Governance, Incentives and Elections as Determinants of Economic Performance, Aid and Investment Flows

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ABSTRACT: Scholars have focused their efforts to explain poor growth and development in regions such as Sub-Saharan Africa, and parts of Asia, Eastern Europe, and Latin America, using arguments based on quality of institutions and geography and the structure and process of resource allocation and endowment. This paper presents a different argument based on an incentive compatibility and asymmetric information framework. We characterize the decision-making problem in government and public sector as being fraught with mis-information about the true state of economic performance. Mis-information can also result in a legal liability which may depend on probability of losing elections, income, and attitude to risk. The agency conflicts between the elected politicians and career-bureaucrats contribute to the mis-information problem, resulting in poor policy choices that may lead to poor economic performance. The role of international financial aid flows is examined and the paper argues that such aid flows may only serve to subsidize the inefficiencies of political leaders and reduce the economic gap created by poor policy choices. More financial aid flows may not be a panacea for poor economic growth and its insurance characteristics may cause recipient governments to choose even riskier policies. We also examine why Foreign Direct Investment (FDI) flows to poor regions, such as Sub-Saharan Africa, are low. We show that the risky policy choices create conditions that increase the value of the option-to-wait on investment decisions, thus reducing the flow of FDI. We undertake empirical analysis on some African Countries and show that the quality of governance influences GDP growth, Employment Creation, and Poverty Reduction in Africa.
KEYWORDS:Governance, Incentives, Asymmetric Information, Elections, Economic Performance, Aid Flows, Insurance, Moral Hazard, Foreign Direct Investment (FDI), Option-to-Wait, Real Options

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1 Introduction

Research on causes of underdevelopment traps and economic growth can be traced back to the work of Young (1928), Rosenstein-Rodan (1943) and Nurkse (1953). The seminal work of Kormendi and Meguire (1985), Grier and Tullock (1998), Barro (1991), Abramovitz (1986) and Baumol (1986), revived the debate on causes of economic growth. Later work by Quah (1997), Salai-I-Martin (1987, 2004) has sought to identify the factors driving economic growth across various regions around the world in a manner that would explain why various regions are growing at widely different rates. A stark example is the vast difference in growth rates between African and Asian countries. Asia was at the same level of development as most African countries in the early sixties, but has since overtaken Africa in its pace of economic growth. Explanations and solutions for Africa's poor growth are found in the research work by Collier (2004), Berthelemy and Varoudakis (1996), Berthelemy and Soderling (2001), and Sacks, et al (2004). The "big-push" initiative, which argues for financial transfers in developing countries and in particular Africa, has been advanced heavily by Sacks et al (2004) and is also linked to the African Commission Report driven by the British government, and accompanied by proposals for debt forgiveness for poorer countries.

Economic analysis in the literature indicates that (see Sala-I-Martin (2004)) the most important variables that explain economic growth include East Asian dummy; primary schooling; investment price; GDP; fraction of the area that is tropical; coastal population density; malaria prevalence; life expectancy; fraction of the population that is Confucian minded; African dummy; Latin American dummy; fraction of GDP attributable to mining; being a Spanish colony; years of pen economy; fraction of the population that is Muslim; fraction of the population that is Buddhist; ethno-linguistic fractionalization and government consumption share. These variables turn out to be the most significant drivers of economic growth out of 67 variables tested econometrically across 88 countries, using 89 million randomly drawn regressions. Some of the findings recently have included the level of the financial sector development, and institutional factors (see Collier 2004).

The works of Collier and Gunning (1999), O'Connell and Ndulu (2002) and Devarajan and Reinikka (2004), among others, highlight Africa's unique position of being the worst economic performer on the basis of most indicators, even after implementing economic reform programs over the last few

days. The underperformance of Africa is evidenced by capital accumulation, low human capital accumulation, and low economic growth and productivity, relative to other regions (Van de Walle and Johnston, 1996).

Least Developed Countries (LDCs) have also consistently received international financial aid flows over the last few decades, especially the African region. The African continent has also been notable for civil wars, general social strife, and outbreaks of famines and disease, all which have contributed to the poor quality of life in the region. Of late, arguments have been advanced for the general cancellation of Africa' international debt, and for an increase in financial aid. Some African countries have already experienced debt-forgiveness and partial cancellation under the Highly Indebted and Poor Countries (HIPC) program. However, the flow of benefits from the HIPC programs have been questioned in some countries.[1] The literature shows extensive analysis of factors that determine debt forgiveness, which can be translated as aid in flow. Some researchers including Neumayer (2002), Easterly (2000), Knack and Dollar (1997), Knack (2001), Brautigam (2000), and Svensson (1999) have identified the quality of governance as a determinant of debt forgiveness.

Despite all the financial aid that has been directed at regions such as Africa, sustainable economic growth has remained elusive (Rodrik, 1996). There has been an attempt to attribute part of this problem to the absence of good governance, corruption and absence of democracy and its supporting institutions (Alesina and Drazen, 1991; Drazen and Grilli, 1993).

The aim of this paper is to develop a framework based on information and incentive contracts that captures the impact of leadership in government, the asymmetric information between an elected politician and bureaucrat, and the role of elections on economic performance. The important role of the state-owned media apparatus, which controls the flow of public information, is also highlighted.

The framework gives insights on how international aid can be seen as a subsidy for the loss of economic performance due to the managerial inefficiency of government leaders. Perhaps this may explain why international

[1]In Ghana, where the HIPC flows were about US$ 100 million by 2003, out of an external debt of about US$6 billion, the incumbent government has been accused by the main opposition party of directing the resources to the central and southern regions of the country where most the incumbent government's supporters reside. Therefore, the distribution HIPC benefits may be skewed.(See Business Report, 7 December, 2004,South Africa)

financial aid has not demonstrably caused positive economic growth in Africa and other poor regions. Even the economic reforms aimed at promoting a market-driven economic growth environment have not been very successful in delivering sustainable economic growth in Africa and these poor regions. Again our framework posits that financial aid associated with economic reform programs only serves to subsidize and perpetuate inefficiency on the part of government leaders and politicians.

In the paper, we examine why Foreign Direct Investment (FDI) flows to poor regions, such as Sub-Saharan Africa, are low. We show that the risky policy choices create conditions that increase the value of the option to wait on investment decisions, thus reducing the flow of FDI.

The rest of the paper is organized as follows. Section II presents an analysis of effort and incentives for leaders, and Section III discusses attitude to risk. Section IV discusses policy choices and links it to economic performance, and Section V discusses international Aid flows as being linked to poor policy choices, and indeed act as insurance for poor economic performance. Section VI discusses Foreign Direct Investment (FDI) as being determined by governance issues, and indeed can be seen as being driven by an embedded option-to-wait. Section VII presents some empirical analysis, while Section VIII concludes.

2 Effort and Incentives for Government Leaders

The political environment in relatively poor regions such as sub-Saharan Africa is characterized by general dissatisfaction with the leadership combined with an inability to change the leadership easily, due to generally undemocratic practices of many governments (Ottaway, 1998). Incumbent governments have a strong grip on power, so much so that either no elections are held, and if held, they are not free and fair (King and McGrath, 1999). The capacity of the population to change national leadership is extensively limited (Harbeson and Rothschild, 2001). Sen (1999) has discussed the importance of democracy in defining freedom and its subsequent impact on economic development. Other authors such as Sala-i-Martin (1997), and Bloom and Sachs(1998), have highlighted the importance of geography as a determinant of growth in Africa. Others, such as Acemoglu, Johnson and Robinson(2001) and Acemoglu (2002), have posited that geography is a determinant of institutions and income growth and distribution. Bates and

Devarajan (2000) argue that politics and general competition for power influences policy choices. Our approach departs from these authors' reasoning but also adds to this literature by explaining the complex nature of development and poverty using incentive-compatibility and asymmetric information arguments in decision-making process for the leadership in the public sector.

We proceed to develop a model that gives a framework for understanding the agency conflict environment at play. In our framework, we assume that there is an elected government led by a head of state (government), who then appoints bureaucrats who are responsible for the day-to-day running of their departments and report to the head of government (the "leader"), on their activities. The government sets the policy framework, which are then interpreted and implemented by the bureaucrats, opening up the relationship to asymmetric information problems and agency conflicts.

Let us assume that the government employee ("the bureaucrat") is an "empire builder" who always projects a good image, and always reports good economic performance rather than bad economic performance, using state-controlled and associated media channels. The leader's role is to set the pace for policy-making and then to supervise the bureaucrat, making sure that they carry out the implementation process and report accurately on the national economic situation and general state of affairs. The leader's role is to act on behalf of the electorate to ensure that when the state of the world is bad, either the bureaucrat reports it as bad, or the leader exposes the incorrect reporting, thereby triggering the possible dismissal of the bureaucrat. Should the leader politician fail in their role, they stand the possibility of losing the next election, and the accompanying benefits.

Let the economy have two possible levels of economic performance, namely α_g for good performance and α_b for bad economic performance. Also b is the probability that the expected economic performance is bad and b_p that the leader finds out that the expected economic performance is bad, and $b_p < b$.

Let us consider the preferences of the elected politician, who has their tenure during the period interval $\{0, T\}$, and has to stand for the next election beyond this period. Let $W > 0$, be the income earned by the politician, during period $(0, T\}$. Let F be future income from re-election beyond period T, that period $\{T + 1, T + N)$, including bribes. Let ε be the effort that the politician applies in the performance of his duties, $D(\varepsilon)$be the disutility of the degree of effort. We also assume that the leader's preferences $U(.)$ are separable in money m and effort e, giving utility $U(m)$, so that $U(m,\varepsilon) = U(m) - D(\varepsilon)$.

Seeing that the bureaucrats are "empire builders" they will report α_g, signaling that the leader will lose the next election, or trigger a *vote of no confidence* process, if they report α_b. The leader will then report α_b when they know that α_b is the truthful situation.

Let α_0 be the economic performance at time $t = 0$, that the leader observes (O) where $O\epsilon\ \{g, b\}$; and $\alpha_{\Re}$ be the economic performance at time $t = 0$ that the politician reports (R) where $\Re\epsilon\{g, b\}$. Let $\Phi(\alpha_g/\alpha_0)$ be the leader's expected utility when the bureaucrat reports having observed $\alpha^{\Re}$ having observed α_0. Therefore,

$$\Phi(\alpha_g/\alpha_g) = U(W + F) - D(\varepsilon) > 0 \tag{1}$$

where the leader reports good when the underlying state is good, receives his current income W, future income F, after applying effort, , to perform his duties, experiencing disutility $D(\varepsilon)$ form effort level,ε^2.[2] Here we assume a constant level of effort. For the bad state then

$$\Phi(\alpha_b/\alpha_b) = U(F) - D(\varepsilon) \tag{2}$$

and the leader reports bad when the underlying economy is bad, and there is a risk of losing the next election, or indeed receive a leadership challenge within their own party and lose their leadership role in government. But by being truthful they stand a good chance of winning the next election and earn future income, F, as (2) shows. [3] Also

$$\Phi(\alpha_g/\alpha_b) = (1 - \Delta)U(W + F) - \Delta U(F - \omega) - D(\varepsilon) \tag{3}$$

where Δ is the probability of the leader losing the next election, and this is also the probability of being found out to have been *untruthful* about

[2] An example would be Margaret Thatcher, Prime Minister of Britain, who was challenged for leadership within her own party and lost, and was replaced by John Major in 1990. Also, perhaps the 2004 US Presidential Elections show similar characteristics in that the Republican candidate George Bush reported the situation as being bad on the security front, and indeed it was bad, and that may be one of the factors that may have won him the election against his opponent John Kerry, a Democratic candidate.

[3] Examples of governments that have portrayed the good performance in their countries, when in fact performance has been good include those of Botswana, Mozambique, and South Africa. And indeed the ruling parties behind these governments were re-elected in Botswana (November 2004), Mozambique (December 2004), and South Africa(May 2004). All these countries have experienced excellent growth relative to their historical past.

the real state of affairs.[4] Basically, equation (3) says that, if the politician reports good when the underlying state of affairs is bad, then he could survive dismissal and continue receiving current wages (W) and future income from re-election, with probability $(1 - \Delta)$, with the economy recovering quickly. Expression (3) also recognizes the possibility of losing the elections with probability Δ and only receiving future income, F.

The term ω in (3) is the legal liability of the leader and the general loss of status from being found not to have been truthful about the true state of affairs. In (3), if we set ω sufficiently high then the leader will not be tempted to report good when the underlying state of affairs is bad since they do not wish to risk a high liability. How high should ω be? For incentive compatibility we require that

$$\Phi\left(\alpha_g/\alpha_b\right) \leq \Phi\left(\alpha_b/\alpha_b\right) \tag{4}$$

In other words, the politician will experience a lower expected utility from reporting a good state of affairs when the real situation is bad, than from reporting the true bad state of affairs. Being truthful is more rewarding than being untruthful.

3 Attitude to Risk and Liability of Not being Truthful

The probability of the leader losing the next election Δ , can be set to be exogenous in the sense that we can impose it. It may also depend on the strategy of the rival political leaders. However, we can also set Δ to be endogenous in cases where the politician's actions result in the collapse of a public corporation, or some other quantifiable negative outcome. In this case, the loss to the public and general taxpayers is quantifiable. Therefore, we can show that Δ is the probability of the *first passage time*, within period interval $\{0, T\}$, where the barrier is ω . In the case of endogenous Δ the liability of the leader can be calculated exactly using the contingent-claims approach as we shall show below. Society and legal institutions would be concerned with identifying the minimum level of liability ω_1 which ensures that (4) always holds. Then ω_1, is the minimum liability that would ensure incentive

[4] Zimbabwe's case also presents an example where the real information about the real state of the economy is not easily verifiable such as for instance information on food supplies.

compatible behavior from the politician, and hence reduce the possibility of untruthful and perhaps corrupt behavior.

What factors determine the liability of untruthful behavior on the part of leader? We can show that this liability depends on attitude towards risk, potential future income, and the probability of being found out to have been untruthful. The probability of being caught being untruthful is also the same as that of losing the next election. To show this we consider the ω that makes the incentive compatible equation hold with equality and then substitute equations (2) and (3) in (4). We then consider a Taylor series expansion about F of $U(F+W) and U(F-\omega)$, and obtain

$$U(F+W) = U(F) + WU'(F) + 0.5W^2U"(F^*), F^*\epsilon(F, F+W) \quad (5)$$

and

$$U(F-\omega) = U(F) + WU^{'}(F) + 0.5W^2U^{''}(F^*), F^*\epsilon(F, F+W) \quad (6)$$

We can show that ω satisfies the quadratic equation.

$$0.5U^{''}(F^{**})\omega^2 - U^{'}(F)\omega + K = 0 \quad (7)$$

where

$$K = \Delta^{-1}(1-\Delta)\left\{WU^{'}(F) + 0.5W^2U^{''}(F^*)\right\} > 0 \quad (8)$$

and again Δ is the probability of being found to have been untruthful.

If we exclude negative roots in (7) we can show that

$$\omega = \left(U^{'}(F)/U^{''}(F^{**})\right)\left\{\left(1 - U^{''}(F^{**})K\right)/U^{'}(F)^2\right\}^{0.5} > 0 \quad (9)$$

Noting that the Arrow-Pratt measure of Absolute Risk Aversion, θ, and noting that,

$$U'(F)/U^{''}(F^{**}) \geq U^{'}(F)/U^{''}(F) \quad (10)$$

we obtain

$$\omega \geq -(1/\theta)\left(1 - \left\{\left(1 + \left(2\theta K/U^{'}(F)\right)\right)\right\}\right)^{0.5}$$

Since

$$U''(F^*)/U'(F) \geq U^{''}(F)/U^{'}(F) \tag{11}$$

then

$$\omega \geq -(1/\theta)\left(1-\left\{\left(1+2\theta\Delta^{-1}(1-\Delta)\left(W-0.5W^2\theta\right)\right)\right\}^{0.5}\right) \tag{12}$$

Then ω depends on being untruthful and losing the next election, Δ,income, W, and attitude to risk, θ. By inspection of (12) we see that when the probability of the leader being untruthful being established is high, one expects the value of ω to increase. When the appetite for risk increases, the liability ω, also increases.[5]

4 Policy Choices and Poor Economic Performance

We assume that actions of the politicians of not reporting the truth about the real state of economic performance, often mean the existence of poor economic performance as measured by low or negative growth in the Gross Domestic Product (GDP). The government and political leadership make policy choices by targeting a specific rate of economic growth, μ, and the volatility of the growth pattern, σ, which are elements of a bigger choice set S. Hence, the policy choice-set is $\{\mu, \sigma\}\epsilon S$. The policy choices depend on the quality of information. Poor information will result in the wrong policy choices that may produce sub-optimal economic performance, while the correct information may result in the right policy choices resulting in positive economic performance.

If GDP at the beginning of the current election period, $\{0, T\}$ is Y, then at any period, t, in the future, GDP can be characterized by the geometric Brownian Motion process with drift, μ, and volatility, σ, given by

$$dY/Y = \mu dt + \sigma dB(t) \tag{13}$$

[5]Some of the political leadership in Africa who are alleged to have been corrupt and persecuted, after leaving office, include Frederick Chiluba, the former president of Zambia. Other examples, include the late President of Nigeria , Abacha, who was found to have benefited from corrupt activities and his family's financial assets were eventually repatriated back to the Nigerian government. Those former leaders who violated human rights, have experienced a different form of liability by being sent into exile such, as such as Colonel Mengistu, of Ethiopia, exiled in Zimbabwe, and Idi Amin of Uganda, exiled in Saudi Arabia, and Charles Taylor of Liberia, exiled in Nigeria. The leaders of Rwanda have been tried in international courts for genocide crimes, the liability being a jail sentence.

where dB is a *Gauss Weiner* process.[6] The term μ is the average GDP growth rate, while σ is the standard deviation (volatility) of percentage changes in GDP. Applying *Ito's Lemma* on (14) shows that at any time in future the level of National Income is given by

$$Y_t = Y_0 \exp\left\{\mu t + 0.5\sigma^2 t + \sigma Z\sqrt{t}\right\} \tag{14}$$

Where, Y_0 is GDP at time $t = 0$, and $Z \sim N(0,1)$. If the policy choice is based on the incorrect information then, GDP levels could fall from period $t = 0$ to any time, t, going forward. Then

$$Y_t < Y_0 \tag{15}$$

and the loss in GDP levels is[7]

$$L = Y_0\left(1 - \exp\left\{\mu t + 0.5\sigma^2 t + \sigma Z\sqrt{t}\right\}\right) \tag{16}$$

If the probability of negative GDP growth is a bad state of affairs that a leader should lose elections over, then this probability is Δ , as above. In other words, poor economic performance and the leader's loss of leadership have the same probability, and the converse is true. However, this probability could differ from Δ if the leader is not found out in the case of having been untruthful and they retain their job. For simplicity we shall assume the probability of unsatisfactory economic performance coincides with that of being dismissed. Then the expected loss in GDP, which also determines the leader's potential expected liability from negligence is

$$L_1 = \int_0^T \pi(t)\left[\max 0, Y_0\left(1 - \exp\left\{\mu t + 0.5\sigma^2 t + \sigma Z\sqrt{t}\right\}\right)\right] dt \tag{17}$$

where $\pi(t)$ is the probability density function for economic performance.

In principle, the loss in GDP to society should be compensated for by the politicians who would have caused it through negligence and poor policy

[6] We can also use more complex stochastic processes, such as a Doubly Stochastic Poisson Process utilized by Asea and Ncube (1998) which captures unexpected shocks in GDP growth, as would arise from oil-price shocks, say. This however, will not change the semantic import of our framework.

[7] We can also set the trigger at some target GDP level Y^*, and evaluate the expected loss, replacing Y_0 with Y^* in equation (17). We can also let Y to be *GDP* Per Capita or Income Per Capita.

choices. Therefore, the liability of political leaders who lie about the state of affairs should be equal to the loss in national income. However, the loss in GDP is a large monetary figure which is impractical to pay off for any individual political leader. Then, who pays for this fall in national income? In the next section we argue that the compensation, inadvertently, comes from external financial aid flows.

5 External Aid Flows as Compensation for Poor Economic Performance

External financial aid flows are targeted at bridging the gap between development targets, domestic resources of government and to alleviate poverty in general. However, if government policy and actions result in national income in the future, Y_t, which is lower than the initial income, Y_0, the aid flows, are basically closing the gap between Y_t and Y_0, or at least the difference between Y_t and a much higher level Y^*. We can see that aid flows could be equal to the liability of the politicians. That is

$$A = L_1 \tag{18}$$

Solving equation (18) using techniques used instochastic calculus yields, the loss in GDP (which is equal to the politician's legal liability), and also equal to aid flows, is given by (see Merton (1977)):

$$A = L_0 \exp(-rT) N(-d2) - L_0 N(-d1) \tag{19}$$

Where $dl = (r + \sigma^2/2) T/\sigma\sqrt{T}$

$d2 = d1 - \sigma\sqrt{T}$ and $N(.)$ is a standardized cumulative probability distribution, with mean 0 and variance 1, and r is a risk-free interest rate.

Aid basically subsidizes the politician's sub-optimal performance in delivering good economic performance. Perhaps, it is not surprising that aid flows to regions such as Africa have not resulted in high economic performance in the region because it can be simply a subsidy for politician's poor performance, merely closing a national income gap.

Another way would be to view international aid as insurance for politicians for poor performance. Aid insures the loss in national income. It is as if politicians have bought insurance. Insurance increases moral-hazard on the part of politicians where they take on more risky policy choices because

they can resort to aid money for poverty relief. They can even engage in civil wars and strife that cause food shortages and famine. Donor agencies then provide rescue by supplying food for the poor.

The expected aid depends on the volatility of GDP growth, σ. When the volatility of GDP increases and economic uncertainty rises, the expected loss in income increases and the amount of aid required goes up. That is $\partial A/\partial\sigma > 0$. Riskier policy choices result in more aid flows being required. Also the longer the period of office before the next election the higher the amount of aid required, that is $\partial A/\partial t > 0$. This may mean that short fixed-terms should be introduced to reduce potential economic damage, and aid requirements.

6 Foreign Direct Investment and Policy Choices

It has been noted in the literature by researchers such as Pindyck (2001), that if the goal of macroeconomic policy is to stimulate investment then *stability* and *credibility* are far more important for attracting foreign direct investment than the levels of taxation or interest rates. The importance of credible policies has also been discussed by Ncube et al (1997) in the analyses of progress in macroeconomic reforms in Zimbabwe in relation to trade issues. They argue that there are questions of policies being time-inconsistent and also fiscally incompatible, risking complete reversal of the reform program, a phenomenon that is in evidence. Pindyck (2001) also notes that political and economic instability depresses investment, particularly in least developed countries (LDCs), which have experienced falling levels of investment as a percentage of GDP in 1980s. This is in spite of the implementation of seemingly good economic reform policies, but whose sustainability can be questioned. This phenomenon has been noted by Dornbusch (1987), and Van Wijnbergen (1985), in respect of the irreversibility of foreign investment in liberalizing economies. Therefore, foreign direct investment depends on factors that are under a government's direct control.

It follows that the policy choices of politicians in government, on macroeconomic issues, $\{\mu, \sigma\} \epsilon S$ will influence investment returns. Choosing a risky policy mix increases the value of the *option to wait* on foreign direct investment (FDI) to regions such as Africa. To fully appreciate the impact of these policies, let us examine how the *option to wait* is valued. The revenues accruing to the foreign investor, are a percentage of GDP,α . Therefore, the

revenues, $R = \alpha Y$. Then, the mean of the changes in the revenue stream is, μ and volatility is σ , the same parameters as the GDP stochastic process. We also assume that, R, is driven by a geometric Brownian process,

$$dR/R = \mu dt + \sigma dB(t) \tag{20}$$

where $dB(t)$ is Brownian motion for R which is same as that of GDP, in equation (14). In other words, a good economy generates good investment returns as long as the policies for the good economy are sustainable, and the converse is true.

Applying *Ito's lemma* to (21) yields the *pde*

$$0.5\sigma^2 R^2 V^{''}(R) + \mu R V^{'}(R) - rV(R) = 0 \tag{21}$$

where r is the risk-free rate. From Dixit (2001) the solution to (21) is the *value of the option to wait on investment*, and is given by

$$V(R) = BR^{\beta} \tag{22}$$

where B is some constant, and β is a function or r and μ and is given by

$$\beta = 0.5\left[1 + \sqrt{\left(1 + 8r/\sigma^2\right)}\right] > 1 \tag{23}$$

What happens when the investment environment risk (GDP volatility),σ , increases? First let us consider the trigger point for investment, H, such that when revenues R, are equal or exceed H, then waiting ceases and investment occurs. From Dixit (2001), H is given by

$$H = r^* K \tag{24}$$

and

$$r^* = r\beta/(\beta - 1) \tag{25}$$

where K is the cost of investment, such that H is an "adjusted Marshallian trigger" for investment. Note that r^* is an adjusted risk-free rate, where the adjustment comes from the waiting option scenario.

Notice that as policy risk, σ^2 goes up,β falls in (23). When β falls, the adjusted risk-free rate r^* increases. An increase in r^* increases the hurdle H in (24), making it more valuable to wait longer to invest.

We can see that risky policy-choices increase the value of waiting to invest and therefore, depress FDI flows. This may help explain why FDI has not risen noticeably in regions such as Sub-Saharan Africa in the past two decades, as has been widely observed in the literature, due to the high-risk policy environment.

7 Empirical Analysis

In this section we discuss and test governance factors which effect economic performance.

7.1 Institutional Factors

We have identified ten (10) institutional factors which capture the quality of governance, and we present them below.

1. **Government to Business Relations**

   This refers to the ability of Chambers of Commerce and Industry Associations to provide private sector views to government. This would include other formal mechanisms for government consultations with business, and use of private sector advisory councils by government, as well as the use of private-public partnerships in government projects.

2. **Human Resources and Entrepreneurship**

   Another important factor is the availability of educated, trained and skilled manpower. The availability of institutions for training manpower and managing it, and general investment in education and support for entrepreneurship.

3. **Financial Infrastructure and Framework**

   The quality of the financial system and the framework within which it operates is vital for the financing of entrepreneurship activities. The development of capital markets, and stable exchange rates are important for engendering a good entrepreneurial environment. The presence of international standards for accounting and auditing also augur well for the selection of viable entrepreneurial activities.

4. **Reliable Justice System**

   The protection of property rights and general recourse to an objective justice system is important for the promotion of private enterprise. The judiciary should demonstrate independence, competence, and honesty. Indeed the right environment for private enterprise, excludes political interference in business.

5. **Corruption Reduction**

   The prevalence of corruption increases transactions costs and bureaucratic delays in the conduct of private business. Corruption should be tackled in both business and government levels, even by use of legislation against the bribing of public officials.

6. **Corporate Governance Practices**

   Entrepreneurship activity is sustainable if it operates in an environment with effective corporate governance practices. Corporate governance has to recognize the rights of all shareholders, and use of independent directors, for the good of the business.

7. **Consistent Policies**

   Business thrives where government adopt policies which it communicates clearly and implements consistently within a period of time. Policy consistency creates the environment to make long-term investment decisions.

8. **Effective Government**

   An effective government is one that makes well-considered decisions in a timely manner. Such a government would also put in place mechanisms for smooth and peaceful transition of power at intervals set by the constitution. An effective government also creates institutions for regulatory activities where required, but avoids over-regulation.

9. **Efficient Administration**

   Most formal businesses require licenses to operate. To attract business an efficient administration is required, to simplify licensing procedures, investment processes, standards for quality of service delivery, ease of obtaining information from government departments, and having clear and non-discretionary procedures for implementing policy.

10. **Free Media**

    Free media activity is a source of information, sometimes free information. It is well-known that information is a good and an ingredient for private business activity. Indeed, the efficient functioning of financial markets relies of the flow of information. Therefore, for private enterprise to thrive there should be a free media environment. In some

African countries the media is not free to operate, and licensing requirements in the media sector are quite cumbersome. In some African countries th emedia is not free to operate, and licensing requirements in the media sector are quite cumbersome.

7.2 Correlation and Regression Analysis

In analyzing the impact of the institutional factors that define the business environment and finally economic growth, we utilized data from the Commonwealth Business Council (CBC).

Data for the institutional factors discussed in section II above, were gathered for the year 2003. Figure 1 below shows each of the factors above for the African region comprising 14 countries, namely Botswana, Cameroon, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

Each of the institutional indicators were added up and averaged the 14 across the countries.

Figure 1 shows the average indicator for each of the 10 institutional factor averaged across 14 African countries, compared to the UK. In figure 2 , we average across ten (10) factors for each country, and present an institutional indicator for each country.

Botswana has the best institutional environment, followed by Ghana, both above 3, and fall in my Category A. Cameroon, Namibia, South Africa, Tanzania, Uganda and Zambia have institutional indicators between 2.5 and 3, and fall in Category B. In Category C, with indicator between 2 and 2.5, we have Kenya, Lesotho, Malawi, Mozambique, and Nigeria. In category D, below indicator 2, we have Zimbabwe. In terms of this categorization we expect formal entrepreneurship to thrive in countries in Categories A and B, with moderate activity in Category C. In Category D, entrepreneurship is expected to be minimal and indeed fall in activity.

Next, we consider the impact of the institutional factors above on entrepreneurship and how these factors influence economic growth namely, *GDP growth, employment growth, and general poverty reduction.*

First, let us consider the levels of GDP Growth, employment growth, and poverty levels for each of the 14 African countries discussed above. Figure 3 shows the average GDP growth rates for the 14 countries for the period 1990-2002.

Mozambique and Uganda, both post-conflict economies, show high average GDP growth rates, followed by Botswana which has been stable political and economically in the last 50 years. Zimbabwe and Zambia, on the other hand, recorded low average economic growth.

Next we consider employment growth, another economic growth indicator. Figure 4 shows employment growth rates for the 14 African countries for the period 1980-2002.

Regarding poverty levels, we consider the percentage population that lives below US$1 a day for each country. Figure 5 shows the poverty patterns for 13 countries, excluding Uganda where data could not be collected.

Note that Nigeria, Zambia, Ghana and Malawi have poverty levels above 40% while South Africa has the lowest level at below 20%.

Next we analyze the extent to which the three measures of economic growth, including income distribution, are correlated with the institutional indicators in Figure 1. Table 1 shows the correlations.

The three growth indicators have reasonably strong correlation with institutional factors, while income distribution, as measured by the Gini index for each country, has weak correlation. The implication is that getting these institutional factors right and implementing appropriate reforms, has the capacity to improve economic growth, reduce poverty, and generate employment, but cannot effectively improve income distribution.

Generally, there is meaningful correlation between the ten (10) institutional factors and measures of economic growth, as shown in Table 2, which confirms the findings shown in Table 1. It would be interesting to run a multiple regression on these factors. But the problem is that the factors are correlated among themselves since, to some degree, they reflect the quality of governance in a country.

We ran four (4) regressions across the fourteen (14) African countries, where GDP growth, Employment Growth, Poverty Levels, and Income distribution, are the dependent variables, and the explanatory variable is the average institutional index as shown in figure 2. Table 3 below shows the results.

From the simple regression results in Table 3, we can see that the institutional factors that capture the quality of governance in African countries, influence GDP Growth, Poverty levels, Employment growth, but do not seem to influence income distribution strongly. As the quality of governance improves, GDP growth increases. As the quality of governance improves, poverty levels drop, and as the quality of governance improves, employment

growth increases.

8 Conclusion

In the analysis above, we have developed a framework based on information and incentive contracts that captures the impact of leadership in government, the asymmetric information between an elected politician and bureaucrat, and the role of elections on economic performance, in poor regions of the world. There are various explanations advanced by empirical studies on poor economic growth in developing regions, and our framework considers the role of asymmetric information and incentive problems in the delivery of services and general economic performance. The empirical analysis of a limited number of African countries confirm the importance of governance issues in determining economic growth, poverty reduction, and employment creation.

Our framework can be useful in understanding how international financial aid can take the role of a subsidy for loss of economic performance due to the managerial inefficiency of government leaders. Perhaps this may explain why international financial aid has not demonstrably caused positive economic growth in Africa and other poor regions. Even the economic reforms aimed at promoting a market-driven economic growth environment have not been very successful in delivering sustainable economic growth in Africa and these poor regions. Again our framework posits that financial aid associated with economic reform programs can perpetuate inefficiency on the part of government leaders and politicians. Indeed, such aid is insurance which increases the moral-hazard problem and may cause leaders to engage in even riskier policy decisions.

We have extended our analysis to examine why FDI flows to regions such as Sub-Saharan Africa are low, despite the implementation of economic reforms. We show that the option to wait increases in value as risk levels increase in the regions, resulting in low FDI flows.

In the framework developed, we have presented the leader as "selfish", and as "not-benevolent" with the aim to balance his reward from being in office, with those of society, as measured by a social welfare function. Our framework can be modified to characterize a "benevolent" leader who balances utility between his own personal gain and a social welfare function, in making decisions. This is a subject for future research.

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Table 1 : Correlation between Institutional indicators and GDP growth, income distribution, poverty levels

Variable	Correlation(%)
GDP Growth %: 1990-2002	30.5%
Poverty: % of Population below US$1 a day	37.4%
Income distribution: Gini Index	4.3%
Employment Growth %: 1980-2002	30.6%

Table 2: Correlation between Institutional Factors with GDP Growth, Poverty and Employment Growth for African Countries

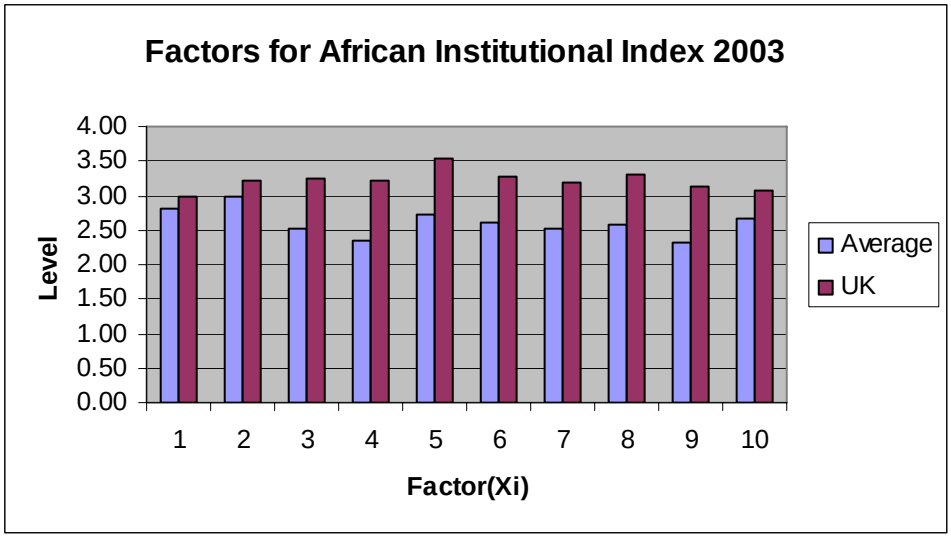
Institutional factor	Correlation with GDP Growth(%) 1990-2002	Correlation with Employment Growth(%) 1980-2002	Correlation with Poverty Indicator: % population below US$1 per day (%)
Govt to Business Relations	29.3	32.4	16.9
Free Media	27.1	3	28.6
Reliable Justice	23.8	23.7	8.2
Efficient Administration	29.7	27.3	31.4
Effective Government	35.8	25.4	40.3
Corporate Governance	19.7	40.8	40.3
Human Resources	1.9	50	10.9
Financial Infrastructure	28.7	22	56.4
Corruption reduction	24.5	24.9	40.6
Consistent Policies	33.2	20.3	39.4

Table 3: Regression Results with GDP Growth, Employment Growth, Poverty levels, and Gini Coefficient as Independent Variables, and the Institutional Index for each country is the Independent Variable

Dependent	Intercept	Coefficient	Level of Significance of coefficient	R-squared
GDP Growth(%)	-1.0159	1.7048	71%	0.0929
	(-0.2516)	(1.1088)		
Employment Growth(%)	1.3412	0.4801	71%	0.0934
	(1.1829)	(1.1122)		
Poverty Levels	79.6118	-17.5178	75%	0.1076
	(2.081)	(-1.2026)		
Gini Coefficient	54.2642	-1.4603	12%	0.0018
	(2.0942)	(-0.148)		

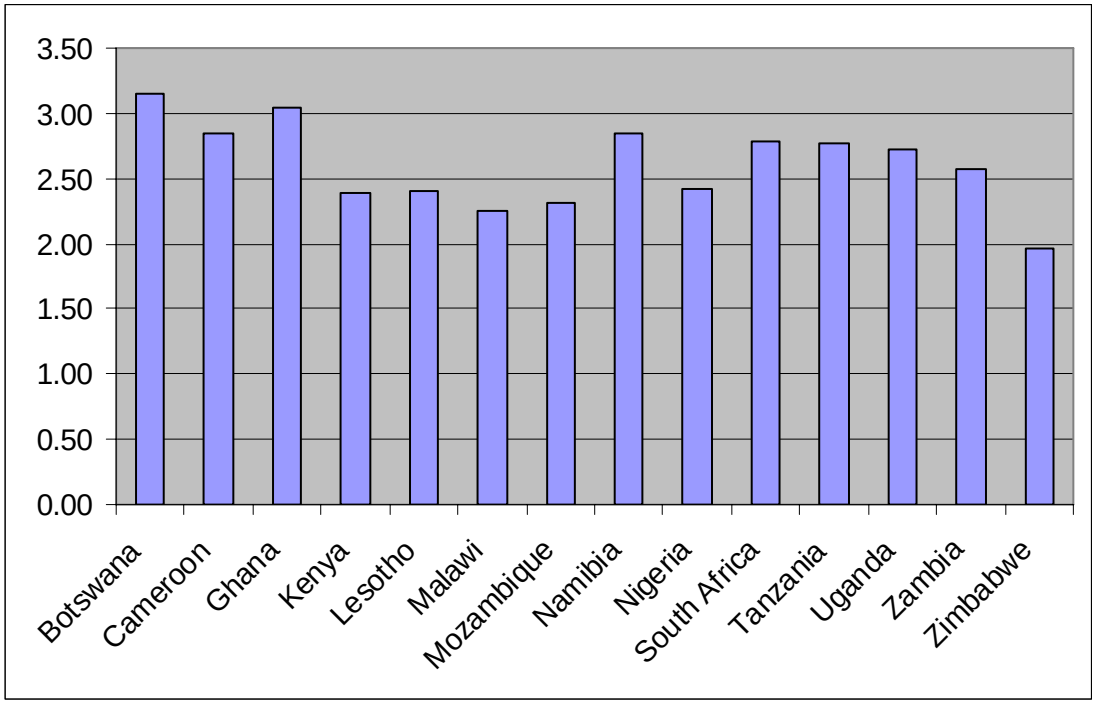
The t-values are in parenthesis.

Figure 1: Africa Institutional Factors 2003



Key: 1: Government Business Relations; 2: Free Media; 3: Reliable Justice;
4: Efficient Administration; 5: Effective Government; 6: Corporate Governance;
7: Human Resources; 8: Financial Infrastructure and Framework;
9: Corruption Reduction; 10: Consistent Policies
Source: Commonwealth Business Council (2003), Business Environment Survey 2003, London, UK

Figure 2: Africa Institutional Indicators by Country: 2003



Source: Commonwealth Business Council (2003), *Business Environment Survey 2003*, London, UK

Figure 3: Average GDP Growth Rates for African Countries: 1990-2002

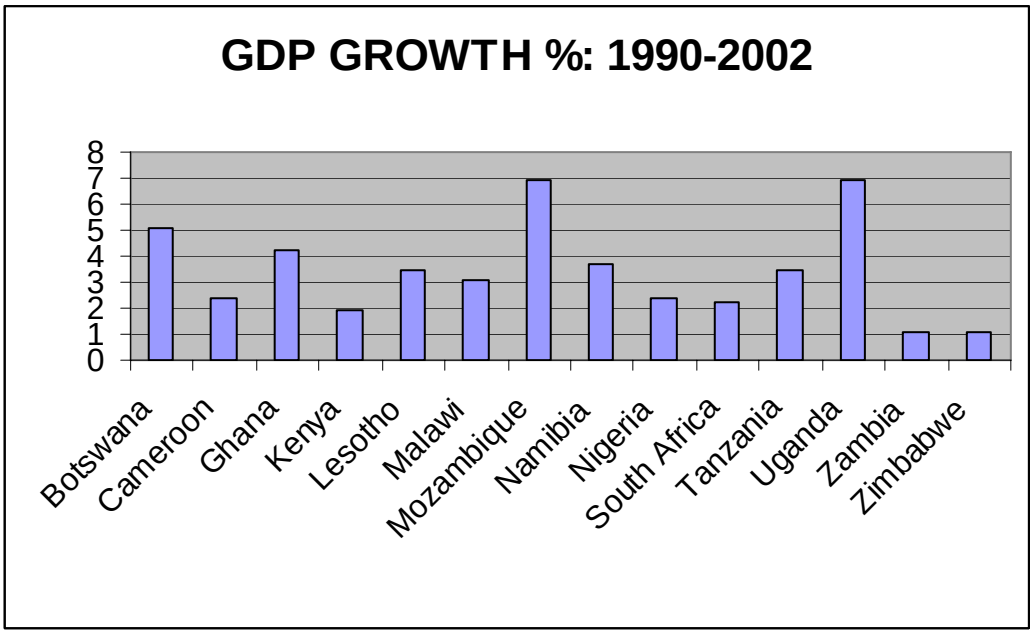


Figure 4: Employment Growth Rates for African Countries: 1980-2002

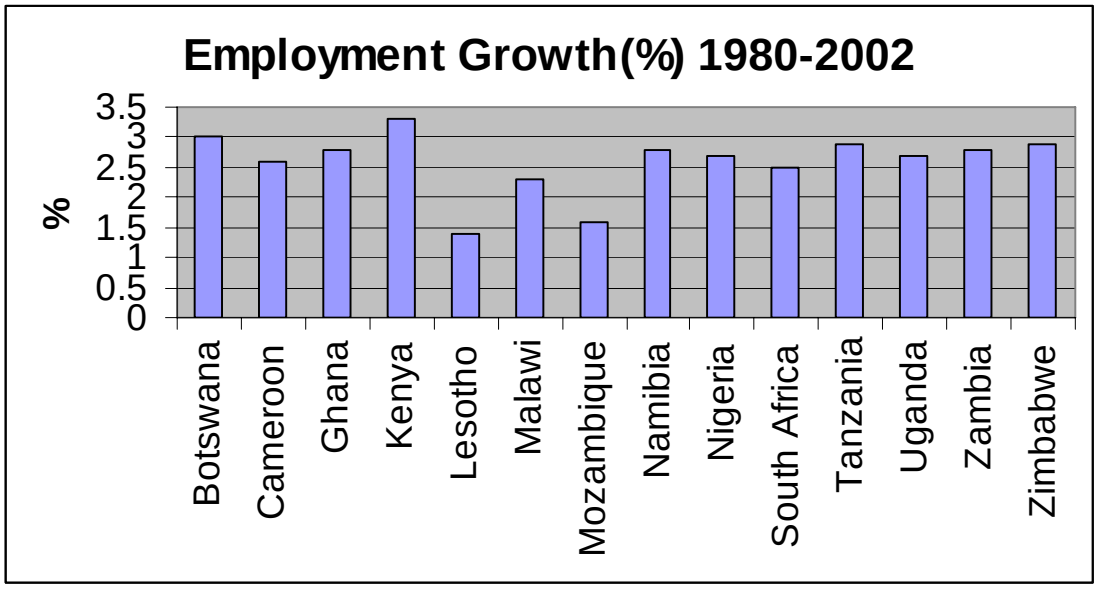


Figure 5: Poverty Levels: % of Population living below US$1 a Day