the delegation set-up. Lohmann (1992: 282) takes up this issue and proposes that monetary policy be delegated to a 'partially independent conservative Central Banker' with implicit escape clauses in the case of severe supply shocks. She states that partially delegating monetary policy to a conservative Central Banker with powers to react to supply shocks is superior to other delegation architecture; namely the discretionary regime, full or partial commitment to a zero-inflation rule, and the institution of a fully independent conservative Central Banker. In a study that somewhat departs from the prevalent research focus on Central Bank independence, Moe (1999:1569) presents a comparative analysis of regimes with regard to the question of how different political systems fare in terms of adopting Central Bank

independence. Political systems that inherently allow for broader checks and balances are more in tune with Central Bank independence. In addition to providing empirical evidence to back up his propositions, it is also shown that 'granting independence via a statute is only credible for legislative systems with at least two decision-making bodies which both have veto rights (for example bicameral systems)'.

I leave a deeper discussion of operationalisation of Central Bank independence variable for the empirical analysis chapter. Here, I provide a snapshot of some of the studies that deal with this issue. Research has come up with diverse sets of indices for operationalising the institution of delegation with regard to independence of the Central Bank. One such work along this line is Cukierman *et al.* (1992), in which they find that different indicators apply for industrial and developing countries for measuring Central Bank independence and, therefore, its link with price stability. While legal independence is the preferred option for the former, it was indicated that actual frequency of change of the chief executive officer of the bank is a better proxy for a Third World setting. Similarly, in measuring the degree of Central Bank independence, a number of studies, including Alesina (1988) and Alesina and Summers (1993), stresses quantifying the political independence of the Central Bank. As such, they highlight the institutional relationship between the Central Bank and the executive, the procedure to nominate and dismiss the head of the Central Bank, the role of government official on the board of the Central Bank and the frequency of contacts between the executive and the Bank. Such variables, on aggregate, estimate the effect of delegation as a solution to the credible commitment problem, to account for the broader links of this political variable to outcomes in both the monetary and real sectors.

Generally, studies show that the economic effects of delegation-based institutional solutions to problems of credible commitment are best understood in the arena of monetary policy. Yet measurements of Central Bank independence may not have been without problems, as they involve a good deal of subjective assessments. For instance, the indices developed by Grilli et al. (1991) and Cukierman (1992), arguably the most commonly used ones, include as many as 13 and 16 factors respectively ranging from the way in which Bank governors are appointed, and tenure length, to levels of lending to government. The analytical validity of these indices may not be robust, due to their subjectivity bias, and also in the light of recent theoretical developments (Mangano 1998). However, several cross-country studies indicate that Central Bank independence, measured by turnover rates of governors, may explain the inflation differentials among countries. Cukierman (1994) cites several institutional changes in different countries that provided broader legal independence to Central Banks, as testimonies that highlight the importance of credibility for low inflation. Extensive reviews are given in Eijffinger and de Haan (1996) and Berger et al. (2001). It is apparent that there exist other fundamental institutional preconditions for economic growth that cannot be dealt through delegating policy prerogative to an independent institution, for which rules-based solutions are more feasible.

2.4.1.2) Judicial Independence

As in the case in the review of the literature on Central Bank independence, here also I defer questions of measurement of this institutional variable to the empirical part of the thesis. I probe into the vast literature on judicial independence to synthesise its treatment of three major questions, i.e. what is judicial independence,

under what conditions do political systems provide for judicial independence, and what is the relevance of this variable to economic growth of countries. In a paper presented at a conference on the theme of the 'Economic Analysis of Political Behaviour,' Landes and Posner (1975) provide one of the earlier definitions of judicial independence. Accordingly, when the judiciary is independent, its decisions do not hinge on any political factors which, under other circumstances such as in the legislature, could have resulted in a different outcome. Put differently, while such factors as the electoral strength of people who are affected by a decision will have a bearing on executive or legislature decisions, judicial independence implies that courts do not shape their decisions along these lines. A slightly different definition of judicial independence is given by Ramseyer (1994:722) in which he used the concept '*exclusively* to refer to systems where politicians do not try to intervene in the courts to reward and punish sitting judges for the politics of their decisions' (italics original).

Beyond the fact that the latter conceptualisation of judicial independence focuses on politicians' behaviour, while that given by Landes and Posner (1975) stresses behaviour of the judiciary, both underscore the impartiality of the judiciary from political factors. The Freedom House definition of judicial independence is a comprehensive one, both in terms of its legalistic dimension as well as in its actual application. In contrast to conventional definitions which emphasise impartiality from political influence, judicial independence in this case requires the judiciary to be free from other economic and religious influences. Still, the issue of independence from politics to define judicial independence is not shared by all scholars. In their study on the determinants of U.S. Supreme Court labour-relation decisions, Spiller and Gely (1992:464) consider the court as 'a self-interested ideologically motivated institution, subject not to the traditional legal rules of precedent but to the constraints

imposed by the political interests of the other institutions of government'. With regard to the question of the rationale for delegation (that is, via judicial independence), Aranson et al. (1982) identify several reasons. The managerial explanation as to why delegation occurs includes reducing workloads, reducing the need for frequent changes in statutory amendments, efficiency considerations and establishing relative permanence among those who make decisions.

The most important political explanation for delegation, as given in Aranson et al. (1982), is that it helps to 'depoliticise' the problem. An independent judiciary can limit the power of other branches of government, by enforcing laws without interference from the executive and the legislature and also by ensuring that laws and policies are compatible with constitutional requirements (Hayek 1960). Given the fact that robust economic growth depends on extensive economic transactions and resource outlay, the importance of secured property rights becomes all the more apparent. The risk of expropriation by government, as clearly discussed in North and Weingast (1989), can be reduced by an independent judiciary that acts as a check on the executive's interference with property and contract rights (Mahoney 2001). Furthermore, legal traditions that attach priority to private property rights, in comparison to those constructed to solidify state power, reflect differences in degrees of judicial independence. As discussed in Beck et al. (2003), this difference also affects economic growth in that, in legal traditions that give priority to the rights of individuals, financial development is correspondingly more intensified. All in all, the growing literature on judicial independence largely upholds the views that this institution of delegation enhances economic growth of countries.

2.4.2) Rule of law and credible commitment

Our interest in this section is to look into how the rule of law, defined as 'a set of stable political rules and rights applied impartially to all citizens' (Weingast 1997:245), affects economic performance by credibly committing governments to sustain policies that promote economic growth. While there exist several constitutional rules fine-tuned to meet commitment goals, an oft-applied policy sphere is given by a model of constitutional rules on fiscal policy. In many instances, fiscal rules that establish constraints on executive discretion are put in place in order to minimise risks of opportunistic behaviour by political agents that would also create uncertainties in the economy. These rules which comprise 'statutory or constitutional restriction on fiscal policy that sets a specific limit on a fiscal indicator such as the budgetary balance, debt, spending, or taxation'(Kennedy and Robbins 2003:2), have had effects on the fiscal policies of countries. It is worth noting that fiscal policy, particularly budget deficits and public debt, often reflect not only absence of credible commitments but also could result from common pool resource problems. As such, there exists a high likelihood that rules set in motion to tackle these problems might occasionally overlap. Rotte and Zimmerman (1998), for instance, identify three basic ways in which fiscal restraint can be achieved through rules. Accordingly, one rule is to link legislation or constitutional amendments with limits on budget deficits or macroeconomic targets as was the case in the Gramm-Rudman-Hollings law in the United States or Article 115 of the German Basic Law. Secondly, international rules that condition access to foreign finance or domestic fiscal health could also achieve similar results of credible commitment. Finally, rules set by international treaties, such as that of the Maastricht treaty, act to limit

executive discretion on public spending. Studies on developing countries, albeit few in number, have partially addressed commitment problems while explaining the importance of fiscal rules and budgetary institutions for fiscal outcomes (e.g. *See* Alesina et al. 1999).

The question of credible commitment also closely correlates with security of property rights. In the real world of transaction costs, agents' economic behaviour, which determines the types and levels of economic activity, depend on the degree to which property rights are secure. These establish not only rights over use of property, but also a credible mechanism of contract enforcement and low risks of government expropriation. As such, the system paves the way for the proliferation of intensive and impersonal exchanges, reduced transaction and transformation costs, as well as other forms of economic organisation vital for growth. In the broadest terms, secured property rights help reduce 'uncertainty by structuring human interaction' (North 1992:13). The provision of such institutions has long been one of the traditional roles of governments. In as much as putting in place an efficient legal system that specifies and enforces property rights ultimately rests with governments, the structure of property rights represents an important element in the vector of governance variables. An overwhelming balance of evidence indicates that sustained economic growth requires a high volume of impersonal economic exchanges among agents that, in return, critically hinge on the existence of a low risk of expropriation on private returns by other agents as well as by government. In other words, it presupposes a regime of secured property rights.

Accordingly, property rights provide an important set of institutions to operationalise the credible commitment variable and to assess its link to economic performance. Several studies empirically investigated the relationship between

measures of security of property rights and economic growth. De Soto (2000) and La Porta, et al. (1997) show that Latin legal systems tend to perform worse in protecting property rights as compared to the Common law system. They find that because of the loose protection of the rights of minority shareholders and creditors, ownership of firms is very concentrated, and capital markets are less developed, in countries that apply Latin legal systems In recent times, subjective measures of institutional quality have began to be widely used in empirical studies of institutions and development. These are based on either polls of experts or cross-country surveys of firm managers or citizens in general. Knack and Keefer (2002), for example, utilise the International Country Risk Guide (ICRG) indicators to show that social polarisation reduces the security of property and contract rights and, through this channel, growth. The ICRG measures of insecurity of property rights consist of expropriation risk, risk of repudiation of contracts by government, rule of law, quality of the bureaucracy and corruption of government, for a large number of countries.

Other notable efforts to measure institutional quality broadly, with security of property rights being a crucial component, include the operation risk index of the Business Environment Risk Intelligence, the country risk review of DRI, the country risk service and country forecasts of the Economist Intelligence Unit, Freedom in the World Index of Freedom House and the World Development Report of the World Bank. An extensive description of these measures is provided in Kaufmann, et al. (1999) and Aron (2000). An interesting objective measure of property rights is given by the concept of contract intensive money (CIM) as a measure of security of property rights, which was formulated and empirically applied by Clague, Keefer, Knack and Olson (Clague, et al. 1996). CIM is defined as a ratio of non-currency money to the total money supply, or $(M_2\text{-}C)/M_2$), where M_2 is a broad definition of

the money supply and C is currency held outside banks. The intuition was that in situations where contract and property rights are secure and well-defined, transactions that heavily rely on outside enforcement are advantageous and that agents use currency for a small proportion of the transactions. CIM is higher in countries whose citizens find the existing regime of property rights credible. They then show that it is positively related to investment and growth rates, and to the relative size of contract-dependent sectors of the economy.

So far I have looked into two unrelated broad categories of institutional solutions to problems of credible commitment. One widely-applied way to constrain government from opportunistically using policy tools towards otherwise economically non-optimal purposes is to hand over such policy tools through political delegation, to agents deemed to be insulated from political interference. It is argued that empirical investigation of the economic implications of such institutions depends on applying viable indicators for the delegation variable, a case explained using monetary policy. Another institutional mechanism to bring about credible commitment is to institutionalise rules that limit the policy choice set for government. Given that not all policy instruments can be transferred to independent organisations, and that some remain strictly under the jurisdiction of the government, I discussed how rules enable governments to credibly commit, with examples from fiscal policy and security of property rights. Nevertheless, the rules-based solution has continuously come under scrutiny due to the fact that many governments historically followed predatory policies to expropriate private returns. Next I elaborate on how such problems can be institutionally tackled through a system of veto players.

2.4.3) veto players and credible commitment

According to Lohmann (2003), apart from setting physical or transaction costs high enough to discourage changes, credibility can result through institutional means, by way of increasing the political cost of reneging. Such political costs are correspondingly large when there exist institutional checks and balances. Keefer (2004) argues that such links between checks and balances and credible commitment represent the most powerful explanation of contrasting development outcomes among countries. Similarly, checks and balances positively affect economic performance to the extent that investors are insulated from *ex post* opportunistic acts on the part of government (North and Weingast 1989). With regard to quantifiably measuring the degree of checks and balances in a political system, existing indicators can be broken down into two dimensions. Some studies proxy commitment problems through subjective perception survey on risk of appropriation in a given country. Notable effort in this respect includes the ICRG data that produces country risk rate based on aggregate index of political, financial and economic risks. However, the application of such opinion survey data is limited in that they mostly measure outcomes, and not quality of institutions such as checks and balances *per se*. Quite a few objective indicators are better suited to mapping the institutions of credible commitment and economic performance.

One broadly used measure in this regard is the POLCON variable produced by Henisz (2000), who applied a spatial model of political choice to derive a political constraint index for executives. It incorporates information on the number of independent branches of government with veto power as well as the distribution of preferences across and within those branches. More specifically, the index includes the number of formal constitutional veto points such executive, judiciary, number of legislature houses; degree of diversity of veto players; and the cohesiveness of each

veto player. Based on an extensive list of cross-country data, he finds that there exists a statistically significant relationship between this political constraint variable and economic growth. Another objective measure on scale of checks and balances in a given political setting is provided in the Database of Political Institutions (*See* Beck et al. 2001). They argue that executive control of the legislature is strong when electoral checks are few, thereby curbing political competition and legislative seats dependent on party nomination. As such, the institution of checks and balances is proxied by the number of veto players, while adjustments are made on the basis of independence of the veto players from each other's influence.

In order to empirically test the hypothesis that political systems with larger sets of checks and balances enjoy better policy stability because they allow for broader interests to be represented, Stasavage (2002) models private investment on the above mentioned indicators and other political instability variables. His findings attest to a positive relationship between checks and balances and private investment, possibly mediated through the impact of institutions of checks and balances in credibly committing government to policy promises. It should be noted that the basic idea behind stipulated positive association between checks and balances and credible commitments stems from the political costs that naturally emerge from attempts to change policy paths by the executive. As such, it is not difficult to deduce that the more in number and the more diverse in preferences are veto players, i.e. political agents whose agreement is required in changing policies, the more stable would policy choices would be. One caveat often mentioned here is that such systems, to credibly commit government, may also compromise policy flexibility that sometimes is critical to economies adapting to changing conditions. Furthermore, veto players

are but one set of proxies for institutional checks and balances, as the latter can also be instrumented by other variables such as regime type in cross-country studies.

Any series review of the literature on veto players is incomplete without noting the contributions of George Tsebelis. By definition, credible commitment implies that the policy framework needs to be stable inter-temporally. In Tsebelis (1995), he argues that the potential for policy change declines with the number of veto players, the lack of congruence (dissimilarity of policy positions among veto players) and the cohesion (similarity of policy positions among the constituent units of each veto player) of these players. Using legislative data from two sources (i.e. the NATLEX computerized database in Geneva and Blanpain's International Encyclopaedia for Labour Law and Industrial Relations), Tsebelis (1999) finds evidence that corroborates the theoretical hypothesis mentioned above. More specifically, the ideological range of government, the range of the coalition, and government duration, mattered for policy stability. Still, the most important insight with regard to the veto players institutional variable is that it facilitates all political systems irrespective of differences in regime type, party system, and type of parliament. As explained in Tsebelis (2000), many political phenomena such as reasons for independence of bureaucrats and judicial independence, can be better understood using the veto players theory. A detailed discussion of the wider applicability of the veto players theory is provided in Tsebelis (2002).

2.5) Empirical studies on nexus between institutions and economic growth

Our endeavour to provide a précis of the major works, which is focussed on the relationships between political institutions and economic growth, is shaped by a few practical considerations. To start with, finding a single feature of political

systems, which cross-cuts country-level differences, is very difficult. The search for the silver bullet has led some (e.g. Freedom House) to resort to applying dozens of criteria which, at the final analysis, could be collapsed into a common denominator. At the other extreme is Tsebelis (2000), who stresses the vitality of the veto players variable as being universally applicable. As such, the organisation of the literature, in this section, is unavoidably subjective. Secondly, notwithstanding the fact that credible commitment is the mainstay of this thesis, one needs also to be cognisant of the overlapping nature of institutions. For instance, a credible regime of property rights presupposes expeditious contract enforcement (i.e. a transaction cost angle).

Arguably, few other politically-provided public goods would have more resonance on economic outcomes than that of secured property rights. This can clearly be inferred from the very definition of property rights as an '*individual's ability in expected terms, to consume the good (or the services of the asset)* directly or to consume it indirectly through exchange (Barzel 1997:3, Italics original). A discussion of the literature on property rights-economic growth nexus, if any, is thus one of the themes of this section. Our starting point, nevertheless, is a related issue which has much pertinence to Africa. Changes in the global political landscape since the early 1990s, which induced countries to adopt more open political systems, have also engulfed Africa. As such, it is a useful exercise to assess the empirical literature on the (probable) relationships between democracy and economic growth. I dwell on this latter issue first.

2.5.1) Does democracy cause economic growth?

Given the fact that the lion's share of global wealth is accounted for by democratic countries, this question appears to be tautological. Yet, such a consensus

on democracy's positive effects on economic growth is far from being the norm in the appropriate literature. In one of the earlier works on the subject, Schweinitz (1959:385) portrays an 'ambivalent impression about the appropriateness of democratic political institutions', given the multifaceted economic problems which developing countries encounter. While there exist a number of ways, whereby the inimical effects of democracy on economic growth manifest themselves, Huntington and Dominguez (1975) argue that democracy encourages redistributive politics. More to the point, current consumption grows exponentially at the expense of profits, thereby leading to lower rates of economic growth. Another channel, through which the effects of democracy on economic growth could be weakened, is the presence of reverse causality. For instance, Burkhart and Lewis-Beck (1994) apply a generalised least squares-autoregressive moving average estimates, based on data from 131 nations, to investigate this issue. They report that, while economic development causes democracy, democracy does not cause economic development. Brunk *et al.* (1987) also report similar results on causation from economic development to democracy. Following the work of Seymour Martin Lipset (1959), this thesis, whereby economic development is a requisite to democracy, was also endorsed, among others, by Dahl (1989).

As mentioned above, an equally boisterous string of literature exists which asserts that democracy causes economic growth. In one of such works, Arat (1988) attacks the modernisation theory's (à la Lipset) view of democracy evolving as countries develop economically. As argued in Olson (1971 & 1996), autocrats are unable to credibly commit and, hence, they affect economic growth adversely. Nevertheless, he, as well as North (1990), on property rights and economic growth, shies away from explaining as to whether democracy is the answer. Put differently,

their arguments did not establish sufficient conditions for democracy to map onto economic growth. Earlier empirical studies that reported an affirmative response to the inquiry on the effects of democracy on economic growth include Kormendi and Meguire, using data on 47 countries; Grier and Tullock (1989), using data on 59 countries; and Pourgerami (1991) on the basis of data on 106 developing countries. Though comparatively very little, research also reports that the institutional quality-economic growth nexus applies both ways. In this regard, Chong and Calderón (2000), based on 35 countries covering the period 1972-1995, show that each variable affects the other. However, the institutional quality variables chosen, such as nationalisation potential and bureaucratic delays, do not necessarily reside in democracies.

2.5.2) Property rights and economic growth

In as much as putting in place an efficient legal system that specifies and enforces property rights, ultimately rests with governments, the structure of property rights represents an important element in the vector of governance variables. Several studies empirically investigated the relationship between measures of security of property rights and economic growth. These come against a background in which even North (1990:107) argued that it is 'impossible to feel institutions, let al.one measure them'. The challenge was to come up with proxies of property right variables amenable to empirical analysis. North and Weingast (1989) argue that Britain's "Glorious Revolution" in the late 17th century restrained the King's and his government's predatory powers, which in turn increased the security of property rights and led to the rapid development of capital markets and economic growth. This contrasts with the case in Spain, where extensive powers of arbitrary

expropriation induced economic stagnation. It shows that a quantitative measure on the risk of expropriation by government can be used to instrumentalise the property rights variable. A transaction cost perspective on the existence of insecure property rights was also given by North (1987), who asserted that inefficient property rights exist because the cost of monitoring, metering and collecting taxes might lead to a situation in which a less efficient property rights structure yields higher tax revenues for the ruler.

The fact that institutional changes are path-dependent and slow to change has induced research to emphasise cross-country analytical settings. Put differently, obtaining sufficient data points for a meaningful intra-country study is difficult. The existence of a strong property rights regime is widely used as an institutional quality variable to explain growth differentials among countries. According to Scully (1988), the economic payoff of having institutions that ensure rule of law, private property, and market al.location of resources becomes clearer when comparison is made across countries. The study, which included 115 countries covering the period 1960-1980, estimates that those countries with better rules of law and secured property rights, enjoy economic growth rates three times greater than those countries which lack these institutions. In terms of economic efficiency, the gap is two-and-half in the former's favour. The premise that legal systems alone could ensure protection of security rights may not, however, be tenable as far as policy is concerned. The 'ideological and perceptions' variable, as explained in North (1992:8), also needs to be considered, because the credibility of the system ultimately rests on agents' ideologies. In other words, it is only when private agents believe that government is credibly committed to protecting property rights, which they engage in growth-promoting activities such as investment.

The theoretical intricacies that relate property rights with growth are discussed in Keefer (2004). Accordingly, the paper mostly refers to definitional and causality problems with respect to secured property rights. The former is linked with associating security of property rights with a particular set of political systems such as democracies. Nevertheless, a number of studies indicate that whether property rights are insecure or not may not have much to do with the political system *per se* but more so with how they are perceived by economic agents. As such, insecure property rights slowdown growth even if they result from a general level of insecurity or reflect governments' short-term horizons in preferring expropriation to growth (Keefer and Knack 2002). Similarly, research on the security of property rights shies away from dealing with the allocation of rights altogether, or wrongly blends it with security of rights at best. The allocation of rights largely deals with how political systems differ in terms of providing rights to citizens. This otherwise grey area in the literature is all the more important as it explains intra-regional growth differences among East Asian countries. For instance, despite being Asia's first democracy, the Philippines under Marcos suffered from the adverse growth impacts of cronyism in which 'access to property rights was granted in exchange for political loyalty' (Root 1996:132).

Property rights mostly affect economic growth through expected returns on private investment. More secured property rights are generally associated with lower than expected expropriation and higher returns on private investment, which Besley (1995:906) identifies with the Lockean theory of property rights. Investment is also enhanced when property rights ensure transferability of assets through market or non-market transactions. Access to financial markets to borrow capital at reasonable cost is also possible when, in lieu of property rights, assets are used as collateral and

when it is possible to smoothly transfer them in the event of default. Other channels include better access to common property and public goods, reduced uncertainty in transactions, and facilitating the internalisation of externalities thereby reducing returns to redistributive or rent-seeking activities (Saleh 2004). One microeconometric study that asserts these theoretical insights is that of Besley (1995) who showed that private property rights, as opposed to communal rights, in Ghanaian agriculture, were very important in increasing security against expropriation and in bettering the transferability of land.

As discussed above, the prominent challenge for research on the property rights-growth nexus has been one of finding a measure for the security of property rights variable. In certain growth-accounting exercises, the institutional quality variable applied to measure security of property rights was set in very broad terms as in Barro (1991:432), who interprets political instability as 'adverse influences on property rights, and thereby as negative influences on investment and growth'. His findings were based on a sample of 98 countries covering the period between 1960 and 1985. However, political instability signifies several structural problems that it may not always be wise to relate to the collapse in the security of property rights. That institutions themselves are endogenous had long created a doubt as to the viability of quantitative studies that postulated a one-way relationship from quality of institutions to growth. Higher income levels may lead to stronger institutions because countries will be capable or willing to spend on them (Eggertson 1990; Mauro 1995). In this regard, a study by Acemoglu et al. (2001) made some strides when they instrumented the security of property rights by settler mortality rates, in the 18th and 19th centuries. Colonised areas, which had lower mortality rates initiated better quality institutions and vice versa.

More or less similar trends were applied in Knack and Keefer (1995) and Rodrik, et al. (2002). In recent times subjective measures of institutions have began to be widely used in empirical studies of institutions and development. These are based on either polls of experts or cross-country surveys of firm managers or citizens in general. Knack and Keefer (2002), for example, utilise the International Country Risk Guide (ICRG) indicators to show that social polarisation reduces the security of property and contract rights and, through this channel, growth. The ICRG measures of insecurity of property rights consist of expropriation risk, risk of repudiation of contracts by government, rule of law, quality of the bureaucracy and corruption of government for a large number of countries. Other notable efforts to measure institutional quality broadly, with security of property rights being a crucial component, include the operation risk index of the Business Environment Risk Intelligence; the country risk review of DRI (this measure is provided by the credit rating agency Standard and Poor's); the country risk service and country forecasts of the Economist Intelligence Unit; Freedom in the World Index of Freedom House and the world development report of the World Bank. An extensive description of the measures is provided in Kaufmann, et al. (1999) and Aron (2000).

To sum up, the wide literature on the relationship between the institutions of property rights and economic performance identifies several policy-relevant findings that stem from the significant causal links between the two variables. Be it by altering transaction costs, which themselves are determined by the political and economic equations, or impacting on agents' behaviour via uncertainty, (in)secure property rights have been robust factors in explaining cross-country differences in economic growth. At least three areas need to be further explored in future research. Firstly, the theoretical framework is not strong when it comes to reverse causality

from higher levels of income to better institutions. Secondly, studies mostly focus on security of property rights, while little attention is paid to the equally important issue of allocation of property rights. Thirdly, cross-country studies could be made more informative through dynamic modelling as compared to comparative static analysis.

2.6) Discussion and summary

Arguably, the most crucial agenda in current development debate is to explain the fundamental factors that are behind observed differences in economic growth among countries. Economic theoretical and empirical models that were oblivious to accounting for the effects of political institutions in determining political economy outcomes by and large failed to provide plausible explanations as to not only why countries, differ in adopting growth-promoting institutions and policies but also how political institutions shape economic performance. Scholars partly responded to this inadequacy by augmenting economic growth models with a string of political and economic variables, albeit not necessarily on strong theoretical foundations. Nevertheless, a better exposition of the effects of political variables on economic outcomes presupposes strong theoretical underpinnings to inform empirical growth accounting exercises. A growing literature on the theme of positive political economy stipulates that cross-country differences in long-term economic growth reflects corresponding differences in political institutions that provide credible property rights regimes with low transactions costs.

However, the theme of institutions and their effect in shaping individuals' behaviour predates its application in explaining economic growth trajectory of countries. After all, as Peters (2004:1) puts it succinctly, 'the roots of political science are in the study of institutions'. Accordingly, I discussed the literature on

institutions and institutionalism with particular emphasis on the three variants of the new institutionalism literature; namely, sociological institutionalism, historical institutionalism, and rational choice institutionalism. I assessed not only their similarities and differences but also with regard to their relevance to a study of economic growth in a cross-country setting. It is shown that, since this study considers institutions to be strictly exogenous, rational choice institutionalism is the most appropriate paradigm for the issue at hand. Note that, to a certain extent, the path-dependence concept in historical institutionalism tallies with the idea of convergence from economic theory on growth. I also reviewed the literature to elucidate the notion of positive analysis and justify its use in this study. Notwithstanding the fact that in several instances there exist overlaps between positive and normative analysis, the approach I use to address our research question remains decidedly positive. This sets the stage for a closer scrutiny of the literature on institutions of credible commitment.

Theoretically, problems of credible commitment are postulated to emerge as a consequence of two phenomenon. The first one, known universally as problem of time inconsistency of policy, and often wrongly considered as the only source of the credible commitment problem, stipulates that governments attempt to outsmart private agents by reneging on policy values once the latter form expectations and, hence, commit resources. It explained that the economic problems in this respect emerge because governments act opportunistically *ex post* while rational agents are not deceived by such surprises. As a result, the net economy-level effects would be sub-optimal outcomes in important parameters, including rates of inflation and national output. Apparently, the institutional solution to this dimension of credible commitment problem is one that ties the hand of government. Secondly, problems of

credible commitment emanate from political instability, by inducing myopic policy preferences in governments, which are inimical to growth. A textbook example in this case is that of political cycles in fiscal policy, whereby incumbents faced with likely replacements, engage in policy choices that constrain the policy space for incoming administrations. In each case of the credible commitment problem, resulting policy uncertainty adversely affects private investment both in type and size.

Empirically, a number of political institutions are well-positioned to ensure that governments are credibly committed to policies that encourage productive engagements temporally. In this respect, institutions of delegation are able to smooth out politically induced policy volatilities by transferring policy prerogatives to nonmajoritian and independent organisations. It was shown that several studies used different measures of Central Bank independence to proxy for the economic effects of this dimension of delegation. Another set of institutions that addresses the credible commitment problem is given by formal rules which are difficult to alter. For instance, constitutional rules that require budgets to balance or provide for property rights security exemplify solutions to problems of credible commitment based on rules. However, it is also explained that rules might be weak unless the political cost for reneging is set prohibitively high. In this regard, systems of checks and balances, often proxied by number of veto players and the distance in their preferences, provide an important institutional solution to problems of credible commitment. Accordingly, a number of studies provided a quantitative account of the size and diversity of veto players and mapped such institutions to political economy outcomes on economic growth. Two points are worth noting here. Firstly, even if operationalisation of the variables reflects conceptual differences in defining checks and balances, on balance, findings overlap in indicating positive links between these

institutions and macroeconomic policies. Secondly, the institutions of checks and balances can be operationalised by variables including, but not limited to, veto players.

Naturally, given the focus of this thesis, I expect institutions of credible commitment to partially explain the differences in economic performance and policy adoption between the stronger and weaker economies in Africa. In this respect, a starting point would be to assess the existing literature on credible commitments and economic performance in Africa. However, there exists a conspicuous absence of discussion of Africa, and in particular in an all-Africa setting, in studies that modelled the economic implications of institutions of credible commitment. Admittedly, there are several studies that included political variables in growth accounting on Africa, mainly by focussing on political instability and effects of ethnic diversity. These, however, did not try to systematically model political economy outcomes of such vital institutions as credible commitment. For instance, economic models indicate that, in Africa, political instability leads to reduced investment, growth-retarding policies and, therefore, weak growth. Positive political economy models, on the other hand, stipulate that absence of institutions that credibly commit governments to, say, protecting private property, result in myopic policies that ultimately lead to economic regress. In this regard, this thesis offers a new dimension to the evolving debate on the political economy of growth in Africa. Still, the reorientation of the research focus towards an African context should not be a simple transposition from a different setting. I need to elaborate our assertions that such an approach is a legitimate one.

Chapter 3. Empirical models for economic growth accounting

During the past several decades, global economic output has expanded at an unprecedented rate. This phenomenal achievement, however, has been largely clouded by the unevenness in economic welfare achieved across countries. Several countries in Africa missed out on the spurt in growth, even during the 1950-1973 time spell, a period which Angus Maddison (2008) characterised as the 'golden age' for economic growth. It is also not difficult to discern a close correlation between countries' records, in terms of economic growth, and a number of important political economy features. For instance, the observation that poorer countries account for a disproportionate share of the world league of weak states, is hardly a random event. It, therefore, comes as no surprise that economic growth has commanded significant interest for academic research. Scholars from a wide spectrum of disciplines have investigated possible fundamental determinants of economic growth in cross-country comparative settings.

The field of growth accounting may have registered a quantum leap with the introduction of institutional arguments as having defining roles in the expansion of national output in the long run. Similarly, and perhaps to a lesser extent, methodological developments have also been instrumental in broadening our knowledge of the political economy of growth. The proliferation of cross-country economic growth studies, over the past several decades, could also be partly explained by the emergence of very powerful computers. As will be explained below, the crucial importance of methodological frameworks for an economic growth study is all the more apparent when our comparative units of analysis are entities as diverse as countries.

In this study, we use both cross-sectional and panel data models of economic growth. As such, it is imperative to elaborate on the specifications of these models when used in economic growth studies. While panel data models would have the edge in terms of accounting for the factors that shape growth, we need also highlight the validity of applying cross-sectional models. To start with, the tendencies for cross-sectional models to reject the null hypothesis can be mitigated by subjecting those models to a battery of robustness tests. Additionally, cross-sectional models provide a useful alternative when, as a consequence of data limitations, it is impossible to estimate panel data models. Lastly, given the fact that our explanatory variable (i.e. institutions) is characteristically sticky, the application of cross-sectional models is, therefore, appropriate. This chapter sets out to achieve two related objectives.

Firstly, we delve into the rich literature on economic growth studies so as to elaborate on the research method applied in the thesis. Cognisant of the fact that economic growth accounting is not the sole method for assessing performance of countries, we compare and contrast the cross-country growth accounting method with the other methods. Secondly, we trace the development of the Solow model in order to elaborate further on the economic growth accounting method. We do so by underlining the point that, under certain circumstances, cross-sectional and panel models are complementary to each other. We organise the chapter as follows. In the next section, we look at the different approaches to investigating economic growth. We discuss the rationale behind cross-country growth accounting in section 3.2. Section 3.3. traces the development of the Solow economic growth model in all its variants, including the augmented ones. We summarise and conclude in section 3.4.

3.1) Major approaches in economic growth studies

Cross-country economic growth accounting does not enjoy a methodological monopoly, albeit it is, by far, the most powerful one. Other approaches include the application of single country long time series, so as to decompose sources of economic growth into three possible factors, namely labour, capital, and total factor productivity (see AERC 2009 for a series of single country long time series studies on some African countries). At this juncture, it is important to highlight the structural similarities between single case studies and cross-country growth accounting, in that both aim to assess the partial effects of different factors. As such, I do not explain the former approach here. Suffice it to say that in situations, where the variable of interest is slow to change. The cross-country growth accounting is a better approach. Similarly, the concept of growth diagnostics has, in recent times, been used to identify economic growth determinants (Rodrik *et al.* 2005). As such, a brief elaboration of this method and its merits vis-à-vis our preferred approach, i.e. cross-country analysis, is very appropriate. However, this tells only part of the story, since the rationale for the choice of this particular approach, is not confined solely to methodological attributes. As the next section shows, the growth diagnostics approach very much follows normative economic models which renders them unsuitable to address the basic research question of this thesis.

3.1.1) Growth diagnostics

Growth diagnostics is a very recent addition to the flourishing literature on the search for the factors that determine economic growth of countries. Introduced by Ricardo Hausmann, Dani Rodrik, and Andrés Velasco (*See* Rodrik et al. 2005&2008), it aims to identify the most binding constraints on economic activity

and also the corresponding policies required to remove these obstacles to economic growth. Using a decision tree, i.e. a method used to explore options and choose among possible outcomes, it then sets out to review and analyse which of the two broad factors hinder economic growth significantly for the country in question, namely high cost of financing domestic investment and low private return to domestic investment. These latter factors are then broken down further into what the researchers consider significant bottlenecks to growth. This line of research closely resembles the analytic narrative approach in political science which combines historical and comparative research with rational choice models in order to understand institutional formation and change (Bates et al. 2000). Needless to say, its focus and, hence its findings, are entirely based on specific case studies. A number of reasons can be highlighted as to why this method is not considered suitable for this thesis.

To start with, research based on this method is primarily informed by normative considerations. Which factors to include in the decision tree is an issue usually left to the discretion of researchers. Though cross-sectional growth accounting partly suffers from a similar limitation, it nevertheless compensates for its limitations as it is amenable to robustness tests. On the basis of which particular factor(s) included, researchers could come up with divergent findings while studying the same subject. On a related note, such an approach will only be able to explain short-run changes in economic growth, since factors considered binding at a particular point in time may not hold for the next period. Secondly, it runs the risk of being mechanistic, in that it gives little consideration for possible inconsistencies between economic rationale and political applicability. Put differently, countries that fail to adopt economically sound policies do so not out of lack of knowledge about

which policies work. After all, such knowledge has become a global public good thanks to the communication revolution of the past few decades which made distribution of scholarly works easier. It is, rather, because the political institutions that produce and sustain such policies are absent. As such, analysis that overlooks the resonance of institutions falls short of accounting for the basic factors that define economic growth. Thirdly, we learn much from empirical regularities that transcend physical borders as well as temporal demarcations. Economic growth is a classic case in point.

3.1.2) Growth accounting

Growth accounting aims to disentangle the contributions of changes in factor inputs and the unexplained residual from observed economic growth. As explained in Barro (1999), its premise is that economic growth occurs primarily from growth in such factor inputs as labour and capital. This paradigm for explaining economic growth was first introduced by Solow (1956) where he applied a neoclassical production function to the subject of growth empirics. I provide an in-depth presentation on this subject in sections below as it is the research method for this thesis. That observed expansion in national output across countries and over time is positively and causally linked with intensified use of labour and physical capital is not a matter of contention. What was debatable was that several countries registered robust growth rates sustained over a long-run above and beyond that explained by factor accumulation. In the economic growth literature, this unexplained residual came to be known as the Solow residual or total factor productivity. For instance, Solow (1957) estimates that about 88% and 12% of output growth per hour worked in the United States between 1900 and 1949 could be attributed to growth in total

factor productivity and factor accumulation respectively (estimates scaled down later, *See* Solow 1958).

Subsequent studies, nevertheless, reported either mixed results or lower estimates for total factor productivity. Baier et al. (2006), for example, assess the contribution of total factor productivity in the economic growth performance of 145 countries. Although there existed significant regional variations, they find that, globally, the contribution of total factor productivity to economic growth is about 14%. While technology became the preferred candidate to proxy total factor productivity, researchers applied a string of other factors including human capital and policies. The gist of the matter was that the growth accounting models were, by and large, unable to account for the underlying causal factor for variations in economic growth across countries. In order to decompose sources of economic growth into factor accumulation and total factor productivity, growth accounting is often applied along two lines. A number of studies used a long time series data on a single country to investigate the factors that explain its economic growth performance beyond short-run oscillations. Another strand of economic growth accounting is tailored to expose those factors which are critical in defining observed differences among countries. It is this latter approach, which has led to a rich array of research on the subject, which I use in this thesis.

3.2) Rationale for cross-country economic growth analysis

A systematic review of the voluminous research on the political economy of growth serves to identify several points that shape the design of this study. First, it is now widely accepted that economic growth is the desideratum for addressing social and economic problems affecting a large proportion of the world population (Birdsall

2005, Islam 1995). Second, observed large and diverging levels of welfare among countries reflect differences in fundamental determinants of economic growth, namely institutions. The third and related point worth noting is that research along the tradition of positive political economy has been very instrumental in providing a coherent explanation with regard to the nexus between political institutions and economic growth. Accordingly, a resounding picture emerging from current political economy research is that institutions not only matter for economic growth but they exhibit primacy as well when compared with other possible basic determinants of growth such as geography and trade (Rodrik et al. 2004). Even critics of this line of thinking do not deny the importance of institutions *per se* but attribute knowledge gaps in the institutions-economic growth paradigm to conceptual and methodological intricacies (Glaser et al. 2004). It is, for instance, a challenge to explain how a relatively slow-changing variable such as institution causes another variable characterised by much dynamic variation like economic growth.

In a study that traced the development path of about eighty countries covering the period 1850-1980, in which he finds political institutions to be fundamental in determining growth, Reynolds (1983:964) also stresses the volatility of growth stating 'nothing is easier than to prevent or stifle economic growth.' Nevertheless, the choice set for the political institution variables that make or break economic growth is so numerous that any study on the theme needs to be selective. Notwithstanding the possibilities that the emergence of highly powerful computers allows even theoretically weak works to surface, the need for systematic analysis of the fundamental factors behind global growth divergence has never been stronger. This need can only be met satisfactorily if empirical works are strongly grounded in plausible theoretical underpinnings. I can talk of underlying causes of economic

growth such as institutions once our method is capable of accounting for the proximate economic factors that shape economic growth. As I show later, once I control for unit effects, there exists no reason for a unit of investment to affect economic output differently in, say South Korea and Nigeria. What is so insightful about the Solow model is that it provides us with the required theoretical and empirical tools to undertake such types of analysis.

One observes multiple features in economic growth dynamics of countries that define present-day patterns in the economic status of each country. A few countries, mostly consisting the West experienced an economic growth path that significantly outpaced rates of growth in their population. In contrast to these countries, which entered intensive growth for a long period, a larger set of countries continued to register only extensive growth, whereby increments in output have been absorbed by growth in population. The diverse pattern also includes countries that have gone through only momentary spurts of growth as well as those making strong strides lately.

Accordingly, Maddison (2003) shows that the median rate of growth in per capita GDP, for the twenty richest countries over the period 1820-2001, stood at 1.6 percent with a range of only 0.7 percent. A stronger growth mostly occurred since the early 1960s in all developing regions, but only the East Asian region kept up the momentum, while in Africa and Latin America, growth largely faltered. Reflecting the fact that such disparities in long-run economic growth rates map onto a series of political economy outcomes including material deprivation and conflicts, the case for accounting for fundamental determinants of economic growth is apparent. A well-tested medium to do growth accounting is to augment the basic economic model with theoretically stipulated relevant variables. As such, it is imperative to explain the

conventional growth modelling approach before I introduce the formal political economy analytical models that identify the direct and indirect channels for links between institutions and growth.

A handful of reasons justify our choice of cross country economic growth analysis in this study. Firstly, economies from all regions in the world have increasingly become intertwined through trade and investment. If economic rationale were the sole issue, globalisation should have a balancing effect on levels of income. Instead, divergence in economic growth among countries has become the norm. As such, a research method fine-tuned to reveal the extent and causal factors of such cross-country variations is a more informative approach. Secondly, institutions are inherently slow to change, in that in many instances, countries tend to introduce piecemeal institutional reforms. Given this stickiness in the institutional variable, it is extremely difficult to draw the level of variation required for a quantitative study from individual country studies. The effect of institutions in shaping political economy outcomes can be captured through cross country studies. Thirdly, some of the theoretical hypotheses of the economic growth literature are next to impossible to test in a case study setting. Most notable among these hypotheses is the notion of convergence, a concept which holds that levels of income across countries tend to equalise over the long-run. Economic growth analysis is, therefore, better served when conducted in a cross country methodological setting.

3.3) The Basics

3.3.1) The Solow model

Given its strong influence on the subsequent large volume of economic growth studies, a brief elaboration of the seminal work of Robert Solow (1956) is in

order. Accordingly, the level of output in an economy characterised by a competitive market structure is determined by size of the labour force, stock of capital and by the technology with which these factor inputs are utilised. The Solow model is based on a Cobb-Douglas production function with level of output determined by capital, K, labour, L, and labour-augmenting technological progress, A. A Cobb-Douglas production function is a linearly homogenous production function with a constant elasticity of substitution in which each factor's share of income is constant over time. Hence, a temporal model of growth with constant returns to scale is given by:

$$Y(t) = K(t)^{\alpha}(A(t)L(t)^{1-\alpha} \text{ ----------} (3.1)$$

With $0 < \alpha < 1$

Where Y(t) is rate of growth in real GDP

In essence, economic growth registered at a particular point in time can be decomposed into two broad categories, i.e. returns from higher use of factor inputs and the Solow residual, or what is conventionally attributed to production technology. Because marginal products are not changed by scale under constant returns to scale, it is generally advisable to use the intensive form (also referred to as the "ratio" or "per capita" representation) of the production function. Hence, for the above equation this translates into:

$$\hat{y}(t) = \hat{k}(t)^{\alpha} = f(\hat{k}(t)) \text{ ----------} (3.2)$$

Where $\hat{y}(t) = \dfrac{Y(t)}{A(t)L(t)}$ denotes output per effective unit of labour and

$\hat{k}(t) = \dfrac{K(t)}{A(t)L(t)}$ denotes capital per effective unit of labour.

$f'(\hat{k}(t)) > 0, f''(\hat{k}(t)) < 0$

The task of decomposing sources of economic growth has crucial implications. Not only can one decipher clear dichotomies in sources of growth between advanced and underdeveloped economies, it also helps to identify a crucial concept in economic growth accounting. Accordingly, that part of growth which cannot be accounted for by increased use of factor inputs is known as total factor productivity (TFP). Barro (1999) shows that the now advanced countries enjoyed TFP rates well in excess of two percent, as is the case for East Asian economies while the figure for countries in Latin America (not surprisingly excluding Chile) were far lower. Equation (3.2) captures the growth trajectory in that output per unit of labour is a function of capital per unit of labour with the condition that capital is modelled to exhibit decreasing marginal returns. The labour force and technology grow at exogenously given constant rates, equation (3.3) and equation (3.4) respectively, where n is the growth rate of the labour force and g is the rate of technological progress.

$$L(t) = L(0)e^{nt} \text{ ----------} (3.3)$$

$$A(t) = A(0)e^{gt} \text{ ----------} (3.4)$$

$$\dot{k}(t) = sY(t) - \delta K(t) \text{ --------} (3.5)$$

$$\dot{k}(t) = \frac{dK(t)}{dt}$$

$$\dot{\hat{k}}(t) = \frac{d\dfrac{k(t)}{A(t)L(t)}}{dt} = \frac{\dot{K}(t)A(t)L(t) - K(t)A(t)\dot{L}(t) + L(t)\dot{A}(t)}{(A(t)L(t))^2}$$

$$= \frac{K(t)}{A(t)L(t)} - \frac{K(t)}{A(t)L(t)}\frac{\dot{L}(t)}{L(t)} - \frac{K(t)}{A(t)L(t)}\frac{\dot{A}(t)}{A(t)}$$

Assuming that a constant fraction of output, s, is invested and capital depreciates at a rate δ I find the stock of capital to evolve in time as given in equation (3.5). Note that for a closed economy, such as that envisaged in the Solow model, capital stock is ultimately a function of savings and depreciation. By redefining the

equation in its intensive form and through substitution, equation (3.6) provides us with an equation of motion for the capital stock per effective unit of labour. We now know how the way in which capital evolves defines the growth path of a country. More specifically, when actual investment, shown by first term in equation below, is above what is required to keep capital stock per labour to the previous period (second term) then the actual stock of capital per effective labour increases to a level that ensures the two terms converge. Conversely, shortfalls in investments induce capital stock per effective labour to adjust downwards towards the break-even equilibrium. Hence, with the help of the crucial assumption of diminishing returns to capital, the model projects an inbuilt dynamism for countries to ultimately converge into the steady state of output.

$$\hat{k}(t) = s\hat{y}(t) - \hat{k}(t)(n + g + \delta) \text{------(3.6)}$$

Finally, by setting equation (3.6) to zero thereby deriving the capital stock per labour at the steady state level,

$$\hat{k}^* = \left(\frac{s}{(n + g + \delta)} \right)^{\frac{1}{1-\alpha}} \text{----------(3.7)}$$

I derive the basic Solow production function in log terms as,

$$\ln \hat{y}^* = \left(\frac{\alpha}{1-\alpha} \right)(\ln s - \ln(n + g + \delta)) \text{-----(3.8)}$$

So far, I have looked into the essentials of the model developed by Robert Solow, to quantitatively account for the factors that determine expansion of national output of countries. The model makes several predictions on economic growth: a high saving rate affects output positively; a high labour growth will have a negative effect on the growth of income per worker, and that, because of diminishing returns to capital, low income countries tend to grow faster, thereby lending support to the

convergence hypothesis. How fast capital stock per unit of labour approaches its steady state value ((1-α)(n+g+δ) at the final analysis, is determined by the rate of saving in the economy.

Naturally, the growth theory formulated by Solow induced a string of scholars test its fit to empirical data on the economic growth of countries. It is rather difficult to clearly differentiate between the theoretical and methodological weaknesses of the model, as most critiques back up their arguments with models somewhat different from the textbook Solow model. Certain critical assumptions of the model, such as that on exogenously given technological progress, were at odds with real life data, which in turn leads one to question the convergence hypothesis. I further assess in the next section how augmented variants of the Solow model attempted to fine-tune the growth accounting exercise.

3.3.2) Augmented variants of the Solow model

While the Solow model remained unquestionably a crucial *modus operandi* for quantitative economic growth research, its limitations in terms of explaining variations in growth performance of countries increasingly became apparent with the advent of broader data sets and tests in different spatial contexts. One observes multiple features in economic growth dynamics of countries that define present-day patterns in economic status of each country. In lieu of its strong roots in neoclassical economics, the Solow model was unprepared to accommodate the possibility that non-market forces could have much bearing on economic growth. Instead, economic growth was modelled in a very mechanical way in that, once the right levels of factors are applied in the right technologically driven mix, economic growth was expected to fall into place.

Had that been correct, and market forces channelled economic resources to where they were scarce, African economies would have enjoyed much higher levels of capital flows. Rational actors, however, look beyond the technical derivations of production functions. Let us clarify this point with an example. Assume money put into countries A and B fetches a return of 100 at the official rate. Assume also that there is a 30% percent risk of expropriation in country A while the risk in country B is 10%. Then, the expected return of the investment in country A equals 40 (i.e. 0.7*100-0.3*100) while capital invested in country is expected to return 80 (i.e. 0.9*100-0.1*100). That return to investment in country B is twice that in country A reflects a credible regime of property rights in country B. If it were for the technical predictions of the production function, I would observe same levels of capital accumulation in both countries.

The most notable anomaly of the basic Solow production function was that its predictions to convergence in levels of income between the richer and poorer countries never materialised, or, at the worst scenario, I observe what Pritchett (1997) called 'Divergence, Big Time.' In growth literature, the notion of convergence in income has three main strands in which basic characteristic features of countries are outlined for each type of 'catching-up' to occur. Firstly, the widely discredited absolute convergence hypothesis stipulates that irrespective of differences in initial conditions, per capita incomes of countries shall converge to one another. Secondly, according to the conditional convergence hypothesis, per capita incomes of countries that are identical in such structural characteristics as preferences, technologies, rates of population growth and government policies, tend to converge to one another independently of initial conditions. Barro and Sala-i-Martin (1992) find evidence supporting this hypothesis for 98 countries from 1960 to 1985. A third dimension in

the convergence set is what is called the 'club convergence hypothesis' whereby per capita incomes of countries that are identical in their structural characteristics converge to one another in the long run, provided their initial conditions are similar as well. The structural characteristics usually encompass common features and refer to polarisation (e.g. ethnic), persistent poverty and clustering.

As mentioned above, the weaknesses in the Solow model manifested themselves through large residuals, when economic growth equations were empirically put to test. In other words, the Solow-type neoclassical approach by and large failed to adequately explain empirically observed differentials in the growth performance of countries. In technical terms, there remained large unexplained residuals after accounting for increments in capital and labour inputs, implying that the root cause for economic growth lies beyond factor accumulation. As explained before, in the economic growth literature, this factor that determines growth above and beyond accumulation of factor inputs is termed 'total factor productivity', and because it meant anything and everything at the same time it induced research to provide quite divergent variables that proxy this concept. For instance, for the endogenous growth theory initiated by Romer (1986) and Lucas (1988) such variables as trade, human capital, endogenous technology and mechanisms of technological diffusion define total factor productivity and consequently economic growth. There exists a large mixture of economic growth accounting approaches; so much so that a revival of the neoclassical view has not been out of the question. A case in point is provided by Mankiw et al. (1992) wherein they argue that not only did human and physical capital accumulation explain cross-country differences in growth, but convergence was also a plausible possibility.

The general idea with augmented variants of the Solow production function is that the reason for the basic model to fall far short of explaining empirical observations rests with the assumption of diminishing returns to capital. One widely applied remedy to address such deficiencies has been to augment the model with a human capital variable that controls for the significant effects of learning by doing on total output. Accordingly, equation (3.9) now provides for the production function to exhibit increasing return:

$$\hat{y}(t) = \hat{k}(t)^{\alpha}\,\hat{h}(t)^{\beta} \text{ ---------- } (3.9)$$

In its extensive form,

$$Y(t) = K(t)^{\alpha}\,H(t)^{\beta}\,(A(t)L(t))^{1-\alpha-\beta} \text{ ----} (3.10)$$

It is worth noting that with economic growth the augmented variant of the Solow model predicts a positive inertia for further technological deepening and, hence economic growth. Put differently, human capital is an important determinant of economic growth of countries, so much so that its inclusion in the growth model now enables one to explain observed divergence in levels of income between countries. In this scenario, economies of poorer countries catch up at a lower rate, or for a time series of a single country, the speed of convergence towards its steady state could be lower. This is confirmed by comparing the speeds of convergence between the augmented Solow production function (equation 3.11) and the neoclassical Solow model as shown in equation (3.12).

$$\psi = (1-\alpha-\beta)(n+g+\delta) \text{ ----- } (3.11)$$

$$\lambda = (1-\alpha)(n+g+\delta) \text{ ------ } (3.12)$$

Generally, it is now apparent that growth in national output is not solely determined by factor accumulation and the technology with which the factors are put to use, as other important variables are also in operation. Neither are the cases for

exogenously determined technology, nor decreasing marginal returns to capital, as strong as had been thought. Had it been the case that capital-starved economies grow faster, empirical evidence on the income levels of countries over a long time span would have fit to the convergence hypothesis. In this respect, human capital became the foremost candidate in reducing the large residuals of the basic Solow production function. The pattern of high investments on human capital in East Asian economies, in the initial periods of their fast growth trajectory, lends support to the weight attached to this variable in the augmented variants of the Solow growth model. Still, human capital investment is ultimately endogenous to the growth model, in that it can only materialise as a consequence of growth-promoting institutions. While I leave the institution-economic growth nexus discussion for a subsequent chapter, it is a useful exercise to assess further technical developments in growth accounting.

It is worth noting that research findings with regard to factors that determine economic growth have generally been sensitive to model specifications, both in functional forms and choice of variables. Even when the empirical work relies on a strong theoretical foundation, as is provided by positive political economy, such sensitivities have motivated researchers to come up with conceptual and methodological refinements for a better understanding of the basic factors as to why countries differ so diametrically in economic performance. An excellent example in this respect is the problem I encounter when I focus on a select few of institutional variables (for reasons of model parsimony) while theory indicates a large vector of variables affecting growth. In an article interestingly titled ‘I just ran two million regressions,’ Sala–i-Martin (1997) emphasises limitations in theories on economic growth in terms of pinning down specific variables, and suggests a technical solution to the problem. Such problems of model specification are more challenging when

one departs from conventional growth accounting to account for the institutional determinants of economic growth. For instance, not only is it true that a high likelihood exists that there is a two-way causal relationship between institutions and economic performance, but the effect of institutions on growth can occur indirectly by affecting factor accumulation.

3.3.3) A note on current state of growth modelling

I dwell more on highlighting prominent issues involved when one undertakes a quantitative analysis of the causes of differences in economic growth across countries. Note that economic growth accounting can also be undertaken within one country context by looking into how different political economy variables evolve to define the rates of economic growth over a long time spell for a given country. Specification-wise, the intricacies involved in growth accounting over a cross-country setting are somewhat different when the research interest is to identify determinants of economic growth for a country in question. In a previous section that discussed the relative merits of large N economic growth studies, I underscored the point that the differences between case studies and cross country studies are not cosmetic. Our concern in this thesis is to study political/institutional variables that explain variations in economic growth performance among a set of countries. Broadly, researchers resorted to applying either a cross sectional analysis of countries on economic growth data, or a panel data analysis of the determinants of economic growth. Whereas either approach has its own pros and cons, it is impossible to disentangle the development of panel data models without giving due credits to cross-sectional models. In as much as one stresses the usefulness of panel

data models, it is also the case that, under a number of situations, cross-sectional models provide us with valid methodological tools.

3.3.3.1) Cross-sectional models

In quite a number of instances, scholars resorted to cross-sectional models so as to map economic growth to a vector of different theoretically stipulated variables. Notable among these are Barro (1991), Mauro (1995), and Sachs and Warner (1995). The growth model on a cross-section of countries takes the form

$$g_i = \alpha + \beta y_i + \tau x_i + \varepsilon_i \text{ ------(3.13)}$$

where y_i is the initial level of GDP per capita and x_i is a vector of other explanatory factors such as physical and human capital, trade, etc. β and τ are parameters to be estimated, while ε_i is the error term. The exact specification of the dependent variable has also been a matter of contention, with some studies using values for GDP per capita while others resort to GDP per worker.

In this respect, Mankiw et al. (1992) measure income with log of GDP per working-age person on a cross-section of data comprising 98 countries in which they provide evidence in support of the assertions of the augmented Solow model. Accordingly, holding population growth and capital accumulation constant, cross-country variations in levels of income are caused by differences in accumulation of human and physical capital. In doing so, the dependent variable for each country was derived as the average of all the years between 1960 and 1985, with no margin given to temporal variations of the variable. While collapsing a large time series data into a single observation may lead to a loss of information, the degree of error may not be significantly large if the short-run fluctuations in the variable do not reflect equally drastic changes in the right-side variables. For instance, though economic growth is a

very dynamic variable, one can not totally attribute the high fluctuations to an otherwise latent variable such as institutions.

Another widely-cited work along this line is that of Barro (1991), who used growth rate of real per capita GDP as the endogenous variable in the growth equation. As in the study mentioned above, the sample dataset included a cross-section of 98 countries and for a similar time frame. In this study, he undertook statistical tests on a range of economic variables to identify those which explain the observed variations in performance among the countries. The study finds that, in compliance with the convergence hypothesis, growth rates of countries inversely related with initial levels of income while human capital, proxied by initial year level of school enrolment rates, positively correlates with the rate of growth in real per capita GDP. The positive impacts of the human capital variable is likely to have been underestimated in the growth equation because human capital had also certain indirect positive effects, notably a positive association with ratios of physical investment to GDP and a negative one with fertility rates. Other variables that returned results which are largely concomitant with theoretical priors are share of government consumption in GDP, political stability and market distortion indicators.

Note that, while I do not deny the risk of information wastage in cross-sectional models, I caution against a wholesale criticism of these models. A number of reasons exist as to why this is so. It is true that such studies merge a large time series into a single observation, thereby making it very likely that important dynamic elements of the variables will not be brought to analytical scrutiny. However, this statement is very context-specific, in that the risk of information loss hinges on the type of variable under scrutiny. In our case, I try to explain the causal relationships between a dynamic variable (economic growth) and a slow-changing explanatory

variable. As such, the very nature of the variables partially mitigates the problem. Additionally, even when I apply cross-sectional models, the use of different robustness techniques helps to address the possible weaknesses of cross-sectional models. For instance, such techniques as robust regressions, regressions with robust standard errors and quintile regression, help to rectify the problems.

Another oft-referred problem one faces with applying cross-sectional analysis for economic growth modelling is a high probability for endogeneity bias (Hoeffler 2002, Nkurunziza and Bates 2003). This type of problem occurs when one or more of the independent variables in the model are themselves determined within the model. For instance, consider the case of the effect of political institutions on economic growth of countries wherein there exist strong possibilities for the former to be partially determined by economic performance. Political institutions are not always exogenous, in that putting in place good institutions usually requires financial costs that make richer nations better placed to establish such institutions. In this case, the model shall not capture the effects of economic status on a country's ability to own growth-promoting institutions. Since the conventional approach to addressing problems of endogeneity requires either differencing or lagging the variables (both doable only in the presence of a temporal dimension for the data), the benefits of panel data models seem apparent.

Nevertheless, this still does not totally rule out cross-sectional models. For instance, if the researcher finds a valid instrument for the relevant variable (what differencing or lagging does for panel data models) then cross-sectional models can control for the problem of endogeneity. Mauro (1995) did this in his study on the causes of corruption. Similarly, it is also the case that the problem of endogeneity bias depends on the features of the variable under scrutiny. For instance, the adoption

of certain institutions may have little to do with income levels in the country. A case in point is where most African countries inherited constitutions from departing colonial administrations.

Still, the above presentation on the applicability of cross-sectional models should not be construed as implying that the two models are perfect substitutes. Notwithstanding the fact that there exist several instances where the use of cross-sectional models is a legitimate one, I make a deliberate effort in this thesis to utilise the panel data specification as much as possible. As shall be explained in a subsequent chapter, some of the basic theoretical stipulations in the economic growth model presuppose panel data set-up for testing and verification. One such case is where the cross-sectional application returned results that conditional convergence in income did not occur in Africa. This result, which did not tally with theoretical propositions, changed when the panel data model was applied. All in all, I have ample reasons to conduct a more in-depth assessment of the panel model, to which I turn next.

3.3.3.2) Panel data models

Across a wide spectrum of disciplines, the use of panel data has proven to be an exceptionally strong tool for research, in that such datasets allow researchers to account for both the temporal and spatial attributes of variables. For instance, a cross-section data of thirty countries can only have less than thirty degrees of freedom, while if augmented by a time element of, say, three years, the model's degree of freedom shall also increase accordingly. In other words, in the panel dataset, where total number of observations is now given by *NT,* our model will have more room for variation, so that it provides a better fit for the relationship between

the endogenous and exogenous variables. It is not difficult for one to see the significance of the broader information rendered by panel data, whereas for the cross-section type of data, it is only limited to *N*. While many economic variables inherently exhibit significant temporal variations as well as differences between cross-section units, political (institutional) variables are notoriously sticky. Panel data models enable researchers to explore both the temporal and fixed effects of variables. Before I summarize major empirical studies in growth accounting that have utilised panel data sets for analysis, I elaborate on the intricacies when one applies such techniques to identify basic determinants of economic growth variation among countries.

Dynamic panel data analysis is the widely applied model specification type used to address problems of wastage of information, endogeneity bias and omitted variable bias that, under certain circumstances, could affect cross-sectional analysis of economic growth among countries. In the case of balanced panel, I shall have observations on each variable at the different points in time and for all countries. The dynamic character of the model emerges from the use of lagged values of the dependent variable as a right-hand side argument. Hence, the dynamic panel model is given by:

$$g_{i,t} = \alpha + \beta y_{i,t-1} + \pi x_{i,t} + \varepsilon_{i,t} \text{ -----} (3.14)$$

In this specification, economic growth as measured by rate of growth in real GDP per capita is a function of past values of the same variable and a vector comprising theoretically stipulated explanatory variables including institutions and human and physical capital. While there is no blue print as to how the error term should be modelled, one approach is to control for time dimension of the error component. In this case, I expect some variable effects which do not alter temporally

and others which transform accordingly. The decomposition of the error term into time variant and time invariant components gives us:

$$\varepsilon_{i,t} = \mu_i + \nu_{i,t} \quad ----(3.15)$$

where the first and second terms reflect the time invariant and time variant components. Hence, by substitution, equation (3.14) transforms into:

$$g_{i,t} = \alpha + \beta y_{i,t-1} + \tau x_{i,t} + \mu_i + \nu_{i,t} \quad ----(3.16)$$

Equation (3.16) is also equivalent to:

$$y_{i,t} - y_{i,t-1} = \beta y_{i,t-1} + \tau x_{i,t} + \mu_i + \nu_{i,t} \quad ------(3.17)$$

which again can be rewritten as:

$$y_{i,t} = \beta^* y_{i,t-1} + \tau x_{i,t} + \mu_i + \nu_{i,t} \quad -----(3.18)$$

where $\beta^* = \beta + 1$

By deriving equation (3.18) in first difference form, I can eliminate $\mu_{i,t}$ because

$$\mu_{i,t} - \mu_{i,t-1} = 0$$

The main advantage of such an exercise is to solve the problem of heterogeneity and hence that of omitted variable bias. Now I have:

$$\Delta y_{i,t} = \beta^* \Delta y_{i,t-1} + \tau \Delta x_{i,t} + \Delta \nu_{i,t} \quad ------(3.19)$$

However, it is now clear that the derivations carried out so far also introduced the problem of endogeneity in the model. This emanates from the fact that the lagged value of the dependent variable is endogenous to the error term lagged once. Logically,

if $y_{i,t} = f(\nu_{i,t}) \Rightarrow y_{i,t-1} = f(\nu_{i,t-1})$

Nkurunziza and Bates (2003) cite the types of bias that emerge from an OLS estimation of the model. Accordingly, the bias is negative for positive values of β; it

increases with β and slowly decreases as the time dimension of the panel is increased. Literature on growth empirics, by and large, favours the use of instrumental values to address the problem of endogeneity, as long as one is able to find legitimate instruments. The instruments used should be highly correlated with the explanatory variable in question (lagged value of the dependent variable) and not with the dependent variable. One solution in this respect is that of Anderson and Hsiao (1982) wherein they argue that it is possible to use two-period lagged values of the dependent variable as well as first-differenced values of the other explanatory variables so as to remedy the endogeneity problem. However, the critical assumption they make that the differenced variables are strictly exogenous has come under strong criticism from a wide spectrum of research. A number of scholars found that these variables are in fact not exogenous in most instances, which in turn led to studies that further refined the methods.

Arellano and Bond (1991) assert that the moment restrictions that one can derive from the Anderson and Hsiao (1982) findings, i.e. equations (3.20) and (3.21), indicate that there exist more valid instruments than the endogenous variables.

$$\mathrm{E}\left(y_{i,t-j}\Delta\nu_{i,t}\right)=0 \quad ----(3.20)$$

for j = 2,3, --- (T-1)

$$\mathrm{E}\left(x_{i,t-k}\Delta\nu_{i,t}\right)=0 \quad ----(3.21)$$

for k = 1,2,3,---(T-1)

They endorse the use of the Generalised Method of Moment (GMM) estimator calculated in two steps. First, I put all the instruments in a single vector:

$$Z^{*}=\left[y_{t-2},y_{t-3},---\Delta x_{t},\Delta x_{t-1}---\right] \quad -----(3.22)$$

And secondly, the inverse of the variance-covariance matrix of the instruments, (A_H) in the equation below, is computed to combine the instruments efficiently, and then used to derive the GMM estimator:

$$\delta_{GMM} = \left(X' Z^* A_H Z^* X\right)^{-1} X' Z^* A_H Z^* Y \text{ -------} (3.23)$$

Note that our presentation so far on panel data estimates for growth accounting is based on the assumption that the error term has both time variant and time invariant components. The possibilities for panel data analysis, however, are multidimensional in accordance with specific type of relationships posited in theories. For instance, in the constant coefficients model I presume that neither country effects nor temporal effects are overly important, so that data can be pooled for estimation. For fixed effects model, one can let intercepts differ while holding slopes constant, or let slopes differ and intercepts remain constant, or both intercepts and slopes differ among sample units. Each case warrants different estimation procedures, as the statistical problems I face also differ according to the model in question. Additionally, I have at least two versions of the random effects model in that in one case the random error is heterogeneous among units such as countries but temporally constant for all, while for error component models, the error term is uncorrelated with both the cross-sectional and temporal dimensions of the model. These latter types of models are also often referred to as a two-way random effects model because they allow time invariant attributes of variables to be included in the models.

Several empirical studies have used panel data sets to provide better approximations to factors that determine observed variations in growth performance among countries. One notable work in this regard is Islam (1995), where he applies different panel data estimators on a dynamic panel data model to test the convergence hypothesis in economic growth. The study highlights the incremental

use values of panel data specifications by sequentially estimating models of cross-section and pooled cross-sections over five-year periods before embarking on dynamic panel estimates. Both cross-sections and pooled cross-sections provide results with few differences, as neither is able to properly account for individual effects. The findings indicate higher rates of conditional convergence and lower values of the elasticity of output to capital, because the dynamic panel data model is capable of controlling for the omitted variable bias. The study in particular applies a couple of panel data estimators, namely the minimum distance estimator, which emphasises the correlated nature of the individual effects and the least square dummy variable estimator. It generally stresses that the main advantage of the panel approach emanates from its ability to allow aggregate production function to differ across countries which, in this case, lends support to the conditional convergence hypothesis.

Similarly, Caselli et al. (1996) further stress the methodological edge panel data estimation provides as compared to cross-section analysis of economic growth. As in most other studies, they pinpoint two rather important technical issues which specifications based on the latter types of data may not be able to internalise in the empirical analysis of growth differences. Accordingly, the study highlights possible inconsistencies of cross-country economic growth studies based on cross-sectional data, if there exist correlated individual effects and endogenous explanatory variables. When both the individual effects, which lead to omitted variable bias, and the endogeneity problems are significant enough, in the cases under scrutiny, estimates that do not account for these situations might become biased. By applying a generalised method of moments estimator (which has the inbuilt capacity to address these problems in dynamic panel data models), they find that per capita incomes converge to their steady-state at a rate of approximately 10 percent. The result is

somewhat at odds with prevalent estimates on convergence that revolve around two percent. The application of the generalised method of moments estimator on a dynamic panel data model returned results that reject the propositions of both the neoclassical Solow model and the augmented Solow model that includes human capital as a further explanatory variable.

The findings using a generalised method of moments for growth empirics have also been endorsed by other similar studies. Tsangarides (2001), for instance, investigates the plausibility of the convergence hypothesis in different modes for OECD and Africa. In addition to underscoring the inadequacies of the cross-sectional models of cross-country economic growth accounting, he derives three important findings with regard to the growth literature. To start with, the dominant view on convergence that values it at 2-3% underestimates actual speed of convergence, in that the rate of convergence to steady-state both for Africa and the OECD stood in excess of 10 percent. Second, the study finds a string of political economy variables that significantly explain variations in growth performance among countries. These include initial conditions, investment, population growth, human capital development, government consumption, openness, financial development and the political environment. Another point worth noting is that both, in its textbook form and human-capital-augmented form, the Solow model is not consistent with observed variations in terms of economic growth among countries. As is the case for a number of other studies on the subject, this study also casts doubt on the robustness of the endogenous growth theory in addressing the question as to why countries differ in their growth performance over the long run.

All in all, a number of practical rationales justify why empirical research on determinants of economic growth in cross-country settings could also use panel data

models, also often referred as cross-section time series data. As long as the specific nature of the variable in question demands it, panel datasets are inherently rich because they enable researchers to trace both temporal and spatial dimensions of political economy variables. For instance, should I be convinced that institutions vary as much within as in between cases, then I would need to rely on panel models to capture the multi-dimensional sources of variation. Similarly, should I have adequate reason to claim that units of analysis are not homogenous, then our use of panel data models helps us to satisfactorily control for heterogeneity of units of analysis. It is these particular cases of variation, as in the case when initial conditions diverge significantly, that the panel model enabled us investigate the convergence thesis.

3.4) Discussion and summary

The major aims of this chapter were to elaborate on the research method for the thesis and also to discuss the justifications for choosing the particular research method. I began by stressing the point that the extensive scholarly interest which the theme of economic growth has attracted over the past several decades has been well warranted. The fact that the poor records that many countries registered with regard to economic growth was causally related to several political economy woes, was in itself important enough to justify the broad academic interest. As is the case for other challenging themes in political science and economics, the study of economic growth has also grown exponentially over the past several decades.

As such, it was only logical for us to explain and justify the particular research method I apply in this thesis. As explained above, growth accounting is not the only methodology when it comes to the study of economic growth. If I were to use it in this thesis, then I would need to weigh its advantages vis-à-vis alternative

methods, i.e. growth diagnostics and case-based economic growth studies. Our presentation in this regard showed that the choice of a cross-country growth accounting approach was, in fact, an informed one. Still, the discussion, which underlined the use-values of cross-country specifications, tells only part of the story.

A discussion, on the relative merits of cross-sectional and panel data models, was next in the pecking order. Though one can not indiscriminately use cross-sectional and panel models as perfect substitutes, I underscored the point that there exist cases where the application of both models is a legitimate approach. I showed that the use of cross-sectional economic growth models could be justified due to a number of reasons. More to the point, I elaborated on the point that institutional variables are inherently latent, hence implying limited temporal variation, as well as the possibility of augmenting cross-sectional models with different tests of robustness.

As for the panel specification, the Solow growth model, for all the right reasons, has long been the workhorse of economic growth studies. In so far as providing robust theoretical grounds and appropriate mathematical specification is concerned, this growth accounting model has been a phenomenal success. It provided a concise explanation as to why and how factor accumulation enters the production function. Naturally, a comprehensive assessment of the neoclassical Solow model, also tracing its refinements, was a useful exercise. Quite a long string of researchers embarked on applying diverse within and cross-country samples to empirically test the strength of the model, which to a certain extent has continued. The discussion presented in this chapter also provided a rationale for the use of the augmented Solow model in the thesis.

Chapter 4. The Setting

The major objective of this chapter is to discuss the setting for the research as well as justify its focus on Africa. To do so, the chapter is organised as follows. In the first section, discussion is provided on four major paradigms on African development; namely the geography thesis, the socio-cultural and historical approach, the institutional approach, and political variables such as instability. Section 4.2 pinpoints some rationale for growth studies in an African context. For a cross-country quantitative study to have meaningful statistical derivations, there should exist meaningful variations in terms of the relevant variables. Section 4.3 shows that this is the case for Africa, in that the region hosts countries with diverse records in economic performance and quality of institutions. Two countries in the Region have made substantial strides in their economic performance over the past several decades, a fact which has led several scholars to label them as 'outliers'. A discussion of Botswana and Mauritius is, therefore, necessary, and I deal with this issue in section 4.4. The final section discusses and summarises. It is obvious that the main purpose of this chapter is, therefore, to underscore the point that our focus on Africa is a legitimate one.

4.1) Competing theories on African economic performance

4.1.1)A growth-inhibiting geography thesis

This thesis, otherwise known as the 'environmental determinism' hypothesis, stresses that the underdevelopment of the region mainly emanates from natural conditions, which are deemed to be a hindrance to human development and production. Accordingly, Sachs and Warner (1997) model such geographical factors as fraction of countries in tropical climates, fraction of land-locked countries and

natural resource abundance in an international cross-sectional data, to explain that geographical variables are important determinants of growth performance in Africa. It is noteworthy that, while underlying the critical roles environment plays in defining economic growth, they did not uphold the notion that we need a unique theory for Africa. They also did not make the relative strength of the environment variable against other candidates such as trade and institutions.

The study finds that a landlocked country's growth is on average 0.58 percentage points lower than a country with access to the sea while a country located in a tropical climate comparatively performs 0.85 percentage points lower than a non-tropical country. Since Africa has relatively more landlocked and tropical climate countries, it then follows that its economic performance is affected negatively. Estimates for other parameters including the ICRG institutional quality index and degree of openness of an economy, have produced results that largely confirmed theoretical priors. However, this study could not convincingly explain why, despite sharing similar environmental characteristics, cross-country variations in economic growth remained strong. Additionally, it is unable to account for those periods during which several countries in the region, managed to perform on a par with other regions.

Similarly, Faye *et al.* (2004) discuss how, on average, countries that do not have direct access to the sea are likely to perform economically poorly. A number of adverse dimensions, which relate to a country being landlocked, were identified, including political instability, large trade costs, dependence on infrastructure of transit countries that at the final analysis could lead to low scores on human development, and rates of economic growth for these countries. Nonparametric evidence is presented to show that the adverse geography hypothesis is not limited to

Africa, in that landlocked countries in other regions also compare less favourably in terms of economic performance with other countries. I can pinpoint a number of factors that question the robustness of this theory in explaining variations in cross-country economic growth. To start with, it is based on a snapshot of the links between environment and economic growth in that it largely fails to control for temporal dynamism with regard to environmental factors. For instance, quite a number of countries in Africa changed from net food exporters several decades before, to net importers, as a consequence of environmental deterioration. As such, mapping long-run economic records to current environmental realities is likely to miss the point. Secondly, the theory is unable to explain why countries in the southern Africa region do not fit with its stipulations. A case in point is Botswana which lends support to the institutional paradigm that emphasises the importance of political institutions as fundamental determinants of growth. I probe further into the experiences of Botswana and Mauritius in a section below.

4.1.2) Socio-cultural and historical factors

This strand of literature on African development puts more weight on the very nature of states in Africa to explain likely causes of their underdevelopment. Accordingly, it postulates that colonialism has created modern institutions and systems at the expense of indigenous forms of governance. Clapham (1996) asserts that there exist significant idiosyncratic elements in African statehood, in that African states differ from other countries in their very configuration and origins. In this regard, it primarily singles out a couple of theoretical hypotheses considered important in explaining the abysmal record of African countries in political economy outcomes. Firstly, since most African countries were created territorially by forcibly

merging otherwise distinct ethnic groups, such a situation aggravated political instability in the postcolonial period. Secondly, political systems were characterised by neopatrimonial relationships between those in office and citizens, which in turn came at a high cost in terms of inability to adopt growth-promoting policies (*See also* Englebert 2000). As in the geography thesis, the plausibility of this approach is questionable, mainly because its relevance seems limited to Africa. I say so because, given that colonisation led to the emergence of states in other parts of the world as well, I would have expected those states to go through comparable economic growth trajectories to African states. Moreover, I hardly see any reason as to why the otherwise dissimilar colonial policies (e.g. direct rule, indirect rule, settler colonialism) should have equivalent resonance on African political economy. Finally, by lumping together state formation experiences in such countries as Ethiopia, South Africa and Zimbabwe, it does not compare like with like.

4.1.3) Institutions rule: a political economy paradigm

So far, I have argued in favour of an all-Africa growth accounting exercise, particularly referring to diverse experiences in economic performance and quality of political institutions among countries in the region. It is also elaborated that approaches that utilise a particularistic theory to explain African economic performance have very limited explanatory force. Similarly, resorting to geographical and historical propositions limits us to very contextual analysis, while failing to account for the inherent temporal dynamism in economic growth. Positive political theory, on the other hand, provides a rich array of explanations as to how political institutions define the growth pace of countries. But this attribute also suffers from a drawback in that there exists no blueprint indicating the order of

importance of *all* political institutions in determining growth. Researchers largely responded to this problem by either subjectively focussing on only a limited number of institutions or by relying on highly aggregated measures, as indicated by the World Bank governance indicators, constructed using hundreds of individual variables drawn from 37 separate data sources provided by 31 different organisations. In this thesis, I partially circumvent this problem by focussing on one set of crucial political institutions that define the economic growth trajectory of countries, i.e. institutions of credible commitment. An additional logic for critically looking into the political economy literature on economic growth in Africa is to highlight the conspicuous absence of institutional variables vis-à-vis political economy outcome indicators.

Ideally, it would have been very informative to synthesise the political economy studies on Africa in accordance with how each type of institution affected economic performance. However, there exists a noticeable difference in the way researchers addressed this issue within different contexts. For instance, research on African political economy, by and large, attempts to explain the channels and magnitude of a given outcome indicator, say political instability, on economic growth, which camouflages the fact that the former is in fact endogenous to types and quality of political institutions in a given country. At this point, I recall the Mauro (1995) study; for it crystallizes the broader view; which in international cross-section data that includes eight sub-Sahara African countries, he instrumentalises poor institutional quality with degree of ethnic fractionalisation. One pitfall of this otherwise excellent work is that almost all the African countries included in the sample were not only those with high scores of ethnic diversity, but were also autocracies during the period in question. The point I make here is that, in organising

the existing African political economy literature, one naturally needs to draw on the above-mentioned features. Accordingly, I discuss the literature in line with those political variables widely applied in African contexts.

4.1.4) Political variables in African economic growth studies

That political instability featured very frequently in studies on causes of cross-country differences in economic growth within an African content is all too apparent given high political volatility in the region (*See* Alesina *et al.* 1996, Fosu 1993, Guillaumont *et al.* 1999). For instance, between 1970 and 1994, coups were so regular that they occurred in at least one country of the continent in every year, save for two years. Such often-violent events occurred mostly in Central, West and East Africa while southern Africa was mostly spared of this type of political upheaval. In terms of guerrilla warfare, every corner of the continent below the Sahara has endured episodes of bloody conflict. For some countries, such as Ethiopia and the Sudan, it lasted for more than two decades while, for others, it transformed into an open regional war, as in the case of the Great Lakes Region or a proxy regional war as in Côte d'Ivoire and Sierra Leone, or culminated in genocide, as was the case in Rwanda.

Still, amid the widespread political violence that engulfed the region, there existed some countries that have remained largely stable, not only under autocracies, but which have also managed to remain so after democratic reforms, with Kenya, Tanzania and Malawi being cases in point (for a video and slide presentation of the political economy of sub-Saharan Africa, see the African Research Program website of Harvard University at http://africa.gov.harvard.edu/).

I mentioned in passing above that research on the relationships between political instability and economic growth, by and large, focused on finding accurate instruments for the former and/or portraying such mediums as direct destruction on infrastructure and instability-induced sub-optimal private investments, in which political instability affects economic performance. In his oft-referenced study on growth determinants for 98 countries over the period 1960-1985, Barro (1991) proxies the political instability variable with two indicators, i.e. the number of revolutions and coups per year and the number per million population of political assassinations per year. Both were found to have significant negative associations with economic growth and, therefore, he argues that because political instability negatively affects property rights, it also deters investment and growth. In line with the style of most conventional studies based on economic theories such as Barro (1991), Gyimah-Brempong and Taynor (1999), political instability was included as an exogenously-determined argument and not as an outcome of political institutions. It is also worth noting that specifications that include an African dummy, risk a selectivity bias problem, because, in randomly including an African country, the likelihood of drawing a higher political instability value is correspondingly larger. A similar pattern is observed in the bulk of other studies.

Accordingly, Easterly and Levine (1997) apply political instability as a control variable in their economic growth study, in which the instability variable was proxied by a number of indicators, including political assassinations, measures of civil liberties, number of coups and revolutions, and number of casualties of war. They argue that ethnic differences closely correlate with cross-country differences in public policy and political stability. A more pertinent assertion of the study to the issue at hand is that, while political instability adversely impacts on growth, its

effects are submerged by the more powerful effects of ethnic diversity on economic growth. Another measure used to quantify political instability in countries is the number of months of war in a country, but the application of this variable did result in a negative and yet statistically insignificant association between political instability and economic growth (Collier and Gunning 1999). On the same note, Nkurunziza and Bates (2003) apply the number of years an incumbent has been in office, and regime type, to capture the implications of political stability on economic performance of countries. Here, political instability is found to explain growth differentials among African countries but the sizes of the coefficient estimates are rather low.

4.2) Rationale for growth analysis in an African context

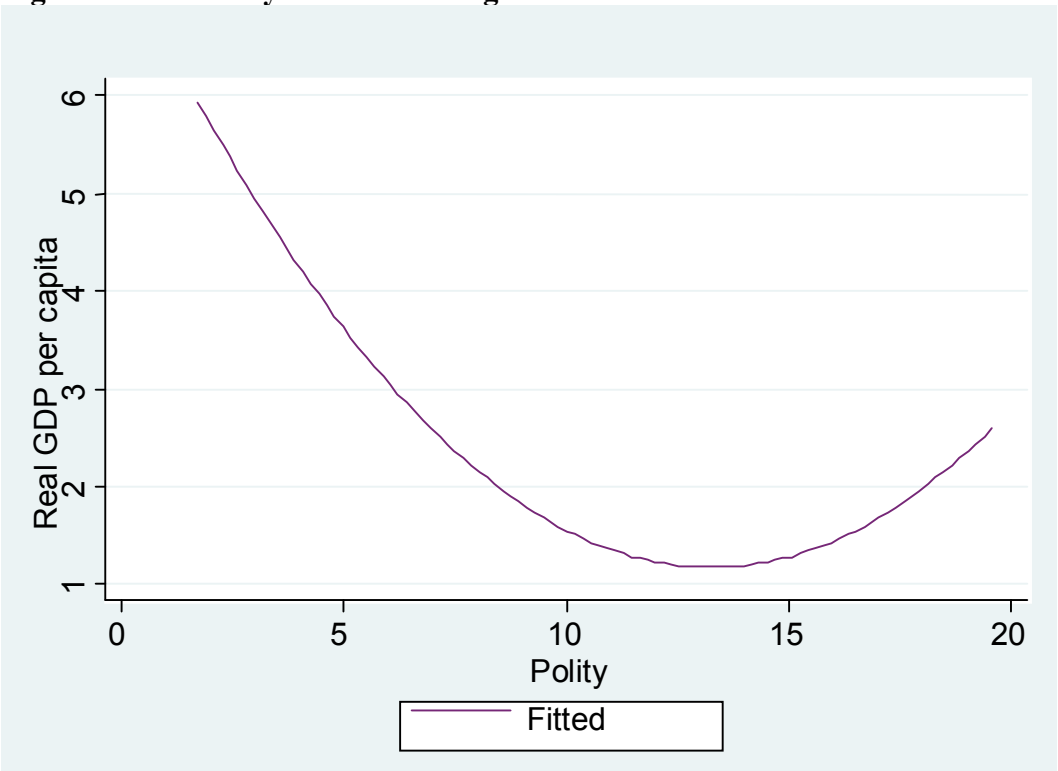
Our primary task in this particular segment of the study is to push through the argument that existing studies by and large had methodological weaknesses in dealing with institutional determinants of growth in Africa. One way to do this is to cast doubt on the frequently used African 'exceptionalism' hypothesis. I use the following presentation to clarify the point. Research on links between democracy and economic growth generally have come up with inconclusive results, in that half of the studies show democracy, positively and strongly, affecting economic performance, while the other half find significant inverse relationships (Przeworski and Limongi 1993). Some scholars argue that democracies are better placed to provide credible regimes of property rights, thereby predicting a positive slope in the economic growth equation (Goldsmith 1995, Leblang 1996). Others stipulate that in countries where the median voter is poor, the pressure for governments to spend more on current consumption at the expense of growth-promoting investments is

quite robust. This scenario ultimately leads economies to fall far from the production possibility curve (*See* Sirowy and Inkeles (1990) and Borner *et al.* (1995)). As a consequence, and as explained in Barro (1996), one expects a nonlinear functional relationship between proxies for democracy and economic growth of countries along a longer time span. By nonlinear, I mean that the effect of democracy on economic growth depends on the economic status of countries in the first place. If I assume that, democracy improves property rights, then I expect a significantly different effect on economic growth for a country which is poor and lacked property rights significantly from another country where property rights were better.

I then ask if Africa confirms to these theoretical priors or exhibits a different pattern as postulated in the 'particularism' literature. I plot real GDP growth rates for forty African countries over the period 1965 to 2000 against the democracy variable. The democracy variable is drawn from the widely used Polity index (Polity IV Project: Political Regime Characteristics and Transitions, 1800-2002) that assigns values from a low of –10 (strongly autocratic) to +10 (strongly democratic). For exposition purposes, and with no loss of analytic power of data, I recode the Polity index into a 1 to 20 scale with increasing values referring to better scores on democracy. This maps countries in the Region from a low of 3 and 3.5 to Guinea and Sierra Leone respectively, to 17.34 for Botswana and 19.57 for Mauritius. As shown in Figure 1, I find a quadratic fit between the democracy and economic growth variables in Africa. While at low levels of development, democracy might have adversely affected growth, further consolidation in the democracy variable seems to have a positive payoff in terms of economic growth in Africa. A finding which broadly tallies with the above mentioned stipulations of research. This endorses our

assertion that if, designed appropriately, political economy studies can explain political determinants of economic growth in Africa.

Figure 1 Democracy and economic growth in Africa



NB. The above graph plots average annual real GDP per capita against Polity scores. Both variables refer a mean of the annual scores for the forty-five countries over the period 1970-2004. Since Polity is not a continuous data, the above graph should not be read as a functional relationship between democracy (Polity) and economic growth. It, however, provides a fair indication of the spread of data in the region. It is indicative of the non-linear relationship between economic growth and democracy. *See* Heston *et al.*(2002) for Real GDP per capita and Marshall and Jaggers (2007) for Polity.

Previously, I maintained that positive political theories strongly elaborate on how a large vector of political institutions defines the economic growth path of countries. Broadly, the essential factors that explain why certain countries enjoyed robust growth, while others performed poorly, in a long-run time are span are existence, in the former, of political institutions that efficiently shaped incentives for productive activities. For instance, the political institutions ensured a credible regime of checks and balances on executive discretion to insulate private investment from

risks of expropriation of wealth and, therefore, encouraged economic agents to actively engage in productive activities. Similarly, in countries where political executives rule without the consent of the broad section of society, political leaders tend to establish extractive institutions.

However, theories are, by and large, open-ended with regard to the relative strength of political institutions in affecting economic growth. I know, for example, that an effective bureaucratic delegation which addresses agency problems enables an economy to reap the economic advantages of not only technical efficiency, but also, that of a credible macroeconomic policy regime. It is also true that a functioning democratic regime can reduce risks of political instability thereby encouraging intensive and lasting economic transactions. While the positive implications of such political institutions for economic growth are apparent, what one cannot draw from theories is an ordered sequence of institutions in terms of their relative strength in determining growth. By limiting the focus of the study on one region, namely Africa, and hence reducing the set of pertinent political institutions, I partially circumvent this problem of rationalising the choice of specific political institutions for further investigation. For instance, if I classify countries as democracies based on Freedom House category of 'free', then only three countries (Botswana, Gambia and Mauritius) pass this test. Still, there are several other factors which justify the emphasis of our growth-accounting exercise on Africa. An all-encompassing derivation of all such factors is that there exist adequate variations within the Region, both in terms of economic performance of countries and types of political institutions, so that it is suitable for empirical scrutiny. Accordingly, this section identifies and discusses the logic behind the focus on Africa.

4.3) Africa as a diverse set of performance and institutions

To start with, African economic growth performance in a long-run time frame comprises a few countries that managed to transform into middle-income country status, while others either regressed continuously or, at best, registered modest growth. To explain the implications of such disparity, I examine how countries fared in terms of real per capita GDP between 1950 and 1990 (consistent with Maddison (1995). The exercise brings to the fore interesting points which support the proposition that economic growth within Africa has been far from even. For instance, between the two years mentioned above, Botswana's economy, measured in terms of growth in per capita, grew ten-fold, a figure which was also a range for the region, given the absence of growth in most other countries. For the other group of countries, such as Ethiopia, Somalia and Chad, there was almost no significant change in rates of growth. By 1990, real GDP per capita in Mauritius, an open economy with relatively longer democratic practice, was three times greater than what it was in 1950. It is also the case that, over the period mentioned above, neither resource-rich countries including Angola, Nigeria, Sierra Leone and Congo nor politically stable countries such as Tanzania and Senegal managed to keep up economic welfare to levels enjoyed in the early 1950s.

One can achieve a better grasp of economic health of countries through a sufficiently long time series on economic growth. Hence, to have a better understanding of how economies in Africa performed over an extended period of time, I resort to the PENN World Tables for the period 1990-2000 on 31 countries. During this decade, and measured in terms of rate of growth of real GDP per capita, the distance between the median value for the best performing economy (Botswana) and that of the slowest growing country (Gambia), is 6.44 percent. In about 41.3

percent of the years included, the countries registered negative growth rates, but the contribution to such an outcome is diverse across countries. If I apply a rule of thumb to classify countries that returned negative rates of growth for real GDP per capita for five or more years as contributing more to the aggregate poor performance of the region, then it is seventeen of the countries which significantly under-performed. Notable in the other segment of the growth spread are Mauritius and Benin. Thus, such scenarios endorse the assertion that economic growth in Africa reflects quite divergent individual country experiences. Since details of variables construction, with corresponding sources for both the panel and cross-sectional models are given in the Appendix, reporting this particular data set here may not serve any purpose.

Similarly, with the help of a simple statistical exercise, I provide additional evidence that countries in Africa have undergone different economic growth episodes. This is clearly shown by the degree of variation, measured by the standard deviation, each country faced in its growth during the 1990s. Accordingly, those countries which, on average, performed strongly, also enjoyed a highly stable economic growth that did not exceed three percent, of which the subset mainly includes Botswana, Mauritius, and marginally, Benin. Nevertheless, stable rates of economic growth do not necessarily imply positive attributes, as the experiences of Cameroon, Côte d'Ivoire, Burkina Faso and Tanzania show because these countries suffered from a low-equilibrium trap. Another group of countries, consisting of the largest countries of the region, such as Nigeria and Ethiopia, managed very erratic rates of growth, in that a very high positive performance in a given year was usually followed by a steep downward spiral in a subsequent period. Therefore, a central message which one needs to derive from the wide variation in economic growth performance, is that an African dummy may not be an adequate tool to understand

the political economy of growth in Africa. Such diversity in experience among countries in the region is equally observed with regard to the types and quality of political institutions that ultimately determine economic growth.

On balance, political instability has been a major feature of the political map in Africa since independence, in which forty percent of the countries have experienced at least one period of civil war before the end of the last century. Compared with other regions, Africa has had a larger share of civil conflicts, so much so that, in one study, of the twenty seven countries sampled for investigating economic causes of civil wars, twelve were from Africa (Collier and Hoeffler 1998). However, as in the case discussed above for our dependent variable, such region-level figures mask the high degree of variation in economic performance and political stability across countries in this part of the developing world. As such, it is imperative to hypothesise that the observed spread in types of political institutions among countries demarcates the line between the better and poorer performers in economic growth. While a detailed profile of such differences in political institutions is beyond the scope of this study, I handpick one important variable in the political institution vector for exemplification purposes.

Accordingly, most African countries have adopted electoral modes of political governance, particularly since the early 1990s. Notwithstanding the fact that, in not a few instances, such moves reflected only rational responses to a changing global political environment, the experiences of countries in practising this dimension of democracy differed significantly. As Bratton (1998) documents there were 54 elections between 1990 and 1994, which covered more than half of the sub-Saharan African countries, so that by the end of the decade, only four countries had not conducted any national elections. He also notes some differences between

countries in that countries that undertook founding elections late tended to have poor quality elections. I observe that in two dimensions of electoral rules that shape economic policy, namely district size and electoral formula, the African political landscape is quite diverse. For instance, as reported in Beck *et al.* 2001, for countries in the region, the mean district size for the lower house disperses as widely as seventy two for Namibia, thirty-six for Senegal and three for Mauritius in 2000. Variations between countries also exist in terms of electoral rules wherein, for example, Benin (arguably the only country to avoid big reversals from the recent batch of reformers) applies a proportional representation system to elect its legislature, as is the case for Mozambique (an emerging post-conflict democracy), while Zambia and Togo use the plurality rule.

In all the discussion above, the overarching rationale I pursued for studying the political economy of economic growth in an African context rested on the region's diversity in performance and institutional qualities. Beyond such conceptual issues, the conventional approach to growth analysis with an African dummy has also recently come under fire for its weaknesses in adequately explaining disparities in cross-country economic performances. Most notably, in a methodologically powerful work, Anke Hoeffler (2002:156) shows that once I fully account for unobserved country effects and for the endogeneity of investment 'there is no systematic unobserved difference between African and non African countries.' Put differently, not only do differences in levels of economic variables such as human and physical capital affect growth across the board, but also, the fundamental institutional variables determine economic growth regardless of where a country is located. As such, research designed to account for differences in long-term economic growth within Africa is more informative than that which bundles the continent into

one unit. One, therefore, expects basic patterns in determinants of growth to be broadly similar when done individually in different regional contexts, as Tsangarides (2001) confirms for OECD and Africa.

All in all, the essence of the above discussion rests on the utilities of conducting a growth-accounting study in an African political economy context. Conventional economic growth studies on fundamental factors accounting for differences among countries rightly identified the African region to have registered consistently slower rates of growth in economic output. A bulk of these studies then embarked on a search for a particularly African variable to explain the reasons behind African underperformance. The view that African countries are poised to grow relatively slowly, even when they are at par with other regions in terms of institutional quality and factor accumulation, is so entrenched in economic growth studies that entering an African dummy has almost become synonymous with standard norm in research on growth. I differ from such an approach by stressing the region's diverse experience both in terms of successes and underachievers in economic growth, as well as parallel variations in political institutions among countries. In doing so, I rephrase the basic research hypothesis in such a way that, the basic factors as to why some countries in the region achieved better growth than the others, relate to the presence of political institutions in the former that, among others, provided for a credible regime of property rights, stable and predictable political and economic systems and avoided predatory governance structures.

4.4)The Botswana-Mauritius story(ies)

Scholars who study the political economy of growth (or other dimensions such as democratic reforms or corruption) in Africa have paid particular attention to

the Botswanan and Mauritian experiences on these scores. This is understandable, given the much-heralded and exceptional progress these countries have made in their politics and economics since independence. With regard to economic growth, their achievements become all the more emphatic given the fact that, at independence, neither of these countries inherited conducive economic environment. When it achieved its independence in 1966, Botswana's level of income was not even in the top twenty of African economies. Over the past 35 years or so, Botswana registered the fastest economic growth rate, not only among African economies but also globally. Again measured in terms of real GDP per capita using data from the PENN World Tables, Mauritius' economy had contracted by 26.2% between 1950 and 1970. Following its independence in 1968, Mauritius' economic growth was so phenomenal that not only did it recover all lost ground but, by the year 2000, its citizens enjoyed an income level three times greater than the 1950 level. It goes without saying that such drastic economic transformations in both countries occurred in conjunction with stable political environments.

Of the string of studies that dealt with the political economy of growth, I cite two which sum up the major ideas behind the performances of these countries. Acemoglu *et al.* (2003) pinpoint five factors to unravel what they call the 'puzzle' which enabled Botswana to sustain good policies. These are relatively inclusive pre-colonial institutions, minimal effect of British colonialism, the compatibility of institutions of property rights and economic interests of the elite in the post-independence period, a rich resource base and critical decisions made by its post-independence leaders (Presidents Khama and Masire). Whether all these factors are particular to Botswana is questionable and hard to verify. Nevertheless, I can single out a few issues that need to be examined further. Botswana is a land-locked country

which, as one of the so-called frontline states, endured the pitfalls of political instability from (Apartheid) South Africa. Additionally, rather than fuelling economic growth, high-value natural resources have been a curse for the political economy of growth. If so, linking Botswana's strong performance to a selected few factors risks the problem of overgeneralization. In contrast to this, Mkandawire (2001) argues that robust economic growth in Africa was not confined to Botswana and Mauritius. He showed that ten of the twenty-seven countries, which achieved very strong growth rates during a period from 1967 to 1980, were African. Despite claims about clientalism and structural obstacles, Africa has had states that were 'developmental,' including, but not limited to, Botswana and Mauritius.

Given these points, is the argument that Botswana and Mauritius are outliers valid? At this point, it helps to elaborate what exactly is meant by an outlier. Also called "discordant observations," "rogue values," "contaminants," "surprising values," "mavericks" or "dirty data", outlier refers to either a) any observation that appears surprising or discrepant to the investigator, or b) any observation that is not a realisation from the target population (Beckman and Cook 1983). It is not difficult to construe a high subjective content in the first definition of an outlier. Considering a number of factors, I find no convincing reason to subjectively label these countries as outliers. In the 1960s, when these countries won their independence, Botswana lagged behind many countries in the region in its income level, while Mauritius was one of the better ones by regional standards. Presently, the World Bank classifies Botswana and Mauritius in the upper middle income category, and more importantly, along with four other African countries. In terms of resource, Botswana is in the resource-rich league together with the likes of Equatorial Guinea, Gabon and Nigeria, while Mauritius does not possess high-value natural resources. Mauritius is an island

state like Madagascar or Sao Tome & Principe, while Botswana has no territorial access to the sea. Botswana is considered homogeneous in its ethnic make-up, whereas Mauritius, as in the case of most African states, is socially diverse.

If I go by the second definition and declare that these two countries are outliers in African data, it means that the probability of selecting either country from an African distribution is very small, if not zero. Since our dependent variable is economic growth, I use this same variable to argue that Botswana and Mauritius are realisations from the target population, i.e. Africa. I will consider first the real GDP per capita income from the PENN World Tables for the year 1970. I do so because both these countries became independent in the late 1960s. For the year in question, the distribution of income in Africa showed a mean of 1557.11, with a standard deviation of 1214.02. Levels of income for Botswana and Mauritius were within one and two standard deviations from the mean, respectively. Put differently, in any random pick on this score, I would have a sufficiently large chance of including Botswana and Mauritius. In fact, if any country was to be an outlier, it should be Gabon, with a level of income 9.3 times greater than the mean income in Africa for the year under scrutiny. A similar picture emerges when I consider current income as classified by the World Bank.

The effects of outliers are mostly felt in linear regressions, since they deviate from the linear relations which other data points follow. I defer parametric tests with regard to Botswana and Mauritius to the quantitative analysis chapters of the thesis. On the other hand, I raise some points that provide a clearer understanding of the general picture. Irrespective of the factors that caused them, observations affected by outliers do not obey theoretically stipulated functional relationships between variables. For instance, the Solow model predicts that higher levels of investment

feed into correspondingly robust growth performance. As such, inasmuch as I are correct to associate the lacklustre performance of other African economies partially with low levels of investment, I should expect to deduce the same for these two countries. On a related note, a stable political landscape, in which the state avoids predatory policies, fosters economic growth in the long-run. As per the definitions of outliers, I would have labelled Botswana and Mauritius as outliers had they achieved progress without the economic and political features mentioned above. To put matters into perspective, unlike the assertions of the conventional view, the strong economic performances of Botswana and Mauritius make them exceptional, but not outliers, in the technical definition of the term.

4.5) Discussion and summary

In this chapter, I set out to establish a rationale for applying a positive political economy approach to studying differences in economic performance among African countries. Several points were discussed, that highlight the value-added of this type of research. To start with, I argued, using empirical evidence, that the prevalent approach to modelling African political economy using context-specific theories is not an informative exercise. One such case in point is the good fit that an all-Africa data provides with the general positive political theories on the nexus between economic growth and democracy. Secondly, I questioned the robustness of studies that normally account for African economic performance by collapsing it into simple mean values. A couple of factors were invoked to sustain this argument, which stresses the presence of adequate variation between countries of the region, both in terms of types of institutions and economic performance. Thirdly and relatedly, the non-institutional theories such as the geography and history hypotheses

were of very limited explanatory power. Such theories were very descriptive of the African situations, as opposed to providing spatially comparative theories. Additionally, since they mostly rely on an average representation of the Region, one is unable to look into important intra-regional disparities. Finally, I discussed the cases of Botswana and Mauritius, which the conventional view considers to be too good to fit an African story. I showed that, as these countries exhibit many features of other African states, the claim that these countries are outliers to African data is technically untenable.

Chapter 5. Model specification and testing

In preceding chapters, I discussed a number of vital points that ultimately allow for a systematic investigation of the political economy of growth from a credible commitment institutional perspective. As the voluminous debate on economic growth accounting was primarily an incremental value-added exercise (*See* Acemoglu 2004 for a review of recent developments), it then naturally followed that tracing the development of the field, both in its theoretical and technical dimensions, helped justify the choice of the particular functional specifications for the thesis. This chapter aims to accomplish a number of tasks. Firstly, I elaborate the quantitative models I use in this research. Secondly, a description of the economic variables to be used in the analysis is provided. In addition to explaining the variables included, the presentation also draws on economic theory to reveal directions of relationships of each economic covariate with the dependent variable. In the previous discussions, while emphasising the strong merits of panel data analysis, and rightly so, I also underscored the practicality of cross-sectional analysis.

There are certain reasons which make the use of cross-sectional models equally appropriate as well as contextually unavoidable. One reason is that since institutional variables are often sticky, I will be able to draw more insights from cross-country differences than I do from changes on the temporal dimension. Also, African data, at a scale required for statistical analysis, is frequently missing from sources that report institutional and policy information on countries. This is not the case, however, for the four variables in the Solow model. As shall be explained below, with the exception of a few countries, the PENN World Table provides data large enough to build a panel along Solow lines and test it on Africa.

It is this last point which provides us with the third task of this chapter. Throughout the discussion so far, I have been forcibly making the point that the best strategy to disprove the 'African exceptionalism' paradigm is to test well-established theories on African data. Since this is a particularly very significant theme of the research, the extensive coverage I give it in this chapter is not difficult to grasp. If the predictions of the Solow model are replicated using exclusively African data, this then implies that, in contrast to the conventional view, there is wide variation in the economic performance of African states. Needless to say, this variation is manifested through both the spatial and temporal angles. I will be justified not to have resorted to invoking theories deemed particular to Africa.

Fourthly, I attempt to establish that African data is not driven by the experiences of a few countries. Recall that, in a previous chapter, I argued that Botswana and Mauritius should not be considered as outliers, strictly based on the technical definition of the concept, to explaining economic growth in Africa. The discussion in this chapter provides us with parametric tests to back up these assertions. Finally, such issues as measurements of the economic covariates and the sources of data are tackled in this part of the thesis.

The roadmap towards achieving the above mentioned objectives is as follows. In section 5.1., I provide a brief description of the cross-sectional model I shall be using in the study. The description is kept brief, not because its use here is limited, but the panel model is better placed to establish our overarching theme for this chapter. Also note that, apart from the cross-sectional models' inability to account for dynamic effects in the relationships, there is much overlap between the two types of models. Taking these issues into account, section 5.2. embarks on a detailed elaboration of the panel model. I delve into the technicalities with regard to

measurements of both sides of variables, i.e. economic growth and economic covariates, as well as assessing how these variables distributed on the African economic map. I discuss data and conduct empirical tests in the following section. This section is decomposed into descriptive and quantitative analyses of economic factors that shaped economic growth for the countries in the region. By showing that African data is compatible with the predictions of the Solow model, the significance of this chapter echoes the overall gist of the thesis. I summarise and discuss the major issues in the final section.

5.1) The cross-sectional model

Before I delve into the descriptions and analysis of economic variables in both models, it helps to clarify the links between this chapter and that on empirical models. Accordingly, the presentation in the previous one, was essentially about the functional specification, and was tuned to address technical issues. Any mention of the actual variables, in the said chapter, was, at best, tangential. Lumping the two issues (i.e. functional specifications and elaboration on variables) into a single chapter would not be advisable. Hence, the case for the discussion in this chapter rests on these points.

Arguably, from the family of cross-sectional economic growth studies, Barro (1991) is the most widely referenced material. As explained earlier, it is his finding of a significant negative coefficient estimate for a dummy on Africa, that led this latter theme to achieve currency among scholars. Economic growth is measured as a simple arithmetic mean of annual rates of growth in real GDP per capita over the period in question. This kind of measurement for economic growth is not shared by other influential economic studies of the recent past. For example, both Acemoglu *et*

al. (2001) and Rodrik *et al.* (2004), emphasise the use of the natural log of real GDP per capita at a particular point in time as the appropriate measure in cross-sectional models. What is notable is that the differences were, by and large, marginal, and did not become major bones of contention in the growth literature (a notable exception to this consensus is Jeffrey Sachs' paper on the relevance of geography, *See* Sachs 2003). Here, I follow the latter and draw on the PENN World Table to define economic growth as natural log of the average real GDP per capita between 1990 and 2003 of the forty-five African countries.

What is not as clear-cut, however, is the type of economic explanatory variables that should be entered into the cross-sectional economic growth analysis. This is because the choice set for the economic covariates has been exponentially rising since the Barro study. Human capital, openness, investment, initial levels of income, public spending on capital formation, and spending on research and development are but a small sub-set in the domain of economic variables. In this thesis, I follow a more pragmatic approach. More specifically, I select the economic covariates in a way that minimises degrees of freedom. This condition is vital in an African context, where I face missing values for many variables. Note that the degrees of freedom is also an inverse function of the number of parameters to be estimated. It is for these reasons that I limit the economic controls to degrees of openness only. I do so not because openness is the only variable or the most important one to affect economic growth in Africa. Rather, the rationale is practical, as data on this variable, are available for all the countries. Additionally, I aim to test the robustness of the findings by replacing openness with other variables, albeit at a cost in terms of degrees of freedom.

5.2) The panel model

I build the panel using data drawn from the PENN World Table (See Heston *et al.* 2006).The selection of countries to be included in the panel was largely driven by a number of considerations. To start with, the existence of an adequate temporal spread for the dependent variable has informed the final list of countries selected for study. This condition was also tied to the availability of data for the dependent variable from a single source that makes comparative analysis acceptable. Yet it has proved a rather less restrictive condition, as notable absentees were Angola, Seychelles and the new entrant to statehood in the region, i.e. Eritrea. Another criterion applied to ensure homogeneity in structural conditions was to limit the geographical coverage to countries that are located south of the Sahara and, hence, rule out North African economies. Accordingly, the resulting sample contains forty-five countries, with the temporal angle stretching over the years between 1960 and 2004.

Note that the Solow model is essentially a neoclassical production function. Since this model assumes an institution free world, the fact that data, for a few of the African countries, included time during colonial spell does not have much bearing on the model. Additionally, as the major preoccupation of this research is to explain long-term growth, it is of paramount importance to smoothen short-term fluctuations in variables. Conventionally, this problem is addressed by collapsing the time series aspects of the data into equally-spaced time spans. Here, I lessen the effects of short term spirals in growth by constructing nine five-year episodes, thereby ultimately resulting in a sample size of 405. Another advantage of such an approach emerges from the fact that the latent effects of the institutional variables naturally require longer time spells to materialise.

5.2.1) The dependent variable

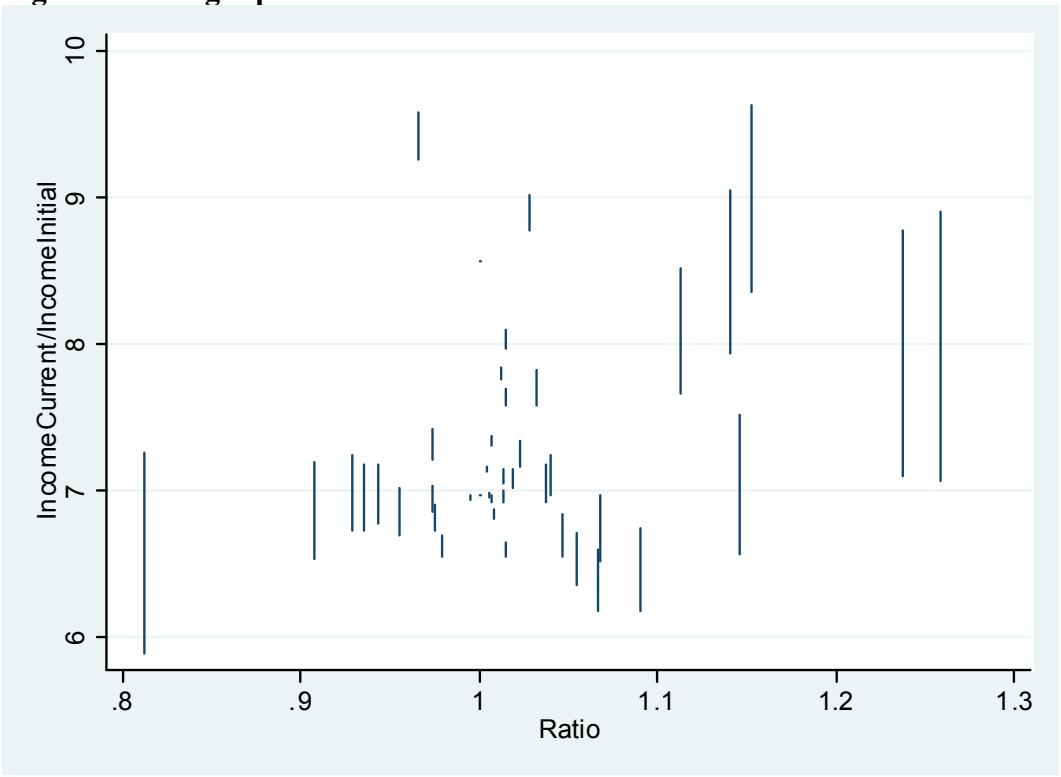
Currently, there exists a battery of indicators used by scholars and practitioners to assess the health of economies, with particular emphasis placed on accounting for the determinants of variations across countries on the variable of interest. One characteristic feature of both stand-alone macroeconomic variables, such as rates of inflation, and composite ones, as in the case of the human development indictors, is that each is inherently limited to explaining only a subset of social welfare. As a consequence, research is better served by utilising a given measure that has a higher correlation to other outcome measurements. Our preference in using economic growth as the dependent variable is, therefore, justified as much by its strong theoretical foundations, as by the fact that the effects of other social indicators could be captured by it.

Even when scholars provide for broader definitions and measurements of the concepts of development and economic welfare (Sen 2001), economic growth remains an integral component. This is shown in the derivations of the widely used UN publication, Human Development Index. The utility of the concept of average levels of income, as an analytical tool to capture cross-country differences in well-being among countries, is all the more pronounced when it is operationalised in such a way as to filter out price effects. Logically, real GDP per capita best satisfies these conditions.

In the previous chapter, I highlighted the shortcomings of the 'African underdevelopment' literature with regard to explaining differences in the growth trajectories of African countries. Empirical research that dummies Africa with a carefully selected list of a few countries runs the risk of camouflaging otherwise significant disparities observed in economic growth performance among the

countries of the region. Additionally, as shown in Figure 2, although there existed a significant spread in average levels of income among African countries, the general trend is skewed to the left. Such curvature accounts for the rather abysmal economic performance of a large number of countries in the past five decades. I group countries in quartiles for a more in-depth investigation of the pattern of long-run cross country economic performance in the region. The variable of interest here is the ratio by which a given country's average income changed over the past fifty years.

Figure 2 A range spike for African economies



NB. In this graph, Income current and Income Initial refer to the natural log of real GDP per capita for the year 2000 and 1970 respectively while the magnitude of change is captured by the variable Ratio. As can be visually inspected, about 12 of the 43 included economies regressed during this period. I use data from PENN World Table (See Heston et al. 2006).

The general pattern of the spread in real GDP per capita can be characterised along three major points. Firstly, the concentration of data points becomes sparse as one moves towards higher ratio values. In other words, the lion's share of countries in the continent experienced a serious contraction in their economies, or, at best, registered growth rates that decidedly failed to outpace growth in the size of their population. Secondly, there exist sizeable variations in the length of the spikes which capture corresponding imbalances in growth rates achieved among the countries. Parallel with countries that have gone through significant economic stagnation, some

countries managed to at least triple their average incomes between the years 1960 and 2000.

Thirdly, there were wide variations in terms of levels of initial income among the countries in question. A few countries were within the middle income echelon as early as 1960, while others began their economic development at extremely low levels of average income. In studies of economic growth, the question of how such initial disparities in income levels among countries evolved over time is a matter of paramount concern, both theoretically and empirically. I shall return to this issue of testing the convergence hypothesis in a subsequent section below, after first dealing with the description of each category.

The bottom quartile consists of countries whose average levels of income has shrunk quite significantly during the period under consideration. Measured in terms of real GDP per capita, the range within this group of regressing economies is also very noticeable in that, in the worst case, the average level of income for a citizen of the Congo (Kinshasa) is only a quarter of what it was about five decades ago, while for that for the within-group best performer, i.e. Comoros, the corresponding figure is about eighty percent. The composition of the nine countries in this category includes resource-rich economies such as Nigeria and Congo (Kinshasa) as well as resource poor ones as in the case of Madagascar and Mozambique.

Interestingly, this grouping comprises countries which were initially relatively poorer and failed to make inroads in the catch-up scenario of growth dynamics, but more importantly, it also hosted some that were in the better-off category with regard to initial income, notably Comoros and Mozambique. Note also the fact that with the exception of Zambia and to a lesser degree Madagascar, the other countries in this group have experienced prolonged and often violent forms of

political violence. It is also worth noting that the point of analysis here is the achievement (or lack of success) for a given country over the long-term, and not current income status.

A characteristic feature of countries in the second quartile is that, over the past half century, their economies remained on either the edge of, slightly below, or above, their initial levels of average income. The range of real GDP per capita for this group falls in between 89 percent below the initial level of income for Senegal and about 20 percent more than the initial level of income for Ethiopia. These countries can best be described as stagnating economies, in that, in a period during which global output expanded exponentially, their economic performance remained largely lacklustre. Apart from their relatively better performance as compared with the previous group, which slides back in economic welfare terms, the countries in this category share a number of features of countries in the bottom quartile.

Additionally, their post-independence political reality was defined by relatively stable autocracies, as in the case of Côte d'Ivoire, Senegal and Togo. Political instability, both in its elitist and broad forms, has ultimately affected the economic performance of these countries. For instance, Hartmann (1999) reports that, between the period 1960 and 1972 alone, Benin has gone through ten changes of Heads of State whereby six of the turnovers in chief executives were caused by military takeovers.

The next group's, i.e. the third quartile , income distribution pattern tends to be closer to the previous group, thereby providing further evidence that overall income distribution is skewed to the left. Nevertheless, the intra-group distribution in average levels of income is relatively more concentrated between the 21 percent and 61 percent above initial income levels for Cameroon and Guinea Bissau respectively.

It also includes South Africa which maintained its higher income status of the initial years while, at the same time, it did not experience significant expansion. Additionally, I observe that the relatively higher ratio in terms of growth in real GDP per capita registered by Guinea Bissau is not very extensive, when one considers the very low initial level of average income for that country. Other countries, comprising, in this category, those countries, added twenty-five percent or more value to their economic status over the long-term, include Burkina Faso, Gambia, Ghana, Kenya, Mauritania, Namibia and Tanzania. With regard to political institutions, a similar pattern exists to the one mentioned for the previous group, with the exception of the particular case of South Africa and Namibia. The overall performance of this group is somewhat better than both the first two quartiles.

In the uppermost quartile, apart from the case of Malawi, all countries in this category have managed to at least double the size of their economies over the five decades under scrutiny. It also includes the two star performers in Africa, both economically, and in relation to being long-surviving democracies. However, research on African political economy, by and large, overlooks a factor that has important implications for the study of economy growth. While both Mauritius and Botswana recorded significant leaps in economic growth, the respective values for each being four-fold and eight-fold, there existed clear dissimilarities vis-à-vis initial levels of income between the two countries. More specifically, while, during the early years, Mauritius had a middle income status, Botswana started from a very low level of development. As such, economic growth in Botswana converged not only in its conditional variant to other African economies, but also to economies outside Africa. Whether their economic achievements have partially been matched by other better-governed countries, in a way that allows one to deduce causality, is an issue I

leave for the quantitative analysis section. This group of countries also includes Cape Verde, Gabon, Congo (Brazzaville), Lesotho and Zimbabwe.

In a nutshell, these kinds of variations have partially been explained by differences with regard to economic variables among countries. For instance, it is broadly found that physical capital accumulation induces faster economic growth when, in particular, a country's initial endowment of such resources is very low (Mankiew *et al.* 1992). Equally true is the assertion that this factor of production is hardly exogenous, in that its quality and size is ultimately a function of other temporally robust determinants. While I hypothesise that political institutions constitute the fundamental determinants of economic growth, a sizeable fraction of the variation in economic growth among countries is still explained by economic variables. As such, economic models (more specifically, the basic Solow model) shall be the logical starting points for any strong cross-country growth accounting exercise. This chapter develops and tests an African panel, informed by the Solow model. In this section, I took the first step in that direction by elaborating the distributional pattern of economic growth among African countries. Our dependent variable for the panel specification is the change in log of real GDP per capita between the start and end of period for each time episode (i.e. 1960-64, 1965-69, ---, 2000-04). Next, I conduct a similar exercise on the pattern of distribution in economic covariates among the countries.

5.2.2) Economic covariates

The menu of economic explanatory variables used in growth empirics has actually been so extensive that an exhaustive listing is impractical. In fact, that the Solow model has been amenable to inclusion of a large set of right-hand side

arguments is reflective of the model's wider applicability. Here, I narrow the choice of variable to those that feature in the bulk of cross-country economic growth studies. The discussion of the cross-country distribution of these variables is informed by two considerations. As elaborated previously, the economic variables on their own explain some portion of the variations, although the fact that large unexplained residuals still remain induces us to look for other more fundamental factors. Moreover, their use-values travel beyond empirical results, since the economic variables in question are also backed by strong theoretical foundations. It is also worth noting that measurement issues in economic variables have equally been bones of contention, in that estimates tend to be very sensitive to choice of specific measurements. This has certainly been the case with studies that model the effects of human capital on economic growth. An in-depth investigation of the pattern of distribution of the economic covariates in an African context is provided below.

5.2.2.1)The convergence hypothesis

One seemingly simplistic, and yet potent, derivation from the work of Robert Solow is the notion that, taking rates of saving and population growth as givens, a country's economic growth trajectory tends to converge to a steady-state level of income per capita. Central to this conclusion, whereby the speed of convergence is a positive function of rates of saving, is the concept of diminishing marginal returns to capital. In contrast to higher saving rates, which make a country grow strongly, the relationship between a country's economic well-being and its population growth rate is an inverse one. Scholars then transposed this concept of convergence in a single country context, to empirically test if and how such a convergence in levels of income materialises in a cross-country setting. In its crudest form, the idea of cross-

country convergence portrays a scenario in which capital, induced by a search for higher returns, flows from capital-saturated economies to capital-starved poorer economies enabling the latter to register faster economic growth and, hence, achieve convergence. This concept is operationalised in cross-country economic growth accounting by including past values of income as explanatory variables. Before I assess the African experience in this respect, a brief description of the different variants of the convergence hypothesis is in order.

A look into the distribution of the income variable reveals a mix of fast growth, regression, as well as stagnation. A handful of countries managed to narrow their income gaps vis-à-vis advanced countries, while others lagged behind. This mixed record on convergence led scholars to refine the conditions under which convergence occurs. A couple of concepts appear frequently in explaining the convergence hypothesis. Initial conditions refer mainly to the starting period for the analysis, whereas by structural conditions, I mean basic variables that define politics and economics such as resource base, ethnic make-up, colonial history, etc. The absolute convergence hypothesis predicts that, regardless of differences in initial conditions, countries in the long-run converge to the same levels of income. Evidence on this postulate is not abundant and all the indications are that there is a clear trend of absolute divergence.

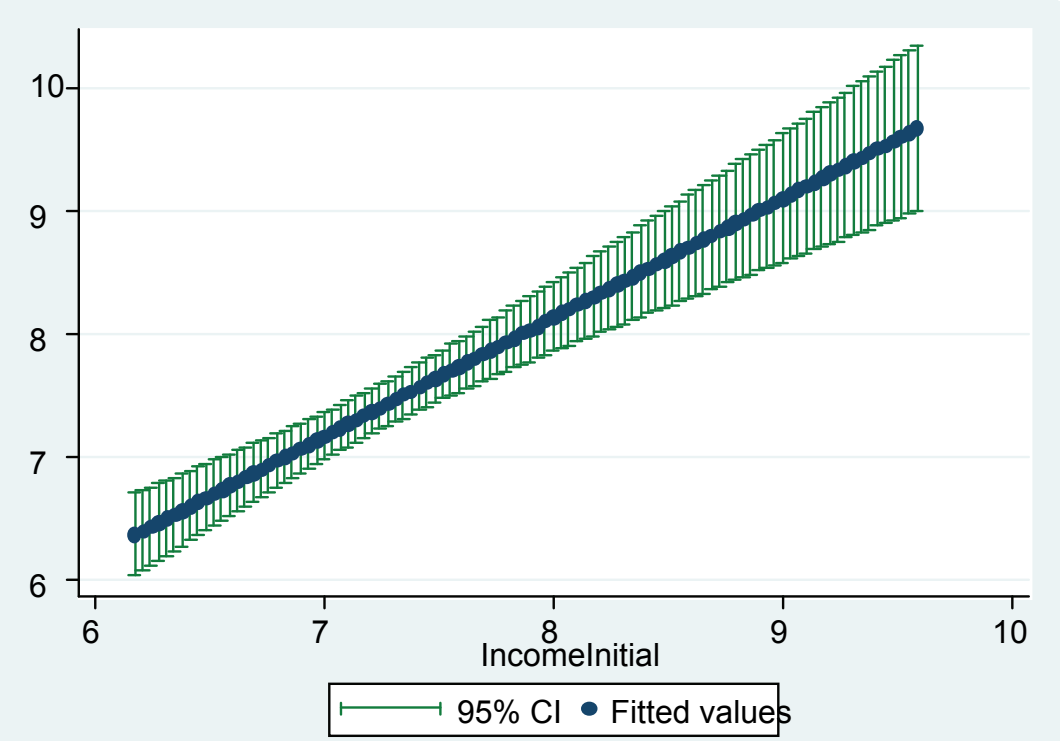
The conditional convergence hypothesis, on the other hand, argues that levels of income among a group of countries, with identical structural conditions, converge to one another, regardless of differences in initial conditions (Chatterji 1992, Johnson and Takeyama 2001). The set of structural conditions is an open one, ranging from preferences to technologies and policies. The third one is the club convergence hypothesis, which imposes stronger conditions than the conditional convergence

variant. Accordingly, not only should structural conditions be similar for convergence to occur, but also, such initial conditions as political polarisation and levels of poverty need to be similar among the countries (*See* Galor 1996). There is also an overlap between the conditional and club convergence themes in many instances. It is these theoretically plausible conditions that justify the inclusion of lagged values of the dependent variable as a right-hand side argument.

The empirical question I investigate in this respect is if, in fact, levels of income per capita among African countries tended to converge over the long-run. Put differently, such a research question boils down to testing a null hypothesis that claims countries in Africa which were relatively richer in the early 1960s, performed economically better than the rest, to such an extent that the gap in income levels was wider by the turn of the last century. It is to be recalled from our discussion on the dependent variable that any widening in the gap of income levels need not necessarily result from initially better economies in the region growing faster than poorer ones.

Rather, it could equally occur as a consequence of economic stagnation in the latter, while economic growth in the other economies could have stabilised. The parameter I apply for a descriptive analysis of convergence is average real GDP per capita of each country for the first and last time episodes. Unlike annualised growth rates, this measure is less prone to short-run fluctuations, thus providing a better representation of income levels. A negative slope implies that there exists a strong case to postulate that convergence in levels of per capita income among African countries has occurred.

Figure 3 Africa and the convergence hypothesis



NB. By plotting the year 2000 level of income (Y-axis) against the initial income of each country (both terms refer to natural log of real GDP per capita), the above graph suggests a pattern of divergence among African economies. I include all the forty-five countries in the basic data. Note that initial income dates differ as per reported in the data source, i.e. PENN World Table (*See* Heston et al. 2006).

As is clearly shown in Figure 3, what appears to have happened in Africa is a strong divergence in levels of per capita income between the two groups of countries. The slope of the curve is 0.7228, and it also implies a positive correlation between initial level of income and current economic welfare, which is significant at one percent. The 95% confidence-level matching is, in particular, stronger at middle income levels. It signifies that any weakening of divergence that might have occurred was limited to the higher income countries in the region. In other words, a country at a very low level of development in the early 1960s within an African context is very

likely to have lost further ground by the end of the analytical period. Similarly, a given country situated, say, at the bottom of the top decile group of countries at the start of the period would have converged to the group average by the end of the period. This lends much support to the club convergence hypothesis, as compared to, in particular, the absolute convergence hypothesis. In other words, convergence in income levels tended to materialise among a cluster of countries, in which a comparable level of initial income is one element that defines the cluster.

Alternatively, I can elaborate the pattern of convergence in average incomes in Africa by looking into the identities of the exits and entries to the top quartile income countries for each period in question. Accordingly, the countries that featured in this group in the initial period (i.e. initially better-off countries) in ascending order of real GDP per capita were Côte d'Ivoire, Comoros, Central Africa Republic, Guinea, Equatorial Guinea, Namibia, Gabon, Mauritius and South Africa. The corresponding set of countries at the end of the period includes Zimbabwe, Guinea, Equatorial Guinea, Cape Verde, Namibia, South Africa, Gabon, Botswana, Seychelles and Mauritius. The new entrants to the higher-income club at the end of the period, namely Botswana, Cape Verde and Zimbabwe, account only for about twenty-seven percent of the group. As such, the descriptive statistics applied to assess the long-run economic growth path of African countries suggest that, with regard to conditional convergence, the trend over the long-run has largely been one of divergence in real GDP per capita. One finds a linear positive association between a given country's level of income at the initial period and that level of income which the country in question achieved by the end of the analytical period.

Nevertheless, it would be untenable to conclude that the above presented evidence is sufficient enough to establish that conditional convergence in levels of

income has not occurred in Africa. I can identify at least two strong reasons as to why this is so. To start with, no attempt is made to control for the effects of other variables on growth in real GDP per capita. As a result, the findings discussed above are likely to refer to simple correlations as opposed to causality. Since the research agenda in this specific case is to investigate whether low (lagged) levels of income cause countries to grow faster, I should allow for estimating the conditional expectation of growth in income, by controlling for other relevant variables. Secondly, the descriptive approach is inherently incapable of addressing endogeneity bias, which naturally stems from having past values of the dependent variable as a right-hand side variable. Research on economic growth accounting has shown that such practical issues have been very important in the empirical testing of theoretical stipulations. Accordingly, I hypothesise a strong, negative coefficient estimate for the lagged income variable that establishes conditional convergence in Africa. This also tallies with findings in most economic growth studies in the literature.

5.2.2.2)Investment

I have already mentioned in passing that the most important variable in the basic Solow production function determining the speed at which countries converge to their steady-state level of income is the rate of saving. The Solow model portrays a closed economy, in that it does not allow for foreign capital inflows to fill the domestic saving and investment gap. As such, capital accumulation, above and beyond what is needed to keep the capital-labour ratio at the previous period level, is an important factor affecting the rate of economic growth of a given economy. Following the organisation of our presentation in this chapter, I abstract from possible links of investment with economic growth to concentrate on three issues.

Firstly, I describe the temporal and cross-country dimensions of the pattern of distribution of investment in Africa. Secondly, it is useful to discuss measurement issues on the investment variable, so as to elaborate how it is dealt with in this study. Thirdly, I expose the theoretical stipulations of economic theory on the causal effects of investment on economic growth of countries. All these help define the more in-depth descriptive as well as quantitative investigation of the investment-economic growth nexus in subsequent sections.

During the early years of independence, African economies were characterised by diverse, but otherwise very low, levels of investment as a proportion of total output. The figures were relatively large for such countries as Zambia, Ghana and Congo (Brazzaville) in that these countries allocated about 65 percent, 60 percent and 55 percent respectively of their GDP, in real terms, towards investment. For the bulk of the rest of the countries in the region, the share of investment in real GDP per capita fluctuated from as low as 0.93 percent for Rwanda to 13.05 percent for Kenya. The pattern of distribution of investment in the economies of the countries showed little change by 1970, in that most of the countries managed only to register single-digit figures for the share of investment in national output. This group accounted for more than half of the countries in the region. The low investment figures are noticeably more pronounced when I take the cases of those countries in which natural resource exports account for a significant share of their GDP in the equation. Taking into account the importance of investment, both to the early developers and the East Asian economies, the links between low levels of investment and abysmal economic growth rates in Africa seem to be almost tautological.

More importantly, investment's share in total GDP did not show noticeable growth over the forty-year period. By the year 2000, the mean of the share of

investment in real GDP per capita stood at a mere 8.51 percent, with a corresponding standard deviation of about 5.83 percent. If I factor out the effects of the resource-driven case of Equatorial Guinea, the respective figures for the mean and standard deviation become 7.93 percent and 4.39 percent. All these lead us to summarize the distributional pattern of the shares of investment in total output of African economies along three broad categories. The first group consists of countries that either started from low levels or otherwise, but still managed to achieve a stable and robust share of investment. The second group refers to countries that remained trapped in the low equilibrium conundrum with regard to the investment variable. Finally, one can also identify a particular segment of countries that have experienced frequent contractions and expansions of investment in their economies. As shall be explained below, the relationships between shares of investment and rates of economic growth are far from uni-dimensional.

Needless to say, measurement issues matter for an aggregate variable such as investment. This is reflected in the literature, where researchers often distinguish between investment in equipment and structure, or between public investment and private investment. Nevertheless, in the majority of cases, the findings confirm theoretical postulations that there exist strong effects of investment on economic growth. Notable works along these lines, which found strong relationships between investment and economic growth, include Mankiw et al. (1992), Barro and Lee (1994), Sala-i-Martin (1997), Islam (1995), and Temple (1998). It is also important to stress that, in order to obtain a comparable measure of investment across countries, one needs to index the variable to level of national output. Accordingly, in this study, the investment variable refers to the natural logarithm of the share of investment in real GDP per capita averaged over each time period of the panel. I should also be

very cautious in accepting the exogenity assumption of investment in the production function. While it is true that the positive effects of investment feed into higher levels of economic performance, it is equally the case that growth will have latent effects on levels of investment in subsequent periods. Similarly, one needs to control for the oft-cited cases of the effects of investment being partly mediated by policy variables such as fiscal and trade policies. To sum up, the relevance of all these theoretical and measurement issues is that empirical works should internalise them to fully account for causal relationships between investment and economic growth of countries.

5.2.2.3)Human capital

It is to be recalled that I discussed in broader detail, in the chapter on techniques of economic growth accounting, the fact that endogenous growth theory provided one solution to the shortcomings of the textbook Solow model. More specifically, it allowed for constant or increasing returns to scale, in that divergence in levels of income can be explained when I internalise human capital accumulation as an explanatory variable. As such, it has largely become useful for cross-country economic growth studies to add variables that measure levels of human capital accumulation in an economy. A parallel observation is that the operationalisation of the human capital variable has not been a clear-cut issue, not least as a reflection of differences in definitions of human capital. The latter situation is exemplified by the debate as to whether human capital should be equated with educational achievements only (Mincer 1993) or should also include investments in health (Becker 1993). Such broad differences in definitions of human capital filtered into vectors of proxies used to test the empirical significance of human capital in economic growth models. As a

result, findings across a wide spectrum of studies on the human capital-economic growth nexus are, by and large, mixed.

An exposition of the distribution of human capital among African countries is seriously undermined by the absence of data dating back to the early years of our analytical period. The presentation here is confined to only a couple of indicators on the educational dimension of human capital of the countries. Accordingly, one measure widely applied to proxy for human capital is the proportion of the population enrolled in primary education. Using gross primary school enrolment, defined as the ratio of the number of students of any age enrolled in primary schools to the number of school age population, I find steep differences in the first period, i.e. 1960-64, ranging from a high of 98 percent for Mauritius to 7 percent and 5 percent for Ethiopia and Niger respectively. By the late 1980s, not only did the figures for gross enrolment ratios tend to converge among the countries of the region, but also they generally grew significantly, with a minimum value of 27 percent for Burkina Faso. Such convergence with regard to gross enrolment ratios for primary schooling gained further momentum by the end of the period under consideration. The narrowness in the gap between the period's mean value of 93.36 percent and a median of 93.42 percent is indicative of the fact that the spread in data is minimal.

The vector of proxies for measuring education includes, in addition to grades completed, the number of schooling years of different segments of the population. This spectrum, measuring the economic effects of education, hypothesises that the production function responds to the number of years of schooling of different age as well as gender groupings. Naturally, the higher the number of schooling years of the working age group of a given country, the higher are the rates of economic growth achieved. While the demarcation line for defining the working age is a matter for

debate, I here utilise the Barro and Lee (2000) data to describe the distributional pattern of human capital for the African panel data. Our preferred indicator is the number of average schooling years for the 15-plus age group. Not surprisingly, Botswana, Mauritius and South Africa feature consistently high by this score. On average, the working population of these countries would have spent between 6 and 6.28 years in formal schooling for the 2000-04 period. At the lower end of the scale are countries such as Guinea Bissau and Mali, where the corresponding value is a mere nine months. In other words, a worker in the countries at the top of the scale is likely to have an education level six times greater than those from the lower end of the table.

The temporal distribution of the education variable is more telling, in that during the initial period, I observe a highly concentrated pattern, with a respective average value and standard deviation of 1.56 years and 1.17 years. As in other features of African political economy, Mauritius registered, exceptionally a very good first-period average number of schooling years of about 3.48, which, surprisingly enough, was matched by Tanzania. What is important, however, is that over the long-run, a few countries managed to register significant growth on this specific variable. This trend of significant strides in the average number of schooling years is encapsulated by the figures for Zimbabwe, Kenya as well as Zambia. For the other group of countries, levels of human capital, as measured by schooling years of the working age population, either stagnated or regressed. Whether the diversity in the cross-sectional time series distribution of the human capital variable caused economic growth rates to differ across the countries in question is an issue I leave to the quantitative analysis section of the study. However, it is worth mentioning that the rather weak relationships identified in empirical studies are more reflective of

shortcomings in the operationalisation of the variable, and less of loose theoretical foundations.

5.2.2.4) Other economic variables

At the outset, I should caution that the specific determinants of economic growth discussed in this category of other economic variables are selective ones, all the more so because our hypothesis is that African data replicate those based on conventional theories. This certainly is the case with the variable that captures the motion for capital stock per effective unit of labour. One central stipulation of the textbook Solow model is the close mapping between a given country's incremental capital-labour ratio and rates of economic growth achieved. In this section, I first elaborate on this concept of the evolution of capital augmented by descriptive data from African economies. It is also crucial to layout the direction of links which are postulated by economic theory between changes in capital stock and economic performance. Our second port of call in this section is a brief discussion of the economic growth implications of arguably the most potent macroeconomic policy tools, namely fiscal and monetary policies. I sum up the section by outlining the cases for a country's degree of openness to the operations of the global economic system in affecting the pace of economic performance. Unlike those variables that constitute the basic Solow model, the economic policy variables are strongly shaped by political institutions.

Accordingly, the Solow model stipulates that the rate of growth of capital per effective labour is a function of three variables. These refer to the rates of growth of population; the rates of depreciation of the capital stock and the rates of technological progress. After all, what is added on the capital stock per effective

labour is the difference between that proportion of income saved (in the closed economy setting of basic Solow, this is tantamount to investment) and the stock of capital depreciated in the previous period. I have explained this notion with the help of a mathematical model in the chapter on the techniques of economic growth accounting. Here, our interest is more on operationalising this variable, to make it amenable to empirical analysis. While higher rates of savings affect income positively, higher labour growth negatively impacts on growth once I account for the effects of technological progress and depreciation of capital. Without delving much into the details of the derivations, this variable is empirically taken to be a composite of rates of growth in population, technology and depreciation. The latter two are assumed to be constant across countries and sum up to 0.05. Hence, the variable is given as the natural logarithm of the rate of population growth augmented by 0.05. Naturally, the coefficient estimate is expected to be significantly negative, as it is mainly driven by the rate of growth of population (Islam 1995, Mankiew *et al.* 1992).

Quite a large string of studies of conventional economic growth indicate that prudent fiscal and monetary policies are a *sine qua non* to bring about robust economic growth rates sustained over a long-run time spell (Kormendi and Meguire 1985, Easterly and Rebelo 1993, Levine and Zervos 1994, Sarel 1996). For instance, expansive monetary policies compromise price stability, thereby dislocating the economy away from growth-enhancing resource allocation. Similarly, higher levels of government consumption, mostly associated with large fiscal deficits, are found to have a detrimental effect on economic growth. The economic growth literature along the lines of the 'African tragedy' paradigm identifies such macroeconomic policy distortions as high deficits, inflation, black market premium, etc. as causal factors for the poor economic performance of the countries. As such, most studies of economic

growth, informed by economic theories, allow for the inclusion of macroeconomic policy variables with the oft-revealed purpose of drawing policy prescriptions on economic growth. This rather highly technocratic approach to policy-making misses the point that good policies rarely emerge from the benevolence of governments. Rather, they are consequences of political institutions that define the policy-making domain of governments. Here, I deal with this issue by looking into the interactive effects of the policy choices with institutional variables in an analytical setting totally based on Africa.

Lastly, several works have shown trade to be a significant determinant of the economic growth of countries. For instance, in widely referred to works, Sachs and Warner (1995, 1997) find that the investment variable loses its explanatory power once a measure of the degree of openness of an economy is included in the economic growth model. Economic theory suggests a number of channels through which the economic performance of a given country is defined by the degree to which its economy is integrated into the global economy. One way is the reverse correlation between market competition induced by external forces and x-inefficiencies, which in the final analysis, contributes to better rates of economic growth. Inefficiencies in production occur for two reasons. The first one is allocative inefficiency, which refers to a sub-optimal mix of production factors, while technical (or x) inefficiencies signify the use of less appropriate production technology. Similarly, international trade can serve as an important conduit for the transfer of technology which enhances economic efficiency and also economic growth of countries. A basic difference in available proxies to a country's degree of openness, is that between indicators based on trade indices only, and those incorporating a wider dimension. A case in point for the latter is the Sachs-Warner index, whereby a country is deemed to be closed if it

has failed in any one of five conditions ranging from ideological orientation to size of distortion in macroeconomic variables. Arguably, the ratio of international trade to GDP adjusted for price changes has more broadly been used in accounting for the effects of openness on economic performance. (Sachs and Warner 1995, Rodrik *et al.* 2004).

5.3) Data and analysis

Basically, the crux of the overall presentation in this chapter rests on achieving two objectives. A study of the political/institutional determinants of economic growth in a cross-country setting, based on the augmented variant of the Solow production function, presupposes the development of a model to control for the effects of economic covariates. Furthermore, I need to establish that our findings along this line are compatible with theoretical priors of conventional economic theories. A logical first step towards achieving this end is to elaborate on measurement issues and theoretical stipulations, as well as the distributional pattern of each economic variable for the African cross section time series data built for the economic growth accounting exercise. I accomplished this task in previous sections. For instance, it is explained, using African data, why the notion of convergence is an integral component of economic growth studies, and how it should feature in the empirical model. The flip side, and arguably the more important one, of the discussion is to draw causal inferences on the effects of the economic explanatory variables on observed variations in economic growth among a panel of African states. In discussions below, I use the African panel data to conduct a descriptive analysis and also a quantitative analysis of the economic determinants of economic growth among the countries.

5.3.1) Descriptive analysis

Our preoccupation with long-run economic growth patterns of African countries is justified by the fact that current abysmal political economic conditions are more reflective of achievements (or lack of) over such a time spell. Notwithstanding the diverse growth trajectories of individual countries, the African region registered strong growth performance in the first two post-independence decades, before a significant contraction afterwards. Using rather stringent conditions to identify growth accelerations, Hausmann *et al.* (2005) finds that, within the global data, sixteen African countries experienced strong growth episodes that lasted for at least eight consecutive years. I gather from this study that, had short-term growth spurts been adequate to bring about lasting improvements in living standards, many African countries would have currently enjoyed economic welfare levels on a par with advanced economies. Here, I shall be able to gauge the contributions of two dimensions for any variation in the dependent variable as well as spread of the explanatory variables. The panel data specification has the particular advantage of assessing the temporal evolution of a given variable and also that variation sourced by country-specific conditions. The presentation focuses on four major variables; namely, the dependent variable, measured by the log of the change in real GDP per capita income between start and end of period; log of initial level of income; log of average level of investment as a share of real GDP per capita; and a term that captures the evolution of capital. Note that details of the derivation of each variable are provided above.

Table 1 Descriptive statistics of economic variables

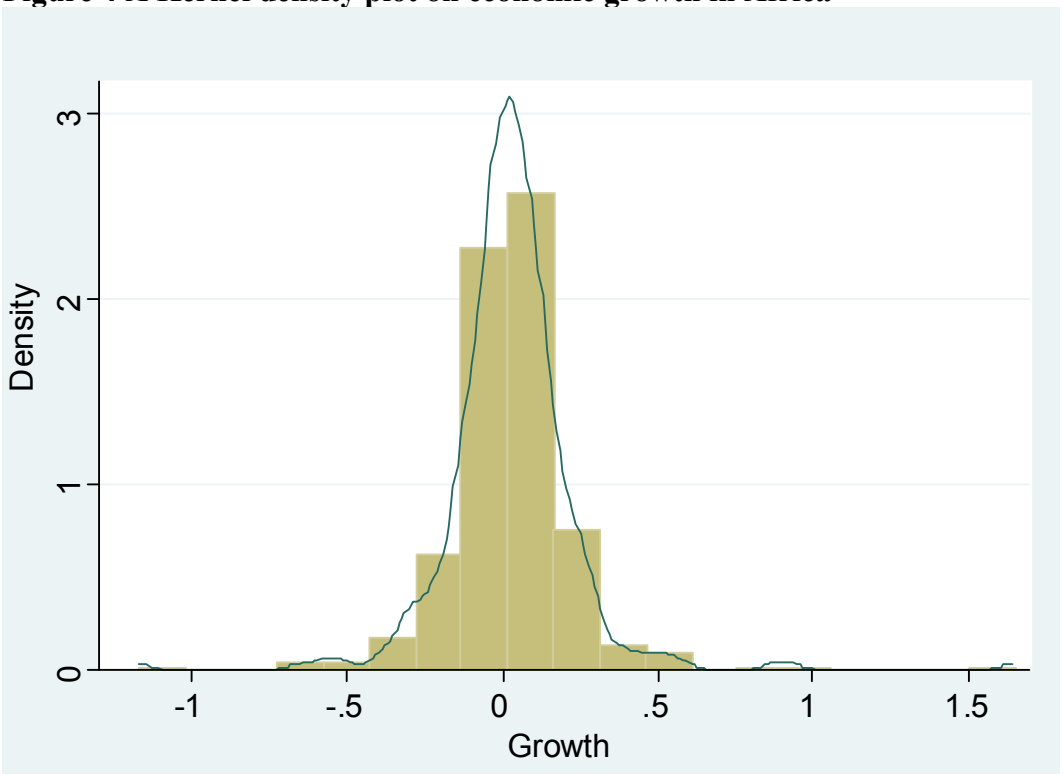
Variable		Mean	Std. Dev.	Min	Max
Income	Overall	0.027	0.20	-1.17	1.65
	Between		0.08	-0.15	0.29
	Within		0.19	-0.99	1,46
Initial Income	Overall	7.27	0.77	5.14	9.93
	Between		0.72	6.21	9.46
	Within		0.28	5.49	8.65
Investment	Overall	1.99	0.71	-0.01	4.51
	Between		0.57	0.81	2.99
	Within		0.43	0.47	4.15
Population	Overall	0.88	0.36	-1.31	1.85
	Between		0.28	0.08	1.67
	Within		0.24	-0.50	1.86

NB. The number of observations is 379 while numbers of countries included and missing observations is 45 and 78 respectively. Table shows the spread in the basic Solow variables for Africa for the panel 1960-2004. Income refers to change in log of real GDP per capita, Initial Income is log of real GDP per capita at start of period, Investment is log of share of investment in GDP, and Population is log of change in population augmented by 0.05. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002)

As shown in Table 1, both types of variations have been instrumental in defining the overall descriptive statistic for each given variable. The dependent variable is normally distributed with a mean of 2 percent and a standard deviation of about 0.2. A closer look at the spread of the economic growth variable, as measured by the standard deviation, reveals that changes in the variable that occurred within countries accounts for more than eighty percent of the overall variation in economic growth among African countries. In other words, country-level effects that shaped the economic growth trajectories of countries in the region ultimately explained most

of the variations observed in levels of income among African countries. As such, I can claim, with a five percent margin of error, that about 68% of the dependent variable falls within the interval [-0.3767023, 0.43025973]. In testing normality, it is mostly advisable to use techniques that allow visual inspection to ensure that the sample is drawn from a normally distributed population. Our results using a histogram along a Kernel density plot confirm that the dependent variable has a normal distribution. This is shown in Figure 4 below. Other diagnostic tests, including the Shapiro-Wilk W test and the Shapiro-Francia W' tests, establish normality with respective values 0.84842 and 0.83896 at a 1% level of significance.

Figure 4 A Kernel density plot on economic growth in Africa



NB. The purpose of this graph is to show that our dependent variable in the Solow model is normally distributed. The bell-shaped plot imposed on the Kernel density highlights this point. As explained above, Heston *et al.* (2006) provides source of data. Recall that panel is for forty-five countries.

Additionally, it is useful to provide a qualitative assessment of the correlations between economic growth and the identified economic covariates. When I calculate the simple linear partial correlations between economic growth and the explanatory variables, I find that only investment returns a value that confirms with theoretical priors, both in terms of direction and significance of correlation. To be more specific, the respective values for the partial correlation of change in log of income per capita to initial level of income, investment and the capital evolution term are 0.02 (0.618), 0.2116 (0.000) and –0.0809 (0.121), with terms in brackets indicating significance levels. Accordingly, only levels of investment seem to affect

economic growth performance achieved by countries over a long time span. In cases like this, where no analytical room is provided to control for the effects of individual specific factors or the temporal dimensions of variables, results of this type fall short of capturing the true mapping between the dependent variable and the vector of independent variables. A possible case in point is when a given country's national output fluctuates drastically in line with changes in international prices of a given commodity, while little change is observed in the conventional variables of the production function.

Nevertheless, the whole idea of using a panel specification is that it provides us with a rich array of possibilities to estimate the actual causal effects of the explanatory variables. I test this stipulation here, by deriving the linear correlations between the economic growth variable and associated economic explanatory variables, but controlling for country-specific effects on the former. While such a specification boils down only to fixed effects, in that it implicitly assumes country-effects to be robust, I fairly expect the partial correlations between the dependent variable and the right-hand side arguments to improve. Note that, in not a few cases, the assumption of linearity in itself may not be a plausible starting point. Given all the above-mentioned reservations, I still find strong correlations between the two sets of variables. Accordingly, initial level of income is negatively correlated with the income variable as per the theoretical stipulations that lend support to conditional convergence. I digress here to recall that Barro(1991), who introduced the African dummy, finds weak evidence on convergence. Similarly, the logarithmic term for rates of population growth augmented by 0.05, so as to capture the evolution of capital, also returns a result that tallies with theoretical priors. As in the previous case,

investment has a strong and positive partial correlation with economic growth (See table below).

Table 2 A correlation matrix between economic growth and selected economic variables

Variable	Correlation	Significance
Initial Income	-0.16	0.00
Investment	0.26	0.00
Population	-0.13	0.02

NB. This table reports the correlations between the dependent variable and the basic Solow variables for Africa. The number of observations is 379 while number of countries included is 45. The correlation values for the forty-five countries are not reported here. It covers the period 1960-2004. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002)

Another point worth noting, in discussing the descriptive aspects of the variables in economic growth accounting, is that it is now widely established that investment does not strictly fulfil the basic condition of variable exogeneity (Hoeffler 2002). Insofar as current levels of investment partially define economic growth achieved at the end of the period, rates of investment are, at the same time, functions of levels of income. Put differently, one runs the risk of endogeneity bias if levels of income are modelled simply as linear functions of rates of investment. Such an approach is likely to artificially magnify the actual effects of levels of investment on economic growth. I find this case to be true in our data as well, in that the correlation coefficient between levels of income in the previous period (as proxied by the initial income variable) and current investment is significantly positive, regardless of whether I controlled for country-effects or not. This is also intuitively appealing in

that, ultimately, it is from national income saved that countries source their investments on physical capital accumulation. All in all, while I established that the theoretically stipulated links between the two sets of variables are also backed up by the descriptive statistics of the African cross section time series data, it is also imperative to investigate whether such a mapping signifies causal relationships.

5.3.2) Quantitative analysis

5.3.2.1) Basic Solow Model

Inasmuch as panel data analysis provides us with a rich insight into postulated relationships among variables, it also offers wider possibilities for dealing with problems of heteroscedasticity and autocorrelation that mar normal inferences. The development of a string of panel data analytic models, such as the constant coefficient models, fixed effects models and random effects models, reflects issues of model specification that address such problems. For instance, I may argue that the average partial effects of investment on economic growth do not entail any significant country or temporal dimensions and, therefore, can be dealt with pooled OLS. Similarly, it could be the case that omitted variables significantly differ within clusters, but remaining constant over time or as a weighted average between time-invariant and cross-sectional differences. As such, it is a very useful exercise to ensure that the model selected to assess the quantitative effects of the explanatory variables (in this case, the economic covariates) are well-suited to deal with problems of heteroscedasticity and autocorrelation. Apparently, part of the question of specifying the right models is addressed by the theoretical frameworks which inform the direction of relationships among the arguments. Statistical tests are also vital tools for tackling such concerns.

Accordingly, I conduct a Hausman test to determine whether the fixed effects or the random effects model is the appropriate one when I run the basic Solow model on African cross-section time-series data. Note that, while the fixed effects model provides a more consistent estimator, the random effects model has the edge when one considers efficiency. If there is no significant correlation between the unobserved country-specific random effects and the regressors, then the more efficient random effects model is the preferred type of specification. Failing to reject the null that the coefficients from the efficient estimator are closely similar to the consistent ones, implies that I should use a random-effects model. Our test results in this specific case (a Prob>Chi2 value of 0.0002) clearly establish that a fixed-effects model specification better captures the relationships between the variables. In other words, the within-country variations in the explanatory variables account for most of the overall effects on economic growth, once I control for country-specific effects. Needless to say, in certain situations, where variables hardly vary temporally, such as the case for social features, the use of random-effects shall be better suited to deal with the problem.

Table 3 Basic Solow fixed-effects model (Dependent variable is the natural log of change in real GDP per capita)

Variable	Coefficient	Std. Err.	T	P>|t|
Initial Income	-0.09	0.03	-2.98	0.00
Investment	0.10	0.02	4.98	0.00
Population	-0.08	0.04	-2.33	0.02
Constant	0.56	0.24	2.38	0.01

λ 0.0115413(0.00)
F(44, 323) = 2.101 (0.00)
Number of countries = 45
Number of observations = 371

NB. This model presents results when basic Solow is run on the African panel introduced above. λ captures speed of convergence while the F value measures the joint significance of all the explanatory variables. As figures in parenthesis show, both are significant at one percent. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002) for the panel covering the period 1960-2004.

In conformity with theoretical stipulations, all the variables that makeup the textbook Solow model significantly determine economic growth for the panel of African countries under consideration. As is justified by the Hausman test above, I started with a within-variation estimation of the model, controlling for country-level effects. Recall that, in preceding sections on descriptive analysis of the relationships between economic growth and the economic explanatory variables, I found a tendency for average income levels to diverge among African countries over a long time spell. However, that relationship was far from establishing causality, in that there existed little scope to assess the conditional effects of initial level of income on economic growth. Here, I find strong empirical evidence to infer that there has actually been a conditional convergence in levels of income among African countries.

The significantly negative coefficient estimate for the initial income variable implies that, in line with prevalent conventional economy theory, countries which were at the lower end of the income ladder at the start of the period have, on average, managed to catch up with better-off economies. The speed of convergence, as given by λ, was about one percent per the number of time episodes used to categorise the panel.

Similarly, coefficient estimates for the variables investment and population tally with the theoretical hypothesis, both in direction of causation and significance of the estimates, thereby establishing the critical importance of rates of investment and population growth hold in defining the economic growth trajectory of countries. It is particularly worth noting that the size of the parameter estimate for investment is indicative of its strong resonance in explaining differences in economic growth among African countries. Nevertheless, the fixed effects estimation is somewhat limited in reflecting the true dynamics of the relationships between economic growth and the independent variables, for a number of reasons. Firstly, a good deal of otherwise important information is lost as a consequence of the collapsing of data for such an estimation. Secondly, in the event of one or more of the right-hand side variables being endogenous, coefficient estimates are likely to be biased. In economic growth accounting, this is a very likely scenario for the investment variable. Thirdly, I face problems of omitted variable bias, as it fails to control for the bulk of heterogeneity among the countries that affect economic growth. To a certain extent, such problems in model specification for undertaking economic growth accounting on a cross-section-time-series data can be addressed with the use of instrumental variable estimation techniques.

Table 4 Basic Solow GMM estimation (Dependent variable is the natural log of change in real GDP per capita)

Variable	Coefficient	Std. Err.	Z	P>z
Initial Income	-0.08	0.02	-3.29	0.00
Investment	0.13	0.02	8.71	0.00
Population	-0.05	0.02	-2.41	0.01
Constant	-0.01	0.00	-4.15	0.00

λ 0.0095(0.00)
Number of countries = 45
Number of observations = 281
m1 (first order correlation) = 0.02
m2 (second order correlation) = 0.72
Sargan test = 0.26

NB. The table introduces GMM results for the African panel. λ captures speed of convergence and is significant at one percent. m1 and m2 are tests for serial correlation, while the Sargan parameter is a test on appropriateness of instruments. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002)for the panel covering the period 1960-2004

As shown in Table 4, the system-generalised method of moments has the methodological edge in better accounting for the effects of lagged dependent variables, entered as right-hand side arguments. Accordingly, the average partial effect of a country, being at the lower end of the scale at the start of the period, on subsequent economic growth is about seven percent. It shows that, over the long term, conditional convergence has been an important feature explaining the cross-country economic growth trajectories in the region. Additionally, I find that the per-period speed of convergence towards their steady-state level was about 0.95 percent. The log of investment as a share of real GDP per capita remained by far the strongest determinant of cross-country differences in economic growth among the economic covariates included in the textbook Solow model. The coefficient estimate for the variable on the rates of growth of population augmented by 0.05, otherwise known

widely in the literature as $\ln(n+g+\delta)$, indicates the strong negative premium of population growth on economic growth performance of the countries. In comparison with the GMM model, the fixed-effects estimator returns results that exhibit an upward bias, which, in turn, is compatible with the structures of the two models.

Naturally, it is necessary to conduct diagnostic tests to establish that the instruments used in the GMM estimator are appropriate. I use three such test statistics to validate our assertion that this specific model provides a viable account of determinants of economic growth in a dynamic panel data analysis. The m1 and m2 tests deal with the cases of first-order and second-order serial correlations respectively. The null hypothesis in both cases is no serial correlation, with corresponding *p-values* of probability of rejecting the null. The specification test stipulates that, while first-order serial correlation need not be zero, GMM estimators require for absence of second-order serial correlation to provide consistent estimates (Arellano and Bond 1998). The results from our tests indicate that I reject the null of no first-order serial correlation, while at the same time the test statistic fails to reject the hypothesis of no second-order serial correlation. As such, it is appropriate to emphasise that the GMM coefficient estimates for the economic variables under consideration are consistent. Another diagnostic test for the appropriateness of the instruments is that of the Sargan test of over identifying restrictions. Here also the high *p-value* for the Sargan test leads us to not to reject the null of appropriate instruments. All in all, the GMM model is a more valid specification to conduct economic growth accounting based on country-level dynamic panel data.

Conventionally, the robustness of selected models in reflecting the underlying relationships among variables is tested by simulating the sensitivity of coefficient estimates to alterations in model specifications. It is generally the case that results

which are derived under stringent conditions may fail to accurately account for quantitative relationships. Our model of a GMM specification on economic growth in Africa performs fairly well when subjected to this litmus test. As is shown in Table 5 below, the coefficient estimates for the major textbook Solow variables are compatible to theoretical priors, both in direction of causation and level of significance.

Table 5 Basic Solow growth models for African economies (Different specifications)

Variable	OLS	Fixed Effects	DIFF-GMM	SYS-GMM
Initial	-0.00	-0.09	-0.18	-0.14
Income	0.00	0.03	0.05	0.05
	0.26	0.00	0.00	0.00
Investment	0.05	0.10	0.13	0.11
	0.01	0.02	0.02	0.03
	0.00	0.00	0.00	0.00
Population	-0.04	-0.08	-0.04	-0.09
	0.02	0.04	0.02	0.05
	0.06	0.02	0.01	0.05
R-squ.	0.05	-	-	-
F(3, 367)	5.22	-	-	-
F(3, 323)	-	12.77	-	-
Chi2	-	-	113.49	31.04
N	371	371	281	324

NB. In this table, I run four models on the African panel data. Because OLS does not allow us to control for either country or temporal effects, the coefficient estimate for initial income loses significance. That parameter estimates in the other three models return results compatible to theory helps establish robustness of estimates. Values under each coefficient estimate represent robust standard errors and *p*-values respectively. Number of observations for DIFF-GMM and SYS-GMM are lower since differencing and use of lagged values leads to reductions of observations. Number of countries included is forty-five. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002)for the panel covering the period 1960-2004

5.3.2.2) Basic Solow augmented by economic policy variables

A broad set of literature on determinants of differences in economic growth among countries took as its *point de dèpart* by augmenting the basic Solow model with a string of right-hand side variables (e.g. Hoeffler 2002, Temple 1998). Notwithstanding the fact that quite a large number of variables applied may not have strong theoretical foundations in causing economic growth differences, the case for economic policy variables has always been a strong one. Well-evidenced diagnostic analyses on the links between economic growth and policy variables have led many to draw a long prescriptive list of specific policy tools that enhance the economic growth performance of countries. Arguably, the most notable among the family of policy prescriptive approaches based on economic growth studies is what is called the 'Washington consensus' or equivalently labelled as the 'first generation reforms'. The term 'Washington Consensus', which was invented by Williamson (1990), is often used to signify neo-liberal and market-fundamentalist policies. However, in a later paper, and following calls for a revision of the policies (Kolodko 1998), Williamson (2000:252) rues the 'damage to the cause of intellectual understanding, and therefore of rational economic reform' caused by the misuse of the concept. Backed by the IMF and the World Bank, there followed a wave of reforms which mainly embody a policy regime of current account liberalisation (with reference to trade and foreign exchange) and privatisation of enterprises. These approaches have been subjected to several severe criticisms following the dismal economic performance of Latin American countries which followed the reforms to the letter, and also coming against the backdrop of a different model in East Asia (*See* Gore (2000) for a critique of this paradigm.

Before I delve into the growth implications of the policy variables in an African context, it is worthwhile to take note of two of the major criticisms put forwarded against the policy-growth nexus. To start with, the uneven adoption of these policy variables across a wide spectrum of countries further endorsed the view that economic policies are fundamentally outcomes of the political process. For instance, a large number of countries have long incurred unsustainable levels of fiscal deficits, despite the widely recognised growth-harming effects of such policy preferences. Additionally, there exists legitimate apprehension among researchers that leads one to cast doubt on the strict exogeneity of these variables. It is quite likely that higher income countries can afford political institutions that provide the right incentives for agents. Bearing these in mind, I select a number of policy variables to assess their importance in terms of their causal relationships with economic growth. The set of policies chosen represent four broad categories that characterise the economic policy landscape of countries. These include fiscal policy, monetary policy, trade policy and security of property rights.

Data for these series of economic policy variables are drawn from two sources. The first one is that provided by the Centre for International Development at Harvard University (*See* www.ksg.harvard.edu./CID/ciddata). Reference is made in particular to a measure of human capital accumulation and to the Sachs-Warner index of openness. Literature on the economic growth implications of the educational dimension of human capital has gone through serious claims and counterclaims with regard to appropriate ways of measuring education. As a reflection of such wide disparities in operationalising the education variables, the database mentioned above provides about thirty-three types of variables on education. The debate on this issue primarily centres around the comparative advantage of using average years of

schooling for the population vis-à-vis average grades completed. The primary schooling variable included in Table 6, measures the average number of years of schooling received by citizens of a given country. The other variable sourced from this database, i.e. the Sachs-Warner index, is a [0,1] binary variable of openness, whereby countries that fail to meet at least one of the five conditions are labelled closed and otherwise. Among these conditions are: that the country had average tariff rates exceeding 40 percent; that its non-tariff barriers covered on average more than 40 percent of its imports; that it had a socialist economic system; that the state had a monopoly of major exports; and that its black market premium exceeded 20 percent.

Similarly, I use data made publicly available by the African Research Programme at Harvard University (http://africa.gov.harvard.edu) for other policy variables. I proxy fiscal policy by real government consumption expenditure as a percentage of GDP. It is derived based on purchasing power parity prices of a given country's Gross Domestic Product. The programme has used IMF publications to organise data on rates of inflations for African economies in a panel format. The variable on inflation measures growth in Consumer Price Index. There exist a number of ways to quantifiably measure the extent to which a country's economy is integrated with the global economy. One such measure is that given by the World Bank and the PENN World Tables that assess a country's openness by the share of international trade to its national output. The source used here provides this measure of openness for a panel of African countries, in that each entry signifies the share of imports plus exports in real GDP. The other one is the Sachs-Warner index. I use both in this particular chapter. Moreover, I also take into consideration a widely-applied indicator of security of property rights. Note that, though an institutional

variable, the property rights variable I test here, i.e. CIM, is constructed based on economic parameters.

Table 6 Economic policy variables and growth in Africa

Variable	FE Basic	FE Inflation	FE CIM	FE Human	FE Open	FE SW Index	F Fis
Initial Income	-0.09	-0.11	-0.08	-0.08	-0.11	-0.12	-0
	0.03	0.03	0.05	0.05	0.07	0.07	0
	0.00	0.00	0.06	0.06	0.12	0.09	0
Investment	0.10	0.10	0.11	0.10	0.08	0.06	0
	0.02	0.03	0.04	0.04	0.05	0.05	0
	0.00	0.00	0.00	0.01	0.08	0.15	0
Population	-0.08	-0.10	-0.14	-0.33	-0.41	-0.48	-0
	0.04	0.04	0.08	0.12	0.14	0.16	0
	0.02	0.02	0.06	0.01	0.01	0.00	0
Inflation		-0.01	-0.01	-0.01	-0.01	-0.01	-0
		0.00	0.00	0.00	0.00	0.00	0
		0.00	0.00	0.01	0.02	0.02	0
CIM			0.05	0.05	0.03	0.04	0
			0.02	0.02	0.03	0.03	0
			0.01	0.04	0.21	0.18	0
Human Capital				-0.01	-0.01	-0.01	-0
				0.00	0.00	0.00	0
				0.49	0.34	0.25	0

Table (Contd,)

SW Index					0.02	0.02	
					0.08	0.08	
					0.77	0.74	
Openness						0.00	
						0.00	
						0.06	
Fiscal						0.00	0
						0.00	0
						0.04	0
Constant	0.56	0.73	0.54	0.76	1.13	1.25	0
	0.24	0.25	0.37	0.38	0.60	0.61	0
	0.02	0.00	0.14	0.04	0.06	0.04	0
N	371	247	159	155	128	128	1
aic	-318	-308	-194	-192	-145	-145	-1

NB. Unlike the preceding table where number of observations differed based on the characteristics of the models, here the differences in number of observations reflect missing values on some policy variables. The models report results for Solow augmented for inflation, contract intensive money (CIM), human capital, the Sachs-Warner openness index, openness, and fiscal policy. Values under each coefficient estimate represent robust standard errors and *p*-values respectively. Note also that I use year 2000 values for the last time-episode since our data source (ARP 2008) only reports that. Number of countries included is forty-five. Data is drawn from the PENN World Tables (*See* Heston *et al.* 2002)for the panel covering the period 1960-2004

As shown in table above, results indicate that a number of economic policy variables were very important in explaining differentials in growth performance among African countries. I ran seven models to investigate whether the inclusion of each economic policy variable, as a right-hand side argument, helped better explain economic growth in Africa. For instance, monetary policy, proxied by rates of inflation, has significantly contributed to economic growth performance in Africa. Countries which have managed to sustain regimes of stable prices (note that this is a reference to low inflation countries), gained, on average, about 0.2 percent in terms of greater national output. The coefficient estimates for rates of inflation show that there existed a significant negative causal relationship between these dimensions of monetary policy and economic growth. A similar assertion can be made with regard to the contract intensive money, whereby differences in the degree of security of property rights among the countries explained about 5.3 percent of the total economic growth variation. At this juncture, it is worth noting that there exists a large menu of variables used to proxy monetary policy tools of countries, that shall be applied in later applications of the political variables. The results for the other variables of policy were, however, not as strong.

Accordingly, the average number of years of schooling of a country's population could not significantly explain differences in economic growth. As mentioned above, the specific measures introduced to value the educational achievements of countries, have always been bones of contention among scholars. As such, one finds a mix of results with regard to the effects of this policy variable in shaping the long-run economic performance of countries. Interestingly, the coefficient estimates for the education variable indicates a negative association between levels of schooling and economic performance. This is more a reflection of

a shortcoming in the specific educational variable used, rather than that of the theoretical foundation of education-growth nexus. Results for other variables; including the two measures of a country's degree of integration in the global economy; namely openness and the Sachs-Warner index, as well as the share of government consumption in GDP, show directions of causation in line with theoretical priors, albeit insignificant ones. All in all, this exercise on the Solow model, augmented by economic policy variables, justifies our application of conventional political economy theories on Africa. It is also of critical importance to take into account a couple of factors in interpreting the results. Firstly, there is a significant limitation in economic policy data for Africa that fits into the panel specification. Secondly, the question of the underlying determinants of economic policy choices of countries, that is the political institutions, can not be overlooked.

Finally, I included a number of fixed indicators that feature prominently in economic growth studies on Africa. Accordingly, the findings endorse our earlier proposition on the shortcomings of the African tragedy paradigm. The two prominent candidates, widely applied to proxy the African dummy in the broader growth literature (Easterly and Levine 1997, Mauro 1995), are social diversity, often measured by ethnic fractionalisation and polarisation scales, and the adverse geographical factors in the region. The logic here is that, if there exists adequate variation in ethnic diversity within Africa, as is the case in the global data, then I expect parallel findings of inverse relationships between economic growth and diversity. After all, it is this very notion of the continent being more diverse than the rest of the world that supposedly explained the absence of economic growth. In a [0,1] scale, the ethnic fractionalisation and polarisation variables are distributed with a mean and standard deviation of (0.65, 0.23) and (0.54,0.19) respectively. This

shows that Africa, far from being a right-skewed distribution, hosts countries of ethnically homogenous as well as heterogeneous societies. As such, I are now in a position to investigate whether the reported social diversity and geographical factors, determine economic growth in the region. .

Table 7 Effects of fixed factors on economic growth in Africa

Variable	RE Ethnic	RE Polar	RE Geography(1)	RE Geography(2)
Initial Income	-0.01	-0.01	-0.02	-0.02
	0.01	0.02	0.02	0.02
	0.56	0.69	0.23	0.23
Investment	0.06	0.07	0.06	0.06
	0.01	0.02	0.02	0.02
	0.00	0.00	0.00	0.00
Population	-0.04	-0.05	-0.04	-0.04
	0.03	0.03	0.03	0.03
	0.15	0.11	0.16	0.16
Ethnic	-0.10			
	0.05			
	0.06			
Polarisation		-0.01		
		0.07		
		0.83		
Geography(1)			-0.11	
			0.05	
			0.02	
Geography(2)				-0.11
				0.05
				0.02
Constant	0.07	-0.03	0.18	0.18
	0.13	0.12	0.16	0.16
	0.60	0.83	0.24	0.24
chi2	27.34	23.43	28.31	28.31
N	371	347	349	349

NB. Data for ethnic and polarisation are drawn from Alesina *et al.* (2003) and Montalvo and Reynal-Querol (2005) respectively. The geography variables, which measure risk of malaria, are drawn from Sachs (2003). Because of absence of within-country variation in the variables, I run random-effects model. It includes all the forty-five countries in the panel. Values under each coefficient estimate represent robust standard errors and *p*-values respectively.

As can be observed from the above Table 7, social diversity, along ethnic lines, did not cause cross-country economic differences in the region. Besides being weak, the introduction of the ethnic variable in the model resulted in other variables losing their significance. I draw similar inferences when I apply the polarisation variable to proxy ethnic diversity in Africa. Given the fact that the variables ethnic fragmentation and polarisation provide diverging conceptualisations of social diversity, one would have expected either of the diversity variables to return significant coefficient estimates. When I ran the basic Solow model earlier, I showed that the bulk of cross-country variation (about 80%) in economic growth in Africa originated from within-country variation, as opposed to in-between country variation. It is this high degree of variation that the ethnic variable is structurally unable to account for. Additionally, recent research has cast some doubt on the political salience of ethnic diversity. Collier (2000), for instance, finds that ethnic diversity adversely affects economic growth only in dictatorships.

Kasara (2007) goes further in that, with the help of empirical evidence, he shows that African leaders did not favour their ethnic groups. The strong results for the geographic variables also came at a cost, as initial income and population lose their significance. The geography variable seems to capture only some unaccounted-for attributes of initial levels of income and the rates of growth of population. Additionally, I investigated whether the political dimension of ethnicity, reflected through choice of policies, was in line with the framework of the broader literature. I find a statistically significant negative correlation between degree of ethnic fractionalisation and share of government consumption in real GDP per capita, suggesting that ethnic diversity did not necessarily led countries to choose adverse fiscal policies. The relevant statistic is –0.2 at a one percent level of significance.

5.3) Discussion and summary

Generally, the conventional economic covariates of the basic Solow model widely utilised to explain cross-country economic growth differences *do* also apply to the intra-Africa differences in the same variable. I used a number of descriptive tools to not only assess patterns of correlations but also to highlight the limitations of deducing findings based solely on these analytical instruments. The latter is all the more important to the issue of conditional convergence, in that its actual effect on economic growth was captured by the quantitative segment of the chapter. As is the case in the broader literature, investment measured by the log of share of investment in real GDP per capita remained the strongest determinant of economic growth among the family of economic covariates. A unit change in the rate of investment for a given country accounted for as much as ten percent of the economic growth differential in the cross-country setting. A parallel situation is observed for the variables controlling for both a given country's initial level of economic growth and technological progress, albeit at a lower scale. It is also worth noting that, notwithstanding the analytical advantage of using GMM estimators, the findings remained robust to different model specifications (*See* Appendices) and were validated by a number of tests statistics.

Chapter 6. Delegation, credible commitment and economic growth in Africa

As a prelude to the discussion on the economic effects of institutions of credible commitment on economic growth in Africa, I highlight a couple of observations from the preceding discussion on the economics of growth in Africa. Firstly, it was shown that variations in growth performance among the countries *did* follow the theoretical stipulations of conventional economic models; so much so that no robust empirical grounds exist to invoke an African 'exceptionalist' paradigm. Secondly, normative economic models are mechanistic, in that they fail to address the basic question of why countries differ in terms of policy choices, given that the knowledge of policy-economic growth nexus is a global public good. As Acemoglu (2005:1026) puts it succinctly, before the onset of political economics, I had no better answer than to state '(some) politicians just don't get it.' Accordingly, the proposition that the dichotomy, between growth-promoting and growth-retarding policies, is essentially a function of differences in types and qualities of political institutions is the theme of this and subsequent chapters. More specifically, I apply empirical evidence on Africa to argue that variations in cross-country economic growth in the region mirror corresponding variations in political institutions that credibly tie the hands of governments from opportunistic behaviour, i.e. institutions of credible commitment.

The subset of institution of credible commitment, I deal with in this chapter, is delegation which, in this particular case, refers to an act of transfer of policy-making prerogatives from the executive to other agents. Widely considered to be a socially ubiquitous phenomenon (Diamond 1984 on delegation and financial intermediation; Vickers 1985 on delegation and the theory of the firm; and Thatcher

and Sweet 2002 on delegation to non-Majoritarian institutions), institutions of delegation have long served as important commitment technologies in economic policy. Here, our interest is to investigate to what extent different variants of delegation map into corresponding variations in economic performance in Africa, as measured by average levels of income. Accordingly, the delegation vector is broken down into two broad categories, each consisting of different measurements of the variable in question. More specifically, I analyse the economic effects of Central Bank independence and judicial independence. Both types of institutions signify the transfer of decision making power out of the hands of the executive. The chapter is organised as follows. In the next section, I investigate the economic effects of Central Bank independence, before embarking on dealing with the case of judicial independence. Subsumed in the section is a profile of the institution in question in the region; operationalisation of the variable, and data and analysis. The final section summarises.

Before I delve into discussions on the economic growth effects of the above mentioned commitment technologies, it is important to stress that the selection of these institutions of delegation from the otherwise broader set was justified for a number of reasons. I digress here to recall that a brief synthesis of the literature on delegation was provided in the review essay literature. Firstly, the theoretical underpinnings that link Central Bank independence and judicial independence to economic outcomes were stronger as compared with other institutions, such as decentralisation. For instance, it is difficult to disentangle the economic effects of decentralisation, which devolves significant political power to sub-national levels of government, in an environment, whereby the distribution of economic resources is structurally tilted, in favour of the centre. Comoros provides us with a striking case,

where a decentralised political landscape existed alongside a significant regional resource imbalance. This is starkly different from the Ethiopian experience wherein weak sub-national governments hold hardly any leverage on the centre. The experiences across the region with regard to decentralisation are so varied that it is difficult to deduce a common denominator for analysis.

Secondly, Central Banking in Africa provides us with an additional insight on the effects of transfer of policy-making prerogatives to multilateral organisations. This variable has the added analytical advantage that I will be able to investigate whether any effect of Central Bank independence on economic growth is driven by the handover of policy prerogatives to a regional body. Thirdly, if I abstract away from unique economic growth experiences, such as those of China and South Korea, then I find secured property rights (often cemented by judicial independence) to be strongly associated with the long-run performance of economies (*See* Torstensson 1994 for the property rights-economic growth link). With regard to delegation to administrative authorities, it is the very fact of these types of institutions being so diverse, which is a prohibitive factor in our analysis. In other words, since not every institution necessarily addresses economic objectives, it is difficult to find a common theoretical denominator that links them with economic growth.

6.1) Central Bank independence

It is hardly an overstatement to say that Central Bank independence has long been a hallmark of delegation as credible commitment. Several examples exist whereby monetary policy is used opportunistically by political actors to achieve myopic political goals. In many instances, governments stage drastic policy reversals, expropriate private returns as well as significantly altering fiscal behaviour during

periods of electoral cycles. Economies bear the brunt of such political phenomena because the resultant uncertainties induce sub-optimal types and levels of economic activity. A battery of studies along this paradigm show that the act of delegating monetary policy to an independent Central Banker helps address the commitment problem (Cukierman 1992, Cukierman *et al.* 1992). This section has a gap-filling agenda in that it attempts to provide a quantitative probe into the effects of Central Bank independence (hereinafter, CBI) on economic growth in Africa. The road map towards this end is as follows. In the next section, I provide a bird's-eye view of the evolution of Central Banking in the continent. The second section synthesises the political economy of CBI, with discussion of its theoretical foundations and the operationalisation of the CBI variable. In the section on data and analysis, I construct a new measure of CBI and empirically test its effects on economic growth in Africa.

6.1.1) A background note on Central Banking in Africa

6.1.1.1) Pre-independence Africa and Central Banking

A number of Central Banks in Africa have had a history that far outdates the era of independence by decades, albeit not rivalling those of Sweden's Riksbank (founded in 1668) or the Bank of England (founded in 1694). Nevertheless, the rationale for the founding of Central Banks in Africa involved diverse practical issues including commercial concerns, symbols of state sovereignty as well as a banker for government. For instance, the establishment of the Central Bank of South Africa (formally known as the South African Reserve Bank) in 1921 bore all the marks of commercial interests, in that the rise in the price of gold in London during those times opened up an opportunistic situation for arbitrageurs. The actions of these agents, who essentially bought gold from South Africa to sell it in Britain, put a

dent on the financial sustainability of commercial banks in the former. It was this perceived need, that the commercial banks could not keep exchanging gold for currency, which forced the country's parliament to pass legislation for the establishment of the Central Bank. The autonomy of the South African Reserve Bank is enshrined in the constitution, wherein it is legislated that price stability is its most important objective. Perhaps a further proof of the Bank's independence is given by its ability to achieve sound monetary policy amid the drastic political transformation of the mid-1990s.

The creation of the Reserve Bank of South Africa also has an important resonance on monetary policy in neighbouring countries. Until well into the 1960s, the South African Rand served as the sole medium of exchange and legal tender in Botswana, Lesotho, Namibia and Swaziland. Such an arrangement essentially implies that monetary policy-making for all these countries was a prerogative of the Reserve Bank of South Africa. Another Central Bank that evolved from a uniquely indigenous African political history is the National Bank of Ethiopia. It also represents one oft-observed trajectory, whereby Central Banks evolve from state owned commercial banks when the level of financial deepening in an economy necessitates the separation of purely commercial activities from monetary policy tasks. A case in point in this regard is the Bank of Ethiopia, which came into existence in 1931. Its functions prior to that period had been executed by the Bank of Abyssinia since 1906, which was also partially foreign-owned. Still, it was not until three decades later (in 1963), with the establishment of the National Bank of Ethiopia, that Central Banking activities were clearly demarcated.

Although the functions of Central Banks evolved through time as per the requirements of modern economies, there exist a number of unique roles played by

Central Banks which differentiate them from commercial banks. Central Banks have a monopoly right to issue and supervise currency notes in a country. They also act as a banker to government, in that they assist governments in keeping public financial resources as well as issuing financial instruments on governments' behalf. In addition to these activities, Central Banks act as lenders of last resort, by ensuring that an adequate flow of financial capital is available for other financial institutions, such as commercial banks and insurance companies. Arguably the most important function of Central Banks is the conducting of monetary policy in such a way that the amount of money in the economy is at a level that expedites economic activities in the real economy. It is to execute this latter task that the objective of price stability has always featured as a major objective for Central Banks. The application of monetary policy, and its implications for the economy, often stands at odds with political objectives of governments. It is this discord between economic efficiency objectives and political goals that justified the granting of autonomy to Central Banks in the conducting of monetary policy.

However, the prevalent monetary policy regimes in pre-independence Africa were carved out by Britain and France. For most of the British colonies in West and East Africa, a multi-country currency board was the norm. A currency board is a rule-based arrangement in which the exchange rate is fixed to an anchor-currency, guaranteeing automatic convertibility and long-term commitment to the system. For instance, the East African Currency Board that comprised Kenya, Uganda, mainland Tanzania and, later on, in 1936, Zanzibar, fits this model. Its foremost objectives had much less to do with stable prices and more to do with controlling the supply of currency in the areas, issuing currency and pegging the exchange rate to the pound sterling. For French colonies, there existed a common currency among fourteen

countries spread throughout west and central Africa. The CFA Franc, also known as *franc de la communauté financière africaine,* became operational since 1945, following France's ratification of the Bretton Woods agreement. It shared the convertibility feature with the currency boards, while at the same time being pegged to the French Franc. Such practice was also applied by French colonies in other parts of the region, as is attested by the experiences of Comoros and Djibouti.

6.1.1.2) Post-independence Africa and Central Banking

The early years of independence in Africa witnessed the emergence of Central Banks in all corners of the region. For the nationalist leaders who took power from colonial rulers, the setting-up of Central Banks was considered instrumental in achieving a couple of objectives. Firstly, Central Banks acted as symbols of sovereignty, thereby inducing several countries to introduce their own currencies. Secondly, the economic development agenda vehemently declared by the leaders presupposed a Central Bank that dictates credit allocation in accordance with national plans. As a case in point, it took just half a decade of post independence period for the three countries to dissolve the East African Currency Board. Not only had this move derived its domestic political capital on the basis of nationalism and sovereignty, but it was very apparent that Kenya's liberal policies could not have fitted Tanzania's African socialism. It is particularly true that statist policies, such as that of Julius Nyerere of Tanzania, had little room for a conservative Central Banker. Rather, the Central Bank was expected to play an active role in enhancing public investment as well as credit allocation, as administered by the government. For the other partner of the Board, Uganda, one can safely say that it went through such

violent political turmoil until 1986, that the functions of the Central Bank were far from the norm.

Still, monetary unions that originate from colonial times remained an important *modus operandi* of policy for a handful of countries. In the west and central sub-region, Central Bank operations of the fourteen countries are delegated to two regional banks. Established following the devaluation of the Franc of the African Financial Community (CFA franc) in 1994, the West African Economic and Monetary Union (WAMU) includes Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo with a common Central Bank called *Banque centrale des Etats de l'Afrique de l`Ouest* (BCEAO). The parallel monetary union and Central Bank, comprising Cameroon, Chad, Central African Republic, Congo (Brazzaville), Gabon and Equatorial Guinea, are respectively called the Central African Economic and Monetary Community and the *Banque des Etats de l'Afrique Centrale* (BEAC).

The CFA franc is a common currency for all the countries in the two communities. As mentioned above, both these entities trace their roots as far back as 1945, when the CFA franc was first created, on the same day that France ratified the Bretton Woods agreement. The consolidation of the regional economic and monetary union included, among others, such features as centralisation of external reserves, harmonisation of banking and monetary legislation and a fixed parity between the CFA franc and the French franc (now with the euro). A notable absentee from these economic and monetary arrangements among former French African colonies was Guinea, as it was the only country that had opted for full independence as opposed to remaining part of the French Community. Similarly, the Common Monetary Area in

southern Africa remained in place with the exception of Botswana, which left it in 1975.

6.1.2) Operationalisation of the CBI variable

Volumes have been written as to why rational politicians choose to delegate monetary policy-making to independent Central Banks. According to Eijffinger and De Haan (1996), one can identify at least three reasons for the use values of CBI. The first justification emerges from the observation that countries with higher values of CBI exhibit, on average, lower rates of inflation. While theoretical stipulations on this line of thinking primarily point out the importance of CBI in addressing time inconsistency of policy problems, other paradigms, such as public choice and the dominance of monetary policy over fiscal policy, also highlight similar arguments.

Another advantage of a CBI is that it helps reduce variability in inflation. Inflation variability, which in turn adversely affects resource allocations, is likely to be high in unstable political systems. In such situations, an independent Central Bank insulates the economy from inflationary spirals. It is also the case that the pattern of unemployment and inflation can be systematically related to the orientations of governments. Thirdly, the aggregate effects of low rates of inflation and less variability in rates of inflation, ultimately enhance economic growth. The bulk of empirical works on the economic effects of CBI have lent support to the theoretical propositions made above, especially with regard to its relationships with rates and variability of inflation (Keefer and Stasavage 1998, 2002).

Earlier, I have argued that there exist strong theoretical reasons as to why rational politicians choose to delegate monetary policy-making prerogatives to independent Central Bankers. Political institutions, which allow for sufficient

autonomy/independence for the Central Bank, help curb the much-heralded time inconsistency of policies problems. It is, however, the case that the degree of independence of Central Banks is a dynamic concept, as it is also true that specific local political evolution of the polity has much say in it (*See*, Debelle and Fischer 1994; Elgie and Thompson 1998).

Neither temporally nor spatially has Central Banks independence been evenly distributed institutions, as the trajectory of the Bank of England, and that of the Bundesbank illustrate. Naturally, scholarly interest in issues of operationalisation of Central Bank independence comes to the fore so as to test empirical fit to the theoretical hypotheses. Before I deal with the intricacies of measuring Central Bank independence, a note of caution is in order. Although conceptually, Central Bank independence refers to lack of institutional constraints, and Central Bank autonomy to operational freedom in selecting instruments, there are also many intersection points that justify using the terms interchangeably. Next, I explain what characteristics define independence of Central Banks and also introduce its use in this study.

Despite its wider economic relevance, the earliest attempt to quantifiably measure Central Bank independence was that of the unpublished work of Parkin and Bade in 1982. Accordingly, CBI was equated with political independence and, on a scale of 1-4 for twelve countries, it was defined as a function of the institutional relationship between the Central Bank and the executive, the procedure to nominate and dismiss the head of the Central Bank, the role of government officials on the Central Bank board, and the frequency of contacts between the executive and the bank (Alesina and Summers 1993).

A clearly defined institutional relationship between the executive and the Central Banks works in favour of CBI, as well as limited roles of government officials in the Central Bank board. Similarly, the more frequent the contact between the executive and the Central Bank the lesser is the CBI. The basic tenet of this index is that CBI is positively related to hands-off policies of government, with regard to the institutional and operational dimensions of the Central Bank. Subsequent studies adopted a more or less similar approach, with much focus on developed countries. More often than not, the dependent variable is either economic growth or rate of inflation but, as Sikken and de Haan (1998) show, fiscal policy outcomes, including public debt and budget deficit can be explained by CBI.

Because the CBI indicator I use here is a blend of two of the most widely used CBI indicators, an elaboration of these measures is a useful exercise. The first method was developed by Vittorio Grilli, Donato Masciandaro and Guido Tabellini, in a journal article published in *Economic Policy* in 1991. Accordingly, the degree of independence accorded to a CBI is broken down into the political and economic dimensions of independence of the Central Bank. The political independence of a Central Bank is defined as the ability of Central Banks to select the final objectives of monetary policy and, based on the principles of appointment, tenure and institutional relationship with the executive, it is gauged along the following eight criteria:

- the governor is appointed without government involvement;
- the tenure of the governor exceeds five years;
- the Central Bank board of directors are appointed without government involvement;
- the tenure length of the board of directors is more than five years;

- there is no mandatory participation of government representatives in the board;
- monetary policy formulation requires no government approval;
- the bank is legally obliged to pursue monetary stability as one of its major objectives; and
- the Central Bank has a legal provision to protect it when in a conflictive situation with the executive.

Economic independence of the Central Bank, on the other hand, refers to the autonomy of the bank in choosing instruments of monetary policy. The economic independence of the Central Bank is determined by the influence of government in determining the size of its borrowing from the Central Bank and the nature of the monetary instruments under the bank's control. Accordingly, seven criteria were used to quantifiably measure this aspect of CBI that includes:

- there is no automatic procedure for government to obtain direct credit from the Central Bank;
- government accesses, if at all, direct credit at market interest rates;
- direct credit to government is temporary;
- it is also limited in size;
- the bank does not participate in the primary market for public debt;
- the bank is responsible for setting the policy rate; and
- the Central Bank has either a sole responsibility or a shared one in supervising the banking sector.

The scoring system used to measure both dimensions, as well as the overall level of CBI, is a simple sum of values registered for each criterion. A couple of limitations of the Grilli *et al.* (1991) CBI index are worth mentioning. Firstly, it is

decidedly an *ex ante* measure of CBI independence, in that the indicator solely relies on legal arrangements regarding the Central Bank and its relationships with the executive arm of the state. It is very obvious that what is legally provided and what actually occurs may not always tally. For instance, a Central Bank that has by legislation been given very limited scope in monetary policy-making could, in fact, exercise broader powers based on the discretion of the government. It is not difficult to find cases in which the reverse is true. Secondly, the CBI variable developed in the aforementioned study was applied to only 18 OECD countries. The relevance of this factor is not so much its applicability to other settings, as the fact that its derivation was largely influenced by institutional features of advanced countries in the first place. Their findings indicate that CBI significantly explains why some countries sustain higher rates of inflation, while they stressed the point that the effects of economic and political CBI are not necessarily equivalent.

The other widely used CBI index is that proposed by Alex Cukierman (1992), which also had the additional advantage of embodying both legal and actual indicators of CBI. In order to calculate the degree of independence enjoyed by a Central Bank, entirely on the basis of the legal framework, sixteen criterion were identified along four major categories including:-

- tenure length of the chief executive officer, the entity that appoints him/her, provision for dismissal, and ability to hold another office;
- the policy formulation prerogatives of the bank, rules of conflict resolution with the government, and level of bank involvement in government budget formulation;
- monetary stability as the overarching objective of the Central Bank; and

- regulations that provide the Central Bank broader authority in limiting the size, type and terms of lending to the government.

Two other sets of proxy were included to augment the legal CBI measure, for the purpose of accounting for possible deviations of actual degrees of CBI from the legal one. Accordingly, he postulated that the actual turnover of Central Bank governors, or the ratio of the actual to the legal term of office of the governor, partly closes the gap. The inclusion of the actual turnover rate of governors was justified on the grounds that not only do empirical observations reveal that actual and legal terms often diverge but, more interestingly, it was based on the notion that beyond a given threshold there exists an inverse relationship between the two. The study also subscribed to the views of specialists from a sub-group of 24 countries on monetary policy, to derive a proxy for the actual measure of CBI. Based on his measure of legal CBI for 70 countries, and CBI based on turnover rate for 58 countries, the findings suggest that different indices should have varied effects on economic policy variables. As mentioned above, the CBI indices I develop in this study are a hybrid of the Grilli *et al.* (1991) indices and those of Cukierman (1992).

At this point, I need to mention one other CBI study which has some relevance to Africa. Marco Arnone, Bernard J. Laurens, Jean-Francois Segalotto and Martin Sommer calculated indices of Central Bank autonomy for 163 Central Banks as of end-2003, and comparable indexes for a subgroup of 68 Central Banks as of the end of the 1980s (Arnone *et al.* 2007). The major advantage of this measure is its coverage of a very large number of countries worldwide and the inclusion of African countries, which in a majority of studies on CBI are underrepresented. For the same specific criteria discussed above for the Grilli *et al.* (1991) and for the Cukierman (1992) indices, they developed a three-variable vector of CBI for each country under

consideration. More specifically, the CBI vector for each country includes a measure of political CBI, economic CBI and an overall CBI. Notwithstanding the fact that it is, by far, the largest indicator of CBI in terms of number of Central Banks (a digression here is warranted to point out that, even if the number of Central Banks included is 163, the number of countries is actually 181), a few of limitations of the Arnone *et al.* (2007) indices are worth noting.

Firstly, it is basically a *de jure* measure capable of assessing CBI, such as is given only in the legal landscape. Secondly, its temporal dimension is a narrow one, as it provides snapshots of only two points in the time scale. Thirdly, it leaves out a number of specific factors that otherwise influence CBI. One notable omission in their indicators is the qualification criterion set for Central Bank governors. While these problems are not specific to this dataset, there is also one strong limitation to it. Accordingly, and perhaps more importantly, the derivations of the standardised scores are informed mainly by the existence of data in contrast to actual assessments. Note that, in constructing our indices in this thesis, I do not allow missing values to partially dictate the scores. This also explains why, despite its broad coverage of African data, I refrain from using the Arnone *et al.* (2007) for the quantitative part of the analysis.

For instance, the category of 'monetary financing of public deficits and monetary instruments' has eight criteria. For fulfilling each criterion, a country gets one point, and otherwise zero, so that the maximum score is eight. Malawi met five of the eight criteria and, therefore, obtains a standardised score of 0.63, while Mauritius achieved a score of four that apparently translates into a standardised score of 0.50. Put differently, the scores did not entirely account for actual CBI when driven by the availability of data. In this study, our use of the Arnone *et al.* (2007) is

solely limited to graphically explaining temporal trends in CBI indices of some African countries. Having taken these into consideration, I next discuss the economic effects of CBI in Africa.

6.1.3) Data and analysis

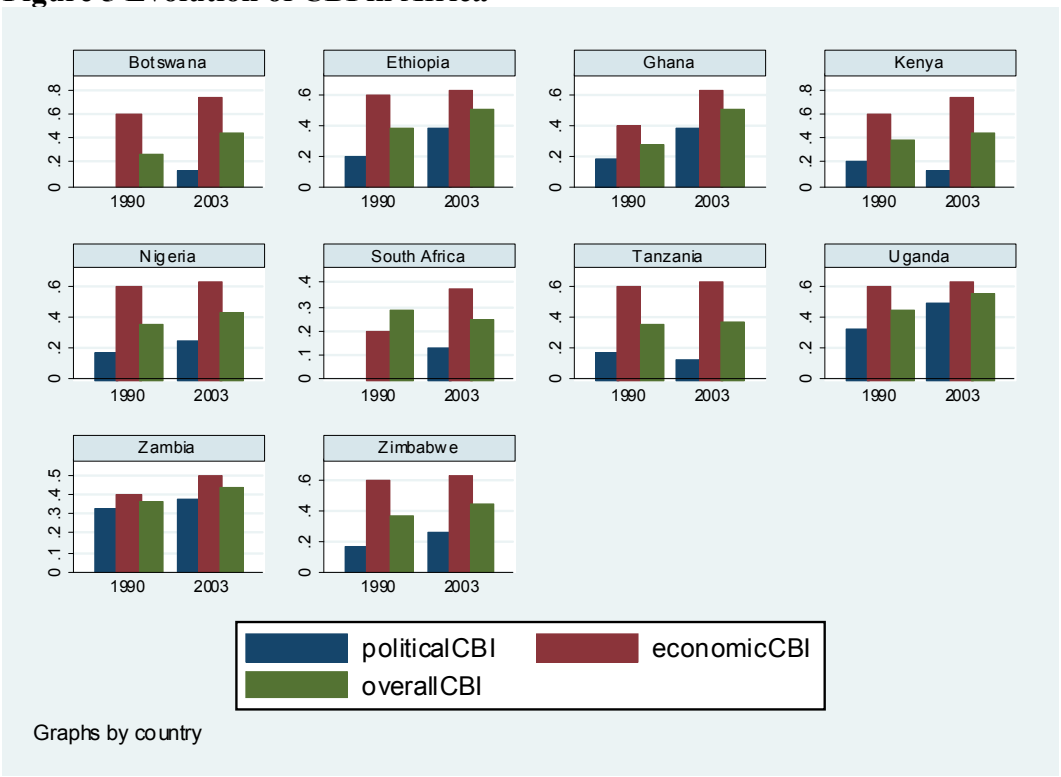
6.1.3.1) CBI and its evolution

First in the pecking order of tasks in this section is to investigate whether there exists with adequate statistical evidence to reject the null hypothesis of no systematic relationship between CBI and economic performance in Africa, the latter variable measured in terms of economic growth and/or quality of macroeconomic policy. I organise the analysis sequentially by starting from sources, measurement of variables on both sides of the equation, followed by descriptive and quantitative investigations respectively. Recall that, earlier, I underscored the weaknesses of the Arnone *et al.* (2007) data in undertaking a meaningful empirical analysis. However, one advantage of this data is that it provides fairly comparable observations for ten countries in two points in time. Note that the temporal dimension of data on CBI in Africa is extremely narrow and hard to find, as published resources have come to surface only very recently.

Cukierman (1992), while arguably the only study to seriously attempt to account for dynamic changes in CBI among African countries, includes as few as less than one-fifth of the 50-plus countries that the region hosts. The data points for the countries already included are further reduced when one takes into account those entries registered as unavailable. Interestingly, it also overlooks monetary policy developments in all of former French colonies in Africa. The significance of this issue emanates from the fact that, unlike in other parts of Africa, these sub-regions

were unique in that monetary policy has always been delegated to regional monetary unions that have had a considerable life-span. A further limitation is the fact that this data begins from 1950, which is quite some time before African countries began to achieve their political independence. All of these points suggest that accounting for the dynamic features of CBI on economic outcomes in Africa is all but impractical.

Figure 5 Evolution of CBI in Africa



NB. Using figures from Arnone *et al.* (2007), the above graph portrays the evolution of CBI for Ten African States along the three CBI variables, i.e. political independence, economic independence and overall independence. In order to capture the low scores of South Africa and Zambia in all the variables, I rescaled the Y-axis in those cases to the interval [0, 0.5]. The metrics remain the same.

Taking the above mentioned limitation into consideration, and based on the Arnone *et al.* (2007) data, it is not difficult to discern that economic CBI has consistently been the most important aspect of delegating monetary policy authority in Africa. Recall that I earlier elaborated on the metrics used in the construction of the Arnone *et al.* (2007) data. In almost all of the countries included above, the economic CBI standardised score is about 0.6, while the corresponding values for the political CBI fluctuate between 0.2 and 0.4. An exceptional case is that of Uganda, in which case the margin between the two dimensions of CBI is very close. Still, the

narrowing of this margin between the economic CBI and the political CBI for Uganda has materialised only since around the year 2000. Zambia also seemed to have accorded its Central Bank a compatible level of independence, both in terms of economic instruments and political aspects of the CBI. Yet it differs from Uganda in that its CBI scores hardly reach 0.5, in contrast to that of Uganda which stands at around 0.6.

Additionally, three other patterns are worth mentioning in portraying the diversity of experiences in CBI among African countries. The first one is that represented by Botswana, whereby political CBI is significantly and consistently lower than economic CBI. The other is that of Ethiopia, which increasingly enhanced the political CBI of its Central Bank with a concomitant downward spiral in its economic CBI. The Ethiopian experience is an exact contrast to that of Kenya, in which a reduction in political CBI is accompanied by improvement in the economic CBI of its Central Bank. In sum, one can discern a few notable features in the evolution of CBI in Africa. It can be deduced that almost all the countries have increased the degree of delegation of monetary policy to their Central Banks since the early 1990s as is shown by the overall CBI scores.

Broadly, African countries seem to have a greater preference for provide their Central Banks with broader prerogatives in choosing policy instruments (economic CBI) than that of a limited political role in the hiring and firing of governors of Central Banks (political CBI). These attributes mostly reflect those of former British colonies in the region with the exception of Ethiopia and South Africa. Note that the diagrammatic presentation above is based on two temporal data points. While it shows situations with regard to CBI at the end of 1980s and around 2003, it does not purport to account for the dynamism in the CBI indicators. Nevertheless, there are

substantial reasons to believe that it fairly captures a trend in the variables. Firstly, institutional variables such as CBI are notoriously slow to change and, hence major fluctuations in the values between the periods are unlikely. Secondly, one observes an improvement in CBI levels across a wide spectrum of countries. As such, the presumption that there could have existed very diverging evolutionary patterns in CBI among countries is less plausible.

6.1.3.2) A new set of CBI indicators for Africa

In order to assess the empirical effects of CBI in Africa on economic growth, I construct two *de jure* and one *de facto* measures. The legal texts and other materials used to build the CBI indicators are available online at www.centralbanking.org.uk (*See also*, Appendix E). Unlike other widely available indicators of CBI that rely on very broad categories, those I develop here are focussed and deal with specific dimensions of CBI. The definitions and coding strategies applied are explained as follows.

The political independence variables capture the degree of autonomy provided to the Central Bank governors. More specifically, I postulate three scenarios:

- The Bank through its board of directors is allowed to appoint the governor;
- The legally set term limit for the governor is greater than or equal to five year; and
- There exists a professional qualification criterion required of the person under consideration to govern the Central Bank.

The coding is based by the number of criteria a given Central Bank fulfils. Central Banks that meet al.l three criteria are assigned a value of one. Note that the existence of public sector officers in the director's board does not imply a weakening

of the first case as long as government representatives do not hold a veto power. I put a value of 1 for Central Banks that satisfy all the conditions; 0.67 on Central Banks that satisfy two of the conditions set above while those that meet only one of the conditions are given a weight of 0.33. A value of 0 is assigned for cases where none of the above set criteria are achieved.

Economic independence of a Central Bank refers to the types of monetary policy instruments at the disposal of the bank and the degree to which the bank is at liberty to use those tools without interference on the part of government. I develop the economic independence variable as a weighted average of two major sub-components. The first of these deals with the question of establishing the identity of monetary policy-maker. It captures the theoretical stipulation that Central Banks with the authority to make monetary policy are more independent. Accordingly, coding statements and corresponding weights are given as follows:

- Monetary policy is the sole prerogative of the Central Bank (1.00);
- The Central Bank and the government share policy-making authority (0.67);
- The legislation fails to clearly address the issue of who makes policy (0.33); and
- Monetary policy is the sole prerogative of the government (0.00).

Note that in cases where the bank is expected only to advise government on policy, it is taken as having full economic autonomy.

The second sub-component of economic independence tackles the bank's autonomy with regard to the fiscal behaviour of government. More specifically, I measure the existence and robustness of policy instruments that control government borrowing from the bank. This is quite an important indicator in an African context

where monetisation of fiscal deficits has been a widespread problem. The coding criteria and associated weights are given below.

- The legislation contains stipulations which limit government borrowing with clear regulations on implementations (1.00). The strength of implementation is assessed by the ease with which government can violate legally-set limits. Autonomy with regard to limits on government borrowing is stronger in cases where the Central Bank can resort to parliamentary approval or change the banking laws;
- The banking legislation provides for a limit on government borrowing but does not clearly indicate programmes of action when and if the core executive attempts to violate the rule (0.50);
- The banking act does not include limits on government borrowing (0.00).

Finally, the *de facto* indicator I construct to operationalise Central Bank independence is the annual rate of turnover of Central Bank governors. Political theory establishes that a higher rate of turnover of Central Bank governors implies a weaker degree of independence for the bank.

6.1.3.3) Tenure of Central Bank governors in Africa

A closer look at the distributional pattern of our *de facto* variable, i.e. actual rates of turnover of governors, is in order, as this variable is a particularly important proxy for Central Bank independence in developing countries (Cukierman *et al.* 1992). When the Bank of Mauritius marked its 40th anniversary, Rundheersing Bheenick, its sixth Governor, explained that the average tenure of a governor for that part of the world was eight years, but with a wide deviation between two and twelve years. The average tenure for a governor of the Bank of Mauritius is six and a half

years. This figure is very close to the average actual tenure of a Central Bank governor in Africa which stands at about 6.4 years. The regional average tenure for a Central Bank governor falls well within the range of independent Central Banks as the criterion in most cases is a tenure of five or more years. In its 45-year existence, the National Bank of Ethiopia has had seven governors, which implies an average survival rate of 5.6 years. Yet the reported value for governors' average tenure in Ethiopia should not mask the fact that the last two decades have been the most volatile for the Bank in terms of turnover rate. Five of the seven governors were hired and fired within the past twenty years.

Table 8 Rates of actual turnover of Central Bank governors (Selected countries)

Country	Number of Governors	Annual Turnover rate*
BCEAO**	4	0.093
Botswana	6	0.1875
Ethiopia	7	0.1590
Madagascar	6	0.1764
Namibia	4	0.2352
South Africa	8	0.097
Sudan	14	0.3182
Uganda	9	0.2195
Zambia	12	0.2791

NB. * Actual turnover rate is the quotient of the number of governors and the total years of existence for the Central Bank. ** BCEAO countries are Benin, Burkina Faso, Côte d'Ivoire, Guinée Bissau, Mali, Niger, Senegal and Togo. Note that, for brevity reasons, this table reports results for 16 countries only. A detailed presentation with names and tenures is provided in the appendix.

Such figures in an otherwise largely unstable political environment should not come as a surprise. One can cite a couple of reasons as to why this is so. To start with, both of the CFA Franc monetary unions in Africa have had noticeably low rates of turnover of Central Bank governors. The BCEAO and BEAC countries that comprise 14 countries have had only four and three governors respectively

throughout their existence. This means that for both of these entities the average tenure of the Central Bank governors exceeded ten years. Similarly, the Reserve Bank of South Africa has had only eight governors during its 86 years of existence. Nevertheless, as Table 8 shows, such figures should not camouflage significant differences in turnover across the entire region. The most unstable Central Bank regime is that of the Sudan where the average tenure of a governor oscillated around three years. Other notable cases include Zambia, with a turnover rate of 0.2791, and Namibia with 0.2352. Perhaps as a reflection of its political history, ravaged by civil conflicts and several coups d'état, average tenure of a Central Bank governor in Nigeria is only five years. However, I observe a pattern of improved longevity for Central Bank governors in recent times in this country.

6.1.3.4) Descriptive analysis

As discussed above, the political independence variable is a function of the system of governor's appointment, her (perhaps a misnomer given that Linah K. Mohohlo of the Bank of Botswana is the only woman in the list) legal term limit and the qualifications required for the position. In the majority of cases, countries managed to meet only one of the conditions, with a corresponding value of 0.5. The extent of involvement by the executive arm of government is quite strong in certain countries. For instance, all the board members of the National Bank of Ethiopia are high-level politicians, and the governor is accountable to the board. Additionally, monetary policy is, legally, set to be the prerogative of the Finance Ministry. At the other extreme are the Central Banks of Botswana and Mauritius. In both countries, the Banking Acts contain robust provisions which dictate the involvement of the chief executive in the governor's selection and decision making.

Table 9 Descriptive statistics of CBI variables

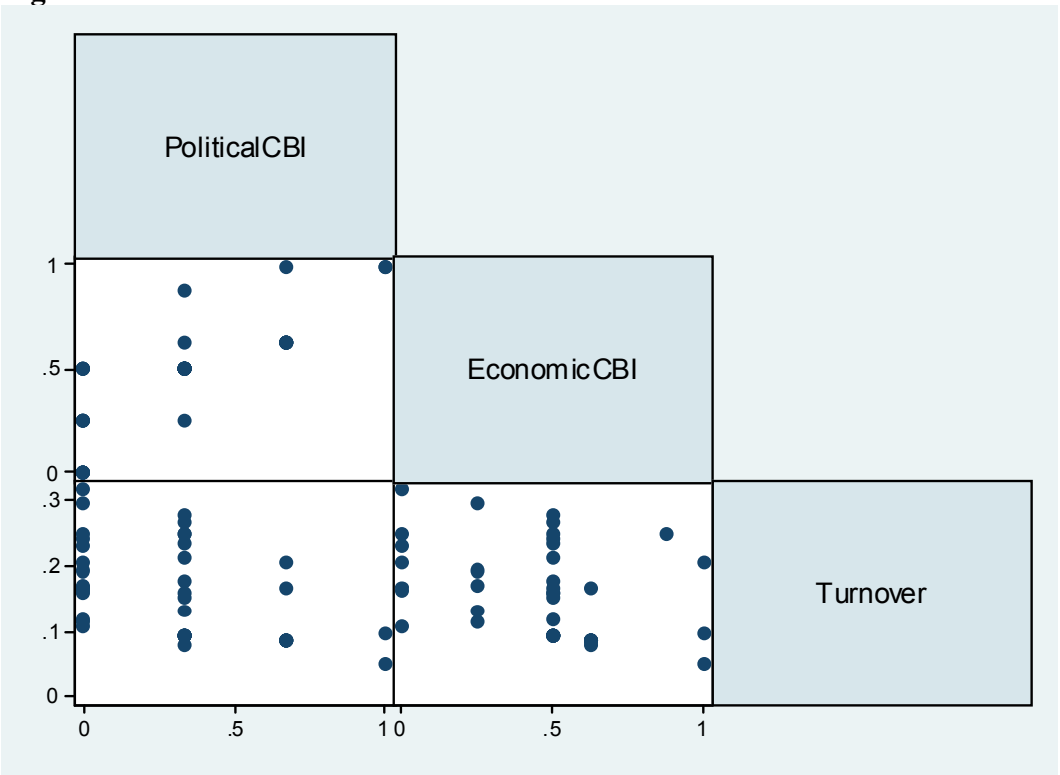
Stats	Political CBI	Policy CBI	Limit CBI	Economic CBI	Turnover
Mean	0.31	0.51	0.41	0.46	0.16
Max	1.00	1.00	1.00	1.00	0.32
Min	0.00	0.00	0.00	0.00	0.05
SD	0.28	0.27	0.29	0.26	0.07

NB. Though figures reported are for forty-four countries in the region, fourteen countries share similar values because of membership to regional blocks. While Political CBI refers to hiring and firing of CBI governors, Policy CBI and Limit CBI account for identity of monetary policy maker and the Banks' legal relationships vis-à-vis Governments. Economic CBI is a weighted average of Policy CBI and Limit CBI. I use the relevant Central Bank legislation to derive the basic indicators of independence. Recall that I refrain from using Arnone et al. (2007) for the quantitative analysis, since assuming missing values as lower CBI scores is untenable.

The distributional patterns of the political CBI and economic CBI are skewed to the left. The fact that the mean value for the political independence variable is 0.31 suggests that, in the prevalent cases, African countries do not provide significant autonomy to the Bank. A more or less similar inference can be made regarding economic independence for the Central Bank. However, the two components of economic independence exhibit diverging patterns of distribution. More to the point, African countries score better in terms of delegating monetary policy-making authority to the Central Banks. The policy dimension of the economic CBI for the bulk of the countries revolves around a mean value of 0.51. Such a distributional pattern sharply contrasts with that of the limit CBI which is indicative of the fact that government borrowing from the Central Bank remains a major risk for the independence of the Central Banks.

Several countries in the region either leave out any regulations on limiting government access to Central Bank lending altogether or the banking laws blatantly lack provisions that credibly allow the Bank to control for such eventualities. Finally, a common trend for all distributional patterns of CBI in the region is that there exist significant cross-country variations, as is shown by the standard deviations. Next I address the empirical implications of the political variables on economic performance of countries in the region.

Figure 6 Links between CBI variables



NB. The scatter in the above graph assesses links among the three CBI variables developed in the thesis. Both axes show scores on each CBI indicator. I include all the forty-five countries in the analysis.

The purpose of the above diagrammatic presentation is to provide a visual assessment of possible links between the three sets of CBI indicators introduced here. It should be noted that political theory does not support the view that these variables should correlate strongly. The first scatter-plot, i.e. top left corner, highlights the relationship between the political CBI and the economic CBI variables. There exists a very strong covariation between these two variables, in that countries which accorded broader political independence to their Central Banks backed these measures with comparable autonomy in monetary policy-making, as well as in terms of Central Banks' dealings with executives. When examining the individual country data, I note that a country in the higher rank group with regard to political CBI is

80% likely to be in the comparably higher group when ranking is along the economic CBI scale.

Our result in this particular case resembles what Arnone *et al.* (2007) reported, as presented in Figure 5 earlier, wherein they indicated that only Kenya and Zimbabwe, both based on 1990 figures, had relatively lower economic CBI as compared to their political CBI figures. Such a strong correlation between economic CBI and political CBI in Africa possibly relates to limited policy tools at the disposal of Central Banks, due in some part to structural conditions, such as poorly-developed financial markets.

In the corner left bottom, one can observe the relationship between political CBI and the *de facto* measure of CBI, i.e. actual rate of turnover of governors. Here also, I notice a rather weak, but still positive, association between these two variables. Reading from left in the figure, I can see that, as political CBI declines, the actual turnover rate of Central Bank governors showed an increase. Those countries that registered very short actual tenures for their Central Bank governors, including the Sudan, Mauritania, and Uganda, are also the ones that failed to give legalistic independence to the Central Banks in the hiring and firing of governors. The other extreme of the ranking order is primarily inhabited by the BCEAO countries. The scatter-plot at the bottom right end of the figure helps us to make some non-parametric (that is, without invoking any assumptions about the distribution) observations.

What I deduce from this particular segment appears to be at odds with earlier observations in that there does not exist any relationship between the economic CBI variable and actual turnover rates for Central Bank governors in Africa. All in all, inasmuch as political CBI and turnover rates correlate positively, I can state that

actual tenure of Central Bank governors in the region can be explained by the legal provisions on the hiring and firing of Central Bank governors.

6.1.3.5) Quantitative analysis

So far, it has been shown that there exist differences in levels of CBI for African countries in terms of the various instruments used to measure CBI. The hypothesis I draw from political theory for empirical investigation is that such differences in cross-country CBI map onto corresponding differences in economic performances for the countries. To this end, I develop economic growth models augmented with the political variables introduced in this section. Accordingly, annual average real GDP per capita of each country for the period 1990-2003 is used as the dependent variable. While I do not dwell much on the choice of the dependent variable here (recall that it is dealt with in a previous chapter), I need to elaborate on the control variable(s) and the political variables on CBI. Unlike the Solow model, economic growth studies based on cross-sectional models draw from open-ended theoretical foundations. As mentioned in Chapter 3, an excellent account of this anomaly in economic growth studies is provided in Sala-I-Martin (1997). This means that economic theory is at a loss when it comes to either the identity of the right-hand side variables or how many of them should be included. It is a reflection of this problem that I observe a long list of variables that have been included the models.

In this thesis, I followed a more pragmatic approach, and permitted availability of data to decide which economic covariate(s) to include. This approach is useful, in that I will be able to minimise losses in degrees of freedom. For instance, if I use human capital as a control, the number of observations in the model collapses to 27. It is for this reason that I resorted to using openness to control for economic

factors. By using the degree of openness as an economic covariate, I do not imply that it is the only variable, where data for all countries are available. That is not all, however, in that, to ensure that the results do not loosely hinge on this variable, I conduct robustness tests by replacing them with other variables, and also by applying other estimation techniques. With regard to the political explanatory variables, a couple of notes are worth mentioning here.

Firstly, the CBI indicators are constructed from the earliest available Central Bank acts. Most of the countries in the region have had their respective legislations introduced or significantly amended in the early 1990s which coincided with the wave of political reforms in the region during that period. For other countries whose Central Bank legislations dated back to earlier periods (notably, South Africa, BCEAO and BEAC members), any amendments in the laws are taken into account. Secondly, it is almost impossible that such measurements to be totally free of subjective assessments on the par of the researcher.

I first focus on investigating the effects of the constituent parts of economic CBI on economic growth in the region. Recall that the former is made up of a policy dimension that controls for the identity of monetary policy making authority, and a term dimension which assessed the level of bank autonomy in controlling public debt. The findings reported in table 6.3. indicate that both components explain a significant level of variation in economic growth among countries. A marginal change in levels of economic CBI from the policy dimension induces a greater pay-off in terms of economic growth. Countries that reform from a lower policy-cum-economic independence CBI regime to a higher one are likely to enhance long-term economic growth significantly. This is important in the sense that, in several countries of the region, the Central Banks were always expected to address multiple

economic objectives, which in turn allowed governments to exercise significant control over monetary policy. A similar assertion can be made with regard to the limit dimension of economic CBI, albeit at a lesser level of significance. As such, a one percent change in favour of a Bank's autonomy in limiting government borrowing explains more than 1.08 of one percent in growth differences.

Table 10 Economic effects of CBI variables in Africa

Variable	(OLS with Political CBI)	(OLS with Policy CBI)	(OLS with Limit CBI)
Openness	0.57 0.21 0.01	0.48 0.20 0.02	0.56 0.20 0.01
Political CBI	1.27 0.47 0.01		
Policy CBI		1.36 0.50 0.01	
Limit CBI			1.08 0.46 0.02
Constant	4.58 0.76 0.00	4.65 0.75 0.00	4.60 0.74 0.00
R-squ.	0.41	0.39	0.36
F(2,41)	15.23	10.12	11.06
N	44	44	44

NB. The three models account for the growth effects of political CBI and economic CBI (Policy and Limit) respectively. Openness, drawn from the PENN World Table) is measured as a natural log of share of exports plus imports in GDP. Figures below coefficient estimates are robust standard errors and *p*-values. All the F values are significant at one percent. Estimation is by OLS.

One serious criticism that can be labelled at the above presentation is that it overlooks a particular feature of monetary policy-making in Africa. This is a

reference to the common monetary areas of former French colonies in West and Central Africa, otherwise known as the CFA franc countries. By default, the countries in these regional blocks share similar values with regard to the derived *de jure* and *de facto* CBI measures. It means that the OLS regression assumption on statistical independence of error terms is violated. As such, I should be investigating this issue in order to establish whether the results reported above were driven by the structurally different CFA franc situation. I follow two approaches to investigate the significance of this problem for the above-reported links between the two sets of variables. In addition to introducing a dummy variable for membership in a regional monetary union, I run a generalised linear model to estimate one of the CBI parameters.

Table 11 Economic effects of CBI variables in Africa (with regional controls)

Variable	(Political CBI with dummy)	(Policy CBI with dummy)	(Limit CBI with dummy)	(GLM)
Openness	0.57	0.49	0.54	0.57
	0.20	0.19	0.19	0.20
	0.01	0.01	0.01	0.00
Political CBI	1.29			1.27
	0.46			0.46
	0.01			0.01
Regional	-0.53	-0.48	-0.63	
	0.19	0.19	0.20	
	0.01	0.01	0.00	
Policy CBI		1.34		
		0.49		
		0.01		
Limit CBI			1.21	
			0.46	
			0.01	
Constant	4.66	4.71	4.73	4.58
	0.72	0.72	0.69	0.74
	0.00	0.00	0.00	0.00
R-squ.	0.66	0.44	0.44	NA
F(3,40)	12.97	9.23	9.66	NA
N	44	44	44	44

NB. Models in 2nd, 3rd and 4th columns capture the links between growth and the CBI variables (OLS estimation), but this time I introduced dummies for membership in the regional monetary unions. Model in last column is a generalised linear model estimation applied on political CBI. Openness, drawn from the PENN World Table, is measured as a natural log of share of exports plus imports in GDP. Regional is a dummy that takes value of 1 if country belongs to a monetary union and 0 otherwise. NA refers to not available. The F values are significant at one percent. Figures below coefficient estimates are robust standard errors and *p*-values. NA refers to statistic inappropriate.

The introduction of the dummy variables helps to shed light on the significance, if any, of membership of the two monetary blocks for the findings in Table 12. Any disparity between the CBI variables estimations is attributed to the inclusion of a control on membership. I observe hardly any change to the coefficient estimate on the political CBI when the dummy for membership is included. The effect of political CBI on economic growth reported earlier was not conditional on the scores for the regional groupings. Political CBI would have continued to be an important variable even if I had ignored those cases from regional monetary unions. The model in the third column of Table 12 reports results with regard to the policy dimension of economic CBI, while corresponding estimates for the limit dimension are provided in Column 4. Yet again, I find very subdued effects of membership in the regional monetary unions on the economic performance of countries. Finally, in the last model, rather than relying on dummies, I sought to address this issue by applying a different estimation technique.

Accordingly, the result from the generalised linear model, based on the political CBI, did not dampen the findings reported in the previous model. It also returned similar results for the other political variables. The generalised linear model is a technique which, in addition to accommodation of such non-normal distributions as poisson or logistic distributions, is capable of dealing with non-linearity issues. In this connection, it helps us assess whether, as a result of inclusion of regional monetary unions, the estimates still hold true.

Table 12 CBI Governors' turnover rate and economic growth in Africa

Variable	(Political CBI)	(Economic CBI)	(Turnover without dummies)	(Turnover with dummies)
Openness	0.57	0.49	0.67	0.59
	0.21	0.19	0.20	0.20
	0.01	0.02	0.00	0.01
Political CBI	1.27			
	0.47			
	0.01			
Economic CBI		1.37		
		0.49		
		0.01		
Turnover				
			-1.86	-3.95
			1.62	1.93
			0.26	0.05
Regional				-0.80
				0.27
				0.01
Constant	4.58	4.68	4.86	5.68
	0.76	0.73	0.90	0.95
	0.00	0.00	0.00	0.00
R-Squ.	0.41	0.39	0.26	0.37
F(2,41)	15.23	10.95	6.92	-
F(3,40)	-	-	-	5.95
N	44	44	44	44

NB. First model is for political CBI as reported in tables above; column 3 presents results for the economic CBI, which is an equally weighted average of policy CBI and limit CBI and; columns 4 and 5 show estimates for the turnover variable without and with dummies respectively. Openness, drawn from the PENN World Table, is measured as a natural log of share of exports plus imports in GDP. F values are significant at one percent. Estimation is by OLS. Figures below coefficient estimates are robust standard errors and *p*-values.

From Table 12 above, our concern is primarily with the last two models. The model in column 2 is already discussed, while the economic CBI (i.e. in column 3) is merely an average of policy CBI and limit CBI. Since both the constituent parts of economic CBI were positively and significantly related with economic growth in the region, and because such results were not sensitive to the particular features of CFA

franc countries, the corresponding significant association between growth and the economic CBI is expected. The influence of actual rate of turnover of governors on economic growth in Africa seems to be weak, even though the direction of the relationship confirms theoretical priors. However, when I include controls for countries' membership of monetary unions, the coefficient estimate for the turnover variable becomes very significant. Unlike the legalistic measures of political CBI and economic CBI, this variable, when I do not control for membership of monetary unions, does not explain cross-country growth differences in Africa. Taking into consideration the fact that turnover rates for both regional blocs are at the lowest extreme of the rankings, a plausible explanation is that the effect of membership of monetary unions manifested itself more through the turnover variable than through political CBI or economic CBI.

Before summing up this section, it is important to highlight some caveats regarding the CBI-economic growth nexus in Africa. Firstly, theory on effects of independence of Central Banks on the economic landscape often underscores its effects mainly on inflation (Cukierman 1992, Fry 1998). Given the fact that theoretical assertions of the direct effects of CBI on economic growth are rather grey, I need to caution as to whether the reported results amount to causal relationships. The other point is that not only are Central Bank legislations not always readily available, but it is also difficult to ascertain whether adequate time has elapsed before the effects of CBI legislations take effect.

This is partly a reflection of limitations of data and partly due to the inherent stickiness of institutional variables. Additionally, it is observed that countries are not equally forthcoming with regard to making information on Central Banks operations publicly available. For instance, our attempt to obtain information from officials of

the Central Bank of the Gambia, with regard to names and tenures of governors, proved fruitless despite repeated calls and emails. Since I have no way of establishing a link between Central Banks which do not impart the required information and CBI scores, it is difficult to assess the effects of missing data on the results. In the event that countries with higher scores on CBI self-select, i.e. Central Banks with higher independence release more information, selectivity bias might affect almost all the studies. It would be, however, an interesting line of research to investigate if and how the extents of information Central Banks choose to make public proxies their independence. As shown in Appendices L and M, estimates remain strong to different robustness tests including changes in model specifications and control variables.

6.2) Judicial independence

Several studies underline the utility of independent courts in promoting a credible regime of policies that ultimately lead to intensification of economic transactions. As economic agents believe that this third pillar of government is insulated from opportunistic behaviour of the executive, they enter into economically optimal long-term commitments, which are often reflected in types and duration of investments. According to Landes and Posner (1975:875), an independent judiciary is defined as 'one that does not make decisions on the basis of the sorts of political factors (for example, the electoral strength of the people affected by a decision) that would influence and in most cases control the decision were it to be made by a legislative body.' Without divulging much about the mechanics of measuring levels of judicial independence at this point, I can identify a number of approaches through which scholars dealt with the judicial independence-economic performance nexus.

The more prevalent paradigm on the economic implications of judicial independence stresses such practical issues as selection of judges, judges' facing no political consequences of their decisions, tenure security and, to a lesser degree, effectiveness of the judiciary itself. The other spectrum argues strongly that the type of specific legal system in question matters is of equal importance in shaping judicial independence and, hence, economic growth. More specifically, it espouses that the *stare decisis* principle of English common law is more accommodative to judicial independence than other forms of legal systems (See, La Porta *et al.* 1999). This principle implies that precedent decisions are to be followed by the courts.

In Africa, colonial legacy has been by far the most important factor shaping countries' legal systems. For instance, countries in west Africa, a sub-region which hosts almost all former colonies of France, have adopted the French civil code since independence as their formal legal system. This also includes Guinea, even though it took the unique step of opting out of the French community in 1958. The influence of colonial experience is all the more apparent when I observe other countries in the sub-region which used to be under British colonial rule. English common law has become the dominant form of legal system in these countries, as Nigeria and Ghana provide cases in point. A strictly parallel pattern is observed when one examines the legal systems of those African countries that were under the fringe players of colonisation in Africa. Angola, Cape Verde and Mozambique apply the Portuguese civil law system, while Equatorial Guinea adopted the civil law system of its former colonial master, namely, Spain. The fact that one part of Somalia was under British control, while the other was an Italian colony, is matched by a legal system that is a mixture of the systems of both these countries. Nevertheless, such categorisation of

African legal systems should not camouflage the otherwise significant roles played by both customary and religious laws in the region.

That *de jure* and *de facto* indicators of a country's judicial independence do not necessarily co-vary, implies that each factor captures a particular segment of the prevalence of the rule of law. Most countries have enshrined, in their constitutions, provisions which are intended to provide judicial independence within their territories. At a presentation in the fourth African Development Forum, Akiumi (2004) provided an insightful synopsis on the question of judicial independence in Africa, from the perspectives of African countries' constitutions. The Ghanaian constitution, for example, clearly stipulates that judicial power is a sole prerogative of the judiciary, and specifically forbids government and parliament from having such powers. This is a far cry from the days when African governments circumvented the power of courts by setting up special courts. Uganda also includes, in its constitution, provisions which prohibit executive interference in the judiciary. Noticeable among these provisions is the restriction by any entity from altering the salaries and other benefits accorded to judges by the state. It was in fact the case that, in order to enhance the financial autonomy of the judiciary and, therefore to achieve judicial independence, several countries, including Kenya and Uganda, tied the budgets of the latter into the consolidated public fund.

As can be deduced from constitutions of countries in the region, there exists a clear understanding that a system of tenure termination of judges is an important variable in the judicial independence equation. In Ethiopia, a judge cannot be removed before reaching retirement age unless there are compelling health reasons and/or upon a majority parliament vote. Anecdotal evidences, however, suggest that there has been a very high rate of attrition of judges in the Ethiopian legal

environment. Hardly any of those cases were apolitical, as one episode in particular highlighted the vulnerability of the judiciary to the whims of the executive. In a case that later became a cornerstone to questions of judicial independence in the country, a judge released, on bail, a former high-profile official of the ruling party who was charged on some counts related to corruption. However, not only did the government force her to resign, but it also rescinded the court's decision to re-arrest the accused. To cement its position vis-à-vis the courts, a new law was passed that prevented judges' from releasing people accused on corruption charges on bail. This particular case encapsulates the otherwise widespread leverage which the executive has on the judiciary (*See* Shakespeare 2009).

To assess the degree of judicial independence in a country, legal provisions are necessary conditions, but are not sufficient, because even in an environment in which judicial independence is constitutionally enshrined, governments could have the wherewithal and the will to violate legal provisions. As is explained in section 6.2.1 below, such phenomena take centre stage in studies that aim to provide quantifiable measures of judicial independence, which are also comparable among countries.

6.2.1) Operationalisation of judicial independence

Earlier, I elaborated the two strands of thought with regard to the postulated effects of judicial independence on the economic performance of countries. These views, in turn, shaped the conceptualisations and methods researchers used in the operationalisation of judicial independence, in ways amenable to empirical analysis. The first of these paradigms argues that legal origins matter strongly in explaining differences in degrees of judicial independence among countries. Friedrich

Hayek(1960) is widely credited with the proposition that the English legal tradition (the common law) is superior to the French legal tradition (the civil law) because the common law was associated with fewer government restrictions on economic and other liberties. As mentioned earlier, a refined version of this view was put forward by La Porta *et al.*(1999), who argue that the basic justifications for the two systems differ from the outset.

Accordingly, common law systems were meant to limit rather than strengthen the state, and originated when the English aristocracy attempted to protect itself from property incursions by the state. In contrast, civil legal tradition reflected the intention of building institutions which enhanced the power of the state. Mahoney (2001) highlights that structural differences exist between the legal systems, in that common law systems provide greater judicial independence, while in civil law systems, the executive has greater scope to alter property and contract rights. However, operationalising the legal type variable is not a straightforward issue, as many countries apply a hybrid of systems. This is certainly the case in most African countries, where religious and customary laws are equally important.

The second approach to defining judicial independence pays less attention to the legal origins of a country, which it holds to be of limited significance. Rather, it emphasises the specific stipulations in the legislation that established the judicial systems of countries, which is further augmented by the actual relationships that have evolved between the executive and the judiciary. Nevertheless, this line of thought is characterised by a conspicuous absence of a meaningful amount of empirical studies. As such, a couple of works are especially notwworthy. La Porta *et al.* (2004) operationalise judicial independence as a normalised sum of the tenure of Supreme Court judges, the tenure of administrative court judges, and the case law variable.

More specifically, tenure lengths of supreme court and administrative court judges are measured on a (0, 1, 2) scale, whereby the numbers in the cell reflect a tenure of less than six year, a tenure of more than six years but not of life time duration, and a lifelong tenure respectively. The case law variable is a dummy that takes a value of 1 if judicial decisions in a given country are a source of law. With one of the dependent variables being indicators of economic freedom such as property rights, they find that judicial independence explains differences in levels of economic freedom among countries. However, the paper does not give the details of the 71 countries included in the study.

Similarly, Feld and Voigt (2003) test whether judicial independence affects economic growth, by constructing *de jure* and *de facto* measures of judicial independence. The *de jure* judicial independence variable is derived based on twelve individual variables that are hypothesised to positively associate with the former. These include issues such as whether judicial independence is provided for in the constitution; whether or not appointments of judges are made by professionals; the length of tenure of judges and their terms being non-renewable; adequate pay and less discretion of executives in determining salaries of judges; broader accessibility of the court and its proceedings; the task of allocating cases not concentrated in a single entity such as the chief justice; competency of the court, and transparency of court decisions. Effective tenure length, number of judges belonging to the same court, changes in the real incomes of judges, changes in the legal foundations of high courts and whether decisions of the courts require the approval of other branches of government, are variables included to account for measuring *de facto* judicial independence. Their findings indicate that real GDP per capita is affected by *de facto* judicial independence and not by the *de jure* measure of judicial independence.

As in other studies, the number of African countries contained in this study is very limited when, in particular, one thinks of undertaking a within an African context investigation of the economic effects of judicial independence. I also observe one possible anomaly of this indicator. The authors address the problem of lack of data by dividing each score by the number of variables for which data was available. This means that a country that scored highest scores on three variables obtains a maximum overall score *if* available data is for those three variables only. Any other country which provided data for all twelve variables, but which has managed to score maximum values for ten of them and minimum for the other two, will have an overall score of 0.83, which makes its judiciary less independent than the previous one (i.e. its overall score 1).

In this study, I construct a new measure of judicial independence for forty-five African countries covering two time points. Following conventional approaches which draw hypothesis from political theories on the relationships between judicial independence and economic performance, I postulate the degree of judicial independence in a given polity to be a function of three factors. Firstly, judicial independence enshrined in a constitution is more credible, as the costs of changing the rules of the game are correspondingly higher. Put differently, countries which explicitly provide for judicial independence in their constitutions should theoretically exhibit more credible and economic growth-enhancing institutions. Secondly, I ask whether a government respected the independence of the judiciary by refraining from actions which compromise the latter's decisions. For instance, there exist widespread cases in the region whereby branches of the executive either totally ignore court decisions or act in a direct contravention of its rules. Thirdly, and equally important, are the types and degree of discretionary powers which executives enjoy vis-à-vis the

judiciary. More importantly, I are interested in knowing whether branches of the executive are legally provided leverages that can be exploited to affect the independence of the judiciary. The individual factors in each of the three dimensions, and the associated coding, are as follows:

- *Does the constitution provide for independence of the judiciary?(JIConst)* A dummy that allots a value of 1 when the response is 'yes.' While, as expected, countries in the region have, by and large, included stipulations on judicial independence in their constitution, this seemingly ubiquitous variable is absent from the constitutions of a few number of countries; notably Burundi, Equatorial Guinea and the Sudan.
- *Does the government respect the independence of the judiciary?(JIGov)* This is also a binary variable that codes positive responses as 1 and 0 otherwise. There exist a number of cases that serve as litmus tests of a government's stance with regard to the independence of the judiciary. A case in point is that noted when court rulings go against the government, and the government either abides by the decision or not. The standoff between three supreme court judges and one high court judge and President Mugabe of Zimbabwe over the detention of two journalists in 1999, is indicative of the vulnerability of judicial independence. Additionally, ineffective court systems, and those characterised by large scale corruption, are prone to executive encroachment. This variable is essentially a *de facto* one and is not as clear-cut as the others, due to the fact that multiple manifestations of actual encroachment on judicial independence exist. In order to circumvent this problem, I limit the operationalisation of this variable, based on two questions. Accordingly, I ask if, for the period in question, there existed a reported case whereby a dispute

between the executive and the judicial was resolved in the former's favour, through political or administrative means. Also, an assessment of widespread corruption is considered to hinder judicial independence. A value of zero, signifying absence of judicial independence, is assigned in cases where a country meets one or both of these conditions.

- *Does the law assign the executive powers that compromise the independence of the judiciary?(JICheck)* As in the previous cases, I give values of one, in situations where there are no noticeable laws or systems that allow the former to dictate terms to the judiciary. These could stem from various situations, such as when the courts are directly placed under the ministry of justice, or law officers are governed under civil service rules. Similarly, renewable term limits and changeable salary schemes for judges could impinge on the independence of the judiciary.

I also include a composite indicator of judicial independence as a simple aggregate of values in each of the variables (JIOv).The basic sources of data to construct these variables are the annual human rights reports prepared by the U.S. Department of State. The Country Reports on Human Rights Practices are submitted annually by the Department to the U.S. Congress, and these reports, covering the period since 1999 are accessible at its website at www.state.gov/g/drl/rls/hrrpt. Note that the thresholds for such qualitative terms as 'widespread corruption' are based on the above data source. Two other indicators are also used to proxy judicial independence. One follows Henisz (2000), who postulated that countries which scored three, or more than three on the xconst variable of Polity IV data, can be considered as having independent judiciaries. Naturally, his measure is also a binary one. The other one is the civil liberties segment of the Freedom House scores which

explicitly includes an entry for independence of the judiciary. Judicial independence is one of the four components that make-up the rule of law index. At this juncture, it is important to pinpoint a couple of points which could adversely affect the quality of the judicial independence variables. To start with, in situations wherein judges do not deviate from the government line as judicial autonomy is lacking in the first place, the possibility of observational equivalence is very realistic. In this case, the variable does not measure judicial independence *per se* but the self-restraint of judges. Secondly, the degree of reporting on judicial independence may not be similar between open and closed political systems. It is possible for those countries with open political systems to self-select into the model. Although the existing data source does not allow to account for such eventualities, such line of investigation is very informative for further research.

One can cite a number of reasons as to why the Country Reports on Human Rights Practices are judged to be fairly objective. To start with, these reports are based on inputs from wide and diverse sources with regard to human rights situations in a given country. Since the reports do not entirely depend on subjective assessments of experts, and also go beyond information provided by the governments of the countries included, they are better placed to be objective. Furthermore, the reports look into human rights issues from different angles, including arbitrary deprivation of life, disappearance, torture and arrest. More importantly, the reports include a section very much focussed on judicial independence. For instance, the subsection 'civil judicial procedures and remedies' assesses whether there is access to an independent and impartial court to seek damages for human rights violations. Another subsection on property restitution investigates whether there is a systemic failure of government to enforce court orders. The executive constraints (xconst)

variable of Polity IV is a seven-scale indicator that evaluates the extent of institutionalised constraints on the decision-making powers of chief executives. This data source includes an entry on judicial independence in the section on 'slight to moderate limitations on executive authority'.

6.2.2) Data and analysis

Discussions so far elaborated on the theoretical foundations of the economic effects of judicial independence, with a focus on cross-country comparisons. Such presentations, coupled with the theory-driven operationalisation of the judicial independence variable conducted above, sets the stage for a quantitative investigation of the proposition that part of the variations in economic growth among African countries can be predicted by differences in levels of judiciary independence. I tackle this issue here with the help of a new variable on judicial independence, as well as with two other proxies for judicial independence. Recall that explanations on the economic covariates have already been dealt with and, therefore, a repeat in this section is not warranted. It is apparent that if any new measure is to be of value, then it should be able to strongly correlate with other widely-applied instruments. This is due to the fact that all such variables essentially claim to measure same dimensions of quality of governance. More to the point, our variable on judicial independence (JIOv) needs to be compatible with existing measurements, as it is derived from similar theoretical principles. As such, it is this task of asserting variable comparability that I first turn our attention to.

A set of institutional quality measures comprising four variables is chosen to this end. The Feld and Voigt (2003) judicial independence variable includes nine African states for its *de jure* dimension, and only five countries (from the same set

involved in the *de jure* measure) for its *de facto* aspect. I do not include figures from this study, as the number of African countries included is too low. Many studies apply contract intensive money as a proxy for the quality of property rights in countries. This variable is used to assess the rule of law in a given polity, which, on average, positively correlates with the independence of the judiciary. As a consequence, I also examine whether JIOv for African countries tallies with their quality of institutions as determined by contract intensive money. The values of contract intensive money for the countries in the region reflect those for the years between 1998 and 2000. Moreover, the civil liberties scores of Freedom House data are included, as judicial independence constitutes one sub-component in the derivation of these scores. I classify countries on a binary scale, in which those countries that score 3.5 or less are considered to have a fairly independent judiciary. The robustness of the JIOv variable is also tested against one opinion survey-based indicator of judicial independence, namely the African Governance Report.

Table 13 Correlations among judicial independence variables

	JIOv	CIM	Agr_Ji	Civil	Xconst
JIOv	1.00				
CIM	0.54	1.00			
	(0.00)				
Agr-Ji	0.53	0.34	1.00		
	(0.00)	(0.21)			
Civil	0.57	0.42	0.64	1.00	
	(0.00)	(0.04)	(0.00)		
Xconst	0.56	0.44	0.54	0.87	1.00
	(0.00)	(0.03)	(0.00)	(0.00)	

NB. CIM is contract intensive money; Agr_JI is judicial independence from the African Governance Report; and Civil is the civil liberties score from Freedom House. Figures in parenthesis refer to levels of significance. The number of data points for the correlations include 45 countries for JIOv, Xconst and Civil; 24 for Agr_Ji and 34 for CIM.

As can be observed from Table 13 above, the judicial independence variable developed here shows strong positive correlations with all but one of the other proxies of judicial independence and institutional quality in the literature. That the correlation of our measure of judicial independence (JIOv) with the F&G measure is not significant, though positive, can be attributed to the latter's limited coverage of Africa. This is more so in the case when I take into consideration the fact that four of the five table-topping African countries in the *de jure* judicial independence measure of Feld and Voigt (2003) also have similar positions in the JIOv variable developed here. It is also worth noting that the limitations in the their variable in terms of accounting for judicial independence in Africa is further highlighted by its rather weak association with all the other variables included in the table. Apart from the significant correlations which I observe between JIOv and the other three indicators

of judicial independence, I can deduce a similar pattern of association between CIM, judicial independence from the African Governance Report and Civil.

The essence of the discussion is not so much that these variables correlate positively and strongly with that measure developed here. Rather, it provides a rationale for why JIOv adequately captures levels of judicial independence in African countries. JIOv provides a better account of judicial independence as compared to other instruments for a number of reasons. Firstly, it is a far more inclusive variable in that F&G, for instance, include only ten African countries. Secondly, it does face a less severe subjectivity problem than is the case for most opinion-based measures, such as the one provided in the African Governance Report. Thirdly, it provides a very focussed proxy for judicial independence, in contrast to that produced by Freedom House. In the Freedom House measure, judicial independence is subsumed under the civil liberties category, which itself is a derivation of seven major categories of indicators. The rule of law dimension, which consists of judicial independence in the Freedom House data, is based on forty-four individual questions on civil rights. The comprehensiveness of the Freedom House measure in terms of geographical and theme coverage comes at a cost, in that it falls short of adequately providing a focussed proxy for individual institutions such as judicial independence. Our measure, however, is entirely concerned with judicial independence.

Before assessing the economic growth effects of judicial independence as measured by JIOv, I first examine the implications of the other variables identified at the beginning of this section. Recall that the civil liberties scores from Freedom House and the xconst variable from Polity IV data (as is used by Henisz (2000)) are used to proxy judicial independence. Similarly, there exist strong theoretical stipulations which postulate that English law countries have a broader scope for

judicial independence. Accordingly, I build four models to empirically investigate whether judicial independence, as proxied by the variables mentioned, explains economic growth variations among African countries. In the first one, the civil liberties scores are taken as interval values, as they are given in the original Freedom House data. As such, higher scores in the [1, 7] scale indicate lower levels of civil liberties and correspondingly those of judicial independence (Civil). Most studies transform the civil liberties scores into binary values, whereby values below a given threshold signify that the judiciary is independent.

In this case, I set this threshold at 3.5, whereby countries that score less or equal to 3.5 at a given point in time are considered as having fairly independent judiciaries (Civil(2)). The xconst variable from polity is also a dummy with a cut-off point of three. What is different from the civil scores is that higher xconst scores are associated with more independent judiciaries. Notwithstanding the fact that judicial independence is better captured as a scale variable, our use of xconst is only to replicate Henisz (2000). The English variable gives a value of 1 if the English common law is the origin of laws in the country in question.

Table 14 The economic effects of judicial independence in Africa

Variable	Fixed effect (Civil)	Fixed effect (Civil 2)	Fixed effect (Xconst)	Random effect (legal origin)
Initial Income	-0.11	-0.01	-0.01	-0.01
	0.04	0.02	0.02	0.01
	0.00	0.73	0.62	0.39
Investment	0.11	0.06	0.06	0.06
	0.03	0.02	0.02	0.01
	0.00	0.00	0.00	0.00
Population	-0.04	-0.03	-0.04	-0.06
	0.04	0.03	0.03	0.03
	0.36	0.31	0.12	0.04
Civil	-0.01			
	0.01			
	0.17			
Civil(2)		0.07		
		0.03		
		0.04		

Table (Contd.)

Xconst			0.06	
			0.03	
			0.09	
English				0.06
				0.02
				0.01
F(3, 287)	9.45	-	-	-
F(3, 287)	-	7.54	-	-
F(3, 354)	-	-	11.25	-
F(3, 368)	-	-	-	10.74
N	301	301	360	371

NB. The first two columns report results when JI is proxied by civil liberties. Estimates in column four capture the effect of the Polity variable while the last one shows the effect of legal origin. Figures below each coefficient estimates refer to robust standard errors and *p*-values respectively. As discussed above, the type of economic control I use in Solow is well defined. Also, while the panel includes forty-five countries, data availability differs from country to country. The first three models are fixed effects. I apply random effects on the last one because there is no intra-unit variation in the English variable. All the F values are significant at one percent.

The coefficient estimates from the above table indicate that the chosen proxies for judicial independence do, in fact, predict economic growth differences among African countries. The results for the civil liberties scores return mixed results. When I add civil liberties scores as interval values, there seems to exist no statistically meaningful relationship between this variable and economic performance of countries. However, transforming the variable into a binary scale, as is conventionally applied, returns results that conform to theoretical priors. Accordingly, one can infer that differences in judicial independence as measured by the civil liberties score were important factors behind the observed differences in long term economic growth among African countries. Note that the negative sign on the coefficient estimate for Civil signifies its coding, as higher scores imply lesser degrees of judicial independence.

Those countries whose political institutions delegated judiciary powers to independent courts reaped positive economic pay-offs in terms of higher levels of average income. *Ceteris paribus*, about seven percent of the economic growth variations among the countries of the region can be attributed to differences in degrees of judicial independence. A similar assertion can be made when I proxy judicial independence by the xconst variable of the Polity IV data. The positive and significant parameter estimate for the xconst variable is further proof of the make-or-break role political institutions have on macroeconomic outcomes (at this specific juncture, that of judicial independence on economic growth). Finally, the findings provide further empirical evidence, based on African economies, of the growth-friendly attributes of English common laws as compared to other legal origins.

I now return to empirical testing of the judicial independence variables developed in this study; namely JIOv and its individual constitutive parts. Earlier, it

was explained that the overall judicial independence variable (JIOv) is aggregated from values based on the coding of each individual variables. These individual constituent parts include such issues as judicial independence enshrined in a given constitution (JIConst), respect of judicial independence by government (JIGov) and the presence of executive powers which tamper with on judicial independence (JICheck). The fact that the information required for constructing these indicators is available only for a very limited time spell obliges us to overlook the temporal dimension of the measures. A better account of the dynamic changes in degrees of judicial independence and subsequent effects on economic growth, was provided in the discussion which used the civil and xconst variables. Economic growth is given by average levels of income for the period 1990-2003, as is the case for degree of openness of the economy.

It should be noted the discussion presented above, on the links between judicial independence and economic growth in Africa, was based on the Solow model, using panel data of the relevant variables. On the other hand, the other sets of results, reported below, use a cross-sectional economic growth model. Both models serve the same purpose of statistically investigating the effects of judicial independence on economic growth in the region. Here, I do so by scrutinising each judicial independence variable, as well as the composite measure. As such, the estimates under each column in Table 15 below assess the effects of including judicial independence explicitly in the constitution, the degree of respect of judicial independence by government, whether or not government is given important legal tools that give it a leverage on judicial independence, and a composite measure that captures all of these variables respectively.

As can be observed, the very fact that the independence of the judiciary is included in the constitution of countries, is a weak predictor of either judicial independence or economic growth. The estimate for this parameter returns a direction of relationship which is at odds with theoretical postulations. I should, however, be wary of reading too much into the effects (or lack of) JIConst on economic growth, when one carries out a close examination of the pattern of distribution of this variable among African countries. This is basically due to the fact that, with the exception of the three African countries, all countries in the region have this institution included in their constitution.

Table 15 Effects of judicial independence on economic growth in Africa (further evidence)

Variable	Constitution	Government	Relative	Overall
Openness	0.63	0.61	0.60	0.57
	0.18	0.16	0.16	0.16
	0.00	0.00	0.00	0.00
JIConst	-0.03			
	0.31			
	0.93			
JIGov		0.48		
		0.19		
		0.02		
JICheck			0.67	
			0.29	
			0.02	
JIOv				0.28
				0.11
				0.02
Constant	4.11	4.23	3.25	3.92
	0.09	0.11	0.12	0.11
	0.00	0.00	0.00	0.00
R-squ.	0.53	0.59	0.59	0.59
F(2,41)	7.05	7.89	9.21	8.62
N	44	44	44	44

NB. The table reports results when JI is measured by constitutional stipulations, actual government acts, presence of executive powers and a composite of all three. Figures below each coefficient estimates refer to standard errors and *p*-values respectively. All the F values are significant at one percent. All are estimated using OLS.

Next in line is the question of any branch of government actively tampering with the independence of the judiciary. A long-standing standoff between the Government of Ethiopia and the country's oldest trade union, the Ethiopian Teacher's Association, encapsulates this point. As the Union resisted government interference on its autonomy; the two sides went to, first the Federal High Court, and then the Supreme Court. Despite the courts' decisions favouring the Union, the police prevented the Union leaders from resuming their functions. Finally, the whole saga ended with the imprisonment, and then exile, of the Union leaders (*See* ILO

2009). The broad repercussions of such executive interference with the independence of the judiciary are not difficult to grasp. The JIGov parameter captures this very notion and, as shown in the findings, this variable was a strong determinant of economic growth in Africa. Put differently, I can draw the conclusion that there exists systematic statistical evidence that lends strong support to the hypothesis that countries with political institutions that ensure delegation of judicial powers to independent courts *do* register higher rates of economic growth.

Nevertheless, the findings suggest that the most potent features of judicial independence in terms of economic growth in Africa are those linked to the presence/absence of legally-provided stipulations which encroach on the independence of the judiciary. In many instances, the executive-judiciary relationships are carved out in such a way that the judiciary is made very reliant on the goodwill of the executive in conducting its operations. A case in point is when the court system is brought directly under the control of one or many departments of the executive. Another situation is that in which the job tenure and financial pay of the judiciary are structured in such a way that they can easily be altered by the executive. I find that the degree of judicial independence, measured along this scale, has had a strong impact on economic performance among African countries. Note that it is the existence of rules and legislation *per se* that mattered in this variable, and not necessarily whether government actively exploited it or not.

The point that the structure of relationship between the government and the judiciary could tilt in favour of the former is figuratively captured by the coefficient estimate of JICheck. I further find that, based on the composite indicator for judicial independence, JIOv, one can infer that the degree of delegation to independent judiciaries explains sizeable variations in cross-country economic growth differences

in Africa. All in all, it is shown that the politics-economics nexus in Africa is strong as exemplified by the economic effects of one form of delegation discussed here, i.e. judicial independence.

Before concluding this section, it is of much critical value to discuss the robustness of the estimates to different specifications. To this end, I ran three different models and test whether the coefficient estimates significantly differ from the results reported here. I firstly applied the Huber-White sandwich estimators for estimating the standard errors in the basic equation. This helped us control for such problems as heterogeneity, lack of normality, leverage or influence. Secondly, I estimated Robust Regression models whereby observations are weighted in accordance with how they behave in the data set. The more deviant an observation is, the less weight is attached to it. Thirdly, a quintile regression is run, for which the measure of central tendency is the median. Unlike the OLS, which is based on the mean, estimates based on quintile regression help one to reap the advantages of the median, in being more resistant to outliers. Note that such exercises have the dual advantage of establishing the robustness of estimates, as well as choosing a stronger model (in case the findings across the estimates diverge significantly). Results not reported here show that the parameter estimates for the political variables remain strong in all the different specifications applied. I subjected the estimates to different robustness tests, as reported in Appendices N and O. The coefficient estimates for the political variables remained significant when different estimation techniques and controls are included.

6.3) Discussion and summary

This chapter set out to investigate if and how commitment technology via institutions of delegation had an influence on economic performance of African countries. To this end, I chose two of such institutions; namely Central Bank independence and judicial independence. Notwithstanding the fact that reliable data for Africa on the issues were rather sketchy, I still managed to find some interesting results, which indicated the positive association between these sets of political variables and economic growth in the region. It was shown that, while both political and economic dimensions of Central Bank independence explained growth differentials among African countries, it was the rate of turnover of Central Bank governors that had the strongest impact on economic growth. As in the case for the Central Bank independence variable, I also introduced new measures of judicial independence in the region. By augmenting these variables with proxies widely applied in the literature, I found that judicial independence did have statistically meaningful effects on African economic performance. I draw some important insights from the analysis provided above. The analysis of economic effects of formal political institutions is a valid exercise. It is also the case that a broader database on such institutions could deepen future analysis. In order to establish the robustness of the findings in this chapter, I ran different specifications including least squares with robust standard errors, robust regression as well as quintile regression. Further, I undertook robustness tests by replacing the main economic control with human capital and initial income variables. In all the cases, initial findings remained robust.

Chapter 7. Rule of law-cum-credible commitment and economic growth in Africa

The major theme of this chapter is to investigate if and how the rule of law variable has shaped economic growth in Africa. More specifically, I aim to provide empirical evidence, drawn from an African context, in support of political theories that link observed economic growth differentials among countries with corresponding variations in the quality of such types of institutions of credible commitment. Note that, unlike the preceding chapter, in which commitment presupposed reducing the policy-making prerogative of governments, the commitment technologies I deal with here fall entirely within the executive domain. Of the battery of rule of law variables, which credibly commit governments to growth-friendly policies, security of property rights is widely cited as being very important in terms of its resonance on economics (North 1990, Olson 1971 & 1996). As explained in Olson *et al.* (2000) and Clague *et al.* (1999), countries endowed with political institutions which minimise the risk of expropriation of private wealth by others, most notably by government, registered robust economic growth over a long time spell.

As is the case throughout the thesis, the analytical method is based on empirically testing different variants of economic models augmented by the relevant political variables. The chapter is organised as follows. In the first section, I provide a brief account of the economic growth implications of security of property rights. The property rights variable is decomposed into three major segments; namely, rule of law, corruption and a composite rule of law variable. I then introduce, in the first section, different rule of law variables which empirically test its relevance to cross-country economic growth differences in Africa. In the second section, property

rights are proxied by levels of corruption. Interactive terms with press freedom and associational and organisational rights were also used to assess the corruption-growth relationship. In the next section, I then apply factor analysis with principal component factors, so as to construct a composite rule of law variable and apply it to the empirical economic growth model. Subsumed in each of the above-mentioned sections are discussions on data sources, and description, as well as analysis, of findings. The last section summarises the major points of the chapter.

7.1. Property rights, commitment and economic growth

Although success stories were noticeably few, one can observe significant variations in economic growth trajectories among African economies. Recall that I established this point empirically in a previous chapter on the economics of growth in Africa. At this particular juncture, I mention certain patterns as a prologue to investigating that part of the variation which is accounted for by institutions of property rights. In 1970, average income in Ethiopia, as measured by real GDP per capita, was a quarter of that in Côte d'Ivoire. The narrowing of the income gap after three decades can, at best, be described as negligible, with the corresponding figure standing at 34 percent. A more emphatic case in point is that of two of the resource-rich economies in the region; namely, Cameroon and Botswana. At the beginning of the period, the average income ratio for the two countries was about 1.67 in favour of the former. Over subsequent decades, the Botswana economy grew so strongly that, by 2003, its average income was 3.34 times higher than that of Cameroon. It is not difficult to discern the level of disparities if I also consider those economies that regressed during the period (for instance, Chad and former Zaire).

What is of more interest to us here is that those differences in economic outcomes occurred in tandem with corresponding disparities in economic policies. In the better-performing countries, the share of national output allocated to consumption was increasingly substituted by spending on investment, while I observe a contrasting picture for the slow-growing economies. On a broader level, countries in the top quartile of the income ladder were either democracies (i.e. labelled 'Free' by Freedom House) or stable autocracies. Our concern in this discussion is not with the implications of democracy for property rights *per se*. Rather, it is the mapping from rules of law and corruption, as sets of proxy of property rights, to economic growth in Africa. For instance, Botswana, South Africa, Cape Verde, Mauritius and Namibia scored highest, as least corrupt on the corruption index perception index of Transparency International. I hypothesise that the fact that these countries also did well in terms of economic growth signifies a statistically meaningful relationship between property rights and economic performance. I can make similar assertions with regard to lack of rule of law, where governments often resort to such diverse predatory policy instruments as inflation tax or direct expropriation, to the detriment of the economy. The discussion below addresses the economic growth implications of the rule of law and corruption in turn.

7.1.1) Rule of law

A handful of rule of law variables, which essentially provide comparative measures of countries' political institutions vis-à-vis a credible property rights regime benchmark, suggest that there existed sizeable variations among African countries in the distribution of this political variable. Using the rule of law variable in the Freedom House data for 2006, one can derive such country-groupings including

those with total absence of rule of law amid political violence (Congo DR and Sudan), those in which rule of law was practically non-existent (Zimbabwe and Togo) as well as other countries that compare favourably with the better performers globally (Cape Verde and Ghana). A median value of 7 for the rule of law in Africa, wherein the global maximum is 16, indicates that African countries *did not* necessarily fare poorly on the basis of this measure. Another point worth noting is that the mean of the rule of law variable in Africa is almost equivalent to the median. The significance of this pattern is that the region hosted as many better performers as those with lower rule of law scores, which, conventionally, is assumed to be skewed to the left. This is arguably a reflection of the transitions, albeit fragile ones, that many African countries made to more democratic forms of governance since the early 1990s.

Table 16 Rule of law and income in Africa (Selected countries)

Country	Rule of Law*	Average Income**	Rank***
Sudan	0	6.48	43
Zimbabwe	0.06	5.86	42
Burundi	0.25	4.60	31
Ethiopia	0.31	5.08	30
Rwanda	0.38	5.30	28
Gabon	0.44	8.52	23
Tanzania	0.63	5.83	13
Namibia	0.63	7.77	10
Lesotho	0.69	6.85	6
Ghana	0.75	5.74	8
South Africa	0.82	8.52	4
Cape Verde	0.88	7.20	1

NB. * Rule of law is from Freedom House data and is standardised here to [0,1] values. It refers to 2006 when the earliest disaggregated data was available.** Average Income is measured by the natural logarithm of GNI per capita for the year 2005 (The Little Data Book on Africa, the World Bank). *** Refers to a country's ranking in the Regional distribution of Rule of Law. Note that I chose the 12 countries only to show the general distribution. Three cases from each quartile are chosen to provide the broader picture.

A visual inspection of the distribution of the rule of law and economic growth variables indicates that there is an underlying positive relationship between them. Those countries such as Burundi and Ethiopia, whose political history was marred by long years of political instability and correspondingly weak levels of rule of law, were at the lower end of the income ladder. Zimbabwe, on the other hand, provides a textbook case whereby a sudden downward spiral in rule of law led to a significant contraction in the economy. The rule of law-economic growth relationship becomes all the more apparent when I take a couple of points into consideration. Firstly, the full cross-country data shows that the simple correlation between these two variables is positive and significant at one percent. Secondly, the slope gets steeper when I control for the income bonanza, which the new oil exporting countries in the region (most notably, Equatorial Guinea and Sudan) enjoyed as of recent years. The gist of the matter is that, although this snapshot on the positive nexus between rule of law and economic growth in Africa is hardly adequate to make causal inferences, it is, at the same time, commensurate with propositions of political theories on the economic implications of rule of law.

7.1.1.1) Operationalisation of rule of law

Disaggregated Freedom House scores on rule of law across countries were only available since 2006. Nevertheless, rule of law is a major component of the civil liberties segment of the Freedom House index and, therefore, the latter can be used to proxy rule of law for previous years. Here, I do not delve into explaining the construction of the civil liberties index, since the issue was addressed in a previous chapter. Also, unlike the case in a previous chapter where I used the aggregate civil liberties index, our focus in this case is only the rule of law component. I draw the

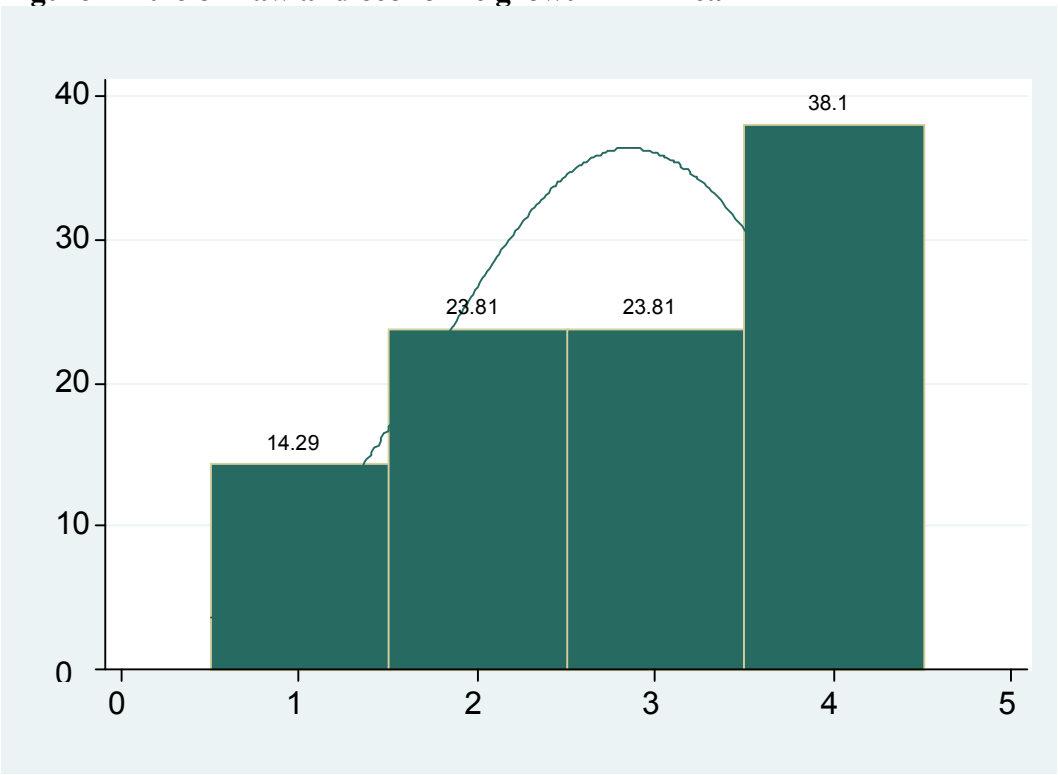
other set of rule of law variables from the Index of Economic Freedom, which is a joint publication of the Heritage Foundation and the Wall Street Journal (Heritage 2008). This data source has a number of attributes as compared to other widely-applied subjective measures of rule of law. Unlike several other rule of law variables, which encounter structural breaks due to measurement changes, methodology amendments with regard to the Index of Economic Freedom (henceforth, IEF) kept comparability across time and space intact. Its reliance mostly on objective indicators to construct the Index is also another merit of this source. It should be stressed here that the objectivity of the IEF data was only a reference to its construction largely from published documents, in contrast to subscription of expert opinions. Additionally, the IEF rule of law variable is very much focussed on its economic resonance, while I find a much broader meaning assigned to rule of law in other sources such as the Freedom House index. More interestingly, the IEF defines property rights entirely from the perspective of rule of law, in that security of property rights is defined as the 'ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state' (*See*, www.heritage.org/research). The overall index is a simple average of ten individual variables on economic freedom including business, trade, fiscal, government size, monetary, investment, financial, property rights, corruption and labour.

The property rights component assesses the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. Note that the IEF scores were based on a number of specific qualifications that assess institutions. These qualifications were not always clearly stipulated as, for example, between 'no corruption' and 'corruption is nearly non-existent.' The scaling is as follows:

- Private property is guaranteed by the government. The court system enforces contracts efficiently and quickly. The justice system punishes those who unlawfully confiscate private property. There is no corruption or expropriation. **(100%)**
- Private property is guaranteed by the government. The court system enforces contracts efficiently. The justice system punishes those who unlawfully confiscate private property. Corruption is nearly non-existent, and expropriation is highly unlikely. **(90%)**
- Private property is guaranteed by the government. The court system enforces contracts efficiently, but with some delays. Corruption is minimal, and expropriation is highly unlikely. **(80%)**
- Private property is guaranteed by the government. The court system is subject to delays, and is lax in enforcing contracts. Corruption is possible but rare, and expropriation is highly unlikely. **(70%)**
- Enforcement of property rights is lax and subject to delays. Corruption is possible but rare, and the judiciary may be influenced by other branches of government. Expropriation is highly unlikely. **(60%)**
- The court system is inefficient and subject to delays. Corruption may be present, and the judiciary may be influenced by other branches of government. Expropriation is possible but rare. **(50%)**
- The court system is highly inefficient, and delays are so long that they deter from the use of the court system. Corruption is present, and the judiciary is influenced by other branches of government. Expropriation is possible. **(40%)**

- Property ownership is weakly protected. The court system is highly inefficient. Corruption is extensive, and the judiciary is strongly influenced by other branches of government. Expropriation is possible. **(30%)**
- Property ownership is weakly protected. The court system is so inefficient and corrupt that outside settlement and arbitration is the norm. Property rights are difficult to enforce. Judicial corruption is extensive. Expropriation is common. **(20%)**
- Private property is rarely protected, and almost all property belongs to the state. The country is in such chaos (for example, because of ongoing war) that protection of property is almost impossible to enforce. The judiciary is so corrupt that property is not protected effectively. Expropriation is common. **(10%)**
- Private property is outlawed, and all property belongs to the state. People do not have the right to sue others and do not have access to the courts. Corruption is endemic. **(0%)**

Figure 7 Rule of Law and economic growth in Africa



NB. The graph shows country groupings on the horizontal line against scores on rule of law (in percentage terms) on the vertical line. I draw data for the rule of law variable from Heritage (2008) while that for economic growth is Heston *et al.* (2006). Numbers at the top of each bar represents percentage of countries in each group.

For analytical purposes, I classify African countries on the basis of their performance, both along the IEF rule of law variable and their economic performance, for the period 1995-2000. Given that there is a 0.85 correlation between the IEF rule of law component and the property rights sub-component, the use of the former variable here should be tenable. Accordingly, Group one countries consist of those with improvements on rule of law but not economic growth; Group two includes those with deterioration in rule of law, but which managed better economic growth; Group three countries enhanced their rule of law scores but did not exhibit economic growth, and Group four comprises countries that performed

positively on both variables. I now derive a number of probabilities to elaborate the importance of rule of law for economic growth. The conditional probability of a country not experiencing economic growth given that it had improved its rule of law, is only 0.22. This means that about four out of five countries that alter their political variables upwards with regard to rule of law are likely to register better economic growth. Only 14 percent of the countries in Africa with enhanced rule of law regimes experienced a contraction in national output. This group contains fewer countries than the other groups, and some of these include Gabon, Kenya, Madagascar and Malawi. It is indicative of the co-variation between rule of law and economic growth in Africa.

The opposite of the above scenario is one whereby a country registers better economic growth despite negative changes in rule of law. This captures the situations in such countries as Cameroon, Central Africa Republic, Equatorial Guinea, Mauritania and Sudan. Again, I ask what the likelihood is of a country being in this vector. The conditional probability for a given country to perform economically better, while being at the lower end of the rule of law scores, is about 0.45. At its face value, this figure seems to suggest that the relationship between rule of law and economic growth is weak in Africa. Nevertheless, a closer scrutiny of the data reveals that the majority of countries in this group are oil-rich economies whose national income was boosted by new oil discoveries and higher prices. In the empirical section below, I control for these outliers and show that rule of law remains a strong predictor of income. Finally, the largest group is accounted for by countries that improved their rule of law institutional quality and also their economic experiences. While this group accounts for 38 percent of the total, the other group, which contains countries in which neither economic growth nor rule of law occurred

(24 percent), comprises, among others, Chad, Democratic Republic of Congo, Togo and Zimbabwe.

The second set of rule of law variables is derived from the United Nations Economic Commission for Africa (UNECA) project on African Governance Indicators. In contrast to the IEF data discussed above, this measure relies on expert and public perception regarding governance in 27 African countries (*See*, UNECA 2008). It consists of three research components, i.e. an opinion-based study using a national expert panel of 70-150 national experts across project countries, a national sample survey using a stratified two-stage probability sample, ranging from some 1300-3000 households across Africa, and desk-based research of factual information and hard data. The study used 83 individual indicators which were reduced into 27 subject matter variables on quality of governance. Each of the 27 variables was placed under seven major components; namely, political representation, institutional effectiveness and accountability, executive's effectiveness, human rights and rule of law, civil society organisations and media independence, economic management, and control of corruption. Discrete values of between 0 and 5 (inclusive) were assigned to each of the 83, indicators while the study applied no weights in deriving component-level and overall indices. It is important to mention that, of the 27 countries in the study, two (Egypt and Morocco) are excluded from our analysis. The relevance of this point becomes clearer later in the discussion.

7.1.1.2) Rule of law indicators

As explained above, the UNECA dataset for 2005 contains a large number of variables that assess quality of governance in each participating country. I select two of these which, arguably, have a direct relevance to the rule of law with regard to

providing a credible regime of property rights. Although one can identify a few overlapping points, each of these variables on its own captures a battery of different aspects of rule of law. A brief description of these variables is given hereunder:

- **Respect for the rule of law** which includes constitutional checks and balances status, leadership's respect for the rule of law, police respect for human rights, citizens' confidence in law enforcement organs, monitoring violations by police and prisons, civil society organisations' monitoring of violations by police and prisons, penalty for violation of human rights by police, participation in conflict resolution, watchdog organisations' independence from the executive, enabling government practices and policies, tax system equitability, tax system influence on local investment, and tax system influence on foreign investment.
- **Law enforcement organs** which includes law enforcement officials' recruitment criteria, police force composition, police training, police equipment, watchdog organisations' independence from the executive, and effectiveness of watchdog organisations.

It is often the case that there exist strong associations among the many variables used to measure quality of political and economic governance. For example, rarely do I find a situation where a strong property rights regime co-exists with a loose system of checks and balances on executive discretion. This underlines the utility of constructing a composite variable that quantitatively measures rule of law. It provides us with a rationale for reducing the extensive dimensionality of the rule of law variables. To this end, I apply a principal components method so as to construct a composite rule of law variable. The presentations with regard to building this third political variable and the empirical tests are dealt with in the analytical section below.

To sum up, I have introduced the three rule of law variables that shall be used to quantitatively assess the nexus between a credible regime of property rights and economic growth in Africa. The first one is derived from the Index of Economic Freedom, while the second vector (consisting of two separate variables) is drawn from the African Governance Indicators. The third rule of variable is an overall index constructed using principal component analysis. In the next section, I provide African empirical evidence to test the hypothesis on positive mapping from rule of law to economic growth.

7.1.1.3) Data and analysis

I begin with a descriptive analysis of the distribution pattern of the variables in the model. Since the economic covariates were defined and elaborated in the preceding chapter, our focus here is on the political variables which measure rule of law. Also, note that, henceforth, Rule (IEF) is sourced from the Index of Economic Freedom while Rule (One) and Rule (Two) signify the two variables from the African Governance Indicators; namely, respect for the law and the law enforcement organ. Earlier, I undertook a group-based analysis to show the predominance of countries with positive changes in rule of law. At the country-level data, this translates into a mean value of 0.40 with a standard deviation of 0.15. The observed gap between the cluster-based distribution and that at the country-level indicates that, despite a general trend towards better rule of law in the region, I still note significant disparities among the countries. The observation that the rule of law variable was not driven by individual extreme values is further supported by an almost equivalent median value. Using the Rule(One) and Rule(Two) variables, I derive similar patterns in that the central tendency measures for rule of law exhibit a mid-point

concentration. The bulk of countries in the region could not be described as very high performers or very poor performers on the rule of law scales. As shown in Table 17, our use of the three variables suggests that measurement error could not have significantly affected the functional relationship between rule of law and economic growth in Africa.

Table 17 A correlation matrix between rule of law and economic growth

	Income	Openness	Rule(One)	Rule(Two)	Rule(IEF)
Income	1.00				
Openness	0.35	1.00			
	(0.02)				
Rule(One)	0.45	0.37	1.00		
	(0.00)	(0.04)			
Rule(Two)	0.40	0.32	0.94	1.00	
	(0.01)	(0.05)	(0.02)		
Rule(IEF)	0.69	0.64	0.60	0.59	1.00
	(0.00)	(0.06)	(0.03)	(0.02)	

NB. Depending on the size of missing values, the number of observations in the correlation matrix is between 38 and 44. Figures in parenthesis are *P* values.

The statement that measurement error did not pose a serious problem is justified on the grounds that, although the political variables were drawn from different sources, the correlation matrix shows a strong link between average level of income and all elements of the rule of law vector. In a similar vein, there exists a strong correlation between the two sets of political variables. A couple of notable points emerge from this pattern of strong correlation among the political variables. Firstly, it endorses our assertion that each institutional variable actually evaluates the same dimension, i.e. rule of law. Secondly, the application of the political variables jointly as predictors of economic growth creates a problem of multicollinearity. Put differently, the cost in terms of loss of degrees of freedom is substantially higher than

the gain in the form of additional information. I also observe a strong association between each rule of law variable on the one hand and degree of openness on the other. What this implies is that the effect of rule of law on economic growth partly filters through the former's positive impact on investment in openness. The coefficient estimates on rule of law in the economic growth equation could be biased downwards because that proportion of the rule of law-human capital link was not accounted for.

At this point, it should be recalled that, previously, I underlined the small n feature of the African Governance Indicators which was further aggravated, since I exclude two North African countries from the dataset. One way to tackle this problem is to proxy the relevant variables for those countries not included, using another comparable index. It is tabulated in the African Governance Indicators study that there was very high correlation with Country Policy and Institutional Assessment (CPIA) index produced by the World Bank (*See* UNECA 2008 for correlations with other measures).

Table 18 Level of correlation between selected World Bank Governance indicators and Africa Governance indicators (Percent by Level)

	Correlations with 24 Africa governance indicators in each interval (% of all correlation)		
	Less than 34%	34-66%	More than 66%
World Bank Institute Rule of Law Score	0	54	46
World Bank Institute Government Effectiveness Score	4	42	54
World Bank Institute Corruption Score	13	83	4
World Bank Institute Voice and Accountability Score	0	46	54
CPIA 16: Property Rules and Rule-based Governance	0	29	71
CPIA 17: Quality of Budgetary and Financial Management	38	63	0
CPIA 18: Effectiveness and Revenue Mobilisation	79	21	0
CPIA 19: Quality of Public Administration	83	17	0
CPIA 20: Transparency, Accountability, and Corruption	4	96	0
Average of Governance CPIAs	0	100	0

NB. This table is reproduced from UNECA (2008)

Briefly, the CPIA is constructed using 16 criteria grouped in four components, of which property rights and rule-based governance is one. Using this source provides a fair assessment of the status of rule of law in countries that otherwise were missing from the data. Because the CPIA index is primarily used by the World Bank to determine each country's share in aid allocation (also known as IDA Resource Allocation Index), it apparently excludes a number of middle-income countries in Africa. One should note that quantitative analysis based solely on countries included in the African Governance Report was not practical, since the small size of the sample made any statistical inference implausible. Of the 41 countries included, data for nineteen countries is drawn from CPIA scores. So far, I have used several descriptive statistics and graphical presentations to argue that, in conformity with the propositions of political theory, there exists a positive association between rule of law and economic growth in Africa. Next, I investigate whether these correlations enable us to make causal inferences.

Table 19 Rule of law and economic growth in Africa

Variable	OLS with Rule (One)	OLS with Rule (Two)	OLS with (IEF)
Openness	0.58	0.61	0.30
	0.24	0.23	0.19
	0.02	0.01	0.11
Rule(One)	2.33		
	0.91		
	0.01		
Rule(Two)		2.11	
		0.91	
		0.02	
Rule(IEF)			3.17
			0.81
			0.01
Constant	3.89	3.89	5.72
	0.85	0.86	0.31
	0.00	0.00	0.00
R-squ.	0.33	0.40	0.44
F(2,38)	9.97	8.60	9.65
N	41	41	38

NB. Note that Rule (One) and Rule (Two) variables were constructed using the African Governance Indicators and CPIA. The third one uses IEF data. Figures below each coefficient estimate refer to robust standard errors and *p*-values respectively. All the F values are significant at one percent.

The findings reported above show that differences in rule of law among African countries did indeed cause the countries to register different levels of economic performance. Model one highlights this point, with the help of the respect for the rule of law variable in the African Governance Indicators. It should be noted that causality is as much, if not more, a theoretical issue as an empirically investigated matter. As such, I consider the findings on the mapping from rule of law to economic growth to signify a causal relationship for at least two reasons. The models are based on very plausible economic and political theories that postulate

causal links. Moreover, the empirical findings tally with these theoretical predictions. One also needs to caution that the interpretation of coefficient estimates in semi-logarithmic models, as in all the models used in the analysis, is not straightforward. Accordingly, I transform the estimates into discrete values using a specific formula, i.e. e^{β}-1 where β is the parameter estimate. *Ceteris paribus,* a one percent difference in rule of law could make a country's economy better or worse by 6.8 percentage points as compared to others. I should stress here that I are not stating that a one percent improvement in rule of law causes a country to grow economically by 6.8 percent. Rather, the percentage figure predicts the degree of income variation that can be accounted for countries whose rule of law variables differ by one percentage point.

These results are further endorsed by those from models two and three. The second model investigates the economic growth implications of rule of law proxied by the law enforcement organs variables. The coefficient estimate for this variable is, in fact, stronger than that for the other two variables. In this case, a one percent difference in the quality of the law enforcement organs in Africa was amounted to about seven percent of the income disparity. Broadly, this paints a picture of the close association between rule of law and economic growth. For instance, the size of Zimbabwe's economy, as measured by real GDP per capita, once deemed to be an African potential success story, was only 48 percent of that of Cape Verde. This is paralleled by a 24 percent difference in quality of rule of law that existed between those two countries. The third model based on the rule of law variable derived from the IEF also provides evidence of the positive nexus of this variable with economic growth, albeit with a lower level of significance. That the link between the political variable and economic growth in this model was not as strong as the previous two

models, can partly be attributed to the fact that, unlike the African Governance Indicators, this index evaluated African countries on a world-wide scale. As indicated in table above, the rule of law variable proxied by the civil liberties index of the Freedom House data was rather weak in predicting economic growth in Africa.

Hitherto, I have not delved much into assessing the temporal dimension of the economic effects of the rule of law of variables. This is perhaps not as serious a shortcoming as it seems, because institutional variables are known to be notoriously sticky. In other words, institutions take a great deal of time to evolve. It is also the case that institutions are path-dependent; thereby further narrowing the scope for significant temporal variation. Bearing these points in mind, I exploit the Rule (IEF) data to investigate whether the cluster-level variations in rule of law were associated with corresponding differences in economic growth. In a fast-globalising world, where the cross-border movement of factors of production is greatly intensified, the use-values of a sustained and credible regime of property rights cannot be overstated. To account for this time dimension, I construct a new variable as follows:

- Countries with high rule of law scores (greater than or equal to 0.5) both at the start and end of IEF period. (1.00)
- Countries below mid point at the start but managed to make the transition to higher levels. (0.75)
- Countries that improved their rule of scores but still remain below average. (0.50)
- Countries that were above average and subsequently on significantly deteriorated in their rule of law scores. (0.25)
- Countries that remained worse performers throughout the whole period. (0.00)

The intuition behind the momentum variable is to assess the dynamics of rule of law in Africa. In a region where political reform reversals were widespread, it is logical to put a higher weight on countries that succeeded in preserving a strong rule of law regime over a longer time period. The second group of countries which registered major strides in rule of law may not have the economic pay-offs forthcoming in the short-run, as economic agents still include their past records into account when making decisions. I follow similar logic to categorise countries into the remaining groups.

Table 20 Temporal changes in rule of law and economic growth in Africa

Variable	OLS with Momentum	OLS with interactive term	OLS with interactive term	OLS with term for non-linearity
Openness	0.21	0.29	0.21	0.31
	0.07	0.06	0.07	0.07
	0.00	0.00	0.00	0.00
Momentum	0.88			
	0.35			
	0.02			
Rule(One)*Momentum		1.55		
		0.59		
		0.01		
Rule(IEF)*Momentum			1.81	
			0.55	
			0.00	
$Rule(One)^2$				2.53
				1.18
				0.04
Constant	5.91	5.95	6.17	5.73
	0.22	0.22	0.18	0.28
	0.00	0.00	0.00	0.00
R-squ.	0.65	0.66	0.68	0.61
F(2,40)	23.89	23.78		20.96
F(2,37)			28.17	
N	41	41	38	41

NB. All the estimates above assess temporal effects, either through an interactive term or squared value of the institutional variable, as in Rule $(One)^2$. Figures below each coefficient estimate refer to robust standard errors and *p*-values respectively. The F values are significant at one percent.

I draw a number of inferences from the above empirical table. Firstly, the economic growth effect of changes in rule of law was more pronounced in countries that were consistently performing well and in those that made significant strides. The estimate for the parameter Momentum in model four is positive and significantly different from zero. Although this temporal measure of the rule of law variable is

lower in absolute terms, than estimates based entirely on cross-sectional aspects, it still suggests that not only positive changes in rule of law, but also the capacity to sustain rule of law, mattered for economic growth in Africa. In models five and six, this variable is interacted with two of the rule of law variables discussed before. I in particular would seek to establish the temporal dimension of rule of law losses its predictive power, once I control for the cross-sectional effect. As is clearly seen in the findings, the positive effect of changes in rule of law, measured along a time scale, on economic growth, remained intact even after I allowed for end-of-period rule of law scores. The additional advantage of both models five and six is that they show that the interactive term results are not sensitive to choice of the specific rule of law measure.

In the last model, I empirically tested whether theoretical assertions on the non-linear effects of institutions hold true in our data. For instance, for two equal scores in rule of law, the countries could experience different impacts on economic growth, if rule of law was already entrenched in one more than in the other. In the same way, this implies that the degree to which a unit change in rule of law affects economic growth can differ for the same country, whether it was already enjoying a better property rights regime or not. Following the practice from estimation of earning functions (*See*, for example, Lam and Schoeni 1993), this is dealt with by adding the square of the independent variable as a right hand-side argument. The results indicate the existence of a built-in effect, in that the better a country fared in its rule of law score, the higher were the economic pay-offs of further improvement. Note also that the F-values in all of the models were significant at one percent, implying the joint-significance of both the economic covariates and the political variables. Finally, I conducted different model specification tests to establish the

robustness of the empirical findings. These include quintile regression, robust regression, as well as regression with robust standard errors. Robustness tests also show that coefficient estimates on the political variables were not sensitive to changes in the type of economic controls applied. Note that, these tests are not reported here for the sake of brevity.

7.1.2. Corruption

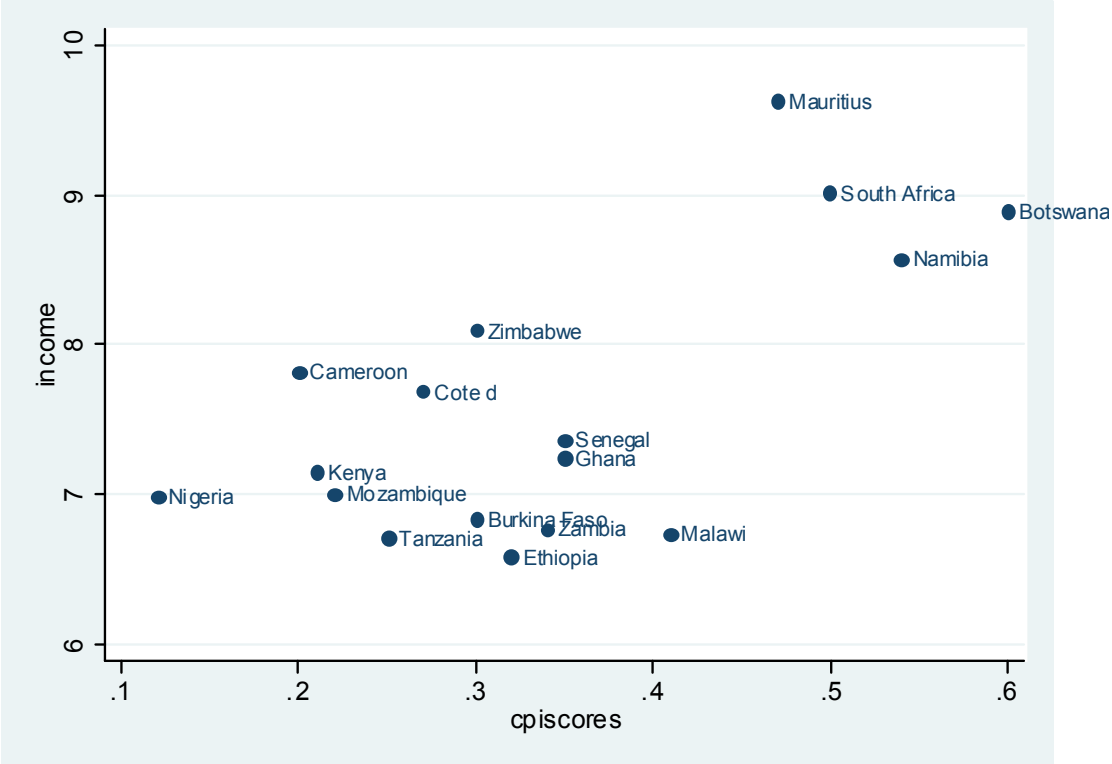
Corruption, defined in very broad terms as the 'misuse of public office for private gain' (Treisman 2000:399), is widely considered detrimental to the economic well-being of countries .A reverse effect from low levels of income to higher levels of corruption is also a very plausible proposition, even though empirical evidence of this posited trend is rather sparse. In an insightful review of the literature on corruption, Treisman (2007) explains the intricacies involved in research on corruption. The negative association between economic growth and corruption can easily be discerned by studying the distributional pattern of both of these variables in global data. African countries account for a disproportionate share of countries perceived to have high levels of corruption. For instance, data from the Corruption Perception Index (CPI) of Transparency International consistently show that only two countries in the region score more than the CPI midpoint of 0.5. Of the 29 non-OECD countries that registered greater than or equal to the mean score of 4.7, only four were African countries; namely Botswana, Cape Verde, South Africa and Mauritius. I also observe sizeable differences with regard to corruption among African countries, in that the cleanest economy in the region (Botswana) having a score about five-times that of the most corrupt (Nigeria). In line with the overall

theme of the study, I primarily focus on the intra-region variation in the political variable and its effect on economic growth.

7.1.2.1) Operationalisation of corruption

One feature of the recent trend in the proliferation of corruption data was that most such indices were constructed as aggregated averages of already existing measures. Since the bulk of these utilise the CPI, a brief account of the methodology applied to derive the CPI index is in order. The CPI itself conglomerates data from 14 sources that originated from 12 independent institutions. All the sources basically report the corruption perceptions predominantly held by experts, both non-resident and resident. To tackle problems of comparability caused by the heterogeneity of the sources, the CPI index applies matching percentile and beta transformation techniques that allow for standardised scores. Countries are then ranked based on the opinion survey; from the worst case scenario (0) to the least corrupt one (10). The two most important sources that feed corruption data on African countries into the CPI were the African Development Bank and the Country Policy and Institutional Assessment index (The World Bank). The CPI additionally provides data on a confidence range, and the number of surveys used that can be used to assess the reliability of the scores for each country. As Figure 8 indicates, a pattern of strong association between economic growth and levels of corruption in Africa is very apparent.

Figure 8 Corruption and economic growth in Africa



NB. This plot of (natural log of) real GDP per capita against scores on corruption suggests a strong positive correlation between the two variables. Note that the corruption scores are standardised into [0,1] values with higher scores indicating less corruption. The income and corruption score variables, which refer to year 2000 values, were drawn from the PENN World Table (Heston *et al.* 2006) and TI (2008) respectively.

It is true that research on corruption/economic growth relationships raised more questions than answers. At the same time, the close correlations I observe between those two variables were not spurious. In the discussion below, I provide empirical evidence, based on African data, which verifies this last statement. In so doing, I argue that the almost equivalent levels of income between, say, Namibia and Equatorial Guinea- despite large difference in corruptions scores-were weak enough to reject the null hypothesis of no effect of corruption on economic growth. Rather, the claim is that the underlying true relationship is one that maps corruption and

economic growth with a positive slope. Nevertheless, this was not straightforward a phenomenon as it had appeared on the surface. A closer look at the scatter diagram above indicated that those countries that registered better scores on corruption did indeed show correspondingly better values on other conventionally-applied governance indicators. This, coupled with the high value judgement input in their construction, created a high likelihood of measurement error. In addition, the possibilities that the effects of corruption on economic growth could be mediated by other political/institutional factors were, often, overlooked. As such, our analysis below shall be shaped by taking into consideration these latter issues.

7.1.2.2) Analysis

Before I begin with a descriptive analysis of the variables in question, it is only imperative to introduce the additional political variables I use in this section. More specifically, I chose two political variables deemed to have strong influence on corruption; namely, freedom of the press and associational and organisational rights. Freedom of the press is one of the main outputs of Freedom House which evaluates countries based on three major categories. The 23 questions on the state of press freedom in a country assess the legal, political and economic dimensions, so as to classify countries on a scale of 0 to 100. Even though these measures date back to 1980, quantifiable indicators have only been available since the mid-1990s. The associational and organisational rights variable, on the other hand, is a sub-component of its flagship publication, i.e. *Freedom in the World*. Broadly, it assesses the political space within each country that allows for the establishment and independence of civil society organisations. I need to introduce a note of caution here in that, because the earliest available year for the availability of associational and

organisational rights data was 2006, a similar cross-country distributional pattern has been assumed for previous years. Clearly, the major setback of this approach is that I fail to adequately account for the dynamic effects of the arguments.

Table 21 A correlation matrix on corruption and economic growth

Variable	Income	Corruption	Press	Association
Income	1.00			
Corruption	0.61	1.00		
	(0.00)			
Press	0.35	0.63	1.00	
	(0.02)	(0.00)		
Association	0.23	0.61	0.80	1.00
	(0.13)	(0.00)	(0.00)	

NB. Note that corruption data was drawn from CPI and IEF while Press and Association were from FH. Number of countries included is 44. Figures in parenthesis are *P* values.

As Table 21 on pair-wise correlations shows, economic growth was strongly and positively associated with corruption and press freedom. Recall that corruption was coded in such a way that higher values indicated lesser levels of corruption. This was not the case for the association and organisational rights variable. There seems to be a parameter shift in this variable, in that, while comparing a cluster of the five high-performing countries shows a distinct pattern with respect to others, the relationship became inelastic among the subset of the other countries. Put differently, the positive effect of associational and organisational rights on economic growth may not be so strong for countries at very low levels of development. A related derivation from the above table is that countries with better scores on corruption also enjoyed wider press freedom and associational and organisational rights. These observations, however, should not conceal the fact that African countries fared badly on all indicators. Such a pattern of low region-level average scores was even more

significant for corruption, in which case the relevant statistic stood at only 0.28. Cross-country variation in corruption scores among African countries was also weaker as, partly, a consequence of many countries sharing the same score.

I ran a number of models to test for the causal effects of the political variables on economic growth in Africa. Earlier, I mentioned that corruption data are usually very noisy, as the possibilities for measurement error were high. Not only is this due to its high correlation with other political variables, but it is also due to its heavy reliance on perceptions. In particular, there exists a high probability of a halo effect, in which other, better governance indicators create an upward bias in experts' evaluations. In order to address such measurement problems, I augment the basic models with two more error-in-variables correction models. It is shown in Table 22 that, even after controlling for possibilities of measurement error, corruption remained a strong factor in explaining cross-country growth variation in Africa. The predictive powers of models two and three were noticeably better as compared to the original specification. Note that an accurate account of the effects of corruption on economic growth requires the unravelling of a whole set of complex relationships, which, in turn, presupposes a much larger sample than I have here. Furthermore, the temporal dimension of the relationship was difficult to establish as a result of lack of reliable data. The exercise here, however, provides preliminary evidence as to why the corruption-economic growth nexus in Africa is worthy of further investigation.

Table 22 Economic effects of corruption and associated variables in Africa

Variable	OLS (Corruption)	EIV* (Corruption)	EIV** (Corruption)	OLS (Press)
Openness	0.41	0.21	0.15	0.29
	0.04	0.06	0.06	0.06
	0.00	0.00	0.02	0.00
Corruption	4.02	4.64	6.76	
	1.16	1.29	1.59	
	0.00	0.00	0.00	
Press				1.33
				0.48
				0.01

Table (Contd.)

	Association			
Constant	5.37	5.24	4.82	5.74
	0.29	0.31	0.35	0.25
	0.00	0.00	0.00	0.00
R-squ.	0.68	0.70	0.78	0.63
F(2,25)	26.37	28.53	39.36	21.56
N	28	28	28	28

NB. EIV* is an Error-in-Variables regression with a reliability factor of 0.9. EIV** is an Error-in-Variables regression with a reliability factor of 0.7. I use this method to minimise measurement problems of the corruption variable. OLS is applied in the first, fourth and fifth models. Figures below each coefficient estimate refer to robust standard errors and *p*-values respectively.

The findings in models four and five endorse the observations I made earlier regarding the economic growth effects of press freedom and associational and organisational rights. More to the point, press freedom had a direct and significant impact on economic growth in Africa, while the coefficient estimate for associational and organisational rights was very weak. This may not be surprising, in that civil society organisations in Africa, as in most other parts of the world, are strong advocates of redistributive policies aimed at addressing equity objectives. More often than not, such policies are at odds with economic efficiency principles and, hence, are very likely to entail costs in terms of growth forgone. Nonetheless, our primary preoccupation in this section is not with the economic growth implications of press freedom and associational and organisational rights *per se*. What I wished to ascertain was weather the part of the effects of press freedom and associational and organisational rights on economic growth filters through corruption. Inasmuch as these effects are significant, one can deduce that press freedom and associational and organisational rights encourage a more secured property rights regime. Table 23 encapsulates these notions and provides empirical evidence which, on balance, supports the proposition of a positive relationship.

Table 23 Further evidence on the corruption-economic growth link in Africa

Variable	OLS with corrupt*press	OLS with corrupt*legal	OLS with corrupt*polit	OLS with corrupt*econ
Openness	0.41	0.38	0.29	0.29
	0.04	0.06	0.06	0.07
	0.00	0.00	0.00	0.00
Corrupt*press	2.91			
	1.06			
	0.01			
Corrupt*legal		1.37		
		0.95		
		0.16		
Corrupt*polit			5.36	
			2.11	
			0.02	
Corrupt*econ				6.64
				3.35
				0.06

Table (Contd.)

Corrupt*assn.				
Constant	5.96	5.99	6.04	6.05
	0.21	0.23	0.20	0.21
	0.00	0.00	0.00	0.00
R-squ.	0.66	0.59	0.65	0.62
F(2,26)	25.26	19.05	24.04	21.16
N	41	41	41	41

NB. The idea behind the above estimates is to test if the effect of different rule of law indicators on economic growth manifest through their effect on corruption. Notwithstanding the fact that hardly any institutional variable is strictly exogenous to economic growth, the results provide a broader picture. Figures below each coefficient estimate refer to robust standard errors and *p*-values respectively. All the F values are significant at one percent.

The approach I followed to disentangle that portion of the effect of press freedom and associational and organisational rights on economic growth, mediated through the latter's impact on corruption, was to augment our basic model through interactive terms. Its analogy from calculus is the partial derivative of corruption to press freedom and associational and organisational rights, multiplied by the partial derivative of economic growth to corruption. In previous discussion, I found that individually, corruption and press freedom causally affect economic growth in Africa while evidence on associational and organisational rights suggested otherwise. In model six, the interactive term between corruption and press freedom is positive and significant at one percent. This suggests that countries whose political systems allow for broader press freedom enjoy better levels of property rights as proxied by corruption. The net effect of this scenario is to enhance economic growth in such countries. Such was not the case, however, for associational and organisational rights, as the relevant parameter estimate in last model is only significant at ten percent. It still represented a significant improvement from the findings on the direct effect of this variable on economic growth reported earlier. One can think of a couple of plausible explanations as to why this is so. Firstly, civil society organisations could hardly be described as champions of the cause of economic growth. The claim that economic growth is *not* a panacea for all social ills is actually the bread and butter of most such organisations. Secondly, the underlying functional relationship between this variable and economic growth may not be totally linear.

I further probe into the links between press freedom and corruption, by decomposing the former into its three constituent parts. The legal environment component of this variable assesses media laws and regulations and a government's tendency to use these instruments to restrict freedom. When I interacted this term

with corruption, I found that the effect on economic growth was rather weak (model seven). This suggests that economic agents in Africa do not consider the statutory rules on press freedom to be robust instruments for credible regimes of property rights. The political environment component of press freedom evaluates the degree of political control over the content news media, which ranges from editorial independence to access to information and censorship. The size and level of confidence on this variable in model eight underscores its utility as a strong indicator of commitment. Those countries which registered better scores on the political environment systematically provided for credible regimes of property rights and, therefore, higher levels of economic growth. The economic environment component deals with identity, concentration and transparency in ownership of media. The coefficient estimate on the interactive term of this variable with corruption, as reported in model nine, falls in between the two other components. Neither legal instruments nor economic factors were as strong as political determinants of press freedom in instilling a credible regime of property rights, which, in turn, were essential for economic growth.

7.2. A composite rule of law variable

Throughout the discussions so far, I symbolised the rule of law variable as a double-edged sword, in that inasmuch as its multi-dimensionality provides a researcher with a rich array of insights, this same character of the variable creates certain serious practical problems. I know that the better governed countries would have credible rules on property rights, clear and impartial enforcement mechanisms, plausible rules that tie the hands of governments, and so on. I also know that these attributes are not mutually exclusive, as they tend to co-vary strongly. What I cannot

say is that the observed correlations among the variables are entirely stochastic so that I can treat each variable as fully exogenous. There exists a high likelihood that either an underlying common factor explains these relationships or a linear combination of the variables provides a better proxy for the rule of law variable. Our primary focus in this section is the exploration of this communality in the variation of the individual variables vis-à-vis the rule of law measure to construct a composite variable. This composite variable is then applied on the empirical model, so as to investigate the extent to which it explains cross-country economic growth differentials in Africa.

The method I use to this end, and thus derive less number of variables that account for most of the variation, is factor analysis with principal component factors. A stepwise presentation on the discussion is provided below.

7.2.1. Data

The data used in this analysis are drawn from the African Governance Indicators, certain features of which were explained in a previous discussion. It is supplemented by CPIA. For a detailed account of which countries were included and the theme coverage of the data see Appendix Q. Each variable is ranked in ascending order based on the percentage of respondents who assigned the given factor the least level of satisfaction. African countries on average scored higher in every sub-component of political representation, including political system and power distribution, while they fared very poorly with regard to decentralisation, tax evasion and corruption. A case in point with respect to the relative importance of the political factors in the overall index was provided by the question of competitiveness of African political systems. Accordingly, data indicated that about 56.1% of

households surveyed by the study found the political systems in African countries to be competitive. Leaving aside the question of what makes political systems competitive, a study by the African Research Program at Harvard University finds that, out of 1127 country-years between 1970-1990 in Africa, in 63% of cases, executives in Africa were elected, while in 22% of cases more than one party competed (See http://africa.gov.harvard.edu). Surprisingly, the domain of countries deemed to have less competitive political systems by the ARG opinion surveys included countries labelled as 'free' by Freedom House, such as Botswana and South Africa, as well as 'not-free' ones such as Chad and Zimbabwe. Another dimension in which the political structure of the countries region rated highly was adherence to constitutionalism. Nevertheless, that pattern in the data on African Governance Indicators which is of interest to us is the strong correlations among the variables.

7.2.2. Operationalisation

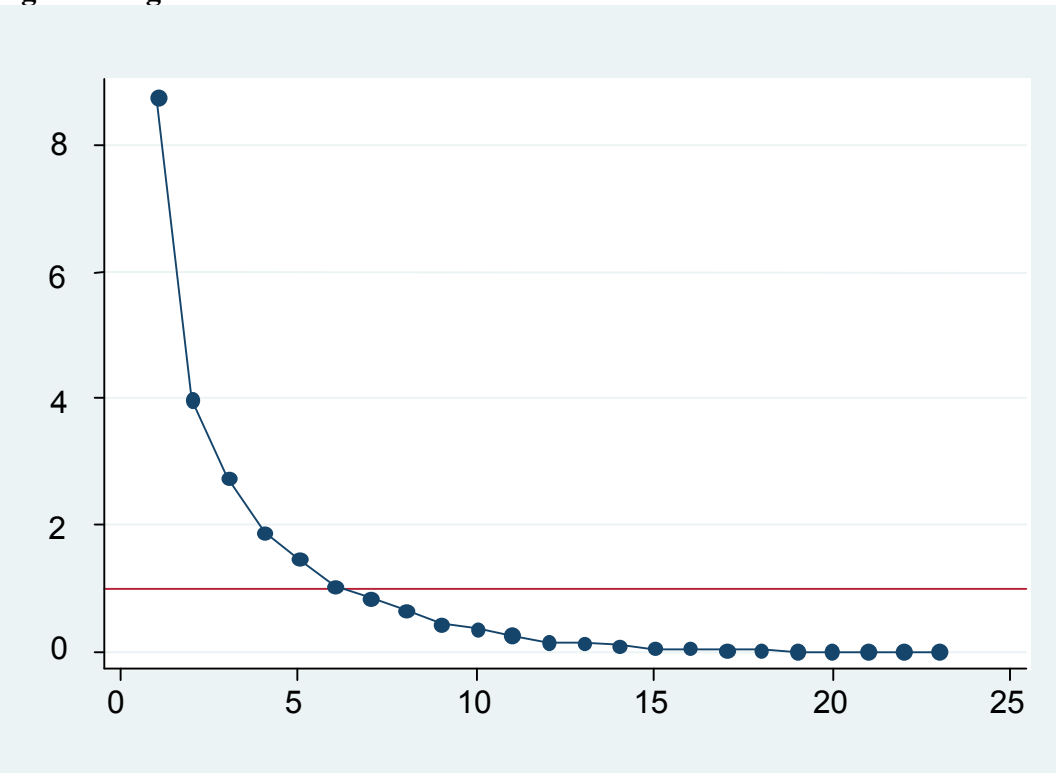
This part of the exercise consisted of two major components. Firstly, a factor analysis of principal components factors is used to reduce the variable dimension of the data. Secondly, I use scores from retained variables to derive a composite measure of rule of law for each country. I derive the principal component factors and corresponding scores as follows:

- A correlation matrix was calculated first, which, on balance, showed that the variables were significantly correlated. Ideally, I would have preferred more of the variables to have been significantly correlated than I actually got for our data. More importantly, however, the political variables showed strong associations among themselves, and with other dimensions such as economic management.

- The next step was to derive the un-rotated factors using principal component factors method. I found that the first factor on its own accounted for about 38% of the overall variation, while adding another two factors raised the proportion of the total variation explained by the three factors to about 66%. The remaining eight factors each could only represent less than 10% of the total variation.

- In factor analysis, there exists no blueprint as to how many of the factors should be retained. The rule of thumb is to retain those with eigenvalues of at least one. Eigenvalue is used as a criterion for determining the numbers of factors to retain and as a measure of variance accounted for by a given dimension.

Figure 9 Eigenvalues of the factors



NB. In this graph, the vertical axis shows eigenvalues, while the factors are provided in the horizontal axis. It shows that six factors pass the criterion of eigenvalue ≥1. The line provides a fairer account of the contribution of each factor in explaining the total variation. For instance, the length of the line between the first two points endorses the point that the first factor on its own accounts a significant degree of variation. I draw data from UNECA (2005).

As can be seen from the graph above, a criterion of a minimum eigenvalue of one left us with six factors to retain. The six factors together account for 84% of the total variation.

Rotated factor loadings provide us with information on how the variables were weighted for each factor and the correlations between the variables and the factor. For instance, I can observe that, for the first factor, relatively larger weights were

assigned to the political factors. Finally, I draw the factor scores for each of the six scores using Bartlett's algorithm.

7.2.3. Analysis

Now that I have derived the factor scores, the composite rule of law variable is constructed as a weighted average of those variables with the highest variation with respect to each factor. For the purposes of brevity, I focus on those values associated with the first factor. This shall not entail much loss of analytical power because I showed earlier that the first factor had an eigenvalue three times more than any other. Also in this factor the amount of variation was concentrated in six major variables; namely power distribution, political system, political party freedom and security, law enforcement organs, efficiency of government services and decentralisation of structures. Each variable in turn decomposes into a string of dimensions that assess those particular attributes of the variable. For instance, the variable power distribution is made up of parliamentary election mode, regional assemblies membership, local assemblies membership, constitutional checks and balances status, legislature's independence, legislature's control and judiciary's independence. Based on the factor scores, the composite rule of law variable, Ŕ, was derived according to the following formula:

$$\acute{R} = 0.17502\beta_1 + 0.15601\beta_2 + 0.14986\beta_3 + 0.13128\beta_4 + 0.11871\beta_5 + 0.10618\,\beta_6$$

where β_i refers to each of the variables introduced above respectively.

Note that the variables were recorded as ranks and, hence, a lower absolute value for the variable implies a higher level of rating. Another point worth mentioning is the limitation in terms of country coverage of the data. To circumvent

this problem, I proxy values for countries not included based on their IEF scores, which were elaborated in a section above.

Table 24 A composite rule of law variable and economic growth in Africa

Variable	OLS	Least squares with robust standard errors	Robust least squares	Quintile Regression
Openness	0.31	0.26	0.23	0.23
	0.04	0.06	0.05	0.08
	0.00	0.00	0.00	0.01
Rule of law	0.72	0.72	0.69	0.78
	0.26	0.18	0.23	0.30
	0.01	0.00	0.01	0.02
Constant	4.59	4.59	4.71	4.54
	0.62	0.48	0.55	0.70
	0.00	0.00	0.00	0.00
R-squ.	0.66	0.66	NA	0.36*
F(2,38)	21.98	23.21	18.78	NA
N	41	41	41	41

NB. NA refers to relevant statistic not available or not appropriate. *A pseudo-R^2 was given here. A McFadden's pseudo R-square between 0.2 and 0.4 is normally considered highly satisfactory. Figures below each coefficient estimate refer to standard errors and *p*-values respectively. Reported F values are significant at one percent.

As can be deduced from table above, the coefficient estimates on the composite rule of law variable lend further support to the proposition I made at the beginning, that variations in rules of law among African countries systematically explain corresponding differences in the economic well-being of the countries. The parameter estimate in the first model uses ordinary least squares, whereby the predictive power of the rule of law variable was significant at one percent. In fact, the coefficient estimate on the rule of law variable was all the stronger when I altered

the model specification to account for possible outlier effects. This was shown in model two, which estimated the model using a linear least squares regression with robust standard errors. Both models, three and four, i.e. robust least squares regression and quintile regression, return results that emphatically reject the null hypothesis that the coefficient estimates on the composite rule of law variable were not different from zero. Additionally, the joint significance of the right-hand side arguments in the model was shown by the corresponding F values, which were all significant at one percent. Results for robustness tests using alternative controls are not reported here. All in all, the rule of law variable, which was considered as a potent institutional tool for a credible regime of property rights, was a strong determinant of economic growth in Africa.

7.3. Discussion and summary

The overarching objective of this chapter was to investigate whether the theoretically postulated links between rule of law and economic growth hold water when subjected to African data. Those institutions, which ensure a broad prevalence of rule of law in a country, feed into economic growth largely via the effect of the rule of law variable on property rights. More specifically, our research problem was to look for empirical evidence from Africa that established the systematic nature of the observed mapping between such rules and economic growth differences among countries in the region. To do so, I broke down the vector of institutions on security of property rights into three major components. The first one dealt with the question of individual rule of law variables and their impacts on economic growth. With the help of data from the Index of Economic Freedom and the African Governance Indicators, I showed that there existed ample evidence to support the proposition that

rule of law explained economic growth variation in Africa. I also found similar results in the second component, in which the presence/absence of credible regimes of property rights was proxied by levels of corruption. In the final component, I constructed a composite rule of law variable based on factor analysis with principal component factors. The findings with respect to this composite variable provided further evidence of the importance of constitutional rules in bringing about secured property rights, and hence, better economic growth. When controls are included for fixed factors such as, geography, ethnic fragmentation and colonial history, the coefficient estimates (not reported here for brevity reasons), by and large, remain strong.

Chapter 8. Veto players, credible commitment and economic growth in Africa

This chapter deals with the third pillar of institutional solutions to problems of credible commitment; namely, veto players. Recall that in preceding chapters, I discussed, with the help of empirical evidence, the degree to which credible commitment, via institutions of delegation and a string of rule of law variables, shaped the economic growth trajectories of African countries. Within the broader theme of positive political theory, which underscores the centrality of political processes in determining economic policy choices, I hypothesise that credible commitment to growth-friendly economic policies is a positive function of the number of veto players and variations in their preferences. Apparently, such a proposition stands in stark contrast to the fragmented political systems literature in that, in the veto players model, executives made up of diverse groups lead to better economic policies, albeit in terms of commitment to the *status quo* policy. Put differently, and in a strictly positive sense, the inability to collectively act, be it within the executive or in its interactions vis-à-vis the other organs of government, is considered a virtue policy-wise. It is a caveat of political theory that I hardly find any research that assesses the joint effects of multiple actors in a given political system, which nevertheless provides a useful line of research.

As mentioned above, our task here is to investigate whether empirical data on Africa upholds the theory-supported nexus between veto players and economic performance, which is mediated by the former's effects on economic policy choices. To put matters into perspective, I draw on Tsebelis (1995) to hypothesise that the veto players paradigm (note that this variable is a composite of a number of veto players and of diversity in their preferences) instils stability in the policy regime,

which, in turn, is conducive to economic growth. As shall be explained below, while the direct empirical links between economic growth and veto players in Africa were weak, I also find that the effects of the veto player variable on economic growth becomes stronger as long as existing policies are pro-growth.

With these points in mind, the road map to analysing the economic effects of veto players in this chapter is as follows. In the section immediately following, I provide a brief précis of political theory on the subject, accompanied by anecdotal evidence from Africa. I do so with the intention of highlighting the research problem. In the following section, I discuss the logic behind the operationalisation of the veto players variable within the two, and most probably the only comprehensive, existing sources. I then present and analyse the results from the quantitative estimation of the parameters. The last section summarizes and concludes. As shall be explained in due course, the analysis here adds value in two ways. Conceptually, I identify one important anomaly in existing measures of veto players and treat it by introducing interactive terms. Methodologically, I use a recently introduced powerful estimation technique for panel data with time-invariant variables; namely the fixed-effect vector decomposition technique.

8.1) Do veto players matter for economic growth?

8.1.1) The Problem

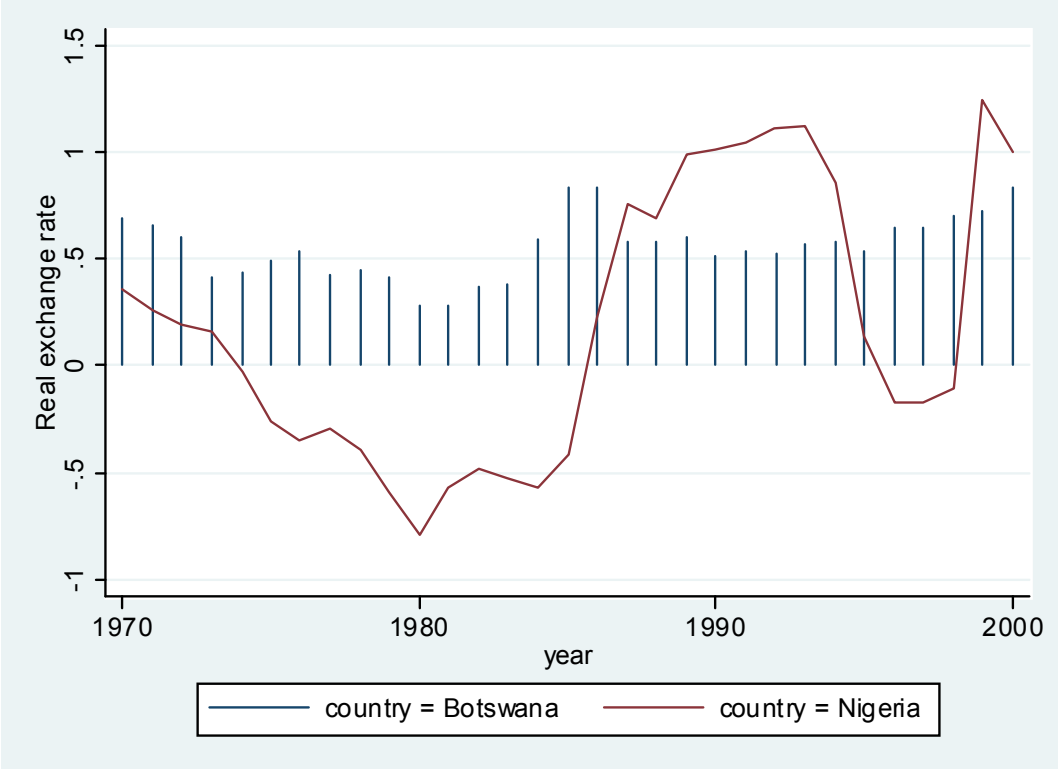
Had it been the case that one had a definitive answer to the above question, it would have sufficed to state that it encapsulated the subject matter of this particular chapter. Nevertheless, the best I can hope for from political theory is a qualified affirmative response, in that the economic effects of the existence of multiple veto players in a political system depends as much on this institutional variable as on

other variables. Accordingly, I use this section to shed light on this rather grey area in political theory and to further restate our research problem. A few examples help clarify the point. With the exception of former Portuguese colonies, where independence struggles were very violent, most African countries gained their independence through well-orchestrated (incoming leaders were groomed by departing colonial masters) multi-party elections. However, no sooner had the political transitions occurred, than in most of those countries, political pluralism was sacrificed to nationalist goals with devastating costs in terms of instability (e.g. Benin, Nigeria and Ghana), while a few, including Botswana, Gambia and Zimbabwe, kept up their pre-independence momentum. The adverse implications of political instability in the former block of countries manifested themselves through significant and frequent policy reversals, both by incumbents and newly-installed governments.

The pay-offs in terms of economic growth for those countries which pursued credible macroeconomic policy regimes were significant. The stark contrast in economic performance of two of the resource-rich economies in the region provides a testimony to the critical importance of the quality of policy in defining long-term economic growth trajectories. In contrast to the assertions of schools of thought that trace political economic paths along identity lines, Botswana was in no better position as compared to Nigeria at the advent of independence. Apart from being landlocked and situated at the centre of a conflict-prone sub-region, its share of national income allocated to consumption was one of the highest. Its citizens commanded a level of income almost equivalent to that of Nigerians by the early 1970s. As Figure 10 clearly indicates, subsequent policy regimes and economic performance between the two countries were diametrically opposed to each other.

Nigeria consistently qualified as a textbook example of the 'Dutch disease', in that its real exchange rate continued to appreciate, whereas Botswana sustained a competitive real exchange rate regime. Over the period under consideration, Nigeria's real exchange rate fluctuated 4.5 times more than that of Botswana. Three decades later, not only has Botswana managed to channel about 14.21 percent of its GDP to investment, while the figure for Nigeria stands at 3.87 percent, but the income ratio has reached 6.75 in Botswana's favour.

Figure 10 Economic policy volatility in Africa



NB. This plot highlights the contrast in economic policies between Botswana (the spike lines) and Nigeria. I calculate real exchange rates as the quotient of the natural log of nominal exchange rate and purchasing power parity over GDP. In addition to having a very stable exchange rate regime, Botswana's real exchange did not fall below zero at any time. Data was drawn from the Penn World Table (*See* Heston *et al.* 2006).Note that the polcon veto player variable (Henisz 2002)is constructed along three dimensions; namely legislature, judicial independence and devolution of power to sub-national governments. Hence, Botswana scored better than Nigeria.

The gist of the matter is that it is not because Botswana, or any other better performing economy for that matter, was particularly endowed with benevolent executives, that it sustained a growth-friendly policy regime for so long. Notwithstanding the fact that the notion of executive benevolence is, at best, a fallacy, I know that rational actors form expectations based on tangible indicators of commitment. I maintain here that it is the presence of institutional veto players and their credibility in narrowing the scope of executive discretion in important policy

tools that ultimately holds the key. Put differently, if the private sector had perceived a high risk of expropriation, say through corruption, then it would not have made those growth-enhancing investments that otherwise entail large sunk costs.

Nevertheless, the presence of multiple veto players in the political system can only serve as a necessary condition for promoting credible commitment. The point that there does not exist an automatic direct relationship between the existence of multiple veto players and good economic policies can be observed from the experiences of the Gambia. Although this country was considered politically free by Freedom House in the 1970s and 1980s, a condition which essentially allows for institutional veto players to exist, its economic policies were erratic. Discussions above lead us to underline the point that the presence of veto players does not cause the adoption of good policies *per se*. Rather, it promotes economic growth by preserving *status quo* economic policies that already are growth-friendly.

8.1.2. The Concept

I mentioned in passing in the introductory text, that one important contribution of this chapter is to underscore the point that the economic effects of a veto players based credible commitment paradigm is conditional on the type and quality of the *status quo* policy. Having a political system that embodies multiple veto players does not necessarily signal the adoption of policies that promote economic growth. Apart from rephrasing the research problem with the help of some anecdotal evidence above, it is worth noting that the veto players literature overlooked this critical point. Let us begin by defining the concept. Veto players are 'individual or collective actors whose agreement (by majority rules for collective actors) is required for a change of the status quo' (Tsebelis 1995:289). Note also the

difference in the commitment technology of veto players from the other two institutional solutions to problems of credible commitment. Governments delegate policy prerogative to a conservative Central Banker to *cause* tight monetary policy; governments introduce constitutional fiscal rules to *cause* fiscal balance; but a veto players system is introduced to preserve the *status quo* rather than cause it.

No discussion of the veto players paradigm is complete without drawing insights from the seminal works of George Tsebelis. Accordingly, he has stated that 'the potential for policy change decreases with the number of veto players, the lack of congruence (dissimilarity of policy positions among veto players) and the cohesion (similarity of positions among the constituent units of each veto player) of these players'(Tsebelis 1995:289). In Tsebelis (1999), he provided empirical evidence arguing that the presence of multiple veto players with divergent preferences did indeed limit the number of significant laws passed (See also Tsebelis 1997 & 2002). I can draw a number of insights from his work to in order to study the effects of veto players on economic growth. Firstly, in terms of political economics, one can draw hypotheses as to if and how countries that differ with regard to the distribution, in number and diversity of preferences, of veto players, map into corresponding differences in policy choices. Secondly, I can also link the choice of legislations under scrutiny to objective measures and/or apply statistical diagnostic techniques to assess selectivity bias, or omitted variable bias so as to deal with them accordingly.

As the overwhelming message from Tsebelis' extensive works show, policy is the undisputed go-between veto player variable and the economic performance variables. What I need to ask is, then, whether or not policy stability, as caused by the veto player variable, maps into better economic performance. A case in point is

MacIntyre (2001), who applies a veto player's paradigm to explain the Asian financial crisis in the 1990s. Accordingly, he showed that the variations in the scaling down of investment and GDP in Indonesia, Malaysia, the Philippines, and Thailand strongly correlated with differences in terms of the size of veto players among the countries. The implications of the veto player paradigm also manifest themselves through its impact in shaping interest-group politics. In this regard, Immergut (1990) undertakes a comparative analysis of the health systems of Switzerland, France, and Sweden, in which policy outcomes ultimately rested on the interactions of veto players.

James Madison's assertion with regard to the positive implications on rule of law of presence of multiple veto players in a political system does also have strong relevance to the economic performance of countries. One formal logic to such view postulates that, as the number of veto players in government increases, their ability to collude on accepting bribes declines, while the incentive to vote on legislations strengthening the rule of law increases (Andrews and Montinola 2004). In such situations, the positive implications of veto players for economic growth derive from the former's nexus with rule of law. Other notable studies on the subject include Moe and Caldwell (1994), on comparisons between presidential and parliamentary systems and Palmer *et al.* (2004) on the effects of heterogeneity of parliamentary democracies. Irrespective of differences among studies on veto players with regard to providing variable measurements that were amenable to empirical analysis, Beck *et al.* (2001) and Henisz (2002) clearly stand out in terms of wider coverage of both country and temporal dimensions. I defer in-depth discussions of these latter two sources of data to section below since I mainly draw on them for the forthcoming analysis. Now that I have provided a more refined version of the research problem,

backed up by empirical evidence and by the shortcomings of political theory, I next turn to a presentation of how the veto players variable has been operationalised.

In order to shed light on the micro-political foundations on the nexus between veto actors and economic growth, I draw on the selectorate theory of Bueno de Mesquita *et al.* (2001 and 2003). Accordingly, all polities are made-up of three nested and changeable groups, in which the largest group consists all residents. The selectorate is a smaller group that has a formal role in expressing a preference over the selection of the leadership. Though this group has a clearly stated say in leadership selection, it may or may not have direct influence on the outcome of leadership selection. The winning group, on the other hand, which is a sub-set of the selectorate group, is critically essential if the incumbent is to remain in office. In situations where the selectorate is larger relative to the winning coalition, supporters of the leader are particularly loyal because of the cost and risk of exclusion if the incumbent is overthrown. They postulate weaker bonds when the sizes of the selectorate and the winning coalition are comparable.

The economic implications of the relative sizes of the selectorate and the winning coalition filter through the choice of policies such as on public spending and taxation. Put differently, the incumbent chooses public policy in such a way that public resource allocation (that is between public goods and private goods) maximizes her political survival chance. When the size of the winning coalition is sufficiently large, in which case the veto power of individual members diminishes, the incumbent could afford to provide for good public policies. In contrast, leaders of small winning coalitions who choose good policies not only risk defection of members of the winning coalition but also face high risk of being replaced by

challengers. Note that the idea of good and bad policies in these cases reflects the extent of public resources to public and private goals.

8.2 Operationalisation of the veto players variable

A number of practical issues come to the fore when one attempts to quantifiably measure political concepts. To start with, and even for a concept like veto players wherein scholars were seldom at loggerheads on its definition, the variable was ultimately measured so as to reflect what the researcher sets out to achieve. In our case, this means that I refrain from the Tsebelis' dichotomy of institutional vis-à-vis partisan veto players. Instead, I utilise the Beck *et al.* (2001) and Henisz (2002) veto players variables since those sources allow broader coverage of countries. Additionally, I would add little value by constructing new indicators since, as shown clearly above, the problem has been more on the variables' inclusion into the model, i.e. the production function. It is, then, only imperative that I should take an in-depth look into how each of the above veto players variables were operationalised. I emphasise, in particular, three traits of the variables; namely, their conceptual and measurement details, spatial and temporal scope and limitations, if any. Needless to say, I give closer attention to the African dimension of the data. These variables were by far the broadest in terms of quantifying the veto players variable.

8.2.1. Checks (DPI)

At the very beginning of this chapter, I underscored the point that political theory is blurred in its propositions with regard to the political economy effects of multiple and preference-wise diverse veto players. In the same breath I speak of

multiple veto players inducing the adverse consequences of political fragmentation (fiscal policy being the most pronounced case), the inability to collectively act could help preserve existing policies and hence promote credible commitment. To the best of our knowledge, no study has so far been made investigating the net effect of these rather conflicting political variables. Nor is a general equilibrium solution to the political market our overarching interest here. I make this point for the sole reason that the construction of the checks variable reflects this delicate line between collective action and credible commitment. More to the point, the Beck et al. (2001) checks variable(s) was simply an augmented version of an earlier index developed by Roubini and Sachs (1989) wherein the latter, also known as the Index of Political Cohesion, indicated the positive mapping between the size of political players and public debt. Assuming away the collective action paradigm, I elaborate on how the veto players variable (checks) promotes credible commitment via policy stability.

Accordingly, the presence of multiple (that is, more than one) veto players was, first and foremost, a function of the degree of electoral competition for executives and legislatures. As per this criterion, countries with no legislature or which have un-elected legislature, or an elected legislature but with one candidate or legislature totally under the aegis of one party, but with multiple candidates, were assigned a value of one for the checks variable. The veto players variable for the rest of the countries, including those where multiple parties were legal, regardless of whether one party won all the seats, or either side of a 75% threshold seats, was dichotomised into the two dominant forms of government. In presidential systems, checks was incremented by one for each chamber of legislature, unless the president's party had a majority in the lower chamber and a closed list system was in place. The variable was also increased by one for each party allied to the president's

party but with ideological preferences more in tune with the main opposition party. In parliamentary systems, checks was incremented by one for each coalition partner needed to maintain a majority and for each government coalition party whose economic preferences closely matched the main opposition party. However, a prime minister's party was not considered a veto player if there was a closed system.

A number of points, which highlight the limitations of this version of the veto players variables, are worth noting. Firstly, this veto players variable did not transcend the regime type classification so as to provide a uniform measure. For instance, I can not tell accurately if Nigeria's score compared to, say South Africa, was, by default, partly explained by differences in the type of regime. Secondly, the executive and legislature electoral criterion tended to mix dissimilar entities, in that it made little distinction between one-party dominant states such as Botswana, Tanzania and Namibia. Another point was that it overlooked the differences between the largely advisory role of the House of Chiefs (i.e. the Upper House) in Botswana and the National Council of Namibia. Thirdly, and on a related note, the construction of veto players was narrowly confined to the executive and legislature. It is, however, clear that the judiciary and sub-national levels of government could also hold substantial veto leverage. These concerns were, to a substantial degree, dealt with in the second veto players variable, as shall be explained below.

8.2.2) Polcon (Henisz)

The veto players variable developed by Witold J. Henisz (See, Henisz (2002)) did certainly have a stronger pertinence to analysing economic implications of differences in institutional checks on policy-making. This is all the more apparent when one assesses the rationale behind the construction of this particular veto players

variable (hereinafter polcon) in the first place. To start with, it was decidedly focussed on identifying the extent to which policy change was feasible under a given political system. Polcon provided a quantifiable measure of the extent to which a change in the preference of any one political actor could induce a change in government policy. Compared to the veto players variable introduced in section above, the orientation of polcon was more in tune with a credible commitment paradigm. Furthermore, this variable's emphasis was on those policy changes that had significance to economic actors; most notably to private investors. At this juncture, and without passing judgement on polcon's reflection of the *status quo* policy, I can safely state that it provided the most relevant and broad measure to investigate the political economy of veto players. It is, then, logical to undertake a closer scrutiny of the concepts and technicalities applied to construct this variable.

The formal model used to construct polcon allowed for five political actors to have a veto say on policy matters; namely the executive, the lower and the upper houses of the legislature, sub-federal units and the judiciary. Based on a very strong assumption whereby the *status quo* policy (X_o) and the preferences of all actors were independently and identically drawn from a uni-dimensional policy space [0,1], the utility of a given political actor from a policy outcome X was equal to $-|X-X_1|$ where X_1 was the most preferred policy point for the political actor in question. I can deduce that maximum utility for this political actor was at 0 (when $X= X_1$) and a minimum of –1 (when X=0 and X_1=1, or vice versa). What is of much relevance for investors was not the type and quality of existing policy *per se*. Rather, it was the 'extent to which a given political actor is constrained in his or her choice of future policies' (Henisz 2000:7). This variable was in turn calculated by subtracting from

one the expected range of policies for which a change in the *status quo* could be agreed by all the veto players in the system.

One prediction of the model is that political discretion was a negative, albeit a non-linear one, function of the number of independent veto players in the system. Put differently, the ability of any one political actor to alter the *status quo* policy should correspondingly be reduced as approval was required from a number of veto players. It, therefore, is the case that investors consider an executive facing fewer checks from other players to be incapable of credibly committing to a policy stance. Using mathematical rules on expectations regarding uniform distributions, the expected difference between the preferences of any two actors was given by 1/(n+2) where n refers to number of veto players. This means that, if the veto players were only the executive and the lower chamber, then their expected difference in policy preferences was ¼. In the uni-dimensional policy space [0,1], six possible preference orderings were predicted by the model. With X_E, X_0 and X_L representing policy positions for the executive, *status quo* policy and legislature policy preference respectively, the preference orderings include:

X_E= ¼ ,X_0 = ½ ,and X_L= ¾

X_E= ¾ ,X_0 = ½ ,and X_L= ¼

X_E= ¾ ,X_0 = ¼ ,and X_L= ½

X_E= ½ ,X_0 = ¼ ,and X_L= ¾

X_E= ¼ ,X_0 = ¾,and X_L= ½

X_E= ½ ,X_0 = ¾,and X_L= ¼

As can be observed from the above orderings, the preferred policy points for the executive and the legislature were located on either side of the *status quo* policy. Since both prefer the latter to each other's point, policy constraint was one. In each

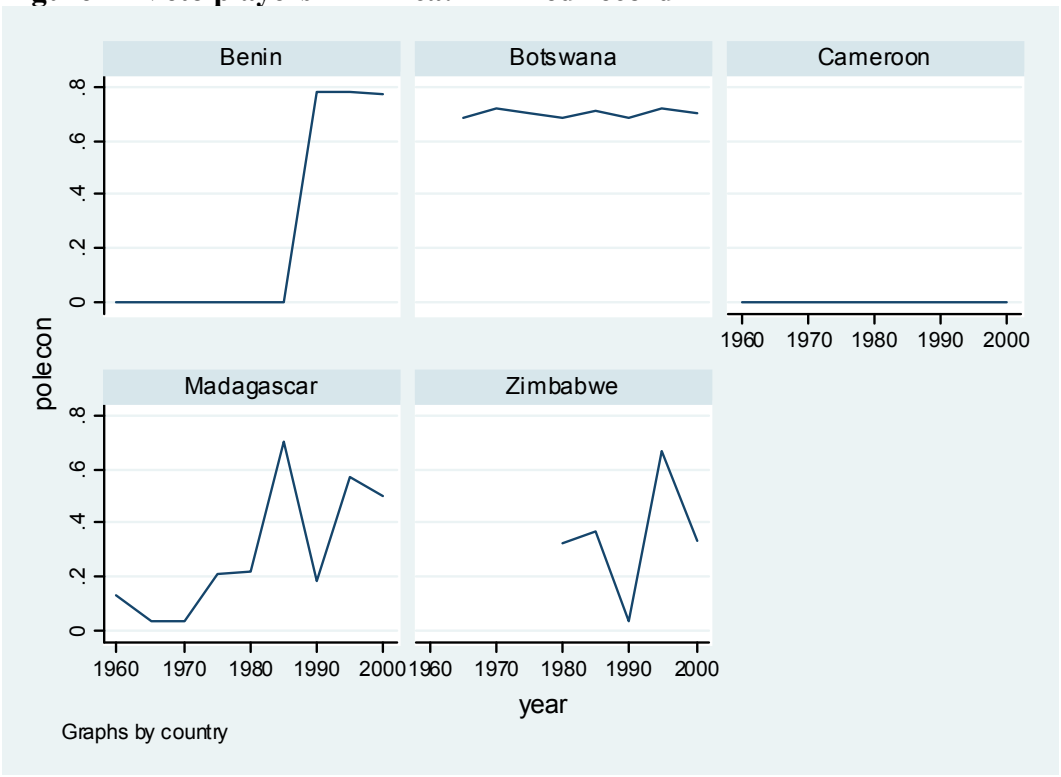
of the remaining four cases, political constraints were assigned a value of ½, because there exist policy points that were preferred by both to the *status quo* policy. The expected level of political constraint under this scenario, which was the average of the political constraint over all orderings, was equal to 2/3. A notable caveat of this approach is, perhaps, the possibility that the expected differences in policy preferences of any two actors were reduced as the number of veto players increases. If one goes by the formula given above (i.e. 1/(n+2)), then the expected difference in preferences is only 0.2 when the veto players are three in number, 0.17 when they are four, 0.14 when they are five, etc. To put it more bluntly, the model's predictions (from the perspective of only number of veto players) are valid when the number of veto players in the system is two. For instance, if there were three veto players the expected difference in the preferences of any two actors is 0.2 and, to fit this into a uni-dimensional policy space, one of the veto players should necessarily have a policy point that exactly matches either the *status quo* policy, or one of that of one of those other veto players.

Be that as it may, it is now clear that a simple count of the number of veto players falls short of capturing the effective levels of political constraints. Notwithstanding the fact that the legislature, for instance, wields an institutional check on the executive, this could become immaterial if the same party controls both branches of government. Polcon addressed this problem in a number of ways. Firstly, when two or more veto players were completely aligned, the game reverted to an outcome where the others do not count as veto actors. If, for example, the lower chamber (in a situation where only the lower house and the executive were veto players) was completely dominated by the party of the executive and hence had its preferences totally aligned with the latter, then the outcome would be as if there

existed only one veto player in the system. This implies a political constraint of zero, provided the executive itself was not a coalition. Secondly, polcon depends partly on the extent of fractionalisation of the legislature when the opposition party dominated the legislature, or when the executive party had some level of majority. It applies the conventional fractionalisation formula which measures the probability that two randomly-drawn actors were from different parties.

A snapshot of the distributional pattern of the veto players variable, as quantified by polcon, is in order. I do so by diagrammatically showing how the variable evolved over time for a selected, and yet representative, group of countries in the region. Benin is from a set of countries which, during the first three decades of independence, went through drastic political upheavals, while Cameroon has been dominated by a stable autocratic regime. Botswana managed to keep a relatively open political environment and stability which Zimbabwe, for all its early potential, failed to do. Madagascar falls in between the extremes of political instability and stable systems. As can be observed from Figure 11, the distributional pattern of this particular variable further confirms the overall assertion of the research that African political economy is a diverse set in terms of institutional qualities.

Figure 11 Veto players in Africa: A mixed record



NB. In this graph, I show the spread in the veto players variable for five African countries. On the one hand, the erratic nature of the variable in Madagascar and Zimbabwe contrasts with the more stable values for Benin while, on the other, I observe diametrically different scenarios between Botswana and Cameroon. Data is drawn from Henisz (2006).

Neither the presence of temporally enduring and strong veto players, nor the utter absence of veto players signifies the modal cases in Africa. Botswana and Cameroon respectively provide cases in point. Despite the complete dominance of the Botswana Democratic Party since independence, the country's high score in the veto player variable stemmed from the broader powers which its legislature and judiciary had at their disposal. Cameroon's situation is a far cry from that of Botswana, in that the heavy-handed rule of RDPC hardly entertained any other veto actor in the country's political system. The trends I observe from the experiences of Benin, Madagascar and Zimbabwe apply to the majority of countries. Since the late

1950s, when most African countries began to gain political independence, their political systems were in a roller coaster with several swings in the political space. The number and diversity of preferences of veto players also fluctuated accordingly.

8.3. Data and analysis

Discussions so far have highlighted a couple of major points that shall shape forthcoming analysis in this section. I first delved into the existing literature to drive home the point that, in contrast to conventional views, the economic effects of differences in number and diversity of veto players among countries were conditional on the qualities of macroeconomic policies. Some anecdotal evidence was used to re-orient the research question. In this section, I shall go a step further and provide systematic empirical evidence that establishes our overarching hypothesis, i.e. veto players did not cause good policies but helped make policies credible. This in turn informed the second point I make at this juncture. I add more value by elaborating on how existing measures of veto players could be augmented to better account for the economic effects of these political variables by concentrating on developing new quantifiable measures. It is this gap in theresearch, the link between economic growth and policies, as mediated by the veto players variable, that I attempt to address here. As was the case in the previous chapters, I include descriptive statistics and quantitative analysis to assess the impact of this institutional variable on economic growth in Africa.

So far in this research, I have used a mixture of cross-sectional models and panel specifications to explain the economic growth implications of the institutions under scrutiny. In this chapter, I use the panel data for the statistical tests. That the Solow economic growth model has long remained a workhorse for investigating

determinants of economic growth is not an overstatement. I followed a similar approach in this study by building a Solow-type Cobb-Douglas production function of forty-five African economies. Recall also discussions in previous chapters that underscored the rationale of using such analytical methods, both in its broader analytical calibre and its relevance to Africa. In the chapter on methodology, I presented a detailed list of econometric models that underscored the use-values of applying panel specifications to explaining determinants of cross-country growth differences. It was shown that, for dynamic models such as the one applied here (that is, for models which have lagged values of the dependent variable as one explanatory variable) the most appropriate models were system-GMM models. While the application of advanced estimation techniques helped address such problems as endogeneity bias and omitted variable bias as well as enhancing the robustness of our estimates, I have so far paid little attention to one feature of our main (political/institutional) variables.

Institutional variables were often time-invariant or very rarely exhibit significant changes. Consider, for instance, the case for type of political systems or electoral systems. I could classify countries on the basis of such systemic attributes as presidential or parliamentary systems and yet I do not find a given country changing from one system to another on very many occasions, if at all. In such cases, using such conventional estimation techniques as fixed effect models poses at least two major problems. As is widely discussed in the econometrics literature (*See* Balatagi 2001, Hsiao 2003 and Wooldridge 2002), these techniques fail to estimate time-invariant variables, because they use only within variance for estimation and disregard the between variance. Additionally, it leads to inefficient estimates and, therefore, less reliable point estimates of variables. In their presentation at the 2005

American Political Science Association conference, Thomas Pluemper and Vera E. Troeger (Pluemper and Troeger 2005) introduced a three-stage estimation technique that enables one to estimate time-invariant models in a fixed effect specification. In this chapter, I also apply this technique which is otherwise known as the fixed effects vector decomposition method. The three stages one needs to follow to deal with the estimation of the time-invariant variables, using a fixed effects vector decomposition model are as follows:

I run the conventional fixed effects model with time-variant variables as right-hand side arguments and retain predicted values. The latter are differences between actual values of the dependent variable and the residuals. Note that the predicted values include both the observed and unobserved unit effects as well as unit means of the time-varying variables and the residuals.

In this stage, I regress the unit effects retained in the previous procedure on the time-invariant variables. This critical stage helps decompose the unit effects into two parts, i.e. an unexplained part, and a part explained by the time-invariant variables.

I finally run the full model using the time-variant, time-invariant and the unexplained part of the unit effects. It was recommended that this third stage be estimated using pooled OLS (Plűmper and Troeger 2005).

I conclude this section by mentioning a few points with regard to the data used and the estimation techniques elaborated above. Data for the construction of the variables in the basic Solow model were drawn from the PENN World Tables (Heston *et al.* 2006). Economic growth was measured by the change in the natural log of real GDP per capita (constant prices: chain series) between the start and end dates of each period. Note that the time dimension of the data includes five-year

periods beginning from 1960 and ending in 2004. I control for initial levels of income by including the natural log of real GDP per capita at the start of the period. For instance, the natural log of real GDP per capita on 1960 represents initial income for the period 1960-64. Similarly, I include as an explanatory variable the average annual levels of investment for each country-period bracket. As is the case conventionally, I assume technological progress and the depreciation rate to be uniform across countries and, hence, I include a term which was the rate of population growth augmented by 0.05 (Islam 1995, Mankiw *et al.* 1992). In order to empirically test our hypothesis that the economic effects of veto players were conditional on the quality of *status quo* policies, I include proxies for such policies using the online data from the African Research Program at Harvard University. Accordingly, share of current government consumption spending in GDP, the black market exchange premium and levels of inflation were applied to represent fiscal policy, trade policy and monetary policy respectively.

8.3.1.) Descriptive analysis

As the title of this sub-section indicates, I are primarily interested here in summarising and describing the variables, without making any inferences. An array of descriptive statistics on individual as well as joint distributions of variables helps us attain such an objective. Recall that, in discussions above on the operationalisation of the political variables on veto players, a selected segment of data was utilised to provide a brief synopsis of the variables' distribution. A closer look into the spread of data serves an important objective beyond a descriptive summary of the variables in use. More importantly, it not only enables us to assess whether the distributions of the data do, in fact, allow for legitimate inferences later on, but also facilitates an

early detection of extreme values in the data. For instance, it is conventionally required in describing the data that the variable(s) of interest be normally distributed. I could at the same time, invoke the central limit theorem for sufficiently large data, as is the case here, in order to accommodate this requirement. Although the descriptive statistics I use below include the Solow covariates and the policy variables, the major concern is naturally with the explanatory variables, i.e. the political variables.

I begin with a summary of the veto players variables. As shown in Table 25, the mean value for the number and diversity of veto players in Africa for the period under consideration, as measured by the checks variable, was 1.67. This rather small value was reflective of the fact that, in about 65 percent of cases, African countries had a score of only one, while about 75 percent of the cases fell between one and two veto players (inclusive). The veto players measure provided by checks did not necessarily imply that better-governed states would correspondingly entertain for more and diverse sets of veto players in their political systems. For instance, countries normally deemed to be free, including Benin, Senegal and South Africa (by Freedom House) shared scores on the veto players variable equal to those of such autocracies such as Cameroon and Guinea. Such values were somewhat perplexing, given the fact that the construction of checks used executive and legislature elections as one criterion. Additionally, had it set the presence of credible elections as a defining factor, it would not have provided Cape Verde a lower score than Ethiopia and Nigeria. A more emphatic indication of the left skewed pattern of the distribution of the veto players variable was given by the median value of one.

Table 25 Descriptive statistics on political and policy variables

Stats	Checks	Polcon	Monetary	Fiscal	Trade
Mean	1.67	0.13	25.84	23.30	0.27
Median	1.00	0.00	8.60	21.30	0.09
Max	5.00	0.86	513.91	82.36	2.14
Min	1.00	0.00	-3.57	2.62	-0.00
SD	0.97	0.23	136.61	13.34	0.39
N	250	361	254	311	228

NB. Definitions of the policy variables were given in main text above. The trade distortion index was derived as log{[100*(Black market exchange rate-official exchange rate)]/100+1}.Data refers to the panel of forty-five African countries for the period 1960-2004.

In one important sense, veto players as measured by the two sets of indicators paint a similar picture on the distribution of this political variable in Africa. A median value lower than the mean for the political variable indicated in the case of the checks variable was matched by that from the polcon variable. According to this latter measure, a median value of zero lends support to the view that, for most sample points (that is country-period), African governments held an unfettered discretion on policy matters. Numerically, this meant, that between the early independence year of 1960 and 2004, a given African government was more than two-thirds likely to have encountered no veto player when making policies. Such a scenario clearly affirms that credible commitment was indeed a commodity in short supply in Africa. Note that the values for veto players, according to polcon, swing between a low of 0 and a maximum of 1. Two of the maximum values under this measure were 0.86 for South Africa for the 1995-1999 period and 0.79 for Benin for the 1990-1994 period. Nevertheless, polcon pointed to a more close association between the overall quality

of governance in a country and the presence of multiple veto players with diverse preferences.

Figures on measures of central tendency and spread also underscore the point that, on average, macroeconomic policies were far from ideal. That governments in the region manipulated monetary policies to meet myopic political ends was not difficult to discern, given the distributional pattern of inflation. Arguably, neither the mean nor the median values for this policy tool adequately reflected the abysmal nature of policies in this regard. This is because, even in the presence of sizeable missing data, I observe a significant trend of erratic policy choices. The same can be said with regard to fiscal policy and trade policy for the countries. For the period under scrutiny, African countries spent as much as 23 percent of their GDP on current government consumption, which was also very close to the median value. The relevance of such a figure in terms of highlighting the predominance of distributive politics, executed through fiscal policy, and its negative impact to economic rationality, was more than symbolic. As explained earlier, it is not the implications of economic policies on economic growth *per se* which epitomize our theme here. Rather, it is the scale of interactions, if any, between these policy variables and the political variables on veto players that captures the centrepiece of our presentation.

Table 26 A correlation matrix between variables on veto players and economic policy tools

	Checks	Polcon	Monetary	Fiscal	Trade
Checks	1.00				
	(250)				
Polcon	0.50	1.00			
	0.00	(361)			
	(249)				
Monetary	-0.09	-0.06	1.00		
	0.20	0.28	(254)		
	(195)	(245)			
Fiscal	-0.24	-0.07	0.07	1.00	
	0.00	0.10	(0.31)	(311)	
	(188)	(277)	(200)		
Trade	-0.06	-0.16	0.07	0.06	1.00
	0.09	0.45	0.35	0.37	(228)
	(135)	(211)	(148)	(213)	

NB. Entries below correlation values refer to levels of significance and figures in parenthesis show number of observations.

If our hypothesis that the effects of veto players on economic growth depended on the quality of economic policy already in place were to hold water, then it would be logical to expect a weaker correlation between these two sets of variables. Put differently, I posit a view that the presence of multiple veto players with diverse preferences with regard to policy choices was not a sufficient condition for the former to have a causal effect on policy choices. It is true that having better scores in the veto players variables allows for a positive premium through its impact on policy stability. Zimbabwe provides us with a classic case in which the presence of a veto actor did not signify better policies or institutions. The government of Robert Mugabe re-established the senate in 2005, making the country's legislature a bicameral one. Going by conventional practice, this should have implied an improvement as the additional House equates with an incremental veto player.

Nevertheless, this very political act was actually a reneging on constitutional rules by the regime (Europa 2007). Political theory was not of much help either, as its assertions in this regard were, at best, incongruous.

Figures in the correlation matrix table presented above tally, on balance, with the propositions made so far. I take note of the weak correlations between the political variables and two of the three policy instruments. While fiscal policy, measured by the share of current government consumption spending in GDP, showed a significant negative association with the variables on veto players, the situation was markedly different for both monetary policy and trade policy. It suggests that countries with multiple veto players with diverse preferences were more likely to have lower proportions of their GDP earmarked for government consumption expenditure. In contrast to this case, there existed no significant correlations between polcon and checks on one side and trade and monetary policies on the other. A couple of points are worth mentioning at this juncture. Firstly, the assertions on the strength of the correlations should not to be construed as having originated only from the corresponding values between each political variables and the economic policy variables. It was also informed by the close associations between the two political variables on veto players themselves. Secondly, the exercise of testing for causal relationships presupposes a systematic quantitative investigation to which I turn next.

8.3.2) Quantitative analysis

This section's main focus is to investigate whether empirical evidence from Africa endorses the proposition that there exist causal relationships between political variables that account for veto players in a country, and its rates of economic growth. As causality is as much a theoretical issue as it is an empirical one, I looked in

discussions above into stipulations from political theory to draw testable hypotheses. Such an exercise provided us with a mixed a result, in that political theory was rather grey when it came to explaining the economic implications of veto players. I then backed up these weaknesses in political theory with some anecdotal evidence, so as to refine the hypotheses. Accordingly, what I are concerned with primarily here, is the effect on economic growth of veto players, mediated through the quality of *status quo* economic policies. Another issue of interest in this part of the chapter is to apply a new estimation technique that potentially addresses one problem in the behaviour of the political variables, i.e. the time-invariant nature of the variables. More specifically, I augment the conventional estimations such as pooled OLS and fixed-effects models with a fixed-effects vector decomposition model. This latter model apparently improves the robustness of the parameter estimates.

8.3.2.1) Basic model with political variables

Essentially, our claim is that the full model, which includes all the variables elaborated above, performs better than the more restricted one that only accounts for the veto players variables. A logical roadmap towards testing such propositions is to first test the evidence for the latter type of models. I begin by looking into the direct effects of veto players on economic growth. Coefficient estimates presented in Table 27 take up the case, when veto players are measured by the polcon variable. Regressions are based on pooled OLS, fixed-effects and fixed-effects vector decomposition models. Results from all the models suggest that the differences in terms of number and diversity of veto players significantly explain the corresponding differences in economic growth among the countries in the region. Although this is reflected more strongly in the latter model, there exist a few factors that cast doubt

on its validity. Not only has the model managed to systematically explain only a small proportion of the overall variation (as indicated by a low R^2 value), but also the F-values return a not-so-strong joint significance for all the variables. Similar points could be made in relation to the OLS model.

Table 27 Economic effects of veto players (Polcon)

Variable	OLS	Fixed-Effects	Fixed-Effects Vector Decomposition
Initial	0.00	-0.08	-0.10
Income	0.01	0.03	0.08
	0.63	0.00	0.18
Investment	0.05	0.10	0.16
	0.01	0.02	0.08
	0.16	0.00	0.05
Population	-0.04	-0.08	-0.17
	0.03	0.03	0.09
	0.12	0.02	0.07
Polcon	0.10	0.08	0.14
	0.04	0.04	0.04
	0.01	0.06	0.00
Constant	-0.09	0.08	0.14
	0.08	0.21	0.50
	0.28	0.03	0.24
R-squ.	0.09	-	0.12
F(4,332)	8.22	-	-
F(4,288)	-	12.41	-
F(4,236)	-	-	6.19
N	337	337	242

NB. Polcon is drawn from Henisz (2002). Population refers to the conventional ln(η+g+δ) in the Solow model. Figures below coefficient estimates are robust standard errors and levels of significance respectively. All F values are significant at one percent. Number of countries included is forty-five in all cases.

Furthermore, the two widely used economic covariates lose their explanatory powers in both of these models. In the fixed-effects model, on the other hand, one can deduce that political variables which account for differences in veto players caused variations in economic growth only at a ten percent level of significance.

Given that all the other variables in this model behaved correctly, that is, in terms of direction of causation and significance levels, it is fair to conclude that empirical evidence on the direct effect of veto players on economic growth in Africa is rather weak. The point estimate to the tune of 0.08 for polcon in the fixed-effects model could well have emanated by chance. These findings, however, should not come as a shock. Had the model returned a significant coefficient estimate for polcon, I would have taken it with a grain of salt anyway. In the absence of coherent theoretical stipulations which directly link veto players with economic performance, results from quantitative studies remain spurious. Setting the question of political theory aside for a moment, I expect to derive comparable results when the measure for the veto players variable is checks. Recall the strong correlations between the two variables reported in section above.

Table 28 Economic effects of veto players (Checks)

Variable	OLS	Fixed-Effects	Fixed-Effects Vector Decomposition
Initial	0.02	-0.12	0.02
Income	0.01	0.04	0.01
	0.18	0.00	0.18
Investment	0.05	0.10	0.05
	0.02	0.03	0.02
	0.00	0.00	0.00
Population	-0.04	-0.04	-0.04
	0.03	0.05	0.03
	0.21	0.44	0.21
Checks	0.00	-0.01	0.00
	0.01	0.01	0.01
	0.83	0.59	0.83
Constant	-0.17	0.76	-0.17
	0.09	0.29	0.09
	0.06	0.01	0.06
R-squ.	0.07	-	0.10
F(4,238)	4.37	-	-
F(4,195)	-	7.04	-
F(5,236)	-	-	4.37
N	243	243	243

NB. Checks is drawn from Beck *et al.* (2001). Population refers to the conventional $\ln(\eta+g+\delta)$ in the Solow model. Figures below coefficient estimates are robust standard errors and levels of significance respectively. All F values are significant at one percent. Number of countries included is forty-five in all cases.

As is shown in Table 28, when I use the checks variable to measure veto players, I emphatically fail to reject the null hypothesis that there does not exist direct and statistically meaningful relationships between this variable and economic growth in Africa. Note the contrasting findings I found when the veto players variable was measured by polcon and checks. It is indicative of the fact that the polcon variable is more suited to accounting for the economic growth implications of veto players than the checks variable. It is explained that one manifestation of the

weakness of this latter variable was the insignificant coefficient estimates for checks in the OLS, fixed-effects and fixed-effects vector decomposition models. Additionally, the introduction of checks into the models led the other economic covariates to return insignificant coefficient estimates. Intuitively, this means there exist no empirical grounds to asserting that the presence of multiple veto players in a political system should automatically bring about expansion in national output. The case of Benin and Cape Verde illuminates this point. Despite the fact that both these countries were deemed free (often indicative of the presence of institutional veto players) since the early 1990s, with Benin having consistently higher scores in terms veto players than Cape Verde, the latter's economy grew at an annual average rate of 4.33 percent during 1990-2004 period, as opposed to Benin's economy which grew at only at 1.54 percent.

8.3.2.2) Basic model with policy interactive terms

If political theory was not forthcoming in capturing the direct effects of veto players on economic growth and if empirical evidence on such structural relationship was thin (both these were established by discussions so far), did other channels then exist whereby the nexus between economic growth and veto players could materialise? I earlier provided an affirmative reply to this research problem, by declaring that the presence of multiple veto players helps promote economic growth, by ensuring credibility to the *status quo* policies. This particular section attempts to provide empirical evidence from Africa to back up such stipulations. I do so with the help of variables on monetary policy, fiscal policy and trade policy which affect the rate of growth of national output. As shown in Table 29, in the case of monetary policy, I have adequate evidence to make a causal inference on the notion of veto

players affecting economic growth conditional on the quality of policy. To start with, both the constituent terms and the interactive term, were on their own, significant. Secondly, notwithstanding the fact that poor monetary policy adversely affects growth, the effect on economic growth is marginally lower for countries with multiple veto players. Thirdly, the coefficient estimates remained strong in all three models.

Table 29 Veto players, policy and economic growth (monetary policy)

Variable	OLS	Fixed-	Fixed Effects

		Effects	Vector Decomposition
Initial Income	-0.01	-0.11	-0.00
	0.01	0.03	0.01
	0.47	0.00	0.77
Investment	0.05	0.10	0.04
	0.02	0.02	0.02
	0.00	0.00	0.07
Population	-0.06	-0.11	-0.05
	0.03	0.04	0.03
	0.05	0.01	0.05
Polcon	0.14	0.14	0.14
	0.05	0.06	0.05
	0.00	0.01	0.00
Monetary	-0.00	-0.02	-0.01
	0.00	0.00	0.00
	0.00	0.00	0.00
Polcon*Monetary	-0.01	-0.01	-0.01
	0.00	0.00	0.00
	0.04	0.02	0.04
Constant	0.03	0.75	0.16
	0.09	0.24	0.38
	0.70	0.00	0.04
R-squ.	0.15	-	0.18
F(6,228)	6.85	-	-
F(6,191)	-	9.40	-
F(7,228)	-	-	7.05
N	235	235	235

NB. Monetary refers to rates of inflation and is drawn from ARP (2008). Population refers to the conventional $\ln(\eta+g+\delta)$ in the Solow model. Figures below coefficient estimates are robust standard errors and levels of significance respectively. Number of countries included is forty-five in all cases. All F values are significant at one percent.

The most important message from the estimates above is that the effect on economic growth of monetary policy was not a linear one, in that it partially hinged on the presence of veto players. The contrasting experiences of Mauritius and

Tanzania in the 1970s and 1980s provide a good analogy. State interventionist policies in Mauritius, which occurred amid broader veto players in the system, did not result in output contraction, whereas the outcome was altogether different for Tanzania. Unfortunately, I could not report similar findings with regard to fiscal policy. These are presented in Table 30 below.

Table 30 Veto players, policy and economic growth (fiscal policy)

Variable	OLS	Fixed-Effects	Fixed Effects Vector

			Decomposition
Initial Income	-0.00	-0.06	-0.00
	0.01	0.04	0.01
	0.28	0.07	0.02
Investment	0.05	0.11	0.05
	0.01	0.02	0.02
	0.00	0.00	0.02
Population	-0.06	-0.15	-0.06
	0.03	0.05	0.03
	0.04	0.00	0.04
Polcon	0.14	0.14	0.14
	0.05	0.06	0.05
	0.00	0.01	0.00
Fiscal	-0.02	-0.02	-0.02
	0.16	0.20	0.16
	0.09	0.11	0.09
Polcon*Fiscal	-0.00	-0.01	-0.00
	0.00	0.00	0.00
	0.63	0.23	0.63
Constant	0.01	0.47	0.04
	0.09	0.27	0.17
	0.91	0.08	0.84
R-squ.	0.12	-	0.15
F(6,255)	5.85	-	-
F(6,216)	-	8.17	-
F(7,255)	-	-	6.23
N	262	262	262

NB. Fiscal refers to current government consumption as a share of GDP and is drawn from ARP (2008). Had there been adequate data, this policy variable would have been better captured by budget deficits. Population refers to the conventional ln(η+g+δ) in the Solow model. Figures below coefficient estimates are robust standard errors and levels of significance respectively. Number of countries included is forty-five in all cases. All F values are significant at one percent.

The proportion of GDP a country allocates to current government consumption is a useful indicator of fiscal policy and adversely affects economic growth. While this variable on its own was a strong predictor of economic growth

performance in Africa, its interactions with the veto players variable was very fragile in affecting growth. The magnitude of the effect of fiscal policy on economic growth did not vary in accordance with the distribution in number and diversity of veto players among countries. A third macroeconomic policy regime under scrutiny is trade policy. As mentioned before, this policy was proxied by the black market premium which indicates the degree of distortion in trade policy. Table 30 captures results under this scenario.

Table 31 Veto players, policy and economic growth (trade policy)

Variable	OLS	Fixed-Effects	Fixed Effects Vector Decomposition
Initial Income	-0.02	-0.19	-0.00
	0.01	0.06	0.01
	0.15	0.00	0.03
Investment	0.05	0.05	0.05
	0.02	0.02	0.03
	0.00	0.03	0.04
Population	-0.06	-0.15	-0.03
	0.04	0.06	0.04
	0.02	0.03	0.45
Polcon	0.22	0.04	0.21
	0.08	0.02	0.08
	0.01	0.03	0.01
Trade	-0.04	-0.04	-0.03
	0.03	0.01	0.03
	0.06	0.01	0.01
Polcon*Trade	-0.02	-0.10	-0.02
	0.01	0.04	0.03
	0.06	0.03	0.01
Constant	0.01	1.41	0.11
	0.12	0.43	0.02
	0.96	0.00	0.05
R-squ.	0.11	-	0.22
F(6,196)	4.04	-	-
F(6,152)	-	8.87	-
F(7,190)	-	-	5.87
N	197	197	197

NB. Trade refers to black market premium and is drawn from ARP (2008). Population refers to the conventional $\ln(\eta+g+\delta)$ in the Solow model. Figures below coefficient estimates are robust standard errors and levels of significance respectively. Number of countries included is forty-five in all cases. All F values are significant at one percent.

As in the case for monetary policy, coefficient estimates on trade policy also provide a broader indication that the effect of veto players on economic growth was positive and significant, on the condition that already existing policies were pro-growth. The point I are making is that, while it is untenable to declare that the existence of multiple veto players directly affects economic growth, it is, at the same time, very likely that these political variables exhibit indirect effects by making existing policies credible. I refrain from elaborating on the findings on each of the parameter estimates, for the sake of brevity. I should, however, be very cautious so as to avoid reading too much into the figures. In several instances, the models' total explanatory power was not as strong as one would have preferred. The limitations in data also made other rigorous tests of robustness impossible. It is, nevertheless, crystal clear that a better accounting for the effects of veto players as commitment technologies on economic growth can be better provided by interacting them with macroeconomic policies.

Before I terminate our discussion on the veto players' paradigm, it is useful to highlight a few points. Firstly, while there exist several cases whereby economic growth of countries was preceded and/or accompanied by the presence of larger number of veto players, one also observes the economic growth trajectories of East Asian countries which came amid situations of strong government. Notwithstanding the fact that such diversity in growth paths is a stylised fact of economic growth, it also implies that a fuller understanding of economic growth presupposes case studies as well. It is also an endorsement of the point that both quantitative and qualitative studies are required to reveal the causal determinants of economic growth. Secondly, as is elaborated in the text above, the veto players' variable used in this study accounts for both the number of veto players and diversity of their preferences. It is,

nevertheless, a worthy exercise for future work to disentangle the effects of these factors on economic growth. Note should also be taken that, though not reprted for brevity purposes, results in all models remain statistically stron when I controlled for such fixed factors as geography, ethnic fragmention and colonial history.

8.4) Discussion and summary

I have consistently espoused the view that political institutions which credibly commit governments to growth-friendly policies hold the key in defining the long-run trajectories of economic growth in countries. Research in the tradition of political economics is pivotal in explaining such assertions, with the help of empirical data. As I did for the two other broad institutional solutions to problems of credible commitment (institutions of delegation and constitutional rules), I dealt with the question of how to quantifiably explain the economic resonance of institutions of veto players in Africa in this chapter. A detailed survey of the literature identified a number of weaknesses, which made the notion of a direct link between veto players and economic growth questionable. I also augmented our assertions that political theory was vague in this respect, with some anecdotal evidence from Africa. It was further underlined that the two comprehensive measures of veto players, i.e. polcon and checks, provide a starting point to dealing with the issue of veto players-economic growth nexus. Methodologically, I showed that the application of fixed-effects vector decomposition model helps address the stickiness problem in institutional variables. Finally, using monetary, fiscal and trade policy indicators, I found that the economic growth implications of veto players were conditional on the quality of *status quo* macroeconomic policies.

Chapter 9. Conclusion

9.1) A brief recapitulation

Inasmuch as I emphasise that Africa could not afford to lose more ground in terms of economic growth, it is also of paramount importance to emphasise that it is the quality of its political institutions that ultimately defines its economic performance. Nonetheless, there hardly exists a blueprint as to which specific forms such institutions should take. What is a very useful line of investigation in this regard is to investigate whether there are systematic relations between cross-country variations in economic performance and political institutions. One growing aspect of political economics research asserts that institutional innovations that address governments' inherent tendency to renege on policy commitments hold the key. Put differently, the moment we discard our faith in the random birth of benevolence and omnipotent governments, whose undying interest is the welfare of their people, and instead concentrate on institutional innovations which curtail executive discretion, then we are better placed to explain the fundamental factors behind the economic growth differentials. After all, the notion that a strong government, which is capable of ensuring security of property rights, is equally capable of expropriation of private property dates back to the writings of John Locke (1690).

In one important sense, I have been forced to 'reinvent the wheel', in that many scholars have been sceptical about the use-values of investigating the effects of formal institutions in an African context. The onus was on this study to justify its research method, by providing evidence that falsifies those propositions which rule out comparative studies on the African continent. I went to great lengths in this research to establish not only that, in contrast to the African particularism thesis, is

African political economy a diverse set, but also that African data on the subject obeys conventional political theory stipulations. Simply put, the bulk of African economies have long been at the lower end of the global income ladder since, in addition to having less of the proximate factors, such as physical and human capital, they lacked those institutions that would have reduced the wide spread economic policy excesses of their governments. When populism gained much ground immediately after independence in many African countries, its first prey was private initiative. Governments, one after another, expropriated private property, levied very high tax rates and took similar measures, all of which stifled private investment. Present-day Zimbabwe provides us with a textbook example of the mammoth costs of absence of institutions that credibly insulate economic objectives from myopic political goals.

The most important common characteristic feature of the string of institutions of credible commitment I dealt with in this study, is that all reduce the scope for executive discretion. Be it in the form of transferring policy-making prerogative to an entity outside the control of the executive (institutions of delegation), or setting strong rules of the game (rule of law) or preserving the *status quo* policies (veto players), the positive analysis showed that countries' differences in terms of these institutions directly mapped onto their variations on the economic growth scale. In doing so, I strongly assert that the tendency to divide African economic performance between the very few successes (i.e. Botswana, Mauritius and South Africa) and the rest, is as wrong as denying the fact that the region did, for a long time register lacklustre performance as compared to other regions. While I place much emphasis on a broad set of political institutions that credibly commit governments to adopt and preserve economic growth-friendly policies, it would be naïve to assume that

bringing about such institutional change requires a simple transplant. In a nutshell, this thesis has shown that unfettered governments, which are unable to credibly commit to growth-promoting policies, explain some of Africa's economic problems over the past several decades.

9.2) Limitations of the study

It is imperative that the findings and discussions presented in this thesis be considered in the light of a number of factors. Firstly, this research is not an antithesis to another rather dominant branch of research that views African political economy outcomes from the perspective of socio-cultural factors such as patronage in politics. As is clearly stipulated from the outset, our aim was decidedly to examine economic growth implications of formal political institutions of credible commitment in Africa. Notwithstanding the fact that I did not use this research systematically to disprove any other paradigm on Africa, the study still pinpointed several reasons as to why one has viable grounds to casting doubt on other competing variables, such as geography and ethnic diversity. Secondly, caution is advised with regard to drawing inferences based on the parameter estimates discussed in the study. I were unable to subject some of the findings to rigorous tests of robustness, since the available data did not allow for such an exercise. It was, in particular, difficult to test whether the findings would remain intact for alternations in datasets. Related to this, the very fact that I occasionally relied on data from different sources, meant that the compatibility between these datasets could be limited. On the other hand, I provided correlation values among different indicators so as to partially circumvent this problem.

Thirdly, a widely observed feature of many political variables is that they were not amenable to quantitative measurements. There exists a sizeable subjective

element in operationalising such types of variables. Although scholars broadly agree on the appropriate conceptualisation of these variables, much room is left for the researcher's discretion and value judgements. One unavoidable consequence of this scenario is that the variables measured, in such a way, could be affected by measurement error. Fourthly, in certain cases, theoretical stipulations drawn from formal political models were not directly amenable into quantitative investigation. For instance, we had little way of knowing whether a given tight monetary policy emanated because the Central Bank is independent, or because the government itself applied self-restraint in its fiscal spending. Finally, this study did not probe into other institutions that help to credibly commit governments, including devolution of political and fiscal powers to lowers tiers of government as well as delegation of policy making prerogative to a regional or global institution. A case in point is given by recent political theory, which associates Chinese economic success with a market-preserving federalism. Delegation to a regional or global institution is also all the more important in that, in the current reality whereby regionalism dominates multilateralism in international trade, Africa's best chance of instilling credibility to economic policies may lie outside individual country borders.

9.3. Looking ahead

In the same way that I speak of Africa as being home to a mosaic of ethnic and religious groups, one also observes diversity in terms of types and quality of political institutions among the countries. Despite broader consensus that reforms in political governance hold the key to positively changing the plight of many African countries, such views have not been equally matched by research on the types, modalities and effects of formal political institutions in Africa. As such, this study

only scratched the surface, thereby highlighting the need for further research effort on these types of institutions in Africa. Certainly, the starting point towards this objective would be the establishment of a database on the diverse African political institutions. Another direction for research is an investigation of a broader set of institutions of credible commitment. In addition to those already studied, I know that a country's joining a regional or multilateral institution often implies the transfer of some of its own policy making prerogative. Nevertheless, the implications of such political decisions on economic policies, particularly from a commitment perspective, have not so far been given much attention. The same could be said of other types of political institutions which possess some relevance to credible commitment.

In a global context, the study highlighted the otherwise contrasting implications of the number and diversity of political actors for credible commitment and collective action. While in certain situations the existence of multiple veto actors in a political system results in adverse policy outcomes, we also understand that, in other contexts, the same structure in the political system could lead to better policies. Existing research does not tell us where the line of demarcation is with regard to situations in which multiple players affect economic policies positively and negatively. This leads us to underline another fruitful line of research. In the study, I identified two major channels through which the effects of political institutions on economic performance filter through. Some of these directly lend commitment to the whole set of institutional frameworks in the country, while other types of institutions of credible commitment affect policies only. For instance, whether or not the size and diversity in preferences of veto players affect economic performance depended on the type of *status quo* policies. If that is the case, then, research on identifying the

dynamics between political institutions, economic policies and economic outcomes could be very useful.

Appendix A. Basic Solow variables for an African panel data

country	year	cid	Income	Initial Income	Investment	Population
Benin	1960	1	0.011504	6.862664	2.172702	0.501355
Benin	1965	1	0.081577	6.925173	2.090015	0.746955
Benin	1970	1	0.128195	7.006306	2.15131	0.785823
Benin	1975	1	-0.08262	7.059093	2.063322	0.815461
Benin	1980	1	0.013385	7.030168	2.309189	0.840049
Benin	1985	1	-0.1015	7.088208	2.308049	0.859761
Benin	1990	1	0.033622	6.99068	1.971278	0.874688
Benin	1995	1	0.077925	7.030327	2.025432	0.885645
Benin	2000	1	0.072365	7.132074	2.062338	0.969015
Botswana	1960	2				0.998192
Botswana	1965	2				1.069763
Botswana	1970	2	0.474531	7.063048	3.223082	1.103978
Botswana	1975	2	0.231908	7.677567	2.929732	1.162146
Botswana	1980	2	0.201849	7.92614	2.901393	1.204314
Botswana	1985	2	0.323701	8.241255	2.41468	1.234356
Botswana	1990	2	0.084147	8.598279	2.964497	1.254936
Botswana	1995	2	0.065351	8.685788	2.876674	1.268254
Botswana	2000	2	0.221063	8.889646	2.766035	0.161721
Burkina Faso	1960	3	-0.1521	6.643386	1.29013	0.688446
Burkina Faso	1965	3	0.070122	6.470908	1.728338	0.705449
Burkina Faso	1970	3	0.016719	6.537271	2.146548	0.706197
Burkina Faso	1975	3	0.03216	6.54064	2.274261	0.698325
Burkina Faso	1980	3	-0.0147	6.622244	2.461827	0.686339
Burkina Faso	1985	3	0.107937	6.665544	2.262962	0.675113
Burkina Faso	1990	3	0.03005	6.717865	2.200703	0.671697
Burkina Faso	1995	3	0.099484	6.713928	2.445433	0.680362
Burkina Faso	2000	3	0.139705	6.83863	2.226574	0.900807
Burundi	1960	4	-0.09362	6.517095	0.811343	0.526477
Burundi	1965	4	0.001045	6.463201	0.933226	0.70841
Burundi	1970	4	-0.01396	6.689624	0.61792	0.610308
Burundi	1975	4	0.132778	6.682434	1.234152	0.425255
Burundi	1980	4	-0.03848	6.79565	1.640059	0.230103
Burundi	1985	4	0.053591	6.830507	1.546181	0.060065
Burundi	1990	4	-0.22842	6.9715	1.385538	-0.03794
Burundi	1995	4	-0.0314	6.745119	1.48101	-0.02721
Burundi	2000	4	0.088242	6.549422	1.779529	0.669117
Cameroon	1960	5	0.024739	7.573901	1.081572	0.747792
Cameroon	1965	5	-0.01469	7.593974	1.533267	0.874831
Cameroon	1970	5	0.031751	7.574024	1.739061	0.894935
Cameroon	1975	5	0.107824	7.596222	1.755168	0.909146
Cameroon	1980	5	0.332987	7.770713	1.685401	0.924967
Cameroon	1985	5	-0.26951	8.172678	1.741048	0.943065
Cameroon	1990	5	-0.22652	7.900763	1.582783	0.963514
Cameroon	1995	5	0.117951	7.663342	1.40303	0.985909
Cameroon	2000	5	0.092971	7.812674	1.479278	0.771109

Appendix A (Contd.)

Cape Verde	1960	6	0.012567	7.256269	2.79132	1.07534
Cape Verde	1965	6	0.353345	7.229933	2.470809	1.25367
Cape Verde	1970	6	-0.01047	7.650611	2.702538	1.138004
Cape Verde	1975	6	0.037967	7.521004	2.657601	0.949979
Cape Verde	1980	6	0.255667	7.565255	2.804915	0.721171
Cape Verde	1985	6	0.088324	7.906709	2.669717	0.453785
Cape Verde	1990	6	0.083636	7.960875	2.739861	0.155428
Cape Verde	1995	6	0.251109	8.157032	2.743394	-0.15379
Cape Verde	2000	6	0.026441	8.51386	2.527187	0.974959
Central African Republic	1960	7				0.596127
Central African Republic	1965	7				0.677632
Central African Republic	1970	7	-0.13742	7.034379	2.960194	0.694531
Central African Republic	1975	7	0.147534	6.903577	2.264385	0.712609
Central African Republic	1980	7	-0.03899	6.971096	1.872634	0.730161
Central African Republic	1985	7	-0.00564	6.931179	2.122248	0.74716
Central African Republic	1990	7	-0.25233	6.911727	2.046904	0.763757
Central African Republic	1995	7	0.133119	6.69701	2.093184	0.780275
Central African Republic	2000	7	-0.06288	6.851291	1.506094	0.367904
Chad	1960	8	0.014823	7.040317	1.502698	0.545354
Chad	1965	8	-0.21245	7.07443	1.540877	0.606039
Chad	1970	8	-0.09344	6.898402	1.859677	0.627031
Chad	1975	8	-0.40307	6.905924	2.248216	0.659443
Chad	1980	8	0.136938	6.44109	2.168599	0.679685
Chad	1985	8	0.03402	6.766284	1.968822	0.691619
Chad	1990	8	0.032391	6.724529	1.956624	0.698461
Chad	1995	8	-0.01807	6.799602	1.994534	0.703012
Chad	2000	8	0.063339	6.720835	3.017896	1.102669
Comoros	1960	9	0.266918	7.210567	2.043573	
Comoros	1965	9	0.191032	7.359035	2.359374	
Comoros	1970	9	-0.00727	7.412027	2.75183	
Comoros	1975	9	-0.01675	7.551413	2.342135	0.873556
Comoros	1980	9	0.023721	7.551591	2.866719	0.975812
Comoros	1985	9	0.002021	7.621528	2.543262	0.979892
Comoros	1990	9	-0.09783	7.589305	2.106412	0.948363
Comoros	1995	9	-0.14678	7.415957	2.05681	0.913308
Comoros	2000	9	-0.06159	7.214343	2.273477	0.025484
Congo, Rep,	1960	10	0.01781	6.91721	3.658883	0.966318
Congo, Rep,	1965	10	0.13114	6.954276	3.598761	1.066428
Congo, Rep,	1970	10	0.110999	7.128833	3.432978	1.084317
Congo, Rep,	1975	10	0.220733	7.329376	3.10625	1.100485
Congo, Rep,	1980	10	0.328405	7.666807	3.575918	1.115174
Congo, Rep,	1985	10	-0.17527	7.959521	2.673422	1.127713
Congo, Rep,	1990	10	-0.30843	7.885073	2.287211	1.13748
Congo, Rep,	1995	10	-0.35532	7.676515	1.92187	1.144061
Congo, Rep,	2000	10	0.099318	7.15944	2.346017	1.099372

Appendix A (Contd.)

Congo, Dem, Rep,	1960	11				1.020187
Congo, Dem, Rep,	1965	11				1.124093
Congo, Dem, Rep,	1970	11	0.049054	7.248938	1.531819	1.120368
Congo, Dem, Rep,	1975	11	-0.15808	7.224112	2.064772	1.08674
Congo, Dem, Rep,	1980	11	-0.1916	7.059978	2.236564	1.071189
Congo, Dem, Rep,	1985	11	-0.07998	6.866892	2.268507	1.069769
Congo, Dem, Rep,	1990	11	-0.57972	6.883473	2.178504	1.07838
Congo, Dem, Rep,	1995	11	-0.19682	6.209676	1.76968	1.09315
Congo, Dem, Rep,	2000	11	0.16181	5.88374	2.341515	0.89812
Cote d'Ivoire	1960	12	0.224755	6.91721	2.232572	1.286786
Cote d'Ivoire	1965	12	0.194249	6.954276	2.336345	1.372961
Cote d'Ivoire	1970	12	-0.01156	7.128833	2.42007	1.385855
Cote d'Ivoire	1975	12	0.137688	7.329376	2.632043	1.39683
Cote d'Ivoire	1980	12	0.035289	7.666807	2.127641	1.405814
Cote d'Ivoire	1985	12	0.142674	7.959521	1.23539	1.412018
Cote d'Ivoire	1990	12	-0.18186	7.885073	1.217691	1.414355
Cote d'Ivoire	1995	12	0.079268	7.676515	1.695215	1.412504
Cote d'Ivoire	2000	12	-0.073	7.15944	1.181981	0.775598
Djibouti	1960	13				1.850021
Djibouti	1965	13				1.841217
Djibouti	1970	13				1.823667
Djibouti	1975	13				1.776425
Djibouti	1980	13	-0.10771	7.195937	1.181981	1.750452
Djibouti	1985	13	0.04355	7.344603	1.181981	1.750172
Djibouti	1990	13	-0.28808	7.569861	1.181981	1.772805
Djibouti	1995	13	0.27988	7.646148	1.181981	1.812158
Djibouti	2000	13	-0.01156	7.64676	1.181981	0.727536
Equatorial Guinea	1960	14	0.07598	7.7061	0.798224	0.257103
Equatorial Guinea	1965	14	0.14044	7.760552	1.096552	0.761563
Equatorial Guinea	1970	14	0.24467	7.605263	0.999887	0.473469
Equatorial Guinea	1975	14	0.05632	7.683247	0.620195	-0.53563
Equatorial Guinea	1980	14	-0.12263	8.432652	0.47326	
Equatorial Guinea	1985	14	-0.14394	8.239823	0.553796	
Equatorial Guinea	1990	14	-0.53292	8.247422	1.326371	
Equatorial Guinea	1995	14	1.64442	8.130271	3.578118	
Equatorial Guinea	2000	14	0.57891	8.383854	3.292513	0.951551
Ethiopia	1960	15	0.06916	6.877739	1.252728	0.774528
Ethiopia	1965	15	0.07598	6.962329	1.373186	0.964383
Ethiopia	1970	15	0.04245	7.09484	1.137484	0.974693
Ethiopia	1975	15	0.00674	7.617297	0.83315	0.978846
Ethiopia	1980	15	-0.07848	7.570752	1.15616	0.978218
Ethiopia	1985	15	-0.071	7.436411	1.429602	0.975495
Ethiopia	1990	15	0.25031	7.368327	1.137757	0.973654
Ethiopia	1995	15	0.17427	6.935497	1.56128	0.974496
Ethiopia	2000	15	-0.05359	8.778717	1.386255	0.820005

Appendix A (Contd.)

Gabon	1960	16	0.432923	5.991665	2.873941	-0.38957
Gabon	1965	16	0.174634	6.100588	2.330362	
Gabon	1970	16	0.378704	6.172494	2.105797	-0.8907
Gabon	1975	16	-0.34245	6.193098	1.725914	0.091568
Gabon	1980	16	-0.10913	6.225152	1.678691	0.579189
Gabon	1985	16	-0.13165	6.135478	1.510534	0.879944
Gabon	1990	16	0.046393	6.139302	1.381244	1.073934
Gabon	1995	16	-0.19218	6.409813	1.692419	1.194638
Gabon	2000	16	-0.12034	6.586682	1.848794	0.824825
Gambia, The	1960	17	-0.03619	8.816021	0.577357	1.032798
Gambia, The	1965	17	0.016432	9.339397	0.818051	1.02773
Gambia, The	1970	17	0.021249	9.582691	0.642655	1.036522
Gambia, The	1975	17	-0.14763	9.932562	1.438291	1.06857
Gambia, The	1980	17	0.052895	9.66614	2.255908	1.11063
Gambia, The	1985	17	0.019021	9.54738	2.008943	1.154487
Gambia, The	1990	17	-0.09394	9.47422	2.357096	1.191763
Gambia, The	1995	17	0.180982	9.508351	2.604041	1.217229
Gambia, The	2000	17	-0.018	9.253288	2.253201	1.059903
Ghana	1960	18	0.542255	6.581873	3.638056	1.165657
Ghana	1965	18	0.926781	6.76963	3.063519	0.6549
Ghana	1970	18	0.170644	6.807128	2.309702	0.70072
Ghana	1975	18	0.092516	6.90222	2.238037	0.821491
Ghana	1980	18	-0.05762	6.776347	1.552112	0.921896
Ghana	1985	18	0.126961	6.802239	1.495029	0.993247
Ghana	1990	18	0.012345	6.814104	1.691423	1.033432
Ghana	1995	18	-0.0019	6.649244	1.943165	1.043198
Ghana	2000	18	0.033529	6.860517	1.700492	0.598122
Guinea	1960	19	-0.09155	6.020683	1.659789	0.763781
Guinea	1965	19	-0.08444	5.805406	1.836131	0.84118
Guinea	1970	19	0.025728	6.958429	1.922788	0.825473
Guinea	1975	19	0.026695	6.989142	1.922788	0.757961
Guinea	1980	19	-0.16276	7.040195	1.922788	0.656672
Guinea	1985	19	0.062509	6.92153	2.30518	0.527068
Guinea	1990	19	-0.03345	7.049958	2.317029	0.385387
Guinea	1995	19	0.120908	7.1097	2.110204	0.252948
Guinea	2000	19	0.141141	7.238641	1.530249	0.798813
Guinea-Bissau	1960	20	0.195806	8.030126	2.211913	-1.31152
Guinea-Bissau	1965	20	0.143471	7.960303	1.919887	-0.59814
Guinea-Bissau	1970	20	-0.04197	7.747778	2.504365	-0.29015
Guinea-Bissau	1975	20	-0.14428	7.781381	2.555129	-0.08101
Guinea-Bissau	1980	20	0.259717	7.840942	2.751914	0.152671
Guinea-Bissau	1985	20	0.021556	7.651985	2.868186	0.389206
Guinea-Bissau	1990	20	-0.03186	7.697893	3.076514	0.612668
Guinea-Bissau	1995	20	-0.15482	7.724226	2.572767	0.813792
Guinea-Bissau	2000	20	-0.2669	7.842326	1.748543	1.061126

Appendix A (Contd.)

Kenya	1960	21	0.038793	6.19984	2.140637	1.155989
Kenya	1965	21	0.043805	6.454097	2.305866	1.197004
Kenya	1970	21	0.07503	6.538212	2.877265	1.20901
Kenya	1975	21	0.05802	6.633147	2.601354	1.222295
Kenya	1980	21	-0.06335	6.229792	2.488424	1.236033
Kenya	1985	21	0.145842	6.448794	2.362638	1.250712
Kenya	1990	21	-0.07144	6.474477	2.115814	1.267047
Kenya	1995	21	-0.0219	6.456157	2.244111	1.284876
Kenya	2000	21	-0.03979	6.636471	2.165007	0.736733
Lesotho	1960	22	0.199848	7.072736	1.129233	0.631682
Lesotho	1965	22	0.015707	7.130299	1.925057	0.658043
Lesotho	1970	22	0.249999	7.048595	2.273764	0.666022
Lesotho	1975	22	0.251357	7.076823	3.069197	0.672361
Lesotho	1980	22	-0.06104	7.149783	2.766038	0.682065
Lesotho	1985	22	0.092314	7.051856	2.775112	0.695634
Lesotho	1990	22	0.086061	7.210227	3.482107	0.713048
Lesotho	1995	22	0.194318	7.155225	3.314576	0.733878
Lesotho	2000	22	0.090585	7.144975	3.087939	-0.00832
Liberia	1960	23				1.039854
Liberia	1965	23				1.091372
Liberia	1970	23	0.014499	6.356021	1.880982	1.098972
Liberia	1975	23	0.098608	6.557247	2.497591	1.103898
Liberia	1980	23	-0.02085	6.558212	1.858872	1.107356
Liberia	1985	23	-0.53234	6.663414	1.196494	1.109808
Liberia	1990	23	-1.17196	7.105417	1.151097	1.112012
Liberia	1995	23	0.874295	7.083061	1.181727	1.114569
Liberia	2000	23	-0.32173	7.183856	1.181727	0.96293
Madagascar	1960	24	-0.00126	7.31442	1.409437	0.967202
Madagascar	1965	24	0.07808	7.5142	1.538155	0.886014
Madagascar	1970	24	-0.06512	7.603005	1.520592	0.876157
Madagascar	1975	24	-0.05014	7.402634	1.426528	0.887291
Madagascar	1980	24	-0.15935	7.449318	1.308499	0.909163
Madagascar	1985	24	-0.04256	7.400278	1.311688	0.936328
Madagascar	1990	24	-0.08163	6.316081	1.088044	0.961743
Madagascar	1995	24	-0.03801	5.139029	1.067853	0.980948
Madagascar	2000	24	-0.09162	6.157911	1.643368	1.077913
Malawi	1960	25	-0.00305	7.14481	1.645628	0.882249
Malawi	1965	25	0.06839	7.117595	2.147996	0.927633
Malawi	1970	25	0.25602	7.230563	2.871953	0.959692
Malawi	1975	25	0.13433	7.145299	2.834796	1.025206
Malawi	1980	25	-0.002	7.068351	2.349132	1.062207
Malawi	1985	25	-0.08121	6.903336	1.920191	1.081039
Malawi	1990	25	0.18135	6.822905	1.919149	1.094092
Malawi	1995	25	0.00514	6.736219	1.625677	1.108663
Malawi	2000	25	-0.04353	6.71281	1.838724	0.743698

Appendix A (Contd.)

Mali	1960	26	-0.28124	6.132226	1.741759	0.669965
Mali	1965	26	-0.00235	6.208872	2.261409	0.77223
Mali	1970	26	-0.01573	6.176865	2.199176	0.790804
Mali	1975	26	0.14856	6.438296	2.384679	0.826268
Mali	1980	26	-0.08211	6.578834	2.197881	0.822307
Mali	1985	26	0.18208	6.612149	2.024987	0.792771
Mali	1990	26	0.06505	6.526392	2.034782	0.757967
Mali	1995	26	0.20278	6.718808	2.023611	0.732469
Mali	2000	26	0.12274	6.732199	1.767937	0.89736
Mauritania	1960	27				0.842991
Mauritania	1965	27				0.871763
Mauritania	1970	27	0.03405	7.160986	2.534774	0.876176
Mauritania	1975	27	-0.00187	7.239265	2.766189	0.880282
Mauritania	1980	27	-0.08003	7.146284	2.950704	0.883776
Mauritania	1985	27	0.06994	7.065724	2.835351	0.887306
Mauritania	1990	27	0.07571	7.12206	2.29099	0.891488
Mauritania	1995	27	0.06893	7.235266	2.122239	0.896656
Mauritania	2000	27	-0.06215	7.327439	1.972497	0.964413
Mauritius	1960	28	0.28593	8.205642	2.906692	1.025203
Mauritius	1965	28	-0.11215	8.437918	2.48804	0.700585
Mauritius	1970	28	0.21603	8.348469	2.503861	0.642165
Mauritius	1975	28	0.14406	8.673446	2.666812	0.589351
Mauritius	1980	28	0.10499	8.739713	2.160273	0.540442
Mauritius	1985	28	0.25679	8.903488	2.3588	0.499552
Mauritius	1990	28	0.15884	9.198913	2.482355	0.472492
Mauritius	1995	28	0.12535	9.426118	2.392965	0.462115
Mauritius	2000	28	0.11439	9.62384	2.440714	0.046063
Mozambique	1960	29	0.08652	6.731412	0.361523	0.81038
Mozambique	1965	29	0.13859	6.808333	0.566418	0.885164
Mozambique	1970	29	0.11716	6.909384	0.912283	0.890803
Mozambique	1975	29	-0.03171	7.041175	0.912283	0.877025
Mozambique	1980	29	-0.17352	7.032289	0.890274	0.851295
Mozambique	1985	29	0.27531	6.728437	1.103305	0.823674
Mozambique	1990	29	-0.03518	7.018715	1.157416	0.810134
Mozambique	1995	29	0.15981	6.795281	1.579647	0.819843
Mozambique	2000	29	0.28398	6.996846	1.728421	0.750846
Namibia	1960	30				0.881972
Namibia	1965	30				0.942148
Namibia	1970	30	-0.08061	8.567209	2.534757	0.958073
Namibia	1975	30	0.03074	8.527565	2.51496	0.987105
Namibia	1980	30	0.00404	8.534839	2.678025	1.021529
Namibia	1985	30	0.02327	8.483504	2.011745	1.051337
Namibia	1990	30	0.08220	8.41285	2.362343	1.063996
Namibia	1995	30	0.00437	8.495963	2.431128	1.053254
Namibia	2000	30	0.05321	8.56951	2.317767	0.870323

Appendix A (Contd.)

Niger	1960	31	0.05571	7.06256	0.941324	0.954626
Niger	1965	31	-0.12204	7.154068	0.85671	1.002817
Niger	1970	31	-0.27602	7.006623	1.219972	1.013725
Niger	1975	31	0.12762	6.949233	2.170912	1.027078
Niger	1980	31	-0.17984	7.119668	2.050694	1.04125
Niger	1985	31	-0.05233	6.945215	1.979558	1.056014
Niger	1990	31	-0.15489	6.909334	1.698851	1.071003
Niger	1995	31	0.05096	6.733176	1.89055	1.085818
Niger	2000	31	-0.00146	6.693881	2.210684	1.142193
Nigeria	1960	32	0.00217	7.008306	1.086407	0.970581
Nigeria	1965	32	-0.1185	6.934105	1.47432	1.005668
Nigeria	1970	32	0.20150	6.941847	1.923274	1.012038
Nigeria	1975	32	-0.10418	7.089327	2.429038	1.018457
Nigeria	1980	32	-0.11186	6.910482	2.254252	1.024872
Nigeria	1985	32	0.06033	6.859604	1.331347	1.031919
Nigeria	1990	32	-0.00016	6.966826	1.439442	1.040407
Nigeria	1995	32	0.11035	6.851629	1.623402	1.050658
Nigeria	2000	32	0.11944	6.97908	1.547435	0.90211
Rwanda	1960	33	-0.22961	6.92745	0.13122	1.102441
Rwanda	1965	33	0.17452	6.741713	0.24885	1.158771
Rwanda	1970	33	-0.07351	6.961694	0.51753	1.166568
Rwanda	1975	33	0.29501	6.825308	0.97822	1.1712
Rwanda	1980	33	-0.0501	7.128664	0.9645	1.176387
Rwanda	1985	33	0.00074	7.09821	1.05963	1.181691
Rwanda	1990	33	-0.6536	6.907995	1.11135	1.186814
Rwanda	1995	33	0.14901	6.733426	1.13485	1.191432
Rwanda	2000	33	0.24593	6.925664	1.16094	1.062989
Sao Tome & Principe	1960	34				0.44059
Sao Tome & Principe	1965	34				0.343098
Sao Tome & Principe	1970	34	0.12717	6.913857	3.466765	0.329237
Sao Tome & Principe	1975	34	0.45937	7.108187	3.002425	0.563324
Sao Tome & Principe	1980	34	-0.37901	7.504419	3.230556	0.745396
Sao Tome & Principe	1985	34	0.09991	7.203696	2.995549	0.892214
Sao Tome & Principe	1990	34	-0.12389	7.293215	2.661829	1.034024
Sao Tome & Principe	1995	34	-0.0223	7.147197	2.862641	1.144428
Sao Tome & Principe	2000	34	0.01644	7.170258	2.745947	0.760905
Senegal	1960	35	-0.08696	7.481899	1.256595	0.962159
Senegal	1965	35	-0.12098	7.395298	1.396438	1.013079
Senegal	1970	35	-0.07503	7.310477	1.767925	1.025354
Senegal	1975	35	0.02004	7.278484	1.642576	1.039027
Senegal	1980	35	-0.01552	7.252621	1.673678	1.052917
Senegal	1985	35	-0.00621	7.289051	1.708648	1.065591
Senegal	1990	35	-0.06401	7.273752	1.81622	1.075148
Senegal	1995	35	0.11486	7.193265	1.888157	1.080658
Senegal	2000	35	-0.11082	7.359703	2.120059	0.912997

Appendix A (Contd.)

Sierra Leone	1960	36				0.497643
Sierra Leone	1965	36				0.587698
Sierra Leone	1970	36	0.02633	7.190209	1.239527	0.608042
Sierra Leone	1975	36	-0.02669	7.223456	1.241247	0.630173
Sierra Leone	1980	36	-0.01213	7.202825	1.255613	0.652572
Sierra Leone	1985	36	-0.16212	7.250273	1.260099	0.673544
Sierra Leone	1990	36	-0.26324	7.072346	1.144784	0.690852
Sierra Leone	1995	36	-0.35591	6.853743	0.557858	0.70332
Sierra Leone	2000	36	0.04175	6.527563	1.166054	0.702993
Somalia	1960	37				0.767689
Somalia	1965	37				1.054301
Somalia	1970	37	0.06720	7.220849	1.746782	0.948053
Somalia	1975	37	-0.09857	7.235446	2.159432	0.543752
Somalia	1980	37	-0.13596	7.032457	1.982567	0.210513
Somalia	1985	37	0.12721	6.780785	2.142269	0.220675
Somalia	1990	37	-0.2838	6.902682	2.271735	0.584223
Somalia	1995	37	-0.07482	6.600918	2.165355	1.033426
Somalia	2000	37	-0.0135	6.524487	2.203635	1.215362
South Africa	1960	38	0.116111	8.50251	2.019533	1.016548
South Africa	1965	38	0.097266	8.655995	2.355953	0.79739
South Africa	1970	38	0.026847	8.772125	2.524577	0.790205
South Africa	1975	38	0.053147	8.835542	2.392879	0.801843
South Africa	1980	38	0.027537	8.933018	2.429548	0.815234
South Africa	1985	38	0.004449	8.943355	2.025957	0.826779
South Africa	1990	38	-0.05414	8.950863	1.896762	0.834299
South Africa	1995	38	0.075996	8.900565	2.094927	0.836789
South Africa	2000	38	0.105994	9.015062	2.076634	0.523122
Sudan	1960	39				0.847903
Sudan	1965	39				0.891507
Sudan	1970	39	0.097823	6.905342	2.657188	0.911788
Sudan	1975	39	0.003571	7.006804	2.904917	0.943933
Sudan	1980	39	-0.11877	6.968512	2.642616	0.981035
Sudan	1985	39	0.061411	6.876708	2.212781	1.018749
Sudan	1990	39	0.066421	6.95585	2.006201	1.052092
Sudan	1995	39	-0.15356	7.041867	2.15001	1.078257
Sudan	2000	39	0.116965	6.954362	2.405311	0.769276
Swaziland	1960	40				0.959047
Swaziland	1965	40				0.922862
Swaziland	1970	40	0.399773	7.932122	2.618925	0.931123
Swaziland	1975	40	0.198832	8.4102	2.421978	0.937445
Swaziland	1980	40	-0.00728	8.617337	2.447413	0.956058
Swaziland	1985	40	0.251741	8.607558	2.387771	0.982976
Swaziland	1990	40	-0.0203	8.907959	2.223611	1.014566
Swaziland	1995	40	0.116447	8.908678	2.157489	1.047833
Swaziland	2000	40	0.078241	9.049823	1.874958	0.729584

Appendix A (Contd.)

Tanzania	1960	41	0.121388	6.218759	0.706476	1.066235
Tanzania	1965	41	0.095762	6.323158	1.081415	1.112478
Tanzania	1970	41	-0.01972	6.355361	1.595848	1.118217
Tanzania	1975	41	-0.01597	6.363425	1.651667	1.118756
Tanzania	1980	41	-0.11235	6.346426	1.647373	1.116555
Tanzania	1985	41	-0.01631	6.219456	1.821351	1.113208
Tanzania	1990	41	-0.04798	6.213087	2.060538	1.110867
Tanzania	1995	41	0.522279	6.186147	1.597946	1.110945
Tanzania	2000	41	0.110746	6.705223	1.365895	0.791536
Togo	1960	42	0.138783	6.724529	1.70801	0.392417
Togo	1965	42	0.277283	6.9403	1.938158	1.323967
Togo	1970	42	0.009271	7.176797	2.031051	1.433929
Togo	1975	42	0.06245	7.163374	2.671676	1.415317
Togo	1980	42	-0.25728	7.191753	2.41621	1.352238
Togo	1985	42	-0.01133	6.838105	2.563486	1.246525
Togo	1990	42	-0.02904	6.812697	2.302174	1.092526
Togo	1995	42	-0.03372	6.800627	2.200615	0.87138
Togo	2000	42	-0.06154	6.713163	2.266007	0.969294
Uganda	1960	43	0.058798	6.77213	0.821427	1.388047
Uganda	1965	43	0.11785	6.845018	1.083898	1.446693
Uganda	1970	43	-0.01908	6.964296	0.809834	1.39032
Uganda	1975	43	-0.27366	6.937993	-0.00696	1.319821
Uganda	1980	43	-0.02002	6.615436	0.74919	1.236399
Uganda	1985	43	-0.01099	6.522122	1.147495	1.148423
Uganda	1990	43	0.236526	6.563856	1.096704	1.069308
Uganda	1995	43	0.17759	6.76148	1.273706	1.009919
Uganda	2000	43	0.051201	6.963937	1.186889	1.056368
Zambia	1960	44	0.047187	6.813917	3.875759	1.031681
Zambia	1965	44	-0.15612	7.073439	4.261472	1.107416
Zambia	1970	44	0.026316	7.171403	4.514783	1.099591
Zambia	1975	44	-0.02659	7.222281	3.536621	1.077501
Zambia	1980	44	0.003457	7.19173	2.240074	1.061835
Zambia	1985	44	0.020721	7.110361	1.67657	1.056143
Zambia	1990	44	-0.17814	7.014401	1.620528	1.062113
Zambia	1995	44	0.007305	6.720594	2.411373	1.079492
Zambia	2000	44	0.089047	6.763481	2.724003	0.604685
Zimbabwe	1960	45	-0.02977	7.739855	2.514453	1.188884
Zimbabwe	1965	45	0.044133	7.758722	2.674241	1.202362
Zimbabwe	1970	45	0.214256	7.97055	2.80132	1.205662
Zimbabwe	1975	45	-0.08468	8.136618	2.416738	1.212669
Zimbabwe	1980	45	-0.04515	8.079575	2.399162	1.222331
Zimbabwe	1985	45	0.10539	8.027878	2.455524	1.230894
Zimbabwe	1990	45	-0.08455	8.146289	2.578181	1.233253
Zimbabwe	1995	45	0.10950	7.967499	2.585148	1.227285
Zimbabwe	2000	45	-0.28903	8.088233	2.430139	0.349472

NB. To construct these variables, we divided the temporal dimension of data into nine equal time periods, i.e.1960-

64, 1965-69,1970-74,1975-80,1980-84,1985-89,1990-1994,1995-1999,and 2000-2004.This helps to purge any short-run fluctuations in the variables. Income is the change in log of real GDP per capita between the start and end of period for each time episode, Initial Income is real GDP per capita at the start of each time bracket, Investment refers to the natural logarithm of the share of investment in real GDP per capita averaged over each time bracket, and Population is a natural logarithm of the sum of population growth augmented by 0.05. This latter variable accounts for the assumption of constant technological progress and depreciation rate.
Source: Author's calculation using data from PENN World Tables.

Appendix B. Basic Solow model with country effects

Income	Coefficient	Std.Err.	t	P>t
Initial Income	-0.092330	0.0310267	-2.90	0.003
Investment	0.103631	0.0208223	4.98	0.000
Population	-0.083727	0.0359921	-2.30	0.021
Benin	0.520809	0.2349878	2.22	0.027
Botswana	0.773019	0.2756562	2.80	0.005
Burkina	0.490029	0.2232457	2.20	0.029
Burundi	0.501415	0.2191968	2.29	0.023
Cameroon	0.649919	0.2547896	2.55	0.011
Cape Verde	0.621264	0.2588389	2.40	0.017
Central Africa R	0.443430	0.2326588	1.91	0.058
Chad	0.428603	0.2280373	1.88	0.061
Comoros	0.462832	0.2530513	1.83	0.068
Congo (DR.)	0.358379	0.2314336	1.55	0.122
Congo R.	0.476995	0.2530754	1.88	0.060
Cote D'Ivoire	0.658571	0.2499769	2.63	0.009
Djibouti	0.682253	0.2571436	2.65	0.008
Equatorial Guinea	0.832871	0.2583892	3.22	0.001
Ethiopia	0.678419	0.2441967	2.78	0.006
Gabon	0.413921	0.2091617	1.98	0.049
Gambia	0.792554	0.3081911	2.57	0.011
Ghana	0.678224	0.2287666	2.96	0.003
Guinea	0.479925	0.2265111	2.12	0.035
Guinea Bissau	0.470060	0.2562103	1.83	0.067
Kenya	0.467045	0.2229524	2.09	0.037
Lesotho	0.557673	0.2392349	2.33	0.020
Liberia	0.404201	0.2302128	1.76	0.080
Madagascar	0.526045	0.2303098	2.28	0.023
Malawi	0.564485	0.2356040	2.40	0.017
Mali	0.485162	0.2182863	2.22	0.027
Mauritania	0.494805	0.2443054	2.03	0.044
Mauritius	0.748360	0.2891365	2.59	0.010
Mozambique	0.691794	0.2276362	3.04	0.003
Namibia	0.637092	0.2835406	2.25	0.025
Niger	0.495031	0.2331523	2.12	0.034
Nigeria	0.569568	0.2327572	2.45	0.015
Rwanda	0.635468	0.2305398	2.76	0.006
Sao Tome & Principe	0.444421	0.2464222	1.80	0.072
Senegal	0.547109	0.2437707	2.24	0.025
Sierra Leone	0.482425	0.2330331	2.07	0.039
Somalia	0.417828	0.2324796	1.80	0.073
South Africa	0.705226	0.2892762	2.44	0.015
Sudan	0.482465	0.2379154	2.03	0.043
Swaziland	0.782584	0.2862241	2.73	0.007
Tanzania	0.589004	0.2144501	2.75	0.006
Togo	0.512827	0.2355843	2.18	0.030

Appendix B (Contd.)

Uganda	.6695577	0.2272231	2.95	0.003
Zambia	.4047249	.2410963	1.68	0.094
Zimbabwe	.5616613	.2680894	2.10	0.037

NB. This table presents coefficient estimates of the basic Solow model variables as well as country controls. Estimation is by fixed-effects model.

Appendix C African cross-sectional economic growth model variables

country	Income	Investment	Population	Initial Income	Openness	H(1)	H(2)	Region
Benin	7.132074	2.022871	8.768481	6.99068	3.985194	2.34	2.1	1
Botswana	8.889646	2.653946	7.363749	8.598279	4.564489	6.28	5.35	0
Burkina Faso	6.83863	2.269028	9.410613	6.717865	3.853985			1
Burundi	6.549422	1.710188	8.650624	6.9715	3.045984	1.38	1.23	0
Cameroon	7.812674	1.371181	9.601817	7.900763	3.869786	3.54	3.17	1
Cape Verde	8.51386	2.480731	5.994809	7.960875	4.444373			0
Central Africa R.	6.851291	1.693779	8.160944	6.911727	3.935237	2.53	2.11	1
Chad	6.720835	2.014903	9.03823	6.724529	4.213957			1
Comoros	7.214343	2.086914	6.360266	7.589305	4.045317			0
CongoDR	5.88374	1.951608	10.85534	6.883473	2.481329	3.03	3.18	0
CongoR	7.15944	2.248129	7.940755	7.885073	4.429634	5.14	4.68	1
Cote d'Ivoire	7.683247	1.625311	9.671908	7.760552	4.234179			1
Djibouti	8.383854	0.887891	6.065691	8.247422	5.034171			0
Ethiopia	6.586682	1.12493	11.04534	6.139302	3.405023		1.15	0
Equatorial Guinea	8.778717	3.510948	6.16165	7.368327	4.796192			1
Gabon	9.253288	1.740466	7.109013	9.47422	4.647949			1
Gambia	6.860517	2.119864	7.220462	6.814104	5.220634	2.31	1.86	0
Ghana	7.238641	1.619388	9.878643	7.049958	4.508644	3.89	4.01	0
Guinea	7.842326	2.061787	9.064385	7.697893	3.874024			0
Guinea Bissau	6.636471	1.599388	7.153255	6.474477	4.607354	0.84		1
Kenya	7.144975	2.173615	10.31924	7.210227	4.067255	4.2	3.99	0
Lesotho	7.5142	3.132446	7.521226	7.183856	5.053991	4.23	4.47	0
Liberia	6.157911	1.181727	8.05484	6.316081	4.057804	2.45	2.26	0
Madagascar	6.71281	1.415853	9.649013	6.822905	3.893379			0
Malawi	6.732199	1.728109	9.294092	6.526392	4.208884	3.2	2.58	0
Mali	6.953417	1.843719	9.274758	6.761816	4.044529	0.88	0.76	1
Mauritania	7.327439	1.9947	7.889032	7.12206	4.595863	2.42	1.94	0
Mauritius	9.62384	2.497329	7.072736	9.198914	4.827096	6	5.55	0
Mozambique	6.996846	1.88707	9.779773	7.018715	3.787383	1.11	1.19	0
Namibia	8.56951	2.529721	7.510036	8.41285	4.616124			0
Niger	6.693881	2.025513	9.227557	8.41285	3.783524	1.02	0.82	1
Nigeria	6.97908	1.353254	11.72602	6.909334	4.034936			0
Rwanda	6.925664	1.308333	8.90987	6.966826	4.00142	2.56	2.03	0
Sao Tome & Principe	7.170258	2.757475	5.074424	6.907995	4.675695			0
Senegal	7.359703	1.591274	9.188538	7.293215	4.418617	2.55	2.23	1
Sierra Leone	6.527563	1.316408	8.556926	7.273752	3.311247	2.4	1.99	0
South Africa	9.015062	2.043814	10.65376	7.072346	3.877772	6.14	7.87	0
Sudan	6.954362	2.388763	10.46538	8.950864	3.082074	2.14	1.91	0
Swaziland	9.049823	2.122262	7.021245	6.95585	4.958043	6.01	5.73	0
Tanzania	6.705223	1.264127	10.42726	8.907959	3.847682	2.71		0
Togo	6.713163	2.24071	8.523727	6.213087	4.384693	3.33	2.83	1

Appendix C (Contd.)

Uganda	6.963937	1.141033	10.06458	6.812697	3.541994	3.51	2.95	0
Zambia	6.763481	2.552565	9.189988	6.563856	4.035252	5.46	5.43	0
Zimbabwe	8.088233	2.519308	9.408037	7.014401	4.129585	5.35	4.88	0

NB. Income refers to the mean of the natural log of real GDP per capita between 1990-2003, Investment is the mean of the natural log of share of investment in Income, Population is the mean of the natural log of population over same period, Openness is the mean of the natural log of the share of exports plus imports in Income, Initial income is the natural log of Income at start of period, H(1) and H(2) refer to number of average schooling years for the 15-plus and 20-plus population, and Region is a dummy for membership in BCEAO or BEAC. We source H(1) and H(2) from Barro and Lee (2000) and draw on PENN World Tables for others.

Appendix D. Country notes on Central Banks Governors in Africa

Banque Centrale des Etats de l' Afrique de l' Ouest (BCEAO) was established in 1962 and has had the following five governors: R. Julienne(1962-1974), A. Fadiga(1974-1988), A.D. Ouattara (1988-1990), C.K. Banny (1990-2005), P-H. Dacoury-Tabley (2005-Present). Information is available at: http://www.bceao.int/internet/bcweb.nsf/french.htm?OpenFrameset

Banque des Etats de l' Afrique Centrale was established 1972. Its governors have been: C. Joudiou (1973-1978), C. Ove Mba (1978-1990), F. Mamaleplot (1990-2007), P. Andizimbe (2007-Present). Information is available at http://www.beac.int/index.html

Botswana: Established in 1975, the Bank of Botswana has had seven governors. They are: H.C.L. Hermans (1975-1978), B.C. Laevitt (1978-1980), F.G. Mogae (1980-1982), C.N. Kikonyogo (1982-1987), H.C.L. Hermans (1987-1997), B. Goalathe (1997-1999), L.K. Mohohlo (1999-Present). Information available at: http://www.bankofbotswana.bw/article.php?articleid=338

Cape Verde: Since its establishment in 1975, the Banco de Cabo Verde have had the following governors: C.V. Santas (1976-1988), A.A. de Luz (1989-1992), O.M. Sequeira (1992-2005), C.A. de Burgo (2005-Present). Information drawn from http://www.pjsymes.com.au/articles/capeverde.htm

Ethiopia: Between 1963 and now, the National Bank of Ethiopia have had the following eight governors: M. Lemma (1959-1974), T. Degefe (1981-1983), L. Tekeher (1983-1985), T. Gebre Kidan (1985-1994), B. Tamirat (1994-1999), L. Berhanu (1999-2002), D. Jale (2002-2005), T. Atnafu (2005-Present). We draw information through an interview with public relations officers in the Bank. The first governor's tenure dates back before the official date of the Bank's establishment since for those years the Bank also undertook commercial banking services.

Ghana: Established on 4th March 1957, the Bank of Ghana has had the following eleven governors: A. Eggleston (1957-1959), H. Kessels (1959-1962), W.M.Q. Halm (1962-1965), A. Adomako (1965-1968), J.H. Frimpong-Ansah (1968-1973), A. Nikoi (1973-1977), A.E.K. Ashiabor (1977-1983), J.J. Addo (1983-1987), G.K. Agama (1988-1997), K. Duffor (1997-2001), P.A. Acquah (2001-Present). Information available at http://www.bog.gov.gh/index/php?linkid=268#599

Kenya: The Central Bank of Kenya was established in 1966. Its governors include: L. Baranski (1966), D. Ndegwa (1966-1982), P. Ndegwa (1982-1988), E. Kotut (1988-1993), M. Cheserem (1993-2001), N. Nyagah (2001-2003), A. Mullei (2003-2007), N.S. Ndung'u (2007-Present). Information available at: http://www.eastandard.net/InsidePage.php?id=1143994847&cid=159 We also appreciate the generous support of the former governor of the Bank, Dr. Andrew Mullei, in providing us information.

Lesotho: Established in 1978, the Central Bank of Lesotho began its operations in 1980. Its governors have been: K. Molemohi (1979-1982), M. Maruping (1982-1988), S. Schoenberg (1988-1997), M. Matekane (1997-2006), M. Senaoana (2006-Present). Information available at: http://www.lesotho.gov.ls/articles/2005/Brief_History_CBL.htm

Madagascar: Banque Centrale de Madagascar was established in 1974, more than ten years after the country left the CFA franc zone. Its governors have been: L.M. Rajaobelina (1973-1983), R. Randriamaholy (1984-1988), B. Razafimanjato (1988-1993), R.J. Ravelomanana (1993-1994), G.E. Ravelojaona (1996-2007), F. Rasamoely (2007-Present). Information drawn from: http://www.banque-centrale.mg/index.php?id=ml_9#gv

Malawi: The Reserve Bank of Malawi was established in 1964 and has had ten governors since. They are: A.E. Perrin (1968), D.E. Thomson (1968-1971), J.Z.U. Tembo (1971-1984), L.C. Chaziya (1984-1986), J.C. Hara (1986-1988), H.J. Lesshafft (1988-1992), F.Z. Pelekamoyo (1992-1995), M.A.P. Chikaonda (1995-2000), E.E. Ngalande (2000-2005), V. Mbewe (2005-Present). Information available at: http://www.rbm.mw/general_info/index.asp

Mauritius: The Bank of Mauritius was established in September 1967. Its governors include: A. Beejadhur (1967-1972), G. Bunwaree (1973-1982), I. Ramphul (1982-1996), M.D. Maraye (1996-1998), R.B. Roi (1998-2006), R. Bheenick (2007-Present). For information, *See* Bheenick (2007) in Bibliography.

Mozambique: Banco De Moçambique was established in May, 1975. It has had six governors since. They are: A. Cassimo (1975-1978), S. Viera (1978-1981), P. Ratilal (1981-1986), E. Comiche (1986-1991), A.A. Malelane (1991-2005), E.G. Gove (2005-Present). Information is available at: http://www.bancomoc,mz/documents/DOI/Governors.pdf

Namibia: Established in 1990, the Bank of Namibia has had four governors (one Dutch, one Swedish, one Malaysian and one Namibian). They are: W.L. Bernard (1990-1991), E. Karlsson (1992-1993), J. Ahmad (1994-1996), T.K. Alweendo (1997-Present). Information available at: http://www.bon.com.na/Content/TopLevelItems/AboutUs/History/aspx

Nigeria: The Central Bank of Nigeria was established in 1959. It has had the following nine governors: R.P. Fenton (1958-1963), A.A. Mai-Bornu (1963-1967), C.N. Isong (1967-1975), M.A. Ciroma (1975-1977), O.O. Vincent (1977-1982), A.A. Ahmed (1982-1993), A.A. Ogwuma (1993-1999), J.O. Sanusi (1999-2004), C.C. Soludo (2004-Present). Information is available at: http://www.cenbank.org/AboutCBN/allgovernors.asp

Rwanda: The National Bank of Rwanda was established in 1966. Its governors include: J.A. Brandon (1964-1965), Hattori (1965-1971), J.B. Birara (1971-1985), A. Ruzindana (1985-1990), D. Ntirugirimbabazi (1991-1994), G. Niyitegeka (1994-1995), F. Mutemberezi (1996-2002), F. Kanimba (2002-Present). Information is available at: http://www.bnr.rw/governance.aspex

Sao Tome & Principe: Banco Central de S. Tomé e Prìncipe has had the following five governors: A.C. David (1992-1994), C.Q.B. De Sousa (1995-1999), D.C. Silveira (1999-2006), A.A. De Carvalho (2006-2008), M. De Sousa (2008-Present). Information is available at: http://www.bcstp.st/Banco/Historical.pdf

South Africa: In its eighty-eight years existence, the South African Reserve Bank has had eight governors. They are: W.H. Clegg (1920-1931), J. Postmus (1932-1945), M.H. de Kock (1945-1962), G. Rissik (1962-1967), T.W. de Jongh (1967-1980), G.P.C. de Kock (1981-1989), C.L. Stals (1989-1999), T.T. Mboweni (2000-Present). Information is available at: http://www.reservebank.co.za/

Sudan: Established in 1960, the Bank of Sudan has had fourteen governors. They are: M.H. A. Beheiry (1959-1963), E. Elfeel (1964-1967), A. Mayrgani (1967-1970), A. Hassan (1970-1971), A.A.M. Aburiesh (1971-1972), I.M.A. Nimir (1973-1980), E.H. Belail (1980-1983), F.I. Elmagbool (1983-1985), I. E-M. Mekkihamad (1985-1988), M.E. Elshaikh (1988-1990), E.S. Elshaikh (1990-1993), S.M. Hassan (1993-1996), A. H. Ahmed (1996-1998), S.M. Hassan (1998-Present). Information is available at: http://www.cbos.gov.sd/english/id/oldgov_e.htm

Tanzania: Established in 1966, the Bank of Tanzania has had six governors. They are: E.L. Mtei (1966-1974), C. Nyirabu (1974-1989), G. Ruthinda (1989-1993), I.M.

Rashidi (1993-1998), D.T.S. Ballali (1998-2008), B. Ndulu (2008-Present). Information is available at: http://www.bot.tz.org/AboutBOT/Former_Governors.htm

Uganda: The Bank of Uganda has had nine governors during the forty-two years of its existence. They are: J. Mubiru (1966-1971), S. Kiingi (1971-1973), Onegi-Obel (1973-1978), H. Kajura (1978), N. Gideon (1979-1980), L. Kibirango (1981-1986), S. Kuggundu (1986-1990), C.N. Kikonyogo (1990-2000), E.T. Mutebile (2001-Present). Information is available at http://www.bou.or.ug/bouwebsite/opencms/bou/about/org_and_governors.html

Zambia: Established in 1964, the Bank of Zambia has had thirteen governors. They are: H.C. Harret (1964-1967), J.B. Zulu (1967-1970), V.S. Musakanya (1970-1972), B.R. Kuwani (1972-1976), L.J. Mwananshiku (1976-1981), B.R. Kuwani (1981-1984), D.A.R. Phiri (1984-1986), L. Chivuno (1986-1987), F.X. Nkhoma (1987-1989), J.A. Bussieres (1990-1992), D. Mulaisho (1992-1995), J. Mwanza (1995-2002), C.M. Fundanga (2002-Present). Information is available at http://www.boz.zm

Zimbabwe: The Reserve Bank of Zimbabwe existed since 1956. The names and tenures of some of its governors, only of those information is available, are as follows: K. Moyana (1983-1993), L. Tsumba (1993-2003), G. Gono (2003-Present). We use different press issues available online to source the material.

Appendix E Country notes on Central Banks legislations in Africa

Below are the relevant Central Bank legislations for the countries under considerations. In certain instances (e.g. Cape Verde and Rwanda), only major points of the legislations are highlighted in the source. Sources and detail information are provided in the appendix on African Central Bank websites.

Banque Centrale des Etats de l' Afrique de l' Ouest (BCEAO):-Traité Constituant l'union Monétaire Ouest Africane (1973), Art. 15-21.

Banque des Etats de l' Afrique Centrale:-Status De La Banque Des Ètats De L'Afrique Centrale (1970, 2007).

Botswana: Bank of Botswana Act 1996

Comoros: Les Status de le Banques Centrale des Comores (1987)

Ethiopia: Monetary and Banking Proclamation 1994.

Ghana: Bank of Ghana Act, PNDCL 291 (1992), 2002 Act 612.

Kenya: The Central Bank of Kenya Act 1966, 1997.

Lesotho: The Central Bank of Lesotho Act 1978, 2000.

Madagascar: Loi No. 94-004 du 10 Juin 1994 Portant Status de la Banque Centrale de Madagascar.

Malawi: Reserve Bank of Malawi Act 1989.

Mauritius: The Bank of Mauritius Act 1968, 2004.

Mozambique: Banco de Moçambique Decree 2/75, 1/92.

Namibia: Bank of Namibia Act 8/1990, 15/1997.

Nigeria: Central Bank of Nigeria Act, 1958, 1997, 1998.

Sao Tome & Principe: Lei Organica do Banco Central Decreto Lei No. 8/1992.

South Africa: Banks Act 1990.

Sudan: Central Bank of Sudan Act 2002.

Tanzania: Bank of Tanzania Act 1995, 2006.

Uganda: Bank of Uganda Act 1969, 1993.

Zambia: Bank of Zambia Act 1996.

Appendix F. CBI Variables for Africa

Country	Economic	Political	Overall	Economic	Political	Turnover
Benin	0.88	0.50	0.69	0.50	0.33	0.093
Botswana	0.75	0.13	0.69	1.00	0.67	0.2069
Burkina Faso	0.88	0.50	0.38	0.50	0.33	0.093
Burundi	0.38	0.38	0.69	0.00	0.00	
Cameroon	0.88	0.50	0.69	0.625	0.67	0.0857
Cape Verde	0.63	0.38	0.69	0.625	0.67	0.1652
Central Africa R.	0.88	0.50	0.69	0.625	0.67	0.0857
Chad	0.88	0.50	0.69	0.625	0.67	0.0857
Congo	0.88	0.50	0.69	0.625	0.67	0.0857
Côte d'Ivoire	0.88	0.50	0.69	0.50	0.33	0.093
Comoros	0.75	0.13	0.50	0.50	0.00	0.1603
Equatorial G.	0.88	0.50	0.69	0.625	0.67	0.0857
Eritrea	0.63	0.38	0.50			
Ethiopia	0.63	0.38	0.50	0.25	0.00	0.1707
Gabon	0.88	0.50	0.69	0.625	0.67	0.0857
Ghana	0.63	0.38	0.63	0.625	0.33	0.25
Guinea	0.63	0.63	0.69	0.00	0.00	0.1679
Guinea Bissau	0.88	0.50	0.44	0.50	0.33	0.93
Kenya	0.75	0.13	0.44	0.50	0.33	0.1593
Lesotho	0.63	0.25	0.50	0.625	0.33	0.08
Liberia	0.63	0.38	0.63	0.00	0.00	
Madagascar	0.75	0.50	0.38	0.50	0.33	0.1764
Malawi	0.63	0.13	0.69	0.50	0.33	0.25
Mali	0.88	0.50	0.50	0.50	0.33	0.093
Mauritania				0.25	0.00	0.2978
Mauritius	0.50	0.50	0.44	1.00	1.00	0.05
Mozambique	0.50	0.38	0.38	0.05	0.00	0.2414
Namibia	0.50	0.25	0.69	0.50	0.33	0.2143
Niger	0.88	0.50	0.44	0.50	0.33	0.093
Nigeria	0.63	0.25	0.19	0.50	0.00	0.1666
Rwanda	0.63	0.50	0.31	0.00	0.00	0.1623
São Tomé & Principe	0.38	0.25	0.25	0.50	0.00	0.2666
South Africa	0.38	0.13	0.25	1.00	1.00	0.097
Seychelles	0.38	0.13	0.56			
Sierra Leone	0.63	0.50	0.31	0.25	0.00	0.1931
Sudan		0.00	0.38	0.00	0.00	0.3182
Tanzania	0.63	0.13	0.69	0.25	0.33	0.1316
Togo	0.88	0.50	0.56	0.50	0.33	0.093
Uganda	0.63	0.50	0.44	0.50	0.33	0.2368
Zambia	0.63	0.38	0.44	0.50	0.33	0.279
Zimbabwe	0.44	0.25		0.50	0.33	0.15

NB. The first three columns of data are Central Bank independence indices from Arnone *et al.* (2007) while in

the last three we provide corresponding figures developed in this thesis.
Source: Own calculation and Arnone *et al.* (2007)

Appendix G. Data sources for economic and political variables

Variable	Source	Remark
Real GDP Per Capita	http://pwt.econ.upenn.edu/php_site/pwt62/pwt_62form.php	See Heston *et al.* (2006)
Investment	http://pwt.econ.upenn.edu/php_site/pwt62/pwt_62form.php	See Heston *et al.* (2006)
Real GDP Per Capita Initial	http://pwt.econ.upenn.edu/php_site/pwt62/pwt_62form.php	See Heston *et al.* (2006)
Population	http://pwt.econ.upenn.edu/php_site/pwt62/pwt_62form.php	See Heston *et al.* (2006)
Economic policy variables	http://africa.gov.harvard.edu	See ARP (2008)
Central Bank independence	http://www.centralbanking.co.uk/links/index.htm	See CBI (2007)
Judicial independence	http://www.state.gov/g/drl/rls/hrrpt	See USSD (2007)
Judicial independence	http://www.freedomhouse.org/template.cfm?page=15	See Freedom (2007)
Constitutional Rules	http://www.heritage.org/Index	See Heritage (2008)
Constitutional Rules	http://www.uneca.org/agr2005	See UNECA (2008)
Constitutional Rules	http://www.transparency.org	See TI (2008)
Veto players	http://www.management.wharton.upenn.edu/henisz	See Henisz (2006)
Veto players	http://econ.worldbank.org	See Beck *et al.* (2001)

Appendix H. African Central Banks on the Web

Country	Web Address
BCEAO*	http://www.bceao.int
BEAC**	http://www.beac.int
Botswana	http://www.bankofbotswana.bw
Burundi	http://www.brb.bi
Cape Verde	http://www.bcv.cv
Comoros	http://www.bancecom.com
Djibouti	http://www.banque-centrale.dj
Ethiopia	http://www.nbe.gov.et
Gambia	http://www.cbg.gm
Ghana	http://www.bog.gov.gh
Guinea	http://www.bcrg.gov.gn
Kenya	http://www.centralbank.go.ke
Lesotho	http://www.centralbank.org.ls
Madagascar	http://www.banque-centrale.mg
Malawi	http://www.rbm.mw
Mauritius	http://www.bom.intnet.mu
Mauritania	http://www.bcm.mr
Mozambique	http://www.bancomoc.mz
Namibia	http://www.bon.com.na
Nigeria	http://www.cenbank.org
Rwanda	http://www.bnr.rw
Sao Tome & Principe	http://www.bcstp.st
Sierra Leone	http://www.bankofsierraleone-centralbank.org
South Africa	http://www.reservebank.co.za
Sudan	http://www.bankofsudan.org
Swaziland	http://www.centralbank.org.sz
Tanzania	http://www.bot-tz.org
Uganda	http://www.bou.or.ug
Zambia	http://www.boz.zm
Zimbabwe	http://www.rbz.co.zw

NB.*BCEAO countries include Benin, Burkina Faso, Côte d'Ivoire, Guinèe Bissau, Mali, Niger, Senegal and Togo. **BEAC includes Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon.
Source: Web links available at
http://www.centralbanking.co.uk/links/index.htm

Appendix I. Basic Solow robustness test on Botswana and Mauritius

Variable	Fixed Effects (Full Sample)	Fixed Effects (Botswana Excluded)	Fixed Effects (Mauritius Excluded)
Initial Income	0.91	0.92	0.91
	0.03	0.03	0.03
	0.00	0.01	0.01
Investment	1.11	1.11	1.11
	0.02	0.02	0.02
	0.00	0.00	0.00
Population	0.92	0.92	0.92
	0.03	0.03	0.03
	0.02	0.03	0.03
Constant	1.75	1.66	1.69
	0.41	0.41	0.43
	0.02	0.04	0.04
N	371	364	364
F(3,323)	12.77	-	-
F(3,309)	-	11.97	11.80

NB. In the three models above, we run fixed-effects estimation technique on the full sample as well as excluding the two countries from the sample. All the F values are significant at one percent.

Appendix J. Basic Solow robustness tests (different specifications)

Variable	Robust	Cluster	Bootstrap	Jackknife
Initial Income	0.91	0.94	0.89	0.91
	0.03	0.02	0.04	0.03
	0.00	0.00	0.00	0.01
Investment	1.11	1.13	0.09	1.11
	0.03	0.02	0.04	0.04
	0.00	0.00	0.02	0.00
Population	-0.08	-0.08	-0.07	-0.06
	0.03	0.04	0.04	0.04
	0.02	0.03	0.00	0.06
Constant	1.75	1.75	1.79	1.62
	0.38	0.42	0.49	0.47
	0.01	0.03	0.04	0.04
N	371	371	371	371
F(3,323)	8.86	8.65	-	7.29
Wald chi2	-	-	22.45	-

NB. In order to account for heterogeneity, we subject the fixed-effects model to the tests mentioned above. All the diagnostic parameters (i.e. F and Wald chi2) are significant at one percent.

Appendix K. Basic Solow augmented for policy variables (robustness tests using different specifications)

Variable	Robust	Cluster	Bootstrap	Jackknife
Initial Income	-0.09	-0.08	-0.07	-0.09
	0.05	0.03	0.08	0.08
	0.05	0.05	0.23	0.24
Investment	0.07	0.07	0.07	0.07
	0.04	0.03	0.03	0.04
	0.08	0.03	0.04	0.09
Population	-0.19	-0.14	-0.14	-0.19
	0.08	0.07	0.13	0.12
	0.02	0.02	0.15	0.03
Openness	0.01	0.01	0.01	0.01
	0.00	0.00	0.00	0.00
	0.03	0.08	0.47	0.03
Monetary	-0.00	-0.00	-0.00	-0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.65	0.83
Fiscal	-0.01	-0.01	-0.01	-0.01
	0.00	0.00	0.00	0.00
	0.05	0.06	0.28	0.39

Appendix K (Contd.)

Human capital	-0.01	-0.01	-0.01	-0.01
	0.00	0.00	0.00	0.00
	0.07	0.17	0.52	0.55
Constant	0.77	0.77	0.77	0.77
	0.35	0.32	0.56	0.56
	0.03	0.02	0.16	0.04
N	188	188	188	188
F(7,145)	5.18	47.62	-	2.29
Wald chi2	-	-	34.45	-

NB. In the above models, we subject the augmented Solow model to different specifications; namely Standard errors adjusted for 36 clusters; standard errors of parameters bootstrapped; jackknife standard errors. All the diagnostic parameters (i.e. F and Wald chi2) are significant at one percent.

Appendix L. CBI estimates robustness tests (different specifications)

Variable	LS	RRG	QR	LS	RRG	QR	LS	RRG	QR
Openness	0.57	0.39	0.27	0.49	0.46	0.39	0.59	0.61	0.50
	0.21	0.24	0.14	0.19	0.22	0.26	0.20	0.61	0.17
	0.01	0.12	0.03	0.02	0.05	0.04	0.01	0.01	0.00
Political CBI	1.27	0.82	0.82						
	0.47	0.52	0.48						
	0.01	0.06	0.04						
Economic CBI				1.37	1.36	0.43			
				0.49	0.48	0.58			
				0.01	0.01	0.03			
Turnover							-3.95	-3.69	-4.59
							1.93	1.56	1.56
							0.06	0.01	0.01

Appendix L (Contd.)

Regional							-0.80	-0.78	-0.75
							0.27	0.26	0.26
							0.01	0.01	0.01
Constant	4.58	5.32	6.42	4.68	4.78	5.32	5.68	6.09	6.16
	0.76	0.96	0.98	0.73	0.87	0.99	0.95	0.83	0.88
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-squ.	0.40	-	0.17*	0.39	-	0.15*	0.37	-	0.20*
F(2,41)	15.2	10.3	-	10.95.64	10.1	-	5.95	6.79	-
F(3,40)	-	-	-		-	-	-		-
N	44	44	44	44	44	44	44	44	44

NB. In the above models, LS refers to Least squares with robust standard errors; RRG refers to robust regression; and QR refers to quintile regression.*Refers to Pseudo-R^2.All F values are significant at one percent.

Appendix M. CBI estimates robustness tests (different controls)

Variable	LSR	LSR	LSR	LSR	LSR	LSR
Human Capital	0.28 0.11 0.01		0.25 0.08 0.00		0.33 0.07 0.00	
Initial Income		0.51 0.16 0.00		0.55 0.14 0.00		0.54 0.16 0.00
Political CBI	0.80 0.64 0.22	1.11 0.43 0.01				
Economic CBI			1.05 0.47 0.04	1.47 0.37 0.00		
Turnover					-3.12 1.95 0.12	-4.32 1.61 0.01
Regional					-0.08 0.07 0.27	-0.64 0.26 0.02
Constant	6.14 0.18 0.00	3.22 1.08 0.00	6.00 0.17 0.00	2.66 0.88 0.00	6.74 0.44 0.00	4.19 1.32 0.00
R-squ.	0.61	0.48	0.65	0.56	0.55	0.48
F(2,26)	19.42	-	19.91	-	12.16	-
F(2,41)	-	17.51	-	39.58	-	10.69
N	29	44	29	44	29	44
Control	Human Capital	Initial Income	Human Capital	Initial Income	Human Capital	Initial Income

NB. To test robustness of findings, we replace the economic control with human capital (HC) and Initial Income (II) alternatively. All models are run using least squares with robust standard errors. All F values are significant at one percent.

Appendix N. JI estimates robustness tests (different specifications)

Variable	OLS	Robust Standard Errors	Robust Regression	Quintile Regression
Openness	0.65	0.65	0.57	0.45
	0.19	0.21	0.21	0.14
	0.00	0.00	0.01	0.00
JIOv	0.38	0.38	0.41	0.55
	0.14	0.16	0.15	0.10
	0.01	0.02	0.01	0.00
Constant	4.14	4.14	4.42	4.62
	0.80	0.78	0.86	0.56
	0.00	0.00	0.00	0.00
N	44.00	44.00	44.00	44.00
R-squ.	0.36	0.36	-	0.18*
F(2,41)	11.51	12.53	9.08	-
N	44	44	44	44
aic	97.25	97.25	.	.

NB. *Refers to pseudo R-squared. Figures below each coefficient estimates refer to standard errors and p-values. All the diagnostic tests (i.e. F and aic) are significant at one percent.

Appendix O. JI estimates robustness tests (different controls)

Variable	LSR	LSR
Human Capital	0.36	
	0.06	
	0.00	
Initial Income		0.62
		0.17
		0.00
JIOv	0.02	0.33
	0.21	0.21
	0.18	0.04
Constant	6.12	2.66
	0.19	1.16
	0.00	0.03
R-squ.	0.56	0.40
F(2,26)	15.88	-
F(2,41)	-	12.65
N	29	44
Control	HC	II

NB. We apply least squares with robust standard errors with the economic controls human capital (HC) and initial income (II). All the F values are significant at one percent.

Appendix P. Basic Solow with controls for colonial history

Variable	Dummy Used	Data truncated
Initial Income	-0.00	-0.09
	0.02	0.03
	0.09	0.00
Investment	0.07	0.11
	0.02	0.02
	0.00	0.00
Population	-0.05	-0.09
	0.03	0.04
	0.08	0.02
Colonial	-0.03	
	0.05	
	0.54	
Constant	-0.06	0.54
	0.11	0.24
	0.59	0.02
F(3,353)	7.21	6.84
N	365	340

NB. In these models, we tested if results were driven by the late joiners of statehood in the region. Accordingly, in model (1) we included a dummy for those countries which got independence after 1970. In model (2), we deleted any data for these countries that predates 1970. The Solow variables remain strong. The F values are significant at one percent.

Appendix Q. A brief description of the African governance indicators

Type of data:- Based on national experts' and households opinion surveys.

Countries:- Benin, Botswana, Burkina Faso, Chad, Egypt, Ethiopia, Gabon, The Gambia, Ghana, Kenya, Lesotho, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.

Governance variables:- Political system, political party freedom/security, power distribution, political representation, electoral process independence/credibility, judiciary's effectiveness, investment policies attractiveness, pro-investment tax policies, economic management, respect for rule of law, corruption control, legislature's effectiveness, human rights and rule of law, CSO/media independence, law enforcement organs, tax system efficiency/corruption, human rights, institutional effectiveness/accountability, state structure management, executive's effectiveness, civil service transparency/accountability, government services efficiency, and decentralisation of structures.

Source: UNECA (2008)

Appendix R. A correlation matrix between fixed factors and quality of institutions in Africa

Variable	Ethnic	Geography	British	French	Rule	Veto	Delegation
Ethnic	1.00						
	405						
Geography	0.57	1.00					
	0.00						
	378						
British	-0.09	-0.31	1.00				
	0.06						
	405						
French	0.27	0.36	-0.57	1.00			
	0.00	0.00	0.00				
	405	378	405	405			
Rule	-0.22	-0.38	0.17	-0.21	1.00		
	0.00	0.00	0.00	0.00			
	405	378	405	405	405		
Veto	-0.01	-0.32	0.25	-0.21	0.40	1.00	
	0.75	0.00	0.00	0.00	0.00		
	361	346	361	361	361	361	
Delegation	0.33	0.44	-0.45	0.72	-0.28	-0.24	1.00
	0.00	0.00	0.00	0.00	0.00	0.00	
	342	315	342	342	342	342	

NB. Data for ethnic fragmentation is drawn from Alesina et al. (2003). The geography variable, which measures risk of malaria, is drawn from Sachs (2003). British and French refer to colonial origins. For the institutional variables, Rule refers to Freedom House classification on the rule of law while Veto and Delegation are the Polcon veto players variable and Central Bank Independence variable respectively. Figures below correlation values indicate significance levels and number of observations.

Appendix S. A note on the joint effects of institutions of credible commitment on economic growth in Africa

It is clear from the discussion in previous chapters that the channels, through which the effects of institutions of credible commitment manifest on economic growth, are multidimensional. Notwithstanding the fact that the underlining function of all the institutions is to limit the scope for opportunistic behaviour of governments, each institutional variable has its own, though not necessarily unique, micro-political foundations. For instance, while the preservation of stable prices is the hallmark for an independent Central Bank, the veto players paradigm deals with a broader set of policy tools. The point which I make here is that, given the breadth and width of each institution of credible commitment, analysis of the partial effect of each institution of credible commitment, as is undertaken in this research, is justified. This, however, does not rule out the use values of assessing the joint effects of all or several of the institutions in question, as is shown in table below.

The exercise to assess the joint effects of the three institutions of credible commitment returns mixed results. To start with, institution of delegation, as represented by the CBI values, loses its explanatory power on economic growth performance in Africa. This is no surprise given the fact the values of this variable are more tuned for static comparisons than capturing the dynamic movements of the variables. As the availability of data on the evolution of Central Banks in Africa improves, one shall be in a better position to explain the effects of these variables on economic performance. Secondly, I find rule of law to be the most potent variable, in that its coefficient estimates remain strong even after I control for the other institutional variables as well as the fixed factors. Thirdly, the effects of the veto

player variable on economic performance in Africa, when assessed jointly with other institutional variables, remains, by and large, continue to be strong, albeit less robust when compared to its partial estimates in Chapter 8.

Variable	OLS	Fixed-Effects	Fixed Effects Vector Decomposition
Initial Income	-0.00	-0.06	-0.00
	0.01	0.02	0.01
	0.24	0.07	0.02
Investment	0.05	0.11	0.05
	0.01	0.02	0.02
	0.02	0.00	0.01
Population	-0.06	-0.15	-0.06
	0.03	0.05	0.03
	0.04	0.00	0.04
Delegation	0.14	0.17	0.22
	0.05	0.09	0.08
	0.15	0.21	0.12
Rule of Law	0.04	0.08	0.02
	0.01	0.03	0.04
	0.02	0.02	0.01
Veto	0.01	0.04	0.08
	0.00	0.01	0.03
	0.10	0.02	0.05
Constant	0.01	0.47	0.04
	0.09	0.27	0.17
	0.91	0.08	0.84
R-squ.	0.28	-	0.21
F(6,255)	3.62	-	-
F(6,216)	-	7.15	-
F(7,255)	-	-	4.22
N	245	262	271

NB. I use selected variables from the many institutional variables applied in the study. Accordingly, CBI variable accounts for delegation (under a strong requirement that extrapolates point values to all periods), rule of law is from Freedom House, and the interactive term between polcon and fiscal policy is for the veto players variable. In all the cases, I controlled for the three fixed factors; namely geography, ethnic fragmentation and colonial history. Figures below coefficient estimates are robust standard errors and levels of significance

respectively. Number of countries included is forty-five in all cases. All F values are significant at one percent.

One needs to take into account a few points when reading these results. This thesis is essentially designed to investigate the effects of the three institutions of credible commitment individually. In addition to this issue of research design, all the institutional variables are not amenable for joint assessment in light of the fact that some are based on cross-sectional models while others on panel data estimates. Still, this line of research, whereby the joint effects of a string of institutions of credible commitment on economic outcomes is analysed, is a useful direction for future research.

Bibliography

Acemoglu, D. 2004. *Recent Developments in Growth Theory*. Edward Elgar Publishing Ltd., UK.

_____. 2005. Constitutions, politics, and economics: A review essay on Persson and Tabellini's The Economic Effects of Constitutions. *Journal of Economic Literature*, XLIII(4), pp1025-1048.

Acemoglu, D., S. Johnson and J.A. Robinson.2003. An African success story: Botswana. *IN* :D. Rodrik (ed.) *In Search of Prosperity: Analytic Narratives in Economic Growth*. Princeton: Princeton University Press. Ch(4): 80-119.

_____.2001. The colonial origins of comparative development: An empirical investigation. *American Economic Review*, pp91(5): 1369-1401.

AERC. 2009. Growth working papers, African Economic Research Consortium. Available at http://www.aercafrica.org/publication/category/asp [accessed 01 May 2009].

AfDB. 2007. *African Development Bank Statistics Pocketbook*. Tunis: Belvedère, Tunisia. Vol.IX.

_____. 2000. *Regional Integration in Africa: African Development Report 2000*. African Development Bank: Oxford University Press.

Akiumi, A.M. 2004. Towards an independent and effective judiciary in Africa. *IN Fourth African Development Forum on Governance for a Progressing Africa*, Addis Ababa, Ethiopia.

Aghion, P. and P. Howitt. 1992. A model of growth through creative construction. *Econometrica*, 60, pp.323-351.

Alchian, A.A. and H. Demsetz. 1972. Production, information costs, and economic organisation. *American Economic Review* 62(5), pp777-795.

Alesina, A. 1998. Credibility and policy convergence in a two-party system with rational voters. *American Economic Review*, 78(4), pp796-806.

_____. 1988. Macroeconomics and Politics. *NBER Macroeconomics Annual*, pp. 13-52, MIT Press, Cambridge, MA.

Alesina, A., R. Hausmann, R. Hommes and E. Stein. 1999. Budget institutions and fiscal performance in Latin America. *Journal of Development Economics*. 59(2), pp233-253.

Alesina, A., Londregan, J. and H. Rosenthal. 1996. The 1992, 1994 and 1996 elections: A comment and a forecast. *Public Choice*, 88(1-2), pp115-125.

Alesina, A., S. Ozler, N. Roubini and P. Swagel. 1996. Political instability and economic growth. *Journal of Economic Growth*, 1(2), pp189-211.

Alesina, A. and R. Perotti. 1996. Income distribution, political instability, and investment. *European Economic Review*, 40(6), pp1203-1228.

_____. 1997. Fiscal adjustments in OECD countries: composition and macroeconomic effects. *IMF Staff Papers*, 44, pp210-248.

Alesina, A. and G. Tabellini. 1988. A positive theory of fiscal deficits and government debt. *Review of Economic Studies*, 57, pp.403-414

_____. 1998. Credibility and Politics. *European Economic Review*, 32(2-3), pp542-550.

Alesina, A. and L.H. Summers. 1993. Central Bank independence and macroeconomic performance: Some comparative evidence. *Journal of Money, Credit and Banking*, 25(2), pp151-162.

Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, and R. Wacziarg. 2003. Fractionalization. Journal of Economic Growth, 8, pp155-194.

Alston, L.J., T. Eggertsson and D.C. North (eds.) 1996. *Empirical Studies in Institutional Change*, Cambridge: Cambridge University Press.

Alt, J.E. 2002. Comparative political economy: credibility, accountability, and institutions. *IN* I. Katznelson and H. Milner (eds.) *Political Science: The State of the Discipline*. New York: Norton.

Alt. J.E. and A. Alesina. 1996. Political economy: An Overview. *IN* R.E. Goodin and H-D. Klingemann (eds.), *A New Handbook of Political Science*, Oxford: Oxford University Press, pp. 645-674

Alt, J.E., R.L. Calvert and B.D. Humes. 1988. Reputation and Hegemonic Stability: A Game-Theoretic Analysis. *The American Political Science Review*, 82(2), pp445-466.

Alt, J.E. and K.A. Shepsle (eds.). 1990. *Perspectives on Positive Political Economy*. Cambridge: Cambridge University Press.

Andrew, J.T. and G.R. Montinola. 2004. Veto players and the rule of law in emerging democracies. *Comparative Political Studies*, 37(1), pp55-87.

Anderson, T.W. and C. Hsiao. 1981. Estimation of dynamic models with error components. *Journal of American Statistical Association*, 76(375), pp598-606.

Andeweg, R.B. 2000. Ministers as double agents? The delegation process between cabinet and ministers. *European Journal of Political Research*, 37(3): pp377-395.

Aranson, P.H., E. Gellhorn and G.O. Robinson. 1982. A theory of legislative delegation. *Cornell Law Review*, 68, pp1-67.

Arat, Z. F. 1988. Democracy and economic development: Modernisation theory revisited. *Comparative Politics*, 21(1), pp.21-36.

Arellano, M. and S. Bond. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), pp277-297.

Arellano, M. and O. Bover. 1995. Another look at the instrumental variable estimation of error-component models. *Journal of Econometrics*, 68(1), pp29-51.

Arnone, M., B.J. Laurens, J.F. Segalotto and M. Sommer. 2007. Central Bank autonomy: lessons from global trends. *IMF Working Paper*, 07/88.

Arnone, M., B.J. Laurens, J.F. Segalotto. 2006. The measurement of Central Bank autonomy: survey of models, indicators, and empirical evidence. *IMF Working Paper*, 06/227.

Aron, J. 2000. Growth and institutions: A review of the evidence. *The World Bank research Observer*, 15(1), pp99-135.

ARP.2008.African Research Program, Harvard University. Available at http://africa.gov.harvard.edu [Accessed 12 March 2008]

Arrow, K.J. 1962. The economic implications of learning by doing. *Review of Economic Studies*, 29(3), pp155-173.

Arrow, K.J. 1985. The economics of agency. *IN* J.W. Pratt and R.J. Zeckhauser (eds.), *Principals and Agents: The Structure of Business, Boston: Harvard Business School* Press, pp37-51

Austen-Smith, D. and J. Banks. 1988. Elections, coalitions, and legislative outcomes. *American Political Science Review*, 82(1), pp405-422.

Axelrod, R. 1981. The emergence of cooperation among egoists. *American Political Science Review*, 75(2), pp306-318.

Azam, J-P. 1995. How to pay for peace? A theoretical framework with references to African countries. Public Choice, 83,pp173-184.

Bagheri, F.M. and N. Habibi. 1998. Political institutions and Central Bank independence: A cross country analysis. Public Choice, 96(1-2), pp187-204

Baier, S.L., G.P. Dwyer, and R. Tamura. 2006. How important are capital and total factor productivity for economic growth. *Economic Inquiry*, 44(1), pp23-49.

Balagati, B.H. 2001. *Econometric Analysis of Panel Data*. Wiley and Sons Ltd.

Banaian, K., R.C.K. Burdekin and T.D. Willett. 1998. Reconsidering the principal components of Central Bank independence: The more the merrier. Public Choice, 97(1-2), pp1-12.

Baron, D.P. 1998. Comparative dynamics of parliamentary governments. *American Political Science Review*, 92(3), pp593-610.

Bardhan, P. 1997. Method in the madness? A political-economy analysis of the ethnic conflicts in less developed countries. *World Development*, 25, 1381-1398.

Barro, R.J. 1991. Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106(2), pp407-444.

_____. 1996. Democracy and Growth. *Journal of Economic Growth*, 1(1), pp1-27.

_____.1999. Notes on growth accounting. *Journal of Economic Growth*, 4(2), pp119-137.

Barro, R.J. and D.B. Gordon. 1983 .A positive theory of monetary policy in a natural rate model. *Journal of Political Economy*, 91(4), pp589-610.

Barro, R.J and J.W. Lee. 1993. International comparisons of educational attainment. *Journal of Monetary Economics*, 32(3), pp363-394.

_____.1994. Sources of economic growth. *Carnegie-Rochester Conference Series on Public Policy*, 40, pp.1-46.

_____.1996. International measures of schooling years and quality. *American Economic Review*, 86(2), pp218-223.

_____.2001. International data on educational attainment: updates and implications. *Oxford Economic Papers*, 53(3), pp541-563.

Barro, R.J. and X. Sala-i-Martin. 1992. Convergence. *Journal of Political Economy*, 100(2), pp223-251.

_____. 1995. *Economic Growth*. New York: McGraw-Hill

_____. 1996. International measures of schooling years and schooling quality. *American Economic Review, Papers and Proceedings*, 86(2), pp218-223.

_____.2000. International data on educational attainment: Updates and implications. *CID working paper*, No.42. Available at http://www.cid.harvard.edu/ciddata/ciddata.html [Accessed 12 February 2007].

Bates, R.H. 1997. Comparative Politics and Rational Choice: A Review Essay. *The American Political Science Review*, 91(3), pp699-704.

_____.1983. Modernisation, ethnic competition, and the rationality of politics in contemporary Africa. *IN* D. Rothchild and V.A. Olunsorola (eds.) *State versus ethnic claims: African policy dilemmas*, Boulder, CO: Westview Press

Bates, R.H., A. Grief, M. Levi, J-L. Rosenthal, and B. Weingast. 2000. The analytical narrative project. *The American Political Science Review*, 94(3), pp696-672.

Baum, J.A.C. and C. Oliver. 1991. Institutional embeddedness and the dynamics of organisational populations. *American Sociological Review*, 57(4), pp540-559.

Baum, J.A.C. and W.W. Powell. 1995. Cultivating an institutional ecology of organisational founding (Comment on Hannan, Carroll, Dundon, and Torres. *American Sociological Review*, 60(4), pp529-538.

Baumol, D.J. 1986. Productivity growth, convergence, and welfare: what the long run data show. *American Economic Review*, 76: 1072-1085.

Beck, T., G. Clarke, A. Groff, P. Keefer and P.Walsh. 2001. New tools in comparative political economy: The database of political institutions. *World Bank Economic Review*, 15(1), pp165-176.

Beck, T., A, Demirgüç-Kunt and R. Levine. 2003. Law and finance: why does legal origin matter? *Journal of Comparative Economics*, 31(4), pp653-675.

Beckman, R.J. and R.D. Cook. 1983. Outlier_ _ _s. *Technometrics*, 25(2), pp119-145.

Ben-David, D. 1993. Equalizing exchange: trade liberalisation and income convergence. Quarterly Journal of Economics, 108, 653-679.

Bendor, J., A. Glazer and T. Hammond. 2001. Theories of delegation. *Annual Review of Political Science*, 4(1), pp235-269.

Bennett, C. J. 1991. Review article: What is policy convergence and what causes it? British Journal of Political Science, 21(2), pp215-233

Berger, H., J. de Haan and S.C.W. Ejiffinger. 2001. Central Bank independence: An update of theory and evidence. *Journal of Economic Surveys*,15(1), pp3-40.

Bernhard, W. 1998. A political explanation of variations in Central Bank independence. *American Political Science Review*, 92(2), pp311-327.

Bernhard, W., J.L. Broz and W.R. Clark. 2002. The political economy of monetary institutions. *International Organization*, 56(4), pp693-723.

Bernhard, W. and D. Leblang. 2002. Political parties and monetary commitments. *International Organization*, 56(4), pp404-431

Besley, T. 1995. Nonmarket institutions for credit and risk sharing in Low-Income countries. *Journal of Economic Perspectives*, 9(3), pp115-127.

Besley, T. and A. Payne. 2003. Judicial accountability and economic policy outcomes: Evidence from employment discrimination charges. *The Institute For Fiscal Studies, Working Paper*, WP0311. Available at http://www.ifs.org.uk/wps/wp0311.pdf [Accessed 15 December 2008].

Bheenick, R. 2007. Escaping the fate of the Dodo. *Address on the Commemoration Dinner for the 40th Anniversary of the Bank of Mauritius* (Unpublished).

Birdsall, N. 2005. Rising inequality in the new global economy. *WIDER Annual Lecture*. Available at http://www.wider.unu.edu/publications/annual-lectures/en_GB/AL9/ [Accessed 16 November 2008].

Blankart, C.B. and G.B. Koester. 2006. Political economics versus public choice. Two views of political economy in competition. *Kyklos*, 59(2), pp171-200.

Blanton, S.L. 2000. Promoting human rights and democracy in the developing world: US rhetoric versus US arms exports. *American Journal of Political Science*,44(1), pp123-131

Blinder, A.S. 1999. Central Bank credibility: Why do we care? How do we build it? *NBER Working Paper 7161*, Cambridge: Mass., National Bureau of Economic Research.

Block, W.A. and S.N. Durlauf. 2001. Growth empirics and reality. *World Bank Economic Review*, 15(2), 229-272.

Blomström, M., R.E. Lipsey, and M. Zejan. 1996. Is fixed investment the key to economic growth? *The Quarterly Journal of Economics*,111, 269-276.

Blundell, R. and S. Bond. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87, 115-143.

Borner, S., A. Brunetti and B. Weder. 1995. *Political Credibility and Economic Development*. Macmillan Press: New York.

Bratton, M. 1998. Second elections in Africa. *Journal of Democracy*, 9(3), pp51-66.

Braumoeller, B.F. 2003. Causal complexity and the study of politics. *Political Analysis*, 11(3), pp209-233.

Braun, D. 2003. *Fiscal policies in federal states*. Aldershot: Ashgate.

Breen, R. 1999. Beliefs, rational choice and Bayesian learning. *Rationality and Society*, 11(4): pp463-479

Broz, J.L. 2002. Political system transparency and monetary commitment regimes. International Organization, 56(4), pp861-887

Brunetti, A., G. Kysunko and B. Weder. 1997. Credibility of rules and economic growth. *World Bank Policy Research Working Paper*, 1760.

Brunk, G.G., G.A. Caldeira, and M.S. Lewis-Beck. 1987. Capitalism, socialism, and democracy: An empirical inquiry. *European Journal of Political Research*,15(4), pp.459-470.

Buchanan, J.M. 1974. Good economics-Bad law. *Virginia Law Review*, 60(3), pp489-492.

Bueno de Mesquita, A. Smith, R.M. Siverson and J.D. Morrow. 2003. *The Logic of Political Survival*. Cambridge: The MIT Press.

_____.2001. Political competition and economic growth. *Journal of Democracy*, 12(1): pp58-72.

Bueno de Mesquita., A.S. Bruce, R. Siverson, and J.D. Morrow. 2002. Political institutions, policy choice, and the survival of leaders. *British Journal of Political Science*, 32(4),pp559-590.

Burkhart, R.E. and M.S. Lewis-Beck. 1994. Comparative democracy: The economic development thesis. *American Political Science Review*, 88(4), pp. 903-910.

Burnside, C. and D. Dollar. 2001. Aid, policies, and growth. *American Economic Review*, 90(4), pp847-868.

Calmfors, L. and J. Driffill. 1988. Bargaining structure, corporatism, and macroeconomic performance. *Economic Policy*, 3(1), pp13-61.

Calvert, R.L. and B.R.Weingast. 1982. Runaway bureaucracy and congressional oversight. *Policy Studies Review*, 1(3), pp557-564.

Caselli, F., G. Esquivel, and F. Lefort. 1996. Reopening the convergence debate: a new look at cross-country empirics. *Journal of Economic Growth*, 1(3), pp363-389.

Calvo, G.A. 1978. On the time consistency of optimal policy in a monetary economy. *Econometrica*, 46(6), pp1411-1428.

CBI. 2007. Central Banks. Available at http://www.centralbanking.co.uk/links/index.htm [Accessed 14 November 2007]

Chatterji, M. Convergence clubs and endogenous growth. *Oxford Review of Economic Policy*, 8(4), pp.57-69.

Chong, A. and C. Calderón. 2000. On the casualty and feedback between institutional measures and economic growth. *Economics and Politics*, 12(1), pp69-81.

CIA.2008.The World Fact Book. Available at: https://www.cia.gov/library/publications/the-world-factbook/index.html [accessed 18 May 2008].

CID. Center for International Development. Harvard University. www.cid.harvard.edu.

Clague, C., P. Keefer, S. Knack and M. Olson. 1996. Property and contract rights under democracy and dictatorship. *Journal of Economic Growth*, 1(2), pp243-276.

Clapham, C. 1996. *Africa and the International System. The Politics of State Survival*. Cambridge Studies in International Relations, 50. Cambridge University Press, Cambridge.

Clemens, E.S. and J.M. Cook. 1999. Politics and institutionalism: Explaining durability and change. Annual Review of Sociology, 25, pp441-466

Coleman, J.S. 1990. *Foundations of Social Theory*. Cambridge (MA): The Belknap Press of Harvard University Press.

Collier, P. 1991. Africa's external relations, 1960-90. *African Affairs*, 90(360), pp339-356.

Collier, P. 2000. Ethnicity, politics, and economic performance. *Economics and Politics*, 12(3), pp225-245.

Collier, P. and A. Hoeffler. 1998. On economic causes of civil war. *Oxford Economic Papers*, 50(4), pp563-573.

Collier, P. and J.W.Gunning. 1999. Explaining African economic performance. *Journal of Economic Literature*, 37(1), pp64-112.

Corsetti, G. and N. Roubini. 1992. Tax smoothing discretion versus balanced budget rules in the presence of politically motivated fiscal deficits: the design of optimal fiscal rules. *CEPR discussion papers* 682.

Crawford, S. and E. Ostrom. 1995. A Grammar of Institutions. *American Political Science Review*, 89(3), pp582-600.

Cukierman, A. 1992. *CB Strategy, Credibility and Autonomy*. Cambridge: Massachusetts, MIT Press.

_____. 1994. Central Bank independence and monetary control. *The Economic Journal*, 104(427), pp. 1437-1448.

Cukierman, A., S.B. Web and B. Neyapti. 1992. Measuring the independence of Central Banks and its effect on policy outcomes. The World Bank Economic Review, 6(3), pp353-398.

Davies, R.B., D. Ionascu, and H. Kristjánsdóttir. 2007. Estimating the impact of time-invariant variables on FDI with fixed effects. *Institute for International Integration Studies (Trinity College Dublin), Discussion Paper No. 228.* Available at http://www.tcd.ie/iiis/documents/discussion/pdfs/iiisdp228.pdf [accessed 30 March 2008].

Dahl, R. 1989. *Democracy and Its Critiques*. New Haven: Yale.

Damaška, M.R. 1986. *The faces of justice and state authority: A comparative approach to the legal process*. New Haven, Conn., Yale University Press.

Dawes, R.M. 1980. Social Dilemmas. *Annual Review of Psychology*. 31, pp169-193.

Debelle, G. and S. Fischer. 1994. How independent should a Central Bank be? *IN* J.C. Fuhrer (ed.), *Goals, Guidelines, and Constraints Facing Monetary Policy Makers*. Proceedings of a Conference held at North Falmouth, Federal Reserve Bank of Boston, pp.195-225

De Long, B.J. 1988. Productivity growth, convergence, and welfare: Comment. *American Economic Review*, 78, pp1139-1153.

Demsetz, H. 1967. Toward a theory of property rights. *American Economic Review Papers and Proceedings*. 62, pp347-59.

De Haan, J., J.E. Sturm and G. Beekhuis. 1999. The weak government thesis: some new evidence. *Public Choice*, 101(3-4), pp163-176.

De Soto, H. 2000. *The mystery of capital. Why capitalism works in the west and triumphs everywhere else*. Basic Books: New York.

Diamond, D.W. 1984. Financial intermediation and delegated monitoring. *The Review of Economic Studies,*51(3), pp.393-414.

Dixit, A.K. 1996. *The Making of Economic Policy: A Transaction Cost Politics Perspective*. MIT Press: Cambridge.

_____2003. Some lessons from transaction-cost politics for less developed countries. *Economics and Politics*, 15(2), pp107-134.

Dixit, A. and J. Londregan. 1995. Redistributive Politics and Economic Efficiency. *American Political Science Review*, 89(4), pp856-866.

Durlauf, S., P. Johnson, and J. Temple. 2005. Growth econometrics *IN* P. Aghion and S. Durlauf (eds.) *Handbook of Economic Growth*. UK: Elsevier Ltd., pp.555-667.

Easterly, W. 2001. *An Elusive Quest for Growth*. Cambridge: MIT Press.

Easterly, W. and R. Levine. 1997. Africa's growth tragedy: policies and ethnic divisions. *Quarterly Journal of Economics*, 112(4), pp1203-1250.

_____.1998. Troubles with the neighbours: Africa's problem, Africa's opportunity. *Journal of African Economies*,7, pp120-142.

Easterly, W. and S. Rebelo. 1993. Fiscal policy and economic growth. *Journal of Monetary Economics*, 32, pp.417-458.

Edwards, S. 1993. Openness, trade liberalisation, and growth in developing countries. *Journal of Economic Literature*, 31, pp1358-1393.

Eggertsson, T. 1990. *Economic Behaviour and Institutions*. Cambridge: Cambridge University Press.

.

Ehrenfield, D.W. 1972. *Conserving life on earth*. Oxford: Oxford University Press.

Eijffinger, S.C.W. and J. de Haan. 1996. The political economy of Central Bank independence. *Special Papers in International Economics*, No.19, Princeton University. Available at: http://www.Princeton.edu/~ies/IES_Special_Papers/SP19.pdf [Accessed 12 March 2008]

Elgie, R. and H. Thompson. 1998. *The Politics of Central Banks*. Routledge advances in international relations and politics, London.

Elgie, R. 1998. Democratic accountability and Central Bank independence: Historical and contemporary, National and European perspectives. *West European Politics*, 21(3), pp53-96.

_____.2001. Democratic accountability and Central Bank independence: A reply to various critics. *West European Politics*, 24(1), pp217-221.

Elgie, R. and I. McMenamin. 2005. Credible commitment, political uncertainty or political complexity? Explaining variations in the independence of Non-majoritarian institutions in France. *British Journal of Political Science*,35(3), pp.531-548.

_____. 2008. Political fragmentation, fiscal deficits and political institutionalisation. *Public Choice,*136(3-4), pp.255-267.

Emerson, R.M. 1976. Social exchange theory *Annual Review of Sociology*, 2, pp335-362.

Englebert, P. 2000. Solving the mystery of the Africa dummy. *World Development*, 28(10), pp1821-1835.

Epstein, D. and S. O'Halloran. 1999. *Delegating Powers: A transaction cost politics approach to policy making under separate powers*. Cambridge: Cambridge University Press.

Europa 2007. The Europa World Year Book 2007 (2v.). Europa Publications Ltd., 48th Edition,

Faye, M.L., J.W. McArthur, J.D. Sachs, and T. Snow. 2004. The challenges facing landlocked developing countries. *Journal of Human Development*, 5(1), pp31-68.

Feld, L.P. and S. Voigt. 2003. Economic growth and judicial independence: cross-country evidence using a new set of indicators. *European Journal of Political Economy*, 19(3), pp. 497-527.

Feng, Yi. 2003. *Democracy, Governance, and Economic Performance: Theory and Evidence*. The MIT Press: Cambridge.

Fosu, A.K. 1993. Effect of export instability on economic growth in Africa. *Journal of Development Areas*, 25(2), pp323-332.

_____.2001. Political instability and economic growth in developing economies: some specification empirics. Economic Letters, 70(2), pp289-294.

Freedom House. 2007. *Freedom in the World*. Available at http://www.freedomhouse.org/template.cfm?page=15 [Accessed 21 October 2007].

Friedman, M. 1953. *Essays in positive economics*. University of Chicago Press, Chicago.

Friedman, T.L. 2005. *The World Is Flat: A Brief History of the Twenty-first Century,* Farrar, Straus and Giroux, New York.

Fry, M.J. 1998. Assessing Central Bank independence in developing countries: do actions speak louder than words? *Oxford Economic Papers*, 50(3), pp512-529.

Fry, M.J. and D.M. Lilien. 1986 Monetary policy responses to exogenous shocks. *American Economic Review*, 76(2), pp79-83.

Fry, M.J., C.A.E. Goodhart and A. Almeida. 1996. *Central Banking in Developing Countries: Objectives, Activities, and Independence*. Routledge: London.

Fudenberg, D. and E. Maskin. 1986. The Folk Theorem in Repeated Games with Discounting or With Incomplete Information. *Econometrica*, 54(3), pp533-554.

Fuente, de la. 1997. The empirics of growth and convergence: A selective review. *Journal of Economic Dynamics and Control*, 21,23-73

Galor, O. 1996. Convergence? Inferences from theoretical models. *Economic Journal*, 106(437), pp1056-1069.

Gastil, R.D. 1989. *Freedom in the world: political rights and civil liberties, 1988-89*. Washington, D.C. Freedom House.

Gilardi, F. 2007. The same, but different: Central Banks, regulatory agencies, and the politics of delegation to independent authorities. *Comparative European Politics*, 5, pp.307-323.

_____. 2004. *Delegation in the regulatory state. Origins and diffusion of independent regulatory agencies in western Europe*. PhD Thesis. Universite De Lausanne.

_____.2002. Policy credibility and delegation to independent regulatory agencies: a comparative empirical analysis. *Journal of European Public Policy*, 9(6), pp.873-893.

Ghura, D. and M. Hadjimichael. 1996. Growth in sub-Saharan Africa. *International Monetary Fund Staff Papers*, 43(3), pp605-634.

Glaeser, E.L. and A. Shleifer. 2002. Legal origins. *Quarterly Journal of Economics*, 117(4), pp1193-1229.

Glaeser, E.L., R. La Porta, F. Lopes-de-Silanes, and A. Shelifer. 2004. Do institutions cause growth. *Journal of Economic Growth*, 9(3), pp271-303.

Goldsmith, A.A. 1995. Democracy, property rights, and economic growth. *Journal of Development Studies*, 32(2), pp.157-174.

Gordon. H.S. 1954. The economic-theory of a common-property resource: the fishery. *Journal of Political Economy*, 62(2), pp124-142.

Gore, C. 2000. The rise and fall of the Washington Consensus as a paradigm for developing countries. *World Development*, 28(5), pp.789-804.

Goudie, A. and P. Ladd. 1999. Economic growth, poverty, and inequality. *Journal of International Development*, 11(2), pp. 177-195.

Grabel, I. 2000. The political economy of 'policy credibility': the new-classical macroeconomics and the remaking of emerging economies. *Cambridge Journal of Economics*, 24(1), pp1-19.

Granovetter, M. and R. Swedberg.(eds.). 1992. *The sociology of economic life*. Boulder, Westview Press

Granovetter, M. 1978. Threshold models of collective behaviour. *American Journal of Sociology*, 83(6), pp1420-1443.

Grier, K.B. and G. Tullock. 1989. An empirical analysis of cross-national of economic growth, 1951-80. *Journal of Monetary Economics*, 24(2), pp259-276.

Grilli, V., D. Masciandro and G. Tabellini. 1991. Political and monetary institutions and public financial policies in the industrial countries. *Economic Policy*,6(13), pp342-392.

Grossman, S.J. and O.D.Hart. 1980. Take over bids, the free rider problem and the theory of the corporation. *Bell Journal of Economics*, 11(1), pp42-64.

Guillaumont, P., S.G. Jeanneney and J-F. Brun. 1999. How instability lowers African growth. *Journal of African Economies*, 8(1), pp.87-107.

Gyimah-Brempong, K. and T.L. Taynor. 1999. Political instability, investment, and economic growth in sub-Saharan Africa. *Journal of African Economies*, 8(1), pp52-86.

_____. 2002. Civil wars and economic growth in sub-Saharan Africa. National Science Foundation: Washington, D.C.

Hakkio, C. and M. Rush. 1991. Is the budget deficit too large? *Economic Inquiry*, 29(3), pp429-445.

Hall, P.A. and Rosemary C.R. Taylor. 1996. Political science and the three new institutionalisms. *Political Studies*, XLIV (5), pp936-957.

_____. 1998. Political science and the three new institutionalisms. *IN* K. Soltan, E.M. Uslaner and V. Haufler (eds.), *Institutions and Social Order* Ann Arbor, MI: University of Michigan, pp.15-43.

Hall, R. and C.I. Jones. 1999. Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics*, 114(1), pp83-116.

Hansen, L.P. 1982. Large sample properties of generalised method of moment estimators. *Economterica*, 50(4),pp1029-1054.

Hardin, G.1968. The tragedy of the commons. *Science* 162, pp1243-1248.

Hardin, R. 1978. Collective Action as an Agreeable N-Prisoner's Dilemma. *Behavioural Science*, 16, pp472-481.

Harrison, A. 1996. Openness and growth, a time series, cross country analysis for developing countries. *Journal of Development Economics*, 48, 419-447

Hausmann, R., L. Pritchett and D. Rodrik. 2005. Growth Accelerations. *Journal of Economic Growth*, 10(4), pp303-329.

Hayek, F.A.von. 1960. *The constitution of liberty*. Chicago: University of Chicago Press

Heilbroner, R. L. 1974. *An inquiry into the human prospect*. New York: Norton

Henisz, W.J. 2000. The institutional environment for economic growth. *Economics and Politics*, 12(1), pp. 1-31.

Henisz, W.J. 2006. POLCON. Available at http://www.management.wharton.upenn.edu/henisz [Accessed 10 June 2008].

Heritage. 2008. Index of Economic Freedom. Available at http://www.heritage.org/Index [Accessed 12 February 2008].

Heston, A., R. Summers and B. Aten. 2006. *Penn World Table Version 6.2, Center for International Comparison of Production, Income and Prices at the University of Pennsylvania*. Available at: http://pwt.econ.upenn.edu/php_site/pwt_index.php [accessed 12 May 2008].

Hoeffler, A. 2002. The augmented Solow model and the African debate. *Oxford Bulletin of Economics and Statistics*, 64(2), pp135-158.

Hsiao, C. 2003. *Analysis of panel data*. Cambridge, Mass: Cambridge University Press.

Huntington, S.P. and J.I. Dominguez. Political Development *IN* F.I. Greenstein and N.W. Polsby (eds.) *Handbook of Political Science, 3*. Reading:Addison-Wesley, pp.1-114.

ILO. 2009. International Labour Organisation Press Release. Available at: http://www.ilo.org/public/english/dialogue/actrav/new/291002/htm [Accessed 14 February 2009].

IMF. 2007. World Economic Outlook 2007: *Spillovers and Cycles in the Global Economy*. International Monetary Fund, Washington D.C.

Immergut. E.M. 1990. Institutions, veto points, and policy results: A comparative analysis of health care. *Journal of Public Policy*, 10(4), pp. 391-416.

_____.1998. The theoretical core of the new institutionalism. *Politics and Society*, 26(1), pp5-34.

Islam, N. 1995. Growth empirics: A panel data approach. *The Quarterly Journal of Economics* 110(4), pp1127-1170.

Iversen, T. 1998. Wage bargaining, Central Bank independence, and the real effects of money. *International Organisation*, 52(3), pp469-504.

Johnson, P.A. and L.N. Takeyama. 2001. Initial conditions and economic growth in the US states. *European Economic Review*, 45(4-6), pp. 919-927.

Jones, C. I. 2002. *Introduction to Economic Growth*, second edition. New York and London: W.W. Norton.

Kasara, K. 2007. Tax me if you can: Ethnic geography, democracy, and the taxation of agriculture in Africa. *American Political Science Review*, 101(1), pp.159-172.

Kaufmann, D., A. Kraay and P. Zoido-Lobaton. 1999. Aggregating governance indicators. *World Bank Policy Research Working Paper*, 2196

Kaufmann, D., A. Kraay and M. Mastruzi. 2005. *Governance Matters IV: Governance Indicators for 1996-2004*. Available at http://www.worldbank.org/wbi/governance [Accessed 21 March 2007]

Keefer, P. and D. Stasavage. 1998. When does delegation improve credibility? Central Bank independence and the separation of powers. *Working Paper Series 98-18, Centre for the Study of African Economies, University of Oxford*. Available at http://www.csae.ox.ac.uk/workingpapers/pdfs/9818text.pdf [Accessed 6 January 2008].

_____. 2002. Checks and balances, private information, and the credibility of monetary commitments. *International Organization*, 56(4), pp751-774.

_____.2003. The limits of delegation: veto players, Central Bank independence and the credibility of monetary policy. *American Political Science Review*, 97(3), pp.407-423.

Keefer, P. 2004. What does political economy tell us about economic development-And Vice Versa? *Annual Review of Political Science*, 7(1), pp247-272.

Kennedy, S. and J. Robbins. 2003. The role of fiscal rules in determining fiscal performance. *Department of Finance (Canada), Working paper 2001-16*. Available at http://www.fiscalreform.net/library/pdfs/ [Accessed 15 April 2008].

Keohane, R.O. 2001. Governance in a partially globalised world, Presidential Address, American Political Science Association 2000. *The American Political Science Review*, 95(1), pp1-13.

Kiewiet, D.R. and M.D. McCubbins. 1991. *The logic of delegation*. Chicago: Chicago University Press.

Klerman D.M. and P.G. Mahoney. 2005. The value of judicial independence: evidence from eighteenth century England. *American Law and Economics Review*, 7, pp.1-27.

Knack, S. and P. Keefer. 1995. Institutions and economic performance: cross-country tests using alternative institutional measures. *Economics and Politics*, 7(3), pp207-228.

_____.1997. Does social capital have an economic payoff? A cross country investigation. *Quarterly Journal of Economics*, 112(4), pp1251-1288.

_____2002. Polarisation, politics and property rights: Links between inequality and growth. *Public Choice*, 111(1-2), pp127-154.

Koelble, T.A. 1995. The new institutionalism in political science and sociology. *Comparative Politics*, 27(2), pp231-243.

Kolodko, G.W. 1998. Economic neoliberalism became almost irrelevant…. *Beyond Transition, A World Bank newsletter about reforming economies*, 9(3), Available at http://web.worldbank.org [Accessed 10 December 2008].

Kontopoulos, Y. and R. Perotti. 1999. Government fragmentation and fiscal policy outcomes: Evidence from OECD countries. *IN* J.M. Poterba and J. Von Hagen (eds.). *Fiscal Institutions and Fiscal Performance*. Chicago, University of Chicago Press, pp. 81-102.

Kormendi, R.C. and P.G. Meguire. 1985. Macroeconomic determinants of growth: Cross-country evidence. *Journal of Monetary Economics*, 16, pp.141-163.

Kydland, F.E. and E.C. Prescott. 1977. Rules rather than discretion: The inconsistency of optimal plans. *Journal of Political Economy*, 85(3), pp473-491.
_____. 1982. 'Time to Build' and Aggregate Fluctuations, Econometrica, 50(6), pp1345-1375.

Laffont, J-J. 2000. *Incentives and political economy*. Oxford: Oxford University Press.

Laffont, J-J. and J. Tirole. 1994. Access pricing and competition. *European Economic Review*, 38(9), pp1673-1710.

Landes, W.M. and R.S. Posner. 1975. The independent judiciary in an interest-group perspective. *Journal of Law & Economics*, 18(3), pp. 875-901.

La Porta, R., L. de Silanes, F. Shelifer and R. Vishny. 1997. Legal determinants of external finance. *Journal of Finance*, 52(3), pp1131-1150.

_____. 1998. Law and finance. *Journal of Political Economy*,106(6), pp1113-1155.

_____. 1999. The quality of government. *Journal of Law, Economics, and Organisation*, 15, pp. 222-279.

La Porta, R, F. Lopez-de-Silanes, C. Pop-Eleches, A. Shleifer. 2004. Judicial checks and balances. *Journal of Political Economy*, 112(2), pp. 445-470.

Leblang, D. 1996. Property rights, democracy, and economic growth. *Political Research Quarterly*, 49(1),pp5-26.

Lee, K., M. Pesaran, and R. Smith. 1997. Growth and convergence in a multi-country empirical stochastic Solow model. *Journal of Applied Econometrics*, 12(4), pp357-392

Lee, K., H.M. Pesaran and R. Smith. 1998. Growth empirics: a panel data approach-A comment. *The Quarterly Journal of Economics*, 113, 319-323

Levi, M. 2006. Why we need a new theory of government. *Perspectives on Politics*, 4(1), pp 5-19.

_____.1997. A model, a method, and a map: Rational choice in comparative and historical analysis. *IN* M.I. Lichbach and A.S. Zuckerman (eds.). *Comparative Politics: Rationality, Culture, and Structure*. Cambridge: Cambridge University Press, pp19-41.

Levine, R. and D. Renelt. 1992. A sensitivity analysis of cross-country growth regressions. *American Economic Review*, 82(4), pp942-963.

Levine, R. and S. Zervos. 1996. What we know about policy and growth from cross country analysis. *IN* L.L. Pasinetti and R.M. Solow (eds.). Economic growth and the Structure of Long Run Development. London: Macmillan, pp.22-24.

Lipset, S.M. 1959. Some social requisites of democracy: Economic development and political legitimacy. *American Political Science Review*, 53(1), pp.69-105.

Locke, J. 1690. The Second Treatise of Civil Government. Available at http://www.constitution.org/2ndtreat.htm [Accessed 03 May 2009].

Lohmann, S. 1992. Optimal commitment in monetary policy: Credibility versus Flexibility. *American Economic Review*, 82(1), pp273-281.

Lohmann, S. 1998. Federalism and Central Bank independence: the politics of German monetary policy. *World Politics*, 50(3), pp401-446.

_____. 2000. Collective action cascades: An informational rational for the power in numbers. *Journal of Economic Surveys*, 14(5), pp655-684.

_____. 2003. Why do institutions matter: An audience-cost theory of institutional commitment. *Governance*, 16(1), pp95-110.

Lucas, R.E. (JR.). 1988. On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), pp3-42.

Lucas, R.E (JR.) and N.L. Stokey. 1987. Money and interest in a cash-in-advance economy," *Econometrica*, 55(3), pp491-513.

Lupia, A. and M.D. McCubbins. 2000. Representation or abdication? How citizens use institutions to help delegation succeed. *European Journal of Political Research*, 37(3), pp291-300.

MacIntyre, A. 2001. Institutions and investors: The politics of the economic crisis in Southeast Asia. *International Organization*, 55(1), pp.88-122.

Maddison, A. 1995. *Monitoring the World Economy 1820-1992*. OECD: Paris.

_____.1999. Perspectives on global economic progress and human development. *IN* I. Castles (ed.) *Facts and Fancies of Human Development*. 1-22. Academy of the Social Sciences in Australia, Canberra 2000. Available at http://www.gddc.net/maddison/ [Accessed 3 December 2008].

_____. 2003. *The World Economy: Historical Statistics*. OECD: Paris.

_____.2008. Statistics on World Population, GDP and Per Capita GDP, 1-2006 AD. Available at http://www.ggdc.net/maddison [accessed 15 August 2008].

Mahoney, P.G. 2001. The common law and economic growth: Hayek might be right. *Journal of Legal Studies*, 30(2), pp. 507-526.

Mahoney, J.M. 2000. Path dependence in historical sociology. Theory and Society, 29(3), pp507-548.

Majone, G. 2001. Two logics of delegation: Agency and fiduciary relations in EU Governance. *European Union Politics*, 2(1), pp.103-122.

Mangano, G. 1998. Measuring Central Bank independence: A tale of subjectivity and its consequences. *Oxford Economic Papers*, 50(3), pp468-492.

Mankiw, N.G., D. Romer and D.N. Weil. 1992. A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2), pp407-437.

Marshall, M.G. and K. Jaggers. 2007. Polity IV Project, Political Regime Characteristics and Transitions, 1800-2007. Available at http://www.systemicpeace.org/inscr/inscr_htm [Accessed 12 February 2007].

Mauro, P. 1995. Corruption and growth. *Quarterly Journal of Economics*,110(3), pp681-712.

Mauro, P.1998. Corruption and the composition of government expenditure. *Journal of Public Economics*, 69(2), pp263-279.

McCarty, N. 2000. Proposal Rights, Veto Rights, and Political Bargaining. *American Journal of Political Science*, 44(3), pp506-522.

McCubbins, M.D. and T. Schwartz. 1984. Congressional oversight overlooked: Police patrols versus fire alarms. *American Journal of Political Science*, 28(1), pp165-179.

McCubbins, M.D., R.G. Noll and B.R. Weingast. 1987. Administrative procedures as instruments of political control. *Journal of Law, Economics, and Organisation*, 3, pp243-77.

McGinnis, M.D (ed.) 1998. *Workshop in political theory and policy analysis*. University of Michigan Press

McNabb, D.E. 2004. *Research Methods for Political Science: Quantitative and Qualitative Methods*. Armonk: NY.

Mkandawire, T. 2001. Thinking about developmental states in Africa. *Cambridge Journal of Economics*, 25(3), pp289-313.

Moe, T.M. 1984. The new economics of organization. *American Journal of Political Science*, 28(4), pp739-777.

Moe, T. M. and M. Caldwell. 1994. The institutional foundations of democratic government: a comparison of presidential and parliamentary systems. *Journal of Institutional and Theoretical Economics,* 150:171-195.

Montalvo, G. and M. Reynal-Querol. 2005. Fractionalization, polarisation and economic development. *Journal of Development Economics*,76, pp.293-323.

Moser, P. 1999. Checks and balances, and the supply of Central Bank independence. *European Economic Review*, 43(8), pp1569-1593.

Mullei, A. 2008. E-mail to Michael Seifu, 26 November.

Nebel, B.J. 1987. *Environmental Science*, 2nd ed. Prentice-Hall.

Nickell, S. 1981. Biases in dynamic models using fixed effects. *Econometrica*, 49(6),pp1417-1426.

Nkurunziza, J.D. and R.H. Bates. 2003. Political institutions and economic growth in Africa. Centre for the Study of African Economies, Oxford University. Working Paper CSAE/ WPS 2003/03

North, D.C. and B. Weingast. 1989. Constitutions and commitment: The evolution of institutions governing public choice in seventeenth-century England. *The Journal of Economic History*, XLIX(4), pp803-832.

North, D.C. 1987. Institutions, transaction costs, and economic growth. *Economic Inquiry*, 25(3), pp.419-428.

_____. 1990. *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.

_____. 1992. Transaction Costs, Institutions and Economic Performance. *International Centre for Economic Growth*, Occasional Papers 30.

_____. 1997. The contribution of the new institutional economics to an understanding of the transition problem, *WIDER Annual Lecture*. Available at http://www.wider.unu.edu. [Accessed 15 June 2007]

Olson, M. 1965. *The Logic of Collective Action: public goods and the theory of groups*. Harvard Economic Studies, Volume CXXIV. Harvard University Press.

_____. 1971. *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. Yale University Press.

_____. 1996. Big Bills Left in the Sidewalk: Why some countries are rich and others poor. *Journal of Economic Perspectives*, 10(2), pp3-22.

Ostrom, E. 1990. *Governing the Commons: the evolution of institutions for collective action*. Cambridge university press

_____. 1998. A Behavioural Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997. *American Political Science Review*, 92(1), pp1-22.

Ostrom, E., J. Walker and R. Gardner. 1992. Covenants with and without a sword: Self-governance is possible. *American Political Science Review*, 86(2), pp404-417.

Palmer, G., T. London, and P. Regan. 2004. What is stopping you?: The sources of political constraints on international conflict behaviour in parliamentary democracies. *International Interactions*, 30, pp.1-24

Parkin, M. and R. Bade. 1982. Central Bank laws and monetary policies. University of Western Ontario, London, Ontario (Unpublished manuscript).

Persson, T. 1998. Economic policy and special interest politics. Economic Journal, 108(447), pp310-327.

Persson, T. and G. Tabellini. 1992. Growth, Distribution and Politics. *European Economic Review*, 36(2-3), pp593-562.

_____.2002. *Political economics. Explaining economic policy*. The MIT Press: Massachusetts Institute of Technology.

_____. 2004a. Constitutional rules and fiscal policy outcomes," *American Economic Review*, 94(1), pp25-45.

_____. 2004b. Constitutions and economic policy. *Journal of Economic Perspectives*, 18(1), pp75-98.

Persson, T. and L.E.O.Svensson.1989. Why a stubborn conservative would run a deficit: policy with time-inconsistent preferences. *Quarterly Journal of Economics*, 104(2), pp325-345.

Persson, T., G. Roland and G. Tabellini. 1997. Separation of powers and political accountability. *Quarterly Journal of Economics*, 112(4), pp1162-1202.

_____. 1999. The size and scope of government: Comparative politics with rational politicians. *European Economic review*, 43(4-6), pp699-735.

Peters, G. 2005. *Institutional theory in political science*. Continuum International Publishing Group: London.

Pierson, P. 2000. Increasing returns, path dependence, and the study of politics. *American Political Science Review*, 94(2), pp251-267.

Plűmper, T. and V.E. Troeger. 2005. Efficient estimation of time-invariant and rarely changing variables in finite sample panel: analysis with unit fixed effects. *In APSA (American Political Science Association) Annual meeting 2005*. Washington, DC.

Pollack, M.A.1997. Delegation, agency, and agenda-setting in the European Community. *International Organization*, 51(1), pp99-134.

Pourgerami, A. 1991. The political economy of development. An empirical investigation of the wealth theory of democracy. *Journal of Theoretical Politics*, 3(2): pp.189-211.

Posen, A.S. Do Better Institutions Make Better Policy? 1998. *International Finance*, 1(1), pp173-205.

Posner, R.A. 1998. Creating a legal framework for economic development. *The World Bank Research Observer*, 13(1), pp1-11.

Powell, W.W. and P.J. DeMaggio (eds.)1991. *The new institutionalism in organisational analysis*. Chicago :University of Chicago Press

Pritchett, L. 1997. Divergence, Big Time. *Journal of Economic Perspectives*, 11(3), pp 3-17.

_____.2000. Understanding patterns of economic growth: Searching for hills among plateaus, mountains, and plains. *World Bank Economic Review*, 14(2), pp.221-250.

Przeworski, A. and F. Limongi. 1993. Political regimes and economic growth. *The Journal of Economic Perspectives*, 7(3), pp51-69.

Quah, D.T. 1997. Empirics for growth and distribution: Stratification, polarization, and convergence clubs. *Journal of Economic Growth*, 2(1), pp27-59.

Ramseyer, J.M. 1994. The puzzling in(dependence) of courts: A comparative approach. *Journal of Legal Studies*, 23(2), pp721-747.

Reilly, B. 2001. *Democracy in divided societies: Electoral engineering for conflict management. Theories of institutional design*. Cambridge: Cambridge University Press

Reynolds, L.G. 1983. The spread of economic growth to the third world: 1850-1980. *Journal of Economic Literature*, 21(3), pp941-980.

Riker, W.H. 1980. Implications from the Disequilibrium of Majority Rule for the Study of Institutions. *American Political Science Review*, 74(2), pp432-446.

Rodrik, D. 1992. Political Economy and Development Policy. *European Economic Review*, 36(2-3), pp329-336.

_____. 1993. The Positive Economics of Policy Reform. *American Economic Review*, 83(2), pp356-361.

_____. 2003. Introduction: What do we learn from the country narratives? *IN* D. Rodrik (ed.) *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton University Press, pp1-20.

Rodrik, D., A. Subrimanian and F. Trebbi. 2004. Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. *Journal of Economic Growth*, 9(2), pp131-165.

Rodrik, D., R. Hausmann and A. Velasco. 2005. Growth Diagnostics. Available at http://ksghome.harvard.edu/~drodrik/barcelonafinalmarch2005.pdf [Accessed 10 January 2008]

_____.2008. Growth Diagnostics. IN J. Stiglitz and N. Serra (eds.), *The Washington Consensus Reconsidered: Towards a New Global Governance*, Oxford University Press, New York, 2008, pp324-355.

Roemer, M. and M. Guerty. 1997. Does economic growth reduce poverty? *CAER II Discussion Paper, no.5.*

Rogoff, K. 1985. The optimal degree of commitment to an intermediate money target. *Quarterly Journal of Economics*, 100(4), pp1169-1990.

Romer, P. 1986. Increasing returns and long-run growth. *Journal of Political Economy*, 94(5), pp1002-1037.

_____. 1987. Growth based on an increasing returns due to specialisation. *American Economic Review*, 77(2), pp56-62

Roodman, D. 2006. How to do xtabond2: An introduction to 'Difference' and 'System' GMM in STATA. *Working paper 103*, Center for Global Development. Washington.

Root, H.L. 1996. *Small Countries, Big Lessons: Governance and the Rise of East Asia*. Oxford University Press.

Rotte, R. and K.F. Zimmermann. 1998. Fiscal restraint and the political economy of EMU. *Public Choice*, 94(3-4), pp385-406.

Roubini, N. And J. Sachs. 1989a. Economic and political determinants of budget deficits in Industrial democracies. *European Economic Review*, 33(5), pp903-938.

_____. 1989b. Government spending and budget deficits in the industrial countries. Economic Policy, 8(4), pp99-132.

Rubinstein, A. 1979. A note about the "Nowhere Denseness" of societies having an equilibrium under a majority rule. *Econometrica*, 47(2), pp511-514.

Sachs, J. 2003. Institutions don't rule: Direct effects of geography on per capita income. *NBER Working Paper Series, 9490*. Available at http://www.nber.org/papers/w9490 [Accessed 09 December 2008].

Sachs, J.D. and A.M. Warner. 1995. Economic reform and the process of global integration. *Brookings Papers on Economic Activity*, 1, pp1-118.

_____.1997. Sources of slow growth in African economies. *Journal of African Economies*, 6(3), pp335-376.

Sala-I-Martin, X.X. 1997. I just run two million regressions. *American Economic Review*, 87(2), pp178-183.

Saleh, J. 2004. Property rights institutions and investment. *World Bank Policy Research Working Paper 3311*, Available at http://www-wds.worldbank.org/external [Accessed 12 September 2007].

Sarel, M. 1996. Nonlinear effects of inflation on economic growth. *International Monetary Fund Staff Papers*, 43, pp.199-215.

Savvides, A. 1995. Economic growth in Africa. *World Development*, 23(3), pp449-458.

Scully, G. 1988. The institutional framework and economic development. *Journal of Political Economy*, 96(3), pp652-662.

Schaling, E. 1998. Institutions and monetary policy: credibility, flexibility, and Central Bank independence. Public Choice, 94(3-4),pp429-433.

Schultz, T.P. 1998. Inequality in the distribution of personal income in the world: How it is changing and why. *Journal of Population Economics*, 11(2), pp307-344.

de Schweinitz, K. 1959. Industrialisation, labour controls, and democracy. *Economic Development and Cultural Change*, VII(4), pp.385-404.

Sen, A. 2001. *Development as Freedom*. Oxford University Press, UK.

Shakespeare, F. 2009. The penalties of truth and leadership: the courage of Judge Birtukan Mideksa. Available at: http://www.ethiomedia.com/aurora/9714.html [Accessed 05 February 2009].

Shepsle, K.A. and B.R. Weingast. 1981. Structure-induced equilibrium and legislative choice. *Public Choice*, 37(3), pp503-519.

Sheshinski, E. 1967. Optimal accumulation with learning by doing, *IN* K. Shell(ed.), *Essays on the Theory of Optimal Economic Growth*, pp31-52, MA: MIT Press.

Sikken, B.J. and J. de Haan. 1998. Budget deficits, monetization, and Central Bank independence in developing countries. *Oxford Economic Papers*, 50(3), pp493-511.

Sirowy, L. and A. Inkeles. 1990. The effects of democracy on economic growth and inequality: A review. *Studies in Comparative International Development*, 25(1), pp126-157.

Smith, R.J. 1981. Resolving the tragedy of the commons by creating private property rights in Wildlife. *CATO Journal*, 1, pp439-468.

Solow, R.M. 1956 . A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70(1), pp 44-64.

_____.1957. Technical change and the aggregate production function. *Review of Economics and Statistics*, 39(3), pp312-320.

_____.1958. A skeptical note on the constancy of relative shares. *American Economic Review*, 48(4), pp618-631

Spiller, P.T. and R. Gely. 1992. Congressional control or judicial independence: the determinants of U.S. Supreme Court labour-relations decisions, 1949-1988. *Rand Journal of Economics*, 23(4), pp463-492.

Stasavage, D. 2002. Private investment and political institutions. *Economics and Politics*, 14(1), pp41-64.

Steffen, G. 2003. Promises and pitfalls of veto player analysis. *Swiss Political Science Review*, 9(2), pp.1-25.

Ström, K. 2000. Delegation and Accountability in Parliamentary Democracies. *European Journal of Political Research*, 37(3), pp261-289.

Szirmai, A., B. Van Ark, and D. Pilat (eds.) 1993. *Explaining economic growth: Essays in honour of Angus Maddison*. North-Holland

Tabellini, G. and A. Alesina. 1990. Voting on the budget deficit. *The American Economic Review*, 80(1), pp37-50.

Tavares, J. and R. Wacziarg. 2001. How democracy affects growth. *European Economic Review*, 45(8), pp1341-1378.

Taylor, M. 1987. *The Possibility of Cooperation*. Cambridge: Cambridge University Press.

Temple, J. 1998. Equipment investment and the Solow model. *Oxford Economic Papers*, 50(1), pp.39-62.

_____.1999. The new growth evidence. *Journal of Economic Literature*, 37(1), pp112-156.

Thatcher, M. 2002. Delegation to independent regulatory agencies: Pressures, functions and contextual mediation. *West European Politics*, 25(1), pp125-147.

Thatcher, M. and A.S. Sweet. 2002. Theory and practice of delegation to Non-Majoritarian institutions. *West European Politics*, 25(1), pp1-22.

Thelen, K. 1999. Historical institutionalism in comparative politics. *Annual Review of Political Science*, 2(1), pp369-404.

The Europa World Year Book 2007 (48th ed.). Taylor and Francis Group Ltd.: UK.

TI. 2008. Transparency International Corruption Perception Index. Available at http://www.transparency.org [Accessed 11 May 2008].

Torstensson, J. 1994. Property rights and economic growth: An empirical study. *KYKLOS*, 47(2), pp. 231-247.

Treisman, D. 2007. What have we learned about the causes of corruption from the ten years of cross-national empirical research. *Annual Review of Political Science*, 10(1), pp211-244.

_____. 2000. The causes of corruption: a cross-national study. *Journal of Public Economics*, 76(3), pp399-457.

_____. 1999. Political decentralization and economic reform: A game theoretic analysis. *American Journal of Political Science*, 43(2), pp488-517.

Tsangarides, C.G. 2001. On cross-country growth and convergence: evidence from African and OECD countries. *Journal of African Economies*, 10(4), pp355-389.

Tsebelis, G. 1994. The power of the European parliament as a conditional agenda setter. *American Political Science Review*, 88(1), pp128-142.

_____.1995. Decision making in political systems: veto players in presidentialism, parliamentarism, multicameralism, and multipartyism. *British Journal of Political Science*, 25(3), pp289-325.

_____. 1997. *Bicameralism*. Cambridge, U.K.; New York: Cambridge University Press.

_____.1999. Veto players and law production in parliamentary democracies: An empirical analysis. *American Political Science Review* 93(3), pp591-608.

_____.2000. Veto players and institutional analysis. *Governance*, 13(4), pp 441-474.

_____. 2002. *Veto players: How political institutions work*. Princeton, NJ: Princeton University Press.

UNDP. 2007. *Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world*. United Nations Development Programme, New York.

UNECA. 2008. *African Governance Report 2005*. United Nations Economic Commission for Africa, Available at http://www.uneca.org/agr2005 [Accessed 22 March 2008].

USSD.2007. *U.S. Department of State Human Rights Country Reports*. Available at http://www.state.gov/g/drl/rls/hrrpt [Accessed 11 December 2007].

Van den, B., C. and G. L. Lilien. 2001. Medical renovation revisited: Social contagion versus marketing efforts. *American Journal of Sociology*, 106(5), pp1409-1435.

Vickers, J. 1985. Delegation and the theory of the firm. *Economic Journal,* 95(Supplement), pp.138-147.

Volkerink, B. and J. De Haan. 2001. Fragmented government effects on fiscal policy: New evidence. *Public Choice*, 109(3-4), pp221-242.

Von Hagen, J. 2002. Fiscal Rules, Fiscal Institutions, and fiscal Performance. *The Economic and Social Review*, 33(3), pp263-284.

_____. 1992. Budgeting procedures and fiscal performance in the European communities. *Economic papers* 96.

_____. 1991. A note on the empirical effectiveness of formal fiscal constraints. *Journal of Public Economics*, 44(2), pp199-210.

Von Hagen and I. Harden. 1995. Budget processes and commitment to fiscal discipline. *European Economic Review*, 39(3-4), pp771-779.

Weingast, B.R. 1993. Constitutions as governance structures: the political foundations of secure market. *Journal of Institutional and Theoretical Economics*, 149, pp286-341.

_____.1995. The economic role of political institutions: market-preserving federalism and economic development. *Journal of Law, Economics, and Organisation*, 11, pp1-31.

_____. 1996. *Political Institutions: Rational Choice Perspectives. A New Handbook of Political Science*, Oxford University Press, pp167-190.

_____.1997. The political foundations of democracy and the rule of law. *American Political Science Review*, 91(2), pp245-263.

Weingast, B.R., K.A.Shepsle and C. Johnson. 1981. The political economy of benefits and costs: A neoclassical approach to distributive politics. *Journal of Political Economy*, 89(6), pp642-664.

Weingast, B.R. and M. Moran. 1983. Bureaucratic Discretion or Congressional? Regulatory Policy Making by the Federal Trade Commission. *Journal of Political Economy*, 94(4), pp884-894.

Weingast, B.R. and W.J. Marshall. 1988. The industrial organisation of congress; or, why legislatures, like firms, are not organised as markets. *Journal of Political Economy*, 96(1), pp132-164.

Williams, J.T., B.Collins and M.I.Lichbach. 1997. The origins of credible commitment to the market. Presented at the annual meeting of the American Political Association, Chicago, Illinois.

Williamson, J. 1990. What Washington means by policy reform. *IN* John Williamson (ed.), *Latin American Adjustment: How Much Has Happened*, Washington, D.C., Institute for International Economics.

_____.2000. What should the World Bank think about the Washington Consensus. *The World Bank Research Observer*,15(2), pp251-264.

Wooldrige, J.M. 2002. *Econometric Analysis of Cross Section and Panel Data*. MIT Press: Cambridge.

World Bank. 2006. *World Development Report 2007: Development and the Next Generation*. World Bank Publications, Washington D.C.

Zucker, L.G. 1987. Institutional theory of organisation. *Annual Review of Sociology*, 13, pp443-464.