Institutional Quality and Economic Welfare Nexus: Evidence from Panel ARDL Models

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Abstract: **The development agenda for many African countries in the last few decades has been geared towards improving their quality of institutions and economic transformation through human development. This paper investigates the relationship between formal and informal institutional quality on human development using the Auto Regression Distribution Lag (ARDL) models. The paper makes use of secondary data collected from, Heritage Foundation, World Development Indicators, United Nations Development Program and Transparency International, from 2001 to 2018. The study reveals a long-run robust inverse relationship between institutional quality and human development with an adjustment speed of 10% for any deviation from equilibrium. The formal institutional quality (economic freedom) has a direct and significant relationship with economic welfare while informal institutional quality (corruption) has a significant inverse relationship with economic welfare. To mitigate the effect of institutional quality on human development, it is recommended that governments in African should enact laws to effectively fight corruption but should also allow some level of corruption to exist since this significantly increases entrepreneurial activity in the short-run.**

Key words: **Institutional Quality, Economic Welfare**

I. INTRODUCTION

Improving the quality of institutions through economic transformation has been recognized as a necessary tool for the achievement of economic welfare over time. Yet the debate on how institutional quality affect economic welfare is still inconclusive. This is because the relationship between institutional quality and economic welfare has been studied using different analytical tool with different set of data in different context. Some of the conclusions from the studies are that institutions regulate human actions(North, 1990 and Bruinshoofd, 2016).Institutions in most cases are not chosen for the common interest of society but rather imposed by groups with political power for their economic gains (Acemoglu, Johnson & Robinson, 2005) yet they constrain and enable group behaviour(Schimid, 2005). Thereby making institutions the best indicators of structural transformation and long term welfare creator of a nation, (Bruinshoofd, 2016)*"If you want to predict the prosperity of a country, just look at its institutions" (Drzeniek, 2015).*

Extant empirical studies shows a direct link between institutional quality and economic welfare (Coleman 1994) and that institutional quality plays a pivotal role in establishing a healthy relationship between business and government, (Hausmann, 2014). Such as assuring flexible and credible commitment (Lohmann, 2003).In addition to the direct relationship between institutional quality and economic welfare, efficient institutional quality drives economic welfare, (Rodrik, 2004) while inefficiency institutional quality is seen as the root causes of economic difference between nations, (Li, &Abiad, 1990). A political regime that guarantee property right for example achieves sustainable economic growth (Przeworski, Limongi, & Giner, 1995). The volatility of fiscal policy for in addition is seen to have a first-order effect of long term economic welfare of a nation (Fatás, & Mihov, 2013). The contribution of institutional quality to economic growth and welfare outweighs the availability of natural resources (Acemoglu, Johnson & Robinson, 2001; Kloomp & De Hana 2009) hence the improvement of institutional quality should be the priority of any economic welfare pro regime.

Yet African is noted for its existing and persistent weak institutions (Alhassan, & Kilishi, 2019) although the continent has been seen lately to be on the frontier of a transitional phase. For example the global average of economic welfare index for least developed countries according to United Nations Development Program (UNDP) has increased by 51.45% from 1990 to 2017 though still below the global average. Europe and Central Asia enjoyed an average 18.07% increase in economic welfare between 1990 and 2017. Sub-Saharan African countries on their part enjoyed an average economic welfare increase of 34.92% between 1990 and 2017. Despite these improvement in economic welfare African countries continue to lag behind in terms of economic welfare, (Fosu, & Mwabu, 2010) and in enacting institution that promote economic welfare.

Previous theories and empirical studies have awaken the interest of policy makers on the relationship between institutional quality and economic welfare in develop countries. Yet few finding exist to support the institutional quality, economic welfare nexus in Africa. Hence this paper seeks to complement this gap by empirically test the short-run and long-run relationship between formal and informal institutional quality on economic welfare thereby ascertaining consensus on the institutional quality economic welfare relationship.

The paper is organized as follows; section two is literature review, section three is reserved for data and methodology used in the study, section four is the empirical analysis and results and section five is conclusions.

II. LITERATURE REVIEW

Definition of Institutions

The original usage of the term institutions can be credited to Verblen (1891) who defined institutions as the structure and mechanism of social order. The usage of the term institution is very common among social science (Hodgson 2006) yet interpreted differently. The expanded notion of institution includes norms, rules and constraints devised by man to reduce uncertainty and control the environment. Examples are (i) written rules and agreements that govern contractual relationships and the governance of corporations (ii) constitutional laws and rules that govern politics, government, finance and society in general and (iii) unwritten codes of conducts, norms of behaviour and beliefs (Menard & Shirley 2014). In another dimension, institutions are made up of rules and organizations designed specifically to guide human action (Islam, 2018). Furthermore institutions are social rules and structure of social interactions that are established and prevalent in a community or group (Hodgson, 2006).

In economics for example, institution are humanly devised constraints that structure the political, economic and social interaction between agents. These constraints comprise formal and informal rules (Leftwich, & Sen, 2010), that limit the behaviour of economic agents. The formal constraints include constitution, laws and property right while the informal constraints are sanctions, customs, traditions, taboos and code of conduct (North, 1990). Informal institutions are in nature private constraints (Williamson, 2009), that matter for development. The range from bureaucratic and legislative norms to clientelism and patrimonialism, influencing political behaviour and outcome (Helmke & Levisky, 2004). Informal rules are in general socially sanctioned norms of behaviour inbuilt with self-enforcing mechanism of obligation, expectation of reciprocity, gossip, shunning, boycotting, shamming, threats and the use of violence, (De Soysa, &Jütting, 2007).

Formal institutions on their part comprise the written constitutions, laws policies, rights and regulations enforced by authorities (Leftwich& Sen, 2010). Property right is an example of a forma institution. It forms the backbone of the modern set of institutions in a market economy. It consists of legal property right that support the broader development of economic property right such as individuals' ability in expected terms, to consume goods directly or to consume it indirectly through exchange (Aidis & Estrin, 2013). Formal institutions are created, communicated and enforced through generally accepted official channels such as the courts, legislature and bureaucracy.

Definition of Economic Welfare

The erstwhile writers in economic welfare conceived welfare as sum of utility accruing to all individuals within a nation. The classicals argued that growth was driven by exogenously determined variables such as land, labour and investment growth. This view took central stage as proxy for economic welfare (Malthus, 1798; Ricardo, 1817; and Ramsey, 1928). The main stream classical economic thinking (Mils, 1848 and Say, 1803) placed the determinants of economic welfare into threefold, namely; technological innovation, the opening of new territories and discovery of new resources and increasing population. In their view growth was synonymous to technological process.

Thus the view that temporal increase in real Gross Domestic Product (GDP) per person would cause a population explosion and a subsequent fall in real GDP per person. In the classical perspective therefore economic growth symbolized collective utility and hence economic welfare of the people. With this in mind the neoclassical school of thought emerged that stressed on capital accumulation and saving as important determinants of economic growth. The Neoclassicals came up with the conclusion that the economy will always converge to a balance growth path in a stable economy, (Solow, 1956; and Swan 1956). Empirically, the neoclassical theory failed in explaining growth differences between nations. In view of explaining these growth variations, the endogenous growth models emerged. In the endogenous model, long-run economic growth of a nation was a function of the growth rate of its populations. Bringing to the fore the role of human capital growth in explaining growth variation between nations.

Institutional quality are key determinant of economic welfare of a nation. (Donges, Meier, & Silva, (2019).Taking from the assertion that the functioning of institutions affect economic welfare, several authors have attempted to discover the relationship between institutions and economic growth (economic welfare) and to trace the number of institutional characteristics that affect economic welfare. There exist a strong link between innovation and corruption, market friendly policies, protection of property rights and effective judiciary system.(Tebaldi & Elmslie 2008). Institutional quality affects investment, technological innovation and economic organization and these factors determine economic growth and hence economic welfare (Wiggins, & Davis, 2006 and Rodrik, 2004). In the sphere of investment for instance, political and governance institutions matter for private investment (Veganzones, & Aysan, 2007).

The views of scholars interested in the link between institutions and economic welfare have divided institutions into economic and political. These two types of institutions roughly summarized as the fundamental forces driving economic welfare. From the point of political structure Kong, (2005). Showed that a balanced configuration of power is a necessary condition for economic growth than a political

structure that is concentrated or excessively fragmented. Przeworski, Limongi, and Giner, (1995). On their part confirm the view that guarantee of property right by any political regime could sustain economic growth. Fatás, and Mihov, (2013). Investigated the effect of policy volatility on long term economic growth for 93 countries using data spanning from 1960 to 2007. Using a panel data regression model, Fatás, and Mihov, showed that volatility of fiscal policy has a first-order effect of long term economic welfare of a nation. Their results also showed that in countries where governments uses aggressive discretionary fiscal policy lowers the rate of economic welfare especially when the choice of fiscal policy is not related to the state of the business cycle. Also an unbalance use of fiscal policy comes with accumulation of debts.

A plethora of variables have been used over time to depict either formal or informal institutional quality. Corruption is an example of an informal institutional quality used to capture institutional quality and analyse its effect on economic welfare. Rich countries hold the perception that poor nations are poor because they are corrupt(Saha, & Ali, 2017). Growth in per capital income has the propensity of increasing corruption but after a threshold level, an increase in the level of per capita income actually lowers corruption (Tella, 2013). Also corruption is seen to have both narrow and broad perspective and all these affect economic welfare. Under the narrow perspective, corruption is seen as a lubricant that speeds up and help entrepreneurs create wealth in specific instances. On a broader perspective corruption remains an obstacle to economic welfare, (Aidt, 2009).

Tella, (2013) did a comparative study on the effect of corruption on economic welfare for East Asia Countries with similar levels of corruption as African. His finding revealed the presence of nonlinear admit corruption and income. He further explained that a growth in per capital income has the propensity of increasing corruption but after a threshold level, an increase in the level of corruption actually lowers corruption. Commander and Nikoloski, (2010) also explored the relationship between institutions and economic welfare. Their study used political systems, business and investment environment and perceived business constraints to capture institutions. Their study used several sets of country level measure of political institutions, the World Bank's doing business report survey to approximate the business and investment environment. The results show no relationship between institutions and economic welfare. In the case of political institutions for instance none of the explanatory variables was significant.

The role of economic institutions in shaping economic welfare has also been on the research agenda for several decades. Economic institutions according to Wiggins, and Davis, (2006) are those institutions that perform economic functions. They include functions like the promotion of property right, facilitating transaction and permitting economic co-operation and organizations. Acemoglu, (2003); Rodrick, Subramanian

and Trebbi, (2002) have described economic institutions as the leading source of economic growth explaining differences in income and productivity across nations. Their claim is supported by Acemoglu, Johnson and Robinson (2001); Kloomp and De Hana (2009) compare the contribution of economic institutions and natural resources to economic growth and concluded that the contribution of economic institutions to economic growth outweighs the availability of natural resources. This is because solid economic institutions lead and other determinant of growth follow.

Several authors have attempted to establish the link between economic institutions and economic growth using different methodology, data and variables. Wanjuu, and Le Roux, (2017) for examples, used unit root and co-integration test to assess the cause and effect relationship between economic institutions and economic growth. The variables on which data was collected included real gross domestic product per capita, corruption perception index, property right index, private investment per capita, government expenditure per capita and trade openness for ECOWAS countries. The findings exposed that economic institutions represented by property rights index engendered real GDP in ECOWAS countries with all other variables effect economic growth except trade openness.

Flachaire, García-Peñalosa, and Konte, (2014). Explained the different ways that economic and political institutions affect economic growth. They used a mixture of regression model which allowed for the endogenous determination of both the number of growth regimes and the variables that determine to which regime a country belongs. They showed that political institutions are key determinant of regime membership but have no direct effect on the growth within regimes. Rather economic institutions explain growth within regimes.

Nawaz, Iqbal, and Khan, (2014) developed a theoretical model that integrated the role of institution in promoting economic growth. Using a panel data of 32 Asian countries from 1996 to 2012. They used data from Worldwide Governance Indicators (WGI) published by the World Bank for institutions variable and included six different dimensions of institutional framework such as Control of Corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law and voice and accountability. The model reveal an inverse relationship between rent seeking behaviour and improvement in institutional quality. Indicating that institution affect economic growth of a nation. On this basis Yıldırım, and Gökalp, (2016), investigated the link between institutions and macro-economic welfare in 38 developing countries using 23 institutional structure variables. The panel data analysis methodology was used to analyse the data from 2000 to 2011. Their finding reveal that institutional structure related indicators such as the integrity of the law system, regulations on trade barriers, foreign investment restriction, private sector share in the banking system and hiring-dismissal variables all have a positive effect on macro-economic welfare in

developing countries. In the case of Asia countries, Nawaz, Iqbal, and Khan, (2014), show that between 1996 and 2012 institutions play a significant role in long-run economic growth. This support the view that countries need good institutions to support and sustain economic growth.

III. DATA AND METHODOLOGY

Measurement of Variables

The data for this study was collected from trusted and reliable data bases that have been used in over three thousand publications worldwide. The countries used for the study were selected to represent the eight economic blocks found in Africa and secondly on the basis of availability of data. The study uses a panel data of eleven African countries for the period 2001 to 2018. This is in line with Rasool, Gulzar and Naseer (2012), that used a panel of eight countries and six years to study the linking between entrepreneurship and economic development in selected Asian countries. In Lekhang and Thanh (2018) also in a recent study used a panel of 13 nations and 11 years to establish the link between economic growth, entrepreneurship and institutions for emerging countries.

Informal Institutional Quality

This is captured by Corruption Perception Index (CPI). The data is collected Transparency International database. The CPI ranks countries by their perceived level of corruption as determined by expert and business people. It is perhaps the most widely recognized measure of corruption, and measure the misuse of public power for private benefits. Corruption is measures on a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean.

Formal Institutional Quality

A total of four formal institutional quality variables are used for this study. They include:-

Rule of Law: This captures the 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. Estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance)

Regulatory Quality: This is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Government Effectiveness: This reflects 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

Economic Freedom: The measurement of economic freedom is based on 12 quantitative and qualitative factors, grouped into four broad categories, or pillars, of economic freedom: Rule of Law (property rights, government integrity, judicial effectiveness) Government Size (government spending, tax burden, fiscal health) Regulatory Efficiency (business freedom, labour freedom, monetary freedom), Open Markets (trade freedom, investment freedom, financial freedom) Each of the twelve economic freedoms within these categories is graded on a scale of 0 to 100. A higher value means the country is economically free A country's overall score is derived by averaging these twelve economic freedoms, with equal weight being given to each

Economic Welfare

The Data for economic welfare (Human Development Index) is collected from United Nations Development Programme (UNDP). This index places emphasis on the development of a person and its capabilities as main criteria for assessing the development of a nation. It has been use to question policy choice by asking how two countries with same level of Gross National Income (GNI) per capita should end up with different development outcome. The HDI is a summary measure of average achievement in the key dimensions such as long and healthy life, being knowledgeable and decent standard of living. The index is a geometric mean of normalized indices for each of the three dimensions.

Economic Control Variables

Education: It is defined as the average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level. Mean years of schooling is more frequent, has broader coverage, and has better discriminatory power than literacy.

Life Expectancy at birth: This indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

Population Growth: It is calculated based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship

Ratio of female to male labour force participation rate: this is the ratio of female to male of proportion of a country's working-age population (ages 15 and older) that engages in the labour market, either by working or actively looking for work, expressed as a percentage of the working-age population.

Mobile cellular telephone subscriptions: These are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator

includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services

Unemployment: this refers to the share of the labour force that is without work but available for and seeking employment.

Auto Regression Distribution lag

The empirical model

$$C = f(Y, \pi) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (1)$$

An Auto Regression Distribution Lag model is considered as

ARDL (1,1,1) Model

$$C_t = Con + \alpha C_{t-1} + \beta_1 Y_t + \beta_2 Y_{t-1} + \beta_3 \pi_t + \beta_4 \pi_{t-1} + e \dots (2)$$

Note

$$C_t = \Delta C_t + C_{t-1}$$

$$Y_t = \Delta Y_t + Y_{t-1}$$

$$\pi_t = \Delta \pi_t + \pi_{t-1}$$

Estimator

Peseran et al. (1999) suggest two different estimators as a solution to heterogeineity bias caused by heterogernous slopes in dynamic panels. These are the Mean Group (MG) and Pooled Mean Group (PGM) estimators.

The Mean Group Estimator

Pesaran and Smith (1995), Mean Group estimator has the least restrictive procedure and it allows for heterogeneity of all the parameters where no cross sectional restriction s imposed. It estimates separate regression for each country and calculating the coefficients as unweighted means of the estimated coefficients for the individual countries. It allows for all coefficients to vary and be heterogeneous in the long-run and short-run.

The ARDL is specified as follows

$$y_{it} = \alpha_i + \gamma_1 y_{it-1} + \beta_1 x_{it} + \mu \dots\dots\dots\dots\dots\dots (3)$$

For country i where i = 1, 2, … N

The long-run parameters $\emptyset_i$ for country i is

$$\emptyset_t = \frac{\beta_i}{1 - \gamma_1}$$

And the MG estimates for the whle panel will be given by

$$\hat{\emptyset} = \frac{1}{N} \sum_{i=1}^{N} \emptyset_i$$

$$\hat{\alpha} = \frac{1}{N} \sum_{i=1}^{N} \alpha_i$$

The Pooled Mean Group (PMG) Estimator

The main characteristic of PMG is that it allows short-run coefficients including the intercepts the speed of adjustment to the long-run equilibrium value and error variances to be heterogeneous countries by country, while the long-run slope coefficients are restricted to be homogeneous across countries. This is particularly useful when there are reasons to expect that the long-run equilibrium relationship between the variables is similar across countries or at least a sub set of them.

$$\Delta ECONSWEL_t = \propto_0 + \sum_{I=1}^{P} a_{1i} \Delta ECONSWEL_{t-1}$$
$$+ \sum_{I=1}^{q} a_{2i} \Delta IFIQV_{t-1}$$
$$+ \sum_{I=1}^{q} a_{2i} \Delta FIQV_{t-1}$$
$$+ \sum_{I=1}^{q} a_{4i} \Delta POPGR_{t-1}$$
$$+ \sum_{I=1}^{q} a_{5i} \Delta RATIOLAB_{t-1}$$
$$+ \sum_{I=1}^{q} a_{6i} \Delta EDU_{t-1}$$
$$+ \sum_{I=1}^{q} a_{7i} \Delta LIFEXP_{t-1} + \lambda ECT_{t-1}$$
$$+ e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots. (4)$$

The Error Correction Term

The Error correction term (ECT) is used to indicate the speed of adjustment to restore equilibrium. A highly significant ECT further confirm the existence of a stable long-run relations between institutional quality and economic welfare. The error correction coefficient shows how quickly variables converge/diverge to equilibrium. Beside the requirement that is should be statistically significant, the coefficient need to be positive or negative. The Error correct mode is specified as follows:-

$\lambda = (1 - \sum_{i=t}^{p} \partial_i)$, speed of adjustment parameter with a negative sign

$ECT = (ECONSWEL_{t-1} - \theta X_t)$, the error correction term

$\theta = \frac{\sum_{i=0}^{q} \beta_i}{\alpha}$, is the long run parameter

a_{1i}, a_{2i}, a_{3i}, a_{4i}, a_{5i} a_{6i} and a_{7i} are the short-run dynamic coefficients of the model's adjustment long-run equilibrium

The Hausman Test

The hypothesis of homogeneity of the long-run policy parameters cannot be assumed as priori. The effect of heterogeneity on the means of the coefficients can be determined by Hausman-type test. If the parameters are in fact homogenous, the PMG estimates are more efficient than MG.

When estimating equations with PMG and MG, it is sometimes necessary to apply the Hausman test to see whether there are significant differences among these estimators. In other word, the efficient estimator under the null hypothesis, which is PMG is preferred. However, if the null hypothesis is rejected, then the efficient estimator MG, is preferred. Null hypothesis of Hausman test is that PMG estimator is efficient and consistent but MG estimator is inefficient against the alternative hypothesis that is PMG estimator is inefficient and inconsistent but MG estimator is consistent.

IV. EMPIRICAL ANALYSIS AND RESULTS

In the first instance we investigate the effect of informal institutional quality variable corruption on economic welfare. The Pooled Mean Group (PMG) and Mean Group (MG) results are presented in table 1. The Hausman test is used to choose between PMG and MG estimators. Since the P-Value of the Hausman test is 0.9982 which is greater than 0.05, this implies the null hypothesis of homogeneity cannot be rejected, hence in examining the effect of informal institutional quality on economic welfare PMG is the better estimator. The coefficient of the Error Correction Term (ECT) for PMG is -0.366 and it is statistically significant at 5%. This shows long-run cointergration and that any deviation of economic welfare from its long-run equilibrium are adjusted at the speed of 36%% via informal institutional quality variable corruption. Corruption shows a weak positive relationship with economic welfare in the long-run. That is a 1% change in corruption will bring about a 2% long-run change in economic welfare in Africa.

The pairwise correlation test results table 4 show that the four formal institutional quality variables (ie. Economic Freedom, Government Effectiveness, Rule of Law, and Regulatory Quality) are all strongly correlated. However, this should be expected, as the variables capture different, but related dimensions of the institutional characteristics of a country. Also, this is understandable and inevitable because those institutional indexes are obtained from the same data source, calculated and adjusted in the same manner. As a control measure to avoid multicollinearity, each of the variables were introduced in separate estimations as shown in tables 2 a, to d

The P-Value of the Hausman Test for all the formal institutional quality variables used in the study are all significant at 5% level of significance and greater than 0.05. This implies the PMG is a better estimator in all the cases. Next the Error Correction Terms (ECT) areis Negative and significant at 5% level of significance meaning any deviation from long-run equilibrium by economic welfare are corrected via formal institutional quality variables.

PMG estimation technique is used to capture the effect of formal and informal institutional quality variables for the respective countries. The results Table 3 shows that the long run coefficients are the same for all countries while the short-run coefficients, variance and intercept differ across the

countries. This finding is in line with Pesaran, Shin and Smith (1999), hypothesis that the long-run coefficients of the PMG estimator are the same for all countries but the intercept, short-run coefficients and error variance differ freely across countries.

The Error correction terms for Ghana and Madagascar are positive and significant. This means no cointergration to equilibrium and signifies the model is explosive. The error correction terms for Burkina Faso, Cameroon, Ethiopia, Malawi and Senegal are negative and significant at 1% level of significance symbolizing cointegration among the variables. Also this means any deviation from long-run equilibrium are corrected at 70%, 19%, 95%, 77% and 45% for Burkina Faso, Cameroon, Ethiopia, Malawi and Senegal respectively. The Formal institutional quality variable (Economic Freedom) and the informal institutional variable (Corruption) show a weak positive relationship with economic welfare in Ethiopia, Madagascar, Malawi and Zambia. Ghana is the only country that shows a weak inverse relationship between both formal and informal institutional quality variables. While economic freedom has a weak negative relationship with economic welfare in Cameroon and South Africa.

Discussion of Finding

The findings of this study reveal that there exist an inverse and significant relationship between corruption and economic welfare for the countries under study. This implies that when corruption increases in a country the economic welfare in that country will reduce. This finding is in line with economic a priori criteria. This finding is in line with the findings of Saha, and Ali (2017) who carried out a study on the impact of corruption on economic welfare measure by human development index. They discovered that corruption influences economic development to a level that rich countries today hold the perception that poor nations are poor because they are corrupt. Also in line with the finding of the study is the conclusion arrived at by Aidt (2009) who examined the link between corruption and economic development. His finding revealed the effect of corruption on economic development in two spectrums; narrow and broad perspective. Under the narrow perspective, Aidt explain that corruption is a lubricant that is able to speed up and help entrepreneurs create wealth in specific instances. On a broader perspective corruption remains an obstacle to economic development.

The findings arrived at by Tella, (2013) is also in line with the finding of this study. In a comparative study on the effect of corruption on economic welfare for East Asia Countries with similar levels of corruption as African. He discovered that the presence of nonlinear admit corruption and income. He further explained that a growth in per capital income has the propensity of increasing corruption but after a threshold level, an increase in the level of corruption actually lowers corruption. Donges, Meier, and Silva, (2019). In a recent study show that institutions are the first degree determinants

of innovation and highlighted the role of innovation as a key determinant of economic welfare of a nation. Tebaldi and Elmslie, (2008) on their part used a cross-country data and the instrumental variable method to confirm that institutional settings explain significant variation of patent of production across nations.

Some degree of economic freedom is essential for prosperity (i.e more growth, less poverty, better quality of life, more jobs etc). Adam Smith trailed by other distinguished line of thinkers such as J.S Mills, Mises, Hayek and Friedman advocated for a free economy with little or no government intervention. Economic freedom in its current form is exercised through property rights, free trade, constitutionally limited government, property right and sound money supply (Grubel, 1998).

Gwartney and Lawson 2004, Holcombe, Lawson, and Gwartney, (2006). reaffirms the strong impact on the level of freedom and its improvement on economic welfare. Economic freedom generally precede growth, (Heckelman, 2000) leads to advancement in the quality of life, (Esposto, &Zaleski, 1999). These views support the existing hypothesis that economic freedom is good for growth in General. This study is unique in that it does not only look at how economic freedom contributes to economic welfare, but places emphasis on the long-run relationship between economic freedom and economic welfare. Contrary to the popular view that economic freedom facilitates economic progress in general, our study found that economic freedom has a significant long-run opposite relationship with economic welfare and that any deviation from this equilibrium is adjusted at the speed of 29%. This implies sustained economic freedom is not good for long-run economic welfare.

The relationship between population growth and economic outcome such as economic welfare has long been debated. The consensus in the late 2000s was that improving economic conditions will generally require effective birth control policies (Sinding, 2009). This thesis revisits the debate by introducing population growth as control variable in the study. The findings echo the detrimental effect of increasing population on economic welfare in the long-run. The results of this thesis are partly in line with the findings of Peterson. In a recent study, (Peterson, 2017) argued that the relationship between population growth and economic growth is controversial. He used 200 years historical data for population growth and economic growth. His findings revealed high population growth is low income countries could possibly slow down economic welfare whereas low population growth in high income countries is likely to create social and economic problems.

V. CONCLUSION

Using corruption, as proxy for informal institutional quality, the study found that informal institutional quality has a direct relationship with economic welfare with a low adjustment speed to long-run equilibrium. The formal institutional quality

variables of Economic Freedom, Government Effectiveness, Rule of Law, and Regulatory Qualityhave a positive long run and significant relationship with economic welfare except economic welfare with a weak inverse relationship. The formal and informal institutional quality equally affect economic welfare in most of the countries.

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APPENDICES

Table.1: Informal Institutional Quality (Corruption) and Economic Welfare result based on Pooled Mean Group (PMG) and Mean Group (MG) Estimation. Dependent Variable is Economic Welfare.

	(MG)	(MG)	(PMG)	(PMG)
VARIABLES	ECT	SR	ECT	SR
ECT		-0.816***		-0.366**
		(0.166)		(0.158)
D. Corruption		0.0240		0.0192**
		(0.0167)		(0.00958)
D. Population growth		14.19		4.941*
		(9.121)		(2.707)
D. Ratio of Female to Male labour force participation		-0.0674		-0.149
		(0.314)		(0.162)
D. Education		33.59***		37.37***
		(5.605)		(9.597)
D .life expectancy		19.16**		2.404
		(9.627)		(5.276)
L. Corruption	-0.139		0.0196***	
	(0.238)		(0.00119)	
L. Population growth	-7.378		0.256	
	(11.52)		(0.285)	
L. Ratio of Female to Male labour force participation	0.767		-0.0580***	
	(2.107)		(0.00647)	
L. Education	-68.98		63.86***	
	(68.81)		(1.055)	
L .life expectancy	78.47		25.12***	
	(60.97)		(0.872)	
Constant		-8.849		4.056**
		(11.89)		(1.597)
Observations	168	168	168	168
Hausman Test	0.9982			

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table 2(a): Formal Institutional Quality (Economic Freedom) and Economic Welfare result based on Pooled Mean Group (PMG) and Mean Group (MG) Estimation. Dependent Variable is Economic Welfare

	(MG)	(MG)	(PMG)	(PGM)
VARIABLES	ECT	SR	ECT	SR
ECT		-0.913***		-0.470***
		(0.167)		(0.150)
D. Economic Freedom		0.0141		-0.0107
		(0.0218)		(0.00968)
D. Population growth		9.466***		2.084
		(3.235)		(2.263)

D. Ratio of Female to Male labour force participation		0.0314		-0.175
		(0.310)		(0.225)
D. Education		42.81***		47.30***
		(6.010)		(6.535)
D .life expectancy		19.13***		8.715**
		(5.969)		(4.401)
L. Economic Freedom	0.180		-0.0159	
	(0.145)		(0.0111)	
L. Population growth	-0.363		2.709***	
	(3.839)		(0.256)	
L. Ratio of Female to Male labour force participation	0.510**		0.185***	
	(0.201)		(0.0202)	
L. Education	-1.044		42.07***	
	(41.21)		(2.024)	
L .life expectancy	53.49**		32.39***	
	(25.50)		(1.036)	
Constant		-21.69		-5.115**
		(18.54)		(2.168)
Observations	174	174	174	174
Hausman Test	**0.9982**			

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table 2 (b): Formal Institutional Quality (Government Effectiveness) and Economic Welfare result based on Pooled Mean Group (PMG) and Mean Group (MG) Estimation. Dependent Variable is Economic Welfare

	(MG)	(MG)	(PMG)	(PMG)
VARIABLES	ECT	SR	ECT	SR
ECT		-0.811***		-0.311**
		(0.156)		(0.142)
D. Government Effectiveness		-0.149		-0.0833
		(0.243)		(0.115)
D. Population growth		0.439		4.610**
		(7.000)		(2.277)
D. Ratio of Female to Male labour force participation		-0.0501		-0.249
		(0.202)		(0.212)
D. Education		46.57***		33.40***
		(9.260)		(8.199)
D .life expectancy		21.16**		0.639
		(9.283)		(5.774)
L. Government Effectiveness	-53.17		-1.005***	
	(52.13)		(0.205)	
L. Population growth	-142.4		2.443***	
	(140.9)		(0.591)	
L. Ratio of Female to Male labour force participation	-15.52		-0.0595***	
	(15.44)		(0.0166)	

L. Education	316.8		72.13***	
	(286.7)		(2.572)	
L .life expectancy	77.70*		19.40***	
	(44.10)		(1.865)	
Constant		22.35		1.640**
		(14.59)		(0.700)
Observations	154	154	154	154
Hausman Test	0.9759			

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table 2(c): Formal Institutional Quality (Regulatory Quality) and Economic Welfare result based on Pooled Mean Group (PMG) and Mean Group (MG) Estimation. Dependent Variable is Economic Welfare

	(MG)	(MG)	(PMG)	(PGM)
VARIABLES	ECT	SR	ECT	SR
ECT		-1.398***		-0.390**
		(0.344)		(0.163)
D. Regulatory Quality		0.101		0.345
		(0.519)		(0.220)
D. Population growth		-0.368		-0.391
		(4.136)		(2.164)
D. Ratio of Female to Male labour force participation		-0.374		0.00493
		(0.616)		(0.251)
D. Education		52.02***		44.04***
		(6.594)		(2.758)
D .life expectancy		18.48*		6.041
		(11.19)		(4.091)
L. Regulatory Quality	39.69		1.772***	
	(38.20)		(0.193)	
L. Population growth	22.95		0.188	
	(19.58)		(0.429)	
L. Ratio of Female to Male labour force participation	-1.302		-0.0139	
	(1.488)		(0.0343)	
L. Education	-190.7		37.47***	
	(234.8)		(1.294)	
L .life expectancy	225.5		34.21***	
	(194.0)		(0.977)	
Constant		2.867		5.343***
		(12.87)		(2.046)
Observations	154	154	154	154
Hausman Test	0.9995			

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table 2(d): Formal Institutional Quality (Rule of Law) and Economic Welfare result based on Pooled Mean Group (PMG) and Mean Group (MG) Estimation.
Dependent Variable is Economic Welfare

	(MG)	(MG)	(PMG)	(PGM)
VARIABLES	ECT	SR	ECT	SR
ECT		-0.831***		-0.179**
		(0.187)		(0.0900)
D. Rule of Law		0.185		-0.129
		(0.510)		(0.265)
D. Population growth		15.59		6.441**
		(10.67)		(2.651)
D. Ratio of Female to Male labour force participation		0.0857		-0.110
		(0.271)		(0.173)
D. Education		45.34***		39.78***
		(8.940)		(5.904)
D .life expectancy		19.78**		-1.697
		(8.186)		(4.534)
L. Rule of Law	-3.036		0.626***	
	(4.512)		(0.101)	
L. Population growth	22.43		0.152	
	(15.63)		(1.041)	
L. Ratio of Female to Male labour force participation	-0.871		-0.122***	
	(1.781)		(0.0230)	
L. Education	138.2		100.3***	
	(85.27)		(8.600)	
L .life expectancy	25.59**		0.923	
	(10.37)		(6.319)	
Constant		0.369		3.643*
		(8.891)		(1.910)
Observations	154	154	154	154
Hausman Test	0.6691			

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table.2: Institutional Quality and Economic Welfare Pooled Mean Group (PMG) short-run result for respective countries. Dependent Variable is Economic Welfare.

VARIABLES	ECT	BURKINA FASO	CAMEROON	ETHIOPIA	GHANA	MADAGASCAR
ECT		0.0813	-1.049***	0.00659	-0.0601***	0.297
		(0.137)	(0.219)	(0.0566)	(0.0185)	(0.201)
D. Corruption		0.0237***	0.0133	0.0400***	-0.0119**	0.0299***
		(0.00470)	(0.00922)	(0.00999)	(0.00576)	(0.0110)
D. Economic Freedom		-0.0217*	-0.0490***	0.0244*	-0.0400***	0.0565**
		(0.0131)	(0.0170)	(0.0131)	(0.00995)	(0.0227)
D. Population Growth		1.308	-1.792	5.354***	-2.323***	11.75*
		(1.935)	(3.593)	(1.574)	(0.653)	(6.034)
D. Ratio of Female to Male labour force participation		-0.0929*	0.0607**	0.149	-0.140*	0.0619
		(0.0487)	(0.0299)	(0.118)	(0.0809)	(0.106)
D .Education		60.95***	46.13***	74.84***	43.39***	16.91
		(5.171)	(3.027)	(6.601)	(2.624)	(17.98)
D. life Expectancy		11.94**	17.25***	-18.74***	2.340	-13.91*
		(5.401)	(4.931)	(4.079)	(3.297)	(8.154)
L. Corruption	-0.00429					
	(0.00609)					
L. Economic Freedom	-0.0329***					
	(0.0106)					
L. Population Growth	1.064***					
	(0.228)					
L. Ratio of Female to Male labour force participation	0.179***					
	(0.0143)					
L. Education	45.45***					
	(1.098)					
L. life Expectancy	34.46***					
	(0.616)					
Constant		0.744	-6.618***	0.753	-0.207	4.330
		(0.997)	(1.990)	(0.595)	(0.159)	(2.664)
Observations	168	168	168	168	168	168

Table 3 Continues

VARIABLES	Malawi	Nigeria	Senegal	South Africa	Uganda	Zambia
ECT	-1.042***	-0.771***	-0.147*	-1.500***	-0.245*	-0.664***
	(0.05320)	(0.14100)	(0.07830)	(0.36100)	(0.14100)	(0.12700)
D. Corruption	0.0286*	0.0426	-0.00459	0.0106	-0.00465	0.0774***
	(0.01720)	(0.02920)	(0.00703)	(0.00720)	(0.01890)	(0.02480)
D. Economic Freedom	-0.00551	0.023	0.0333**	-0.0788***	-0.0164	-0.00909
	(0.02000)	(0.02570)	(0.01610)	(0.01580)	(0.04090)	(0.01800)
D .Population Growth	1.141	-6.087	10.74**	7.283***	0.57	7.446***
	(0.91400)	(6.26800)	(4.80000)	(1.51100)	(1.26700)	(1.31300)
D. Ratio of Female to Male labour force participation	-0.163	0.673***	-0.174***	0.167***	-2.301**	-0.966
	(0.14000)	(0.25900)	(0.06060)	(0.03580)	(0.98200)	(0.68300)
D. education	27.38***	35.77***	42.87***	44.39***	33.66***	-36.61
	(5.93600)	(3.43400)	(6.09900)	(3.63700)	(3.94500)	(38.80000)
D.life expectancy	51.34***	8.535	-3.028	34.95***	20.19**	-16.89**
	(8.60800)	(9.10500)	(4.02400)	(4.65300)	(8.44100)	(8.44500)
Constant	-13.26***	-1.908	0.000702	2.613	-1.52	-3.281*
	(1.93500)	(1.28800)	(0.24900)	(2.31300)	(1.40400)	(1.67900)
Observations	168	168	168	168	168	168

Source: Author's processing of data Note: *** Statistical significant at the 1% level; ** Statistical significant at the 5% level; * Statistical significant at the 10% level

Table 4: Pairwise Correlation of Variables

	1	2	3	4	5	6	7	8	9	10	11	12
ECONOMIC FREEDOM (1)	1											
Corruption (2)	0.49*	1.00										
Economic Welfare (3)	0.46*	0.52*	1.00									
Government Effectiveness (4)	0.50*	0.75*	0.49*	1.00								
Regulatory Quality (5)	0.78*	0.72*	0.48*	0.81*	1.00							
Rule of Law (6)	0.44*	0.62*	0.50*	0.73*	0.64*	1.00						
Population Growth (7)	-0.26*	-0.54*	-0.58*	-0.65*	-0.49*	-0.42*	1.00					
Education (8)	0.46*	0.33*	0.93*	0.39*	0.42*	0.48*	-0.52*	1.00				
Ratio of female to male labour force participation rate (9)	-0.01	-0.24*	0.14*	-0.27*	-0.25*	-0.07	0.18*	0.36*	1.00			
Life Expectancy (10)	0.18*	0.45*	0.25*	0.18*	0.11	0.34*	0.08	0.02	-0.12	1.00		
Mobile phone subscription (11)	0.33*	0.63*	0.74*	0.41*	0.46*	0.33*	-0.40*	0.54*	-0.16*	0.45*	1.0	
Unemployment (11)	0.43*	0.58*	0.60*	0.72*	0.67*	0.53*	-0.84*	0.57*	-0.25*	-0.11	0.41*	1.00

Source: Author's processing of data

*** Statistical significant at the 1%level, ** Statistical significant at the 5% level, * Statistical significant at the 10% level