Impact of Institutional Quality on Educational Attainment: The Case of Low-Income SSA Countries

Stephen Akpo Ejuvbekpokpo[a],*; Sallahuddin Hassan[b]

[a]Department of Economics, Delta State University, Abraka Nigeria.
[b]School of Economics, Finance and Banking, University Utara, Malaysia.
*Corresponding author.

Abstract

Education produces many social, political and economic outcomes including improved cognitive competences, higher wages, better health and enhanced economic status. Nations ensure the development of their population by the use of educational intervention. Despite the documented empirical correlations of education attained, there have been scanty researches exploring the impact of institutional quality in low-income SSA countries. The problem facing SSA can be ascertained in the area of weak institutions which leads to poor level of educational attainment and low level of life expectancy which have become the focus of the development agenda in the world as a whole and developing countries in general. The objective of this study is to evaluate the relationship between institutional quality and educational attainment in low-income SSA countries from 2005 to 2013. The research used secondary data sourced from World Bank governance indicators, Transparency International and Heritage Foundation. The analysis was divided into panel data using the fixed effects method (FEM) and generalized method of moments (GMM). Both the panel data analysis and the generalized method of moments of institutional quality and educational attainment indicated that most of the countries investigated exhibits mixed performance in institutional quality. The study recommends policies to reduce corruption in all levels of economic activities. In addition, rule of law need to be strengthened and the educational sector should be refined to train manpower in all aspect of human activities in the region especially the low-income countries in SSA countries.

INTRODUCTION

It is a known fact that the performance of innovation and educational attainment has been unequal regarding the productivity of human capital in SSA countries. The sub-Sahara African region has seen a remarkable rise in primary and secondary school enrolment over the past decade. More children are reaching the last grade of primary school with the aspiration of going onto secondary education The low proportion indicates that countries are facing significant challenges in meeting the demand for secondary education. In 2009 according to UNDP (2014), SSA was up to 21.6 million, or 30% of all lower secondary school-age children who are out of school worldwide. Within the region, 40% of all lower secondary school-age are girls and 33% of boys were out of school.

It is important to note that human capital development implies the acquisition of knowledge and intellectual stock through the means of education for expansion of economic productivity, efficiency, performance and output. The importance of human capital development cannot be over emphasized in this world of dynamic economic changes, where human factors have been recognized as the most important factors of management. Out of the various factors that contribute to production; physical factor, monetary factor, machines and man, man has been identified as the most important and relevant out of these factors UNDP (2014)

The categorization of countries into developed and developing nations is based on the human development rates of the people of the nations. Nations tries all they have at their disposal to develop their population by the use of education intervention to ensure development. Even organizations in adjustment to changes in the business environment have to pay better attention on the development of their employees to be able to cope economically with the challenges of the business environment.

However the drives for a high level of educational attainment boils down to the issue of strengthening of institutional quality prevalence in the countries of investigation. Hodgson (2006) defines institutions as durable systems established and embedded with social rules that structures social interactions. This definition encompasses both formal and informal institutions in broad sense. In line with this definition, Fapounda (2012) opined that institutions are formal and informal rules that are essential for economic performance outcome, which varies from one country to another depending on the institutional setting. In another scenario, Ekpo (2013) maintained that effective institutions provide for predictable and stable patterns of interaction in all spheres of life. Institutions are regarded as long lasting entities that its speed of change may not be immediate rather, it takes time to adjust. This is more peculiar with the informal institutions which rely on natural law. Nevertheless, formal and informal institutions form the basic structure of a given society but do not dictate the social, economic and political relations and interactions of those affected by them (Leftwich & Sen, 2011).

1. LITERATURE REVIEW ON INSTITUTIONAL QUALITY AND EDUCATIONAL ATTAINMENT

In the educational attainment concept which is also called knowledge development dimension, is classified into four indicators. These indicators provide both the quantity and quality aspects of knowledge and/or human capital accumulation. The indicators are the following: adult literacy rate, primary school enrolment rate, secondary school enrolment rate and total number of years in schools (Barro & Lee, 2013). The idea here is to capture not only total literacy conditions, but also to see their components.

Beltencourt (2013) carried out an investigation to access the role of democracy in determining education in Southern African Development Community (SADC). The period of the investigation was from 1980-2009 and the data was got from the 15 countries that make up the SADC. The basic investigation was to ascertain whether democracy play any role in enhancing education in the region. The method used was panel time-series analysis (T= 30 and N=15). The descriptive of the data suggest that there is a positive relationship between democracy and education. The statistical correlations between education and democracy are positive and significant, and the OLS regression line also affirms this means that there is a mutual relationship between democracy and education taking place in the sub-region (SADC). Note as far as the research work is concerned, democracy is interchanged with quality institutions.

The literature on the consequences of democracy to education has attracted attention of different scholars in recent time. Bloom,Canniny and Chan (2005) used a sample with 62 countries covering the period 1975-1993 and they reported that increases in democracy taking place in upcoming democracies have attracted increase in secondary school enrolment. On the other hand, Mulligan, Gil and Sala-i-Martin (2004) do not find evidence that democracy affects education spending in their sample of 142 countries between 1960-1990.

Also, Brown and Hunter (2004) use a panel of 17 countries between 1980 and 1997 to report that democracy has had a positive effect on pre-primary and primary education spending in Latin American. More specifically to SSA, Satasavage (2005) uses a sample of 44 countries of African democracies between 1980 and 1996 to report that those recent democracies increased spending on primary education, and Harding and Satasavage (2013) suggest that school attendance is higher in democracies than in non-democracies and that the abolition of school fees in democratic states plays an important role in enhancing attendance.

Researchers have long debated the relative importance of education and institutions. Wietzke (2015) carried out a research on long-term consequences of colonial institutions and human capital investments: sub-national evidence from Madagascar. This study from Madagascar represents one of the few systematic attempts to disentangle the separate economic effects of historical school investments and colonial institutions within a comparable national context (Acemoglu, Gallego, & Robinson, 2014). Regions which received stronger property rights and legal institutions in the colonial period tend to record much better economic outcomes over time than areas with comparable geographic and historical characteristics (Wietzke, 2015).

Furthermore, Neugarten (2015) investigates the role of educational attainment on state failure throughout Africa since 1950, the beginning of the independence era. The study uses 31 countries ranging from the northernmost tip of Africa to the southernmost. Although educational attainment is not directly an institution, a country's academic achievement is most likely highly correlated with how well the educational sector functions In addition, this result is consistent with earlier findings by Green and Moser (2013), who find positive associations between local property rights and manufacturing activities in Madagascar.

Education is not only a way to better income and employment opportunities for all or a source of economic growth for the nation. But it also plays a pivotal role in improving other social indicators. It leads to better life expectancy and health care, smaller family norms, greater community and political participation. It also leads to reduction of inequality, poverty elevation and good governance. It is a pre-condition to establish democracy in a country (Carlos, 2016)

This case has been made forcefully by former colonies that were chosen for European settlement; they do better today due to the higher quality of the institutions they received in the colonial era. While the authors acknowledge that better institutions tend to be associated with higher rates of investment in human capital, they interpret this as a result of institutional development (Acemoglu & Robinson, 2012).

Also studies in this area rely on sub-national data and do not typically account for possible interactions between institutions and human capital within localities. For example an article by Gennaioli, La Porta, Lopez-de-Silanes, and Shleifer (2013), who document that economic effects of local human capital outweigh those of local institutions in a large sample of developing and developed regions, only uses contemporaneous data to buttress this stance. This was also corroborated by Acemoglu and Dell (2010). As a consequence, the authors cannot fully account for the possibility that local skill and education levels are influenced by the quality of local institutions,

or by other local processes of endogenous human capital accumulation, like domestic migration or learning-related spillovers (Glaeser & Gottlieb, 2009; Lucas, 1988; Romer, 1990). However, the issue of state failure and instability is one of great concern for the west and the inhabitants of fragile states throughout Africa.

Model specification and method of Analysis

To estimate our model consistently and efficiently, this study used both static and dynamic panel data analysis. For static panel, random and fixed effects are used to assess the behavior of the variables. In addition, dynamic panel data of generalized method of moments (GMM) is also applied to test the robustness of the model. For dynamic panel data models (Arellano and Bover, 1995) encompasses regression equation in both differences and levels, each one with its specific set of instrumental variables. The use of instrumental variables is required to handle two issues. First, we can resolve the problem of simultaneity and reverse causation that is due to the likely endogeneity of the regressors used in this type of equation and to reduce the estimation bias because of the under reporting of institutional qualities incapability within the SSA countries. Nevertheless, the researcher used the GMM estimator developed by Anderson and Hsiao (1981), Griliches and Hausman (1986), Hsiao (2003) Blundell and Bond (1988) for dynamic models of panel data. The model is formally stated in conjunction with the objective of the research as shown in Equation (1) this is consistent with Arellano, 2003 and Poveda,

$$EDU_{it} = \beta_{2t} + \delta_1 EDU_{it-1} + \delta_2 RLI_{it} + \delta_3 CI_{it} + \delta_4 BQ_{it} + \delta_5 PRI_{it} + \delta_6 H_{it} + \delta_7 SE_{it}$$
$$+ \delta_8 GE_{it} + \delta_9 INFR_{it} + \varepsilon_{it}$$

$$(1)$$

where,
EDU = Educational attainment (school enrolment)
PRI = property right (percentage)
RLI = rule of law (percentage)
CI = corruption index (percentage)
BQ = bureaucratic quality (percentage)
GE = government expenditure (percentage of GDP)
SE = School expenditure (proxied by total % of GDP)
INFR = infrastructural facilities (percentage)

2. RESULTS AND DISCUSSION

From the Hausman test result, Education's χ^2 value is 0.047 hence Fixed Effect Model (FEM) estimator is applicable instead of Random Effect Model (REM). This follows the discussion below. The results of estimation are shown in Table 1 The table shows that all the variables' has negative coefficient such as RLI, CI, BQI, SE, LAB and INFR except the coefficient of PRI which has a positive sign. Also, RLI, CI and PRI are statistically significant at the conventional level of significance. The rule of law index is statistically significant at five percent but

shows negative coefficient. In other words, one percent increase in rule of law index implementation in the region on average leads to 0.04 percent decrease on educational attainment of the people in the area of this study. This is not in agreement with human development theory and this finding lays credence to previous studies such as Osman, Alexiou and Tsaliki (2012) and Cross and Donelson (2010). In their submission that rule of law serve as an engine room that promotes peace and security and safety net for educational attainment.

Corruption index is also statistically significant at five percent but with negative coefficient. This implies that one percent increase on the control of corruption on average leads to 0.05 percent decrease on educational attainment. This result also contravenes the human development theory. Ideally, control of corruption in the society leads to increase on educational attainment because funds that were supposed to be stolen is made available for judicious use for the people's education as asserted by Barro and Lee (2013); Beltencourt (2013) and Wietzke (2015).

Nonetheless, *BQI* is statistically insignificant with a negative coefficient. While, property rights index is statistically significant at five percent level of significance with positive coefficient. In other words, a one percent increases on effective implementation of property right in the region on average leads to 0.13 percent increase on educational attainment in low-income SSA countries. This result is consistent with economic theory and also supported by previous studies such as German Soto and Flores (2015) and Wietzke (2015). They assert that security of property rights has the potential to advance the standard of living and educational attainment.

Table 1
Table 1-a
Institutional Quality and Educational Attainment in Low-Income Countries: Fixed Effect

Variable	Coefficient	Standard Error	t-value	Prob>$\|t\|$
Constant	6.828	0.127	53.56	0.000*
RLI	0.042	0.013	3.32	0.001*
CI	0.045	0.017	2.63	0.009*
BQI	0.002	0.022	0.13	0.895
PRI	0.128	0.024	5.38	0.000*
SE	0.020	0,014	1.43	0.156
LAB	0.018	0.017	1.08	0.282
INFR	0.009	0.005	1.68	0.095**

Diagnostic statistics:

R^2: Within	0.300
Between	0.006
Overall	0.009
Wald	$\chi^2_7 = 282.320$
Prob (χ^2)	0.000
Multicollinearity	1.320
Heteroskedasticity	54239.280
Serial Correlation	171.012
F–statistics	$F(24, 193) = 913.23$

Table 1-b
GMM Results on Institutional Quality and Educational Attainment in Low-Income

Variable	Coefficient	Standard Error	z-value	Prob>$\|z\|$
Constant	17.522	3.567	4.91	0.000*
RLI	1.016	2.371	0.43	0.668
CI	-2.192	0.761	2.88	0.004*
BQI	0.012	0.071	0.18	0.860
PRI	-0.267	0.067	3.97	0.000*
SE	0.264	0.044	6.03	0.000*
LAB	-0.138	0.015	9.47	0.000*
INFR	0.963	0.336	2.86	0.004*

Diagnostic Statistics:

Wald	$\chi^2_9 = 12526.560$
Prob (χ^2)	0.000
Sargan test	$\chi^2_{24} = 19.428$
Prob (χ^2)	0.979

Arellano-Bond	Order	Z	P>Z
	1.	0.637	0.524
	2.	0.241	0.810

Note: * and ** indicates significance at 5 and 10 percent level of significance.

For the instrumental variables apart from *INFR* which is statistically significant at ten percent but with negative coefficient, The other variables like *SE* and *LAB* are insignificant in terms of their relationship with educational attainment in the sub-region. In other words, lack of encouragement from government through effective educational policies on education contributed to the high level of illiteracy in the region. This assertion lends support to the ones reported by previous studies Klomp and Haan (2013), Saulawa (2014) and Acemoglu, Gallego and Robinson (2014) opined that there is a huge regional imbalance within the countries due to poor implementation of educational policies in the SSA countries in general and the selected low-income countries in particular.

Various diagnostic checks were performed and the results are also shown in Table 1 These include the results of multicollinearity, heteroskedasticity and autocorrelation. However, the post estimation has shown that the model has no issue of heteroskedasticity and autocorrelation. The discussion was based to on FEM as it relates to the model.

In addition, GMM was also computed for this model and the result is reflected in Table 1 and the interpretation is done thus. *RLI* is statistically insignificant, but with positive coefficient. In this circumstance it means that

rule of law index does not contribute positively to the educational attainment in the region. However this situation is in contrary to human capital development theory. Therefore the implementation of rule of law policy is expected to influence the educational attainment of the people positively. Nevertheless, corruption index is statistically significant at five percent level of significance, with negative coefficient. In other words, one percent increase in corruption index (control of corruption) on average leads to 2.19 percent decrease in educational attainment in the region. This finding is inconsistent with the human development theory and supported by previous studies such as Barro and Lee (2013), Saulawa (2014) and Acemoglu, Gallego and Robinson (2014) they opined that there is a huge regional imbalance within the countries due to poor provision of infrastructural facilities in the SSA countries as a result of high level of corruption.

In another scenario, bureaucratic quality index is insignificant but has positive sign. In other words, increase in effective bureaucratic qualities index in the society, suppose to increase the level of educational attainment when all other things are held constant. That is to say, the higher the effectiveness of *BQI*, the higher the level of educational attainment in SSA countries other things being equal. This result is not in consonance with human development theory. Hence something needs to be done to improve the educational standard through effective regulation of bureaucratic quality index in the low-income countries of SSA region.

Furthermore, the issue of property rights index shows that it is statistically significant at one percent, but with a negative coefficient. In other words, one percent increase in property rights index regulations, on average leads to a decrease of 0.27 percent of educational attainment within the research area. That is to say, as the level of the freedom of property rights increases, the standard of living of the people among the countries of this study falls. This is contrary to human development theory. Ideally, the higher the level of property rights acquisition, the higher the level of educational attainment so as to meet the challenges of research and development as a driving force for greater property rights acquisition in any given society as is obtainable in the developed world.

The educational attainment model passed the Sargan test of over identifying restrictions (endogeneity), after two-step has been computed as shown on the Table 1 The χ^2 value of the Sargan test is 19.428, and the probability χ^2 is 0.979. This means that the *p*-value of the test is greater than 0.05, this shows that the instruments are valid. Also, the Arellano-Bond serial autocorrelation test was also significant. Here, first order and second order are 0.637 corresponds to 0.524 and 0.241 and 0.810 respectively. This shows that there is no autocorrelation in the model.

CONCLUSION

Generally, the paper investigates the impact of institutional quality and educational attainment in low-income SSA countries. Both static and dynamic panel data analysis was employed. The key findings include institutional qualities such as rule of law and corruptions are major contributing setback on the educational attainment in the low-income SSA countries. The paper therefore, recommends improvement in government expenditure on health, education and economic services as components of productive expenditure to boost economic development. Also, institutional activities such as rule of law, control of corruption and bureaucratic quality need to be effectively implemented to bring about accountability, transparency, justice and fairness. In addition, policy-makers in these countries should focus on the capability and capacity of government institutions in carrying out comprehensive monitoring, implementation and evaluation of educational policies through increased investment on education.

REFERENCES

Acemoglu, D., & Dell, M. (2010). Productivity differences between and within countries Macroeconomics. *American Economic Journal*, 2(1), 169-188.

Acemoglu, D., & Robinson, J. (2012). *Why nations fail: The origins of power. Prosperity, and Poverty.* New York: Crown Business.

Acemoglu, D., Gallego, F., & Robinson, J. A. (2014). *Institutions, human capital and development* (No. w19933). National Bureau of Economic Research.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2006). Institutions as the fundamental cause of long- run growth. In P. Aghion & S. Durlauf (Eds.), *Handbook of Economic Growth* (pp.385-472). Amsterdam: Elsevier.

Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950-2010. *Journal of development economics*, *104*, 184-198.

Bettencourt, L. (2013). The origins of scaling in cities. *Science*, *240* (6139), 1438-1441.

Bloom, D, Canning, D., & Chan, K. (2005). Higher education and economic development in Africa. Manuscript, Harvard University.

Blundell, R., & Bond, S.(1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87* (1), 115-43.

Brown, D. S., & Hunter, W.(2004). Democracy and human capital formation, education spending in Latin America, 1980-1997. *Comparative Political Studies*, *37*(7), 842-864.

Carlos, G. (2016). Institutions and growth: A GMM/IVpanel VAR approach. *Economics Letters*, *138* (2016), 85-91.

Ekpo, A. H. (2013). *Promoting inclusive development in Nigeria: Issues of policy reforms and expectations from*

economic agents. Distinguished public lecture, department of economics, university of Lagos.

Fapounda, T. M. (2012). Women and the informal sector in Nigeria: Implications for development. *British Journal of Arts and Social Sciences, 4*(1), 20 & 35- 45.

Gennaioli, N., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2013). Human capital and regional development. *Quarterly Journal of Economics*, *128*(1), 05-164.

German-Soto,V., & Flores, G.L. (2015). Contribution of education and innovation to productivity among Mexican region: A dynamic panel data analysis. *Theoretical Economics Letter, 5*, 44-55. http://dx.org/10.4236/tel.2015.51008.

Glaeser, E. l., & Sacks, R. E. (2006). Corruption in America, *Journal of Public Economics*, *90*(1), 53-72.

Glaeser, E., & Gottlieb, J. (2009). The wealth of cities: Agglomeration economies and spatial equilibrium in the United States. *Journal of Economic Literature*, *47*(4), 983-1028.

Green, A., & Moser, C. (2013). Do property rights institutions matter at the local level? Evidence from Madagascar. *Journal of Development Studies*, *49*(1), 95-109.

Griliches, Z., & Hausman J. A. (1986). Errors-in-variables in panel data. *Journal of Economics*, *31***,** 93-118.

Hausman, J.A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251-1271.

Hodgson, G. (2006). What are institutions?. *Journal of Economic Issues, 11*(1), 1-24.

Hsiao C. (2003). *Analysis of panel data* (p.34). Cambridge University Press.

Klomp, J., & Haan, J. (2013). Political regime and human capital: a cross-country analysis. *Social indicators research, 111*(1), 45-73.

Leftwich, A., & Sen, K. (2011). Don't mourn; organize institutions and organizations in the politics and economics of growth and poverty-reduction. *Journal of international development, 23*, 319-337.

Mulligan, C. B., Gil, R., & Sala-i-Martain. (2004). Social security and democracy. *Journal of Economic Analysis and Policy, 10*(1).

Neugarten, J. D. (2015). State failure and political instability: The impact of educational attainment in Africa. *Undergraduate Economic Review*, *11*. http://digitalcommons.iwu.edu/uer/vol11/iss1/11.

Osman, R. H, Alexiou ,C., & Tsaliki, P. (2012). The role of institutions in economic development evidence from 27 Sub-Saharan African countries. *International journal of social Economics, 39*(1/2), 143-149.

Poveda, A.C. (2012). Violence and economic development in Colombian cities: A dynamic panel data analysis. *Journal of International Development*, *24*, 807-827.

Romer, P. (1990). Endogenous technical change. *Journal of Political Economy*, *98*(5), 71-102.

Saulawa, A. G. (2014). Technology education for national and human capital development, The challenge of the Era. *Journal of Educational and Social Research*, *4*(7), 92.

Stasavage, D. (2005). Democracy and education spending in Africa. *American Journal of Political Science, 49*(2), 343-358.

Stasavage, D. (2013). Knowledge in monetary policy, Institutional conflicts an complementarities: Monetary policy and wage bargain institutions as EMU. 183.

Transparency International. (2013). *Corruption perception index*. www.transparency.org/cpi

Tridico, P. (2008). Institutions, human development and economic growth: Growth in transition Economies. *The European Journal of Development Research*, *19*(4), 569-593.

UNDP (2014). Human Development Report*, 2014*. New York: United Nation Development Programme.

Wietzke, F. B. (2015). Long-term consequences of colonial institutions and human capital Investments: Sub-National Evidence from Madagascar. *World Development*, *66*, 293-307.