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ABSTRACT

This study empirically accessed the impact of institutional quality on economic performance in West Africa. The study employed the control of corruption, government effectiveness, regulatory quality and rule of law as institutional quality indicators as provided by the World Governance Indicators, WGI (2017). A panel data set of 12 West African countries from 1996 to 2015 was estimated using the fixed effect model, the random effect model and the panel two-stage least square technique. The result showed that all the indicators of institutional quality employed in the study have positive and significant impact on economic performance in West Africa when the fixed and random effect model estimation technique was employed but only government effectiveness was significant after taking account of endogeneity using the panel two-stage least square technique. The study concludes that economic performance in West Africa would be enhanced in the presence of improved institutions with more consideration to government effectiveness.

1. Introduction

The role of institutions has continued to receive attention by researchers in recent times as possibilities exist of economic fundamentals alone not being the only decisive factor of economic performance but also the level of institutional quality present in the society. According to Ndulu et al (2008), a major research project undertaken by the African Economic Research Consortium (AERC) revealed that institutions are accorded considerable attention in explaining the growth of African economies. Empirical results of the project attribute the poor growth in the 1980s to weak institutions and the growth resurgence in the 1990s to improved institutions. North (1981) defined institutions as the rule of the game in a society or more formally, the humanly devised constraints that shape human interaction. Good institutions have been documented to be critical in providing an enabling environment for the juice of economic prosperity to trickle down to the poorer segments of the populations in sub Saharan Africa (Thorbecke, 2013).

Currently, a good number of research work on the determinants of macroeconomic aggregates has concentrated on the role institution plays. While Constantinos, Persefoni and Hashim (2014) had studied the role of institutions on economic performance, Oluwatobi et al (2013) studied the role of institutions on innovations in Africa and Demetriades and Law (2006) examined the effect of institutions on financial development. Barro (1997) and Mauro (1995) had also revealed that institutions are important for investment and long term sustainable growth. Studies by Hall and Jones (1999) have established that differences in institutions across the globe bring about vast variations in education attainment, capital accumulation and productivity and therefore account for the disparity of income.

Existing literature primarily indicates that a positive relationship exists between institutions and growth but sometimes, institutions with similar characteristics produces extremely different outcomes across different groups, regions and societies (Saima, Nasir and Muhammad, 2014).

In regards to institutional quality role in influencing economic performance, not many research works have been done in the West African region and as such it then becomes necessary to analyse this relationship for the case of the region. This study involves a panel data analysis of 12 West African countries from the year 1996 to 2015. The data for the study is strictly guided by its availability. Estimation techniques for the study include the fixed effect model, the random effect model and the panel two stage least square in other to account for possible endogeneity in the model.

Section 1 of this study is the introduction, section 2 presents a brief literature review, and section 3 presents the methodology to be utilised and model specification. While the presentation and interpretation of results are outlined in section 4, section 5 concludes the research work.

2. Literature Review

Most African countries in the 1960s where richer than their Asian counterparts and with a solid base of natural resource, it was believed that this trend would continue. Gunnar Myrdal in his well-publicised *Asian Drama* also supported this view. However, the continents growth record has fallen short of expectations as growth has remained rather poor with a high level of unemployment and many African citizens living in extreme poverty.

While growth in Africa, particularly sub Saharan Africa is poor, the Asian economies have been growing rapidly. Perara and Lee (2013) notes that countries in South Asia grew by around 7.5 percent before the global financial crises. In East Asia, growth has also been remarkable, with GDP per capita growing at 6 percent in 2007 according to the World Bank.

In other to understand the immerse forces influencing Africa's economic performance, many researchers have delved into the area of institutions in relation to growth (Acemoglu, Johnson and Robinson, 2001, 2002). To Crawford (1994), the origin of Africa's institutional weaknesses is the long lasting effects of European colonial rule, which had little incentive to develop Africa's local institutions. Iqbal and Daly (2014) argued that weak institutions diverts scarce resources from productive sector to unproductive sector therefore promotes rent seeking activities whereas strong institutions reduce the chances of rent seeking activities and accelerate economic growth process and productivity of the growth inducing factors.

According to Osabuohien and Efobi (2013), institutions can be broadly categorised into formal and informal. Formal institutions include rules and framework, documented by specific authorities in the society, to regulate the behaviour of economic agents (Greif, 1998). Informal institutions include customs, beliefs, norms and culture that can inform behaviours of economic agents. According to North (2005), informal institutions are usually not written down. For this study, we place focus on formal institutions as there are available data reporting different aspects of institutional quality in a given society.

Nabila, Shazia and Muhammad (2015) studied the impact of institutional quality on economic growth in developing economies of Asia with a panel data for the period 1990-2013. The result reveals that institutional quality has positive impact on economic growth. The result also shows that there is a causality running from institutional quality to economic growth. This finding is

supported by Constantinos, Persefoni and Hashim (2014) study where they empirically examined the impact of institutional quality on economic growth in Sudan for the period 1972-2008. The result obtained shows that the quality of institutional environment is a major factor of economic prosperity in Sudan.

Klomp and Haan (2009) explored the relation between institutions and volatility of economic growth for 116 countries for the period 1960 to 2005 using different indicators for political administration like political stability, regime types and uncertainty of policy. The study employed specific to general approach and found out that uncertainty and instability, democratic regime and economic growth volatility are negatively related to each other

Le (2008) investigated the relationship among institutions, remittances, trade and economic growth for the period 1970 to 2005 for 67 developing economies. Using different estimation techniques, the study finds that better quality of institutions leads to higher economic growth in the long run as well as in the short run.

Ulubasoglu and Doucouliagos (2004) explored the relationship between institutions and economic performance for the period 1990 to 1999. Using a sample of 119 countries, they use simultaneous model for econometric analysis using two proxies for institutional quality, one for political freedom and second for economic freedom. They find that political freedom has positive impact on human capital and total factor productivity (TFP) and physical capital.

Ali and Crain (2002) explained the interconnections among economic freedom, institutional distortion and economic growth. Using a sample of 119 countries for the period from 1975 to 1998, they conclude that civil liberties and political administration have no significant impact on economic growth, however, economic freedom plays significant role in enhancing economic growth.

Vijayaraghavan and Ward (2001) tested the empirical relation between institutions and economic growth for the period 1975 to 1990 for 43 countries. For analysis purpose, they use different proxies of institutional quality like property rights, structure of governance, size of the government and the political freedom. The results show that well defined property right and the size of the government are significant determinants of institutional quality which enhance economic performance; this result is supported by Knack and Keefer (1995) who also examined the association between institutions and economic progress. They found that property rights are significant determinant of economic growth as Campos and Nugent (1999) also revealed in their empirical study that the institutions of governance improve the development performance.

3. Methodology

This study utilises the descriptive statistics and various econometric techniques which comprises of the fixed effect model, the Swamy Arora random effect model and the panel two stage least square estimation technique. The fixed effect model allows for heterogeneity among subjects by allowing each entity to have its own intercept value (Gujarati and Porter, 2008). Although the intercept may differ across subjects, each entity's intercept is time invariant while the random effect model assumes that the intercept is a random variable with a mean value. For the random effect model, individual differences in the intercept value for each cross sectional observations are reflected in the error term. The fixed and random effect model permits us to account for heterogeneity of the West African countries. The panel two stage least square allows us to obtain unbiased and efficient estimates for the parameters in the model as well as taking into account the problem of endogeneity in the model.

3.1 Model Specification

This study employs a panel data set of 12 West Africa countries for the years 1996 to 2015. The choice of countries and time frame are guided by its availability.

We specify a model where;

$$GDP_{it} = \alpha_0 + \alpha_1 INS_{it} + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

Here, *GDP* represents real *GDP* per capita in constant US$ (which proxy for economic performance). *INS* represents institutional quality. This study employs four different indicators of institutions as provided by the World Governance Indicators, WGI (2017) database. They include the control of corruption, government effectiveness, regulatory quality and rule of law.

The World Governance Indicator, WGI (2017), defined the control of corruption as the perception of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests. Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development while Rule of Law captures perceptions of the extent to which agents have confidence in and abide

by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

X is a set of control variables peculiar to growth theories and developing countries which comprise of capital (which would be proxied by Gross Fixed Capital Formation (GFCF) in constant US$), Labour (LF) (which would be proxied by Adult population, 15-64 as a % of total), Foreign Direct Investment (FDI) as a percentage of GDP, Net Official Development Assistance and Foreign Aid received (AID) in current US$ and Trade (TO) (% of GDP).

In the model, i represents cross sectional index while t represents the time index. ε is the error term. Equation (1) can be decomposed and written as;

$$GDP_{it} = \alpha_0 + \alpha_1 GFCF_{it} + \alpha_2 LF_{it} + \alpha_3 FDI_{it} + \alpha_4 AID_{it} + \alpha_5 TO_{it} + \alpha_6 INS_{it} + \varepsilon_{it} \qquad (2)$$

Economic theory postulates a positive relationship between *GFCF, LF, FDI, AID, TO* and real output per capita. Capital and labour is expected to stimulate growth based on the neoclassical production and the solows growth model; FDI is also expected to promote growth in the host country (Fayissa and Nsiah, 2013), not just by providing direct capital financing but also creating positive externalities and the procurement of new technology from abroad. However, many empirical studies have found out that FDI may not necessary influence growth and sometimes might even retard growth. Iheonu (2016) had also observed that FDI crowds out domestic investment in sub Saharan Africa which might not be good for sub Saharan Africa growth prospects. Other studies by Saltz (1992) and Dutt (1997) have also observed a negative relationship between FDI and growth. Net official development assistance and foreign aid received based on economic theory is meant to have a positive relationship with growth. Study by Dalgaard et al (2004) affirms to this relationship while Shan (1994) result identified a negative relationship between *AID* and growth. *TO* is trade as a percentage of GDP for each country we consider in the model. It captures the impact of openness of the economy on economic growth and it is expected that a positive relationship exists between both variables.

Data for the study are obtained from the World Bank World Development Indicator, WDI (2016) and the World Governance Indicator, WGI (2017).

4. Empirical Results and Interpretation

We begin this section with the descriptive statistics which comprises of the mean, minimum, maximum and standard deviation of the variables in the model as reported in Table 1. The result reveals that the average value of GDP per capita which proxy for economic performance is 836.84

US$. The minimum value across the sample size is 305.08US$ while the maximum is 2548.42US$. The average value of capital across the sample size is almost 4 billion US$ while the minimum value is a negative value of more than 20 million US$ (Sierra Leone, 1997) and a maximum of about 75 billion US$. This shows that capital in West Africa varies across the sampled countries and this may be connected to peculiarities of the individual countries.

Table 1: Descriptive Statistics of the Variables

Variables	Mean	Standard Deviation	Minimum	Maximum
GDP	836.84	471.74	305.09	2548.42
GFCF	3775443953.09	10730237377.36	-20612328	74661218300
LF	52.41	2.13	46.95	57.79
FDI	3.13	3.68	-0.90	31.84
AID	803113351.85	1022188545.39	49380000	12665800000
TO	62.80	19.44	28.28	125.03
CC	-0.66	0.3683	-1.33	0.31
GE	-0.76	0.40	-1.61	0.13
RQ	-0.55	0.34	-1.62	0.13
RL	-0.69	0.44	-1.53	0.16

Source: Authors' compilation for data source from WDI (2016) and WGI (2017)

The descriptive statistics also shows that the average labour force in West Africa is 52.41 with a minimum of 46.95 and a maximum of 57.79. FDI has an average value of 3.13 with a 3.68 standard deviation, a minimum FDI value of -0.90 and a maximum of 31.84 across the sample size. TO across the West African countries has a maximum value of 125.03, a minimum of 28.28 and an average value of 62.80. This disparity could also be based on the peculiarities of the individual countries. For the net official development assistance and foreign aid received (AID), the descriptive statistics shows that AID has an average value of more than 800 million US$, a minimum of about 49 million US$ and a maximum value of more than 12.7 billion US$.

The average value of control of corruption index is -0.66, with a maximum value of 0.31 and a minimum value of -1.33. For government effectiveness as a proxy for institutional quality, its average value is -0.755, maximum value of 0.13 and a minimum value of -1.61. Regulatory quality has an average value of -0.5505, a minimum value of -1.62 and a maximum value of -1.53 while Rule of Law has a minimum value of -1.53, a maximum value of 0.16 and an average value of -0.69.

The indicators of institutional quality exhibit a strong positive correlation among themselves (see Appendix, Table A2). This is actually expected as they are related and since they represent various aspect of institutional quality, they were included in the econometric estimation in different regressions.

The fixed effect model result indicates that the control of corruption has a positive and significant impact on economic performance at 5 percent level of significance; a unit increase in the control of corruption leads to a 78.3 unit increase in economic performance in West Africa. This simply means that an effective corruption control would improve economic performance in West Africa. The result also shows that government effectiveness have a positive impact on economic performance at 1 percent level of significance. A unit increase in government effectiveness leads to a 103 unit increase in economic performance for the West African region. Regulatory quality and Rule of Law also have positive impact on economic performance in West Africa at 1 and 5 percent level of significance respectively. An improvement in regulatory quality and rule of law leads to a 102.4 and 66.2 unit increases in economic performance respectively for the West African region.

Table 2: Impact of Institutions on economic performance (Fixed Effect Estimation Result)

Regressors	(1)	(2)	(3)	(4)
Constant	-2042.156	-2145.582	-1952.755	-1849.920
	(-4.7956)*	(-5.0373)*	(-4.6398)*	(-4.3475)*
GFCF	1.5727	1.5754	1.5240	1.5415
	(20.1382)*	(20.3347)*	(19.3615)*	(19.5659)*
LF	54.0670	56.7608	52.9178	50.7443
	(6.4871)*	(6.7688)*	(6.4324)*	(6.1368)*
FDI	5.9374	5.6442	4.9994	6.1779
	(2.7987)*	(2.6793)*	(2.2909)*	(2.9164)*
AID	4.3474	4.2436	4.3294	4.3158
	(6.2169)*	(6.1003)*	(6.2202)*	(6.1410)*
TO	-0.2471	-0.4063	-0.5594	-0.6256
	(-0.3708)	(-0.6275)	(-0.8654)	(-0.9601)
CC	78.3544			
	(2.3516)**			
GE		103.0417		
		(3.0213)*		
RQ			102.4001	
			(2.7753)*	
RL				66.2017
				(2.6259)**
Adj. R-squared	0.9593	0.9599	0.9596	0.9590
Observations	240	240	240	240
Number of Countries	12	12	12	12

Source: Authors' computation, 2017

NOTES: Dependent Variable: GDP per Capita; * and ** denotes significance at 1% and 5% respectively. t statistics are presented in parenthesis.

The fixed effect model result also shows that the coefficient of each regressor is constant for each column in the model. This finding is robust when compared to the random effect model. The result of the fixed effect model denotes that capital has a positive and significant effect on economic performance in all columns of the result, a unit increase in capital brings about 1.5 unit increases in per capita GDP. Labour force, FDI and AID all have positive and significant effect

on economic performance while trade openness has a negative but insignificant effect on economic performance. A percentage increase in LF leads to a more than 50 unit increase in economic performance in West Africa for the fixed effect model across all columns. A unit increase in AID also improves GDP per capita by more than 4 units. The result for TO shows that a percentage increase in TO leads to a more than 0.2 unit fall in per capita GDP but this relationship isn't significant as can be seen from the probability value across the columns.

The Swamy Arora random effect model also shows similar results with the fixed effect model. The result shows similar coefficients and signs for all variables in the model. The random effect model shows that GFCF, LF, FDI and AID has positive relationship with economic performance while TO have a negative and insignificant relationship across the four columns of the random effect model as is the case of the fixed effect model. A unit increase in capital leads to a more than 1.5 unit increase in economic performance while a unit increase in AID lead to about 4.4 unit increase in economic performance in West Africa. A percentage increase in labour leads to a more than 50 unit increase in economic performance while a percentage increase in FDI also improves economic performance by about 5.4 unit on the average for all columns. Trade is observed to be negative and insignificant.

Table 3: Impact of Institutions on economic performance (Random Effect estimation result)

Regressors	(1)	(2)	(3)	(4)
Constant	-2159.900	-2251.649	-2074.943	-1991.474
	(-5.1572)*	(-5.3515)*	(-4.9842)*	(-4.7344)*
GFCF	1.5908	1.5918	1.5419	1.5619
	(20.4301)*	(20.6002)*	(19.6553)*	(19.8941)*
LF	56.1867	58.7661	55.1258	53.1888
	(6.9265)*	(7.1859)*	(6.8546)*	(6.5812)*
FDI	5.6179	5.2817	4.7229	5.9412
	(2.6606)*	(2.5180)**	(2.1756)**	(2.8139)*
AID	4.4578	4.3228	4.4264	4.4314
	(6.3825)*	(6.2205)*	(6.3659)*	(6.3133)*
TO	-0.1898	-0.3319	-0.4905	-0.5451
	(-0.2878)	(-0.5163)	(-0.7642)	(0.8426)
CC	74.5719			
	(2.2759)**			
GE		108.1008		
		(3.2301)*		
RQ			99.5808	
			(2.7360)*	
RL				55.3533
				(1.7258)***
Adj. R-squared	0.7213	0.7215	0.7248	0.7124
Hausman Test	0.0099	0.0548	0.0225	0.0169
Observations	240	240	240	240
Number of Countries	12	12	12	12

Source: Authors' computation, 2017

The result of the random effect model also shows that the control of corruption, government effectiveness, regulatory quality and rule of law has a positive and significant impact on economic performance in West Africa. While the control of corruption is significant at 5 percent, government effectiveness and regulatory quality are significant at 1 percent while rule of law is significant at 10 percent. The result also notes that government effectiveness as with the case of the fixed effect model exerts the strongest impact on economic performance.

While the results of the fixed and random effect models are largely consistent with a priori expectations except for trade, both techniques failed to account for endogeneity in the model which could lead to biased estimates. Literature suggests that economic growth is a strong determinant of FDI, therefore there is a likelihood of potential endogeneity between FDI and real GDP per capita (Adeniyi, Ajide and Salisu, 2015). This study therefore applies the panel two-stage least square (2SLS) estimation technique in a bid to solve the endogeneity problem in the model.

Table 4: Impact of Institutions on economic performance (2SLS estimation result)

Regressors	(1)	(2)	(3)	(4)
GFCF	0.0000000153	0.0000000153	0.000000015	0.0000000150
	(15.84)*	(16.18)*	(15.59)*	(15.55)*
LF	47.53019	50.16497	46.37112	45.27678
	(7.89)*	(8.56)*	(8.09)*	(7.45)*
FDI	12.42051	12.04518	12.41822	13.36535
	(2.86)*	(3.00)*	(2.46)*	(3.20)*
AID	0.0000000431	0.0000000421	0.0000000431	0.0000000429
	(4.37)*	(4.50)*	(4.45)*	(4.33)*
TO	-1.279746	-1.380133	-1.556492	-1.648876
	(-1.41)	(-1.78)***	(-1.73)***	(-2.08)**
CC	58.54861			
	(1.68)			
GE		93.9122		
		(3.42)*		
RQ			54.50418	
			(1.06)	
RL				39.90485
				(1.23)
Adj. R-squared	0.7313	0.7384	0.7303	0.7252
Observations	240	240	240	240
Number of Countries	12	12	12	12

Source: Authors computation, 2017

The result above shows that the signs of the regressors in all columns are consistent with the result of the fixed and random effect model. The 2SLS result however, differs with the magnitude of the

coefficients and the significance of the variables. The empirical result indicates that the control of corruption, regulatory quality and rule of law has a positive impact on economic performance but this impact is not significant at conventional statistical levels while government effectiveness has a positive and significant impact on economic performance in West Africa. A unit increase in government effectiveness improves economic performance by an estimated 94 units.

In the result, trade remains insignificant when the control of corruption acts as an indicator of institutional quality but when government effectiveness, regulatory quality and rule of law represents institutional quality, trade becomes negatively and statistically significant. The 2SLS result also found out that GFCF, LF, FDI and AID all have a positive and significant impact on economic performance as is the case of the fixed and random effect models.

5. Conclusion

This study has examined the impact of institutional quality on economic performance for a panel of 12 West African countries within the years 1996 to 2015. The selection of countries was based on available data. The panel data study was estimated using the fixed effect model, random effect model and the panel two-stage least square model. The study employed four institutional quality indicators which includes the control of corruption, government effectiveness, regulatory quality and rule of law. The study also controlled for conventional sources of growth. Findings reveal that all four indicators of institutional quality employed in this study has a positive and significant impact on economic performance when the fixed and random effect model was applied and when the two-stage least square estimation technique was applied, all indicators were positive but only government effectiveness was found significant. The study recommends that better institutions in West Africa will improve economic performance with more emphasis on effective governance.

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Appendix

Table A1: List of Sample Countries

Benin	Burkina Faso	Cameroon	Cote d'Ivoire
Gambia	Ghana	Mali	Niger
Nigeria	Senegal	Sierra Leone	Togo

Source: Authors compilation

Table A2: Correlation Analysis

	GDP	GFCF	LB	FDI	TOT	AID	CC	GE	RQ	RL
GDP	1.000									
GFCF	0.695	1.000								
LB	0.496	0.159	1.000							
FDI	-0.08	-0.043	0.082	1.000						
TOT	0.133	-0.151	0.518	0.293	1.000					
AID	0.493	0.332	0.161	-0.01	-0.01	1.000				
CC	-0.15	-0.199	0.046	0.009	0.100	-0.01	1.000			
GE	0.147	-0.071	0.099	-0.03	0.063	0.097	0.713	1.000		
RQ	-0.01	-0.061	-0.01	0.040	0.131	0.045	0.747	0.777	1.000	
RL	-0.21	-0.160	-0.02	0.100	0.146	-0.05	0.741	0.753	0.786	1.000

Source: Authors computation.