INSURANCE DEVELOPMENT AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA: DOES INSTITUTIONAL QUALITY MATTER?

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This paper investigates how institutional environments shape the relation between insurance development and economic growth nexus in a panel of 39 sub-Saharan African countries from 1991 to 2018 using the two-step system Generalised Method of Moment (GMM) estimation technique. The results show that total insurance, life insurance, and non-life insurance positively impacted economic growth. While the political environment and the rule of law enhance economic growth, economic freedom, and legal and property rights hurt it. Finally, the interaction of insurance and institutional quality variables is associated with lower growth. These results not only support North's (1990) argument that institutions play a critical role in nations' economic growth but corroborate the hypothesis that unhealthy political institutions could deter the growth-effect of insurance. The findings from this study underlie the importance of strengthening the institutional factors to enhance insurance development's impact on economic growth in Africa.

Keywords: Insurance Development, Economic Growth, Institutional Quality, Panel Data
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1. INTRODUCTION

Over the years, considerable attention has been devoted to ascertaining the relationship between financial development and economic growth. However, most of these studies have focused on the banking sector and securities market. The insurance sector has not received adequate attention considering the critical role being played by the sub-sector. For instance, insurance, as an indemnifier and financial intermediary, assists not only in promoting economic growth by mitigating risk more effectively but

also in mobilising domestic savings for long-term investment (Ward and Zurbruegg, 2000; Srijena and Falta, 2017). Insurance offers financial protection to all segments of society, thereby reducing the uncertainty associated with the macroeconomic environment (OECD, 2017). Moreover, insurance, by creating an environment of greater certainty, helps to engender financial stability and soundness, fosters investment and innovation, and creates liquidity. Furthermore, insurance companies make other payments such as salaries to their personnel and intermediaries, taxes to the government, dividends to their shareholders, and interest to the lender. These payments affect consumption, investment, and aggregate production and thus economic growth in any economy (Apergis and Poufinas, 2020). Asides, insurance helps to promote economic growth by promoting entrepreneurial attitude, encouraging innovations, ensuring the vitality of the market, and engendering keen competition. It equally assists risk-averse individuals and entrepreneurs to undertake higher return activities (Brainard and Schwartz, 2008; Cristea et al., 2014; Peleckienė et al., 2019).

Empirically, some studies have confirmed the positive impact of insurance on economic growth (Haiss and Surnegi, 2008; Curak, Loncar and Poposki, 2009; Han et al. 2010; Ege and Bahadir, 2011; Din, Abu-Bakar and Regupathi, 2017; Apergis and Poufinas, 2020). However, few studies have reported the adverse effect of insurance on economic growth (Zouhaier, 2014). However, one could argue that for Africa, at least, the economic growth effect of insurance has been limited over the years for some reasons. The insurance markets in many African countries only witnessed significant growth towards the end of the 2020s. For example, the insurance penetrations (volume of premium divided by the gross domestic product) for most African countries are less than 5 percent, except for South Africa (16.9 percent) and Namibia (6.69 percent). Secondly, the indices of institutional quality are extremely low in Africa compared to what is obtained in the developed countries. It is widely recognised and empirically ascertained that institutional quality is critical not only to the growth of the economy (Minier, 1998; Persson, 2005) but also to the development of the insurance sub-sector (Shen and Lee 2006, Ward and Zurbruegg, 2002). This development perhaps explains the recent emphasis on the institutional building by the World Bank and other international agencies and African governments' focus on building strong institutions in the region.

Indeed, several measures to enhance the quality of institutions in Africa have been initiated and are being implemented. Some of these measures include modification of the legal structure and security of property rights. This entails the protection of property rights, ensuring impartial courts, legal enforcement of contracts, and legal enforcement of contracts. Moreover, governments in the region have instituted measures to tackle the problem of corruption. Asides, many countries in Africa have established institutions to ensure fair and credible elections. This is in addition to the institution of measures to promote the rule of law.

The literature is replete with studies that analyse the direct effects of insurance development (Han, et al., 2010; Ghosh, 2013; Zouhaier, 2014; Alhasson and Fiador, 2014; Din, Abu-Bakar and Regupathi, 2017) and institutions (Persson, 2005; Blanchard and Shleifer, 2000) individually on economic growth. However, none of the known

existing studies in Africa have focused on understanding how institutional quality affects the effect of insurance on economic growth[1]. In other words, no known studies have analysed the interactive effect of insurance and institutional quality on economic growth based solely on African countries, to test the proposition that the economic growth effect of insurance is better felt when the quality of institutions is high. The argument is that economies with higher institutional quality are more likely to have stricter financial policies and stable macroeconomic environments that would enhance the effect of insurance on economic growth. When institutional quality creates suitable legal and economic environments, both the insured and the insurers will have confidence that their rights and investment are protected. Such a development will cause insurance to experience rapid development with a possible positive effect on economic growth. Contrariwise, in economies with weaker institutions, financial regulations, and policies are less likely to be stringent. Governments are prone to making sub-optimal decisions, which often engender high macroeconomic instability. Thus, the actual effect of insurance on economic growth is adversely affected. Essentially, we build from previous works to contend that the magnitude of the impact of insurance on economic growth is conditional on the quality of institutions, as good institutions ensure optimal financial policies and macroeconomic stability. We explore how the effect of insurance varies, if at all, when it is interacted with the quality of institutions in sub-Saharan Africa.

Essentially, our study makes three sets of contributions to the literature. First, in contrast to most existing studies that investigate the direct effects of insurance on economic growth and the direct effect of the quality of institutions on economic growth, we explore how the quality of institution shapes the impact of insurance on economic growth using the two-step system Generalized Method of Moment (GMM) estimation technique. Second, rather than using a single indicator of institutional factors, we use four namely, the rule of law, polity2, property rights, and economic freedom index. The use of these indicators helps to capture the effects of institutional environments on the insurance-economic growth nexus in a more comprehensive manner. Third, the outcomes of the study show that insurance (life and non-life positively impacted economic growth. The results reveal that the political environment and the rule of law enhance economic growth, while economic freedom and property rights hurt it. Finally, the interaction of insurance and the quality of institutions does not in general enhance economic growth. This possibly reflects the poor state of institutional environment in Africa.

The remainder of the paper is organised as follows. Section 2 provides a brief literature review and the hypothesis. Section 3 discusses the methodology, data, and data sources. Section 4 presents the results. Section 5 discusses the results. Section 6 contains the conclusion.

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[1] Several studies have examined the intermediatory role of institutional quality on finance-growth, foreign aid-growth, and FDI-growth nexus among others in Africa (Bouchoucha and Benammou, 2020, Yahyaoui and Bouchoucha, 2020). However, the only known study that considered institutional environments as moderators in the insurance-growth nexus is Lee, Chang, Arouri and Lee (2016). However, the study only examined the threshold effect of institutional quality on the relationship between insurance and economic growth

2.   LITERATURE REVIEW

This section provides the theoretical and empirical literature on the nexus between insurance, institutional quality, and economic growth. The section is divided into three sub-sections. The first sub-section looks at the effect of insurance on economic growth. The second sub-section examines the effects of institutions on economic growth. The last subsection explores the interactive effects of insurance and institutional quality on economic growth.

2.1.   Insurance And Economic Growth

Theoretically, there are two perspectives on the relationship between insurance and economic growth. The first argues that insurance, through the various services it provides, can contribute to economic growth. These services include mobilisation of domestic savings for long-term investment, improving the efficiency of risk management and capital allocation, engendering financial stability and soundness, fostering investment and innovation, and assisting risk-averse individuals and entrepreneurs to undertake higher return activities. The second viewpoint contends that insurance, working through various channels may adversely affect economic growth. This school of thought argues that the presence of credit market imperfections and high levels of inequality might make the effect of insurance on economic growth negative. Several studies have identified the channels through which it occurs. These include excessive risk-taking and volatility and the decreasing role of financial intermediation as economies develop arising from increased competition between financial intermediaries (Demirguc-Kunt et al., 2013).

Empirically, several studies have examined the relationship between insurance and economic growth using different methodologies and a wide range of data sets ranging from cross-country to country-specific cases. The majority of the studies show a positive effect of insurance on economic growth. For example, Webb, Grace and Skipper (2002) use iterated three-stage least squares simultaneous estimation to analyse the effect of banking and life insurance on economic growth. They found that both banking and life insurance promote economic growth. However, they found that the joint effect of banking and life insurance on economic growth is greater than the effect of each variable.

Kugler and Ofoghi (2005) focus on the economy of the United Kingdom (UK) in investigating the associations between insurance and economic growth. Johansen's cointegration test shows a long-run relationship between the development of the insurance market size and economic growth for all the components of the insurance market. Han et al. (2010), in a study of 77 developing and developed countries, examine the effect of insurance on economic growth. Using GMM, the study finds that insurance promoted economic growth. When the analysis is done for developing and developed countries separately, the results show that insurance contributed more to the economic

growth in the developing countries than the developed countries. Lee (2011) uses the life and non-life premium to determine the relationship between insurance and economic growth in 10 OECD countries. The study finds that life and non-life insurance contributed to economic growth. However, the impact of non-life insurance on economic growth is more remarkable than life insurance. Peleckienė et al. (2019) use annual data to explore the relationship between insurance and economic growth in European countries. The study finds a significant positive impact of insurance penetration on economic growth in 4 countries and contrasted results in 5 countries. Other studies have also contributed to the literature (see, for example, Beenstock et al., 1986; Outreville, 1996; Beck and Webb, 2003; Li et al., 2007; Akinlo and Apanisile, 2014; Olayungbo and Akinlo, 2016).

In contrast, some of the studies established a negative or insignificant effect of insurance on economic growth. For instance, Fashagba (2018) finds that life insurance hurts economic growth in Nigeria. Nwani and Omankhanlen (2019) find that both life and non-life insurance have an insignificant impact on economic growth. Haiss and Sumegi (2008) find a negligible effect of total insurance and non-life insurance on economic growth. Based on the review above, our first hypothesis is stated thus:

H1. Insurance development has a significant and positive effect on economic growth.

2.2. Institutions and Economic Growth

The growing importance of institutions in the economy led to the fourth group of studies that examined the relationship between institutions and economic growth. The debate on the direct effect of institutions on economic growth continues, and there is no consensus in the literature to date. Williamson (2000) states that a good legal and political environment will boost investors' confidence in insurance activities, and thus, promote increased demand for life insurance. North (1990) claims that growth and development are impossible to achieve without institutions. In line with the argument, Azam (2021) found that corruption stifles growth while political stability and government effectiveness promote it. In the long run, political stability, the lack of violence, and corruption control have a positive and significant impact on economic growth in EU countries, according to Aknc, Usta and Kaplan (2022). In contrast to studies that indicated a positive link between institutions and economic growth, some studies have found that institutions have a detrimental impact on economic growth (e.g., Persson and Tabellini, 1992; Blanchard and Shleifer, 2000; Tavares and Wacziarg, 2001). Hence, our second hypothesis is stated as:

H2. Good-quality institutions have positive and significant effects on economic growth

2.3.   Insurance, Institutions and Economic Growth

In recent times, efforts at developing the financial sector, especially in developing countries, have focused on promoting sound and durable institutions. The argument in the literature is that improvement in institutions promotes insurance through various channels. As an illustration, insurance being a contractual right requires the existence of sound legal rules and protection. Hence, the legal environment is connected with insurance activities. Moreover, insurers need adequate property rights for them to invest funds realised from premiums into proper instruments to guarantee adequate returns that can meet their obligations to the insured in the future (Lee et al., 2016). Empirically, some studies have explored the relationship between institutions and insurance. For example, Ward and Zurbruegg (2002) investigate the determinants of insurance consumption in OECD countries and Asia. They find that civil rights and political stability promote the consumption of insurance. Beck and Webb (2003), in a panel study of 68 countries, show that religion and institutional variables provide a more powerful impact on insurance consumption than economic and education factors. Ćurak et al. (2013) use survey data from 95 respondents to examine how social and demographic factors affect the demand for life insurance. The results show that age, education, and employment motivate the demand for life insurance. Other factors, including gender, marital status, and family size, have no significant effect on insurance demand. Sepehrdoust and Ebrahimnasab (2015) use panel data covering 1999-2011 to investigate how institutions affect life insurance consumption in some selected developing countries. The study found that regulatory and political institutions enhanced life insurance consumption. A few other studies that have contributed to the debate are; Esho et al. (2004), Lee et al. (2013), and Chang and Lee (2012).

Not many studies have examined the interactive effect of institutional quality and insurance on economic growth. Most existing studies have focused on the interactive impact of financial development and institutional quality on economic growth (Aluko and Ibrahim, 2020; Sulemana and Dramani, 2020; Ehigiamusoe and Samsurijan, 2021, Asante et al., 2023). The conclusion from most of the existing studies is that institutional quality augments financial development to impact positively on economic growth. Specifically, the study by Effiong (2015) for 21 sub-Saharan African countries finds the insignificant interaction effect of both financial and institutional development on economic growth. This was attributed to poor state institutional quality in the SSA. Asante et al., (2023) equally find that institutional quality augments financial development to influence economic growth positively. In the same way, Sghaier (2022) finds that institutional quality is complementary to financial development in four North African countries. For the insurance sector, whether the growth effects from its activities in risk transfer and indemnification as well as in financial intermediation are affected by institutional environments has not been explored, especially in SSA. A known study by Lee et al. (2016) that focusses on insurance finds that good-quality institutional environments augment insurance to enhance economic growth. Hence, the need for

policymakers to pay attention to the quality of institutions when exploring possible benefits from insurance development. Our third hypothesis is stated as:

H3. Institutional quality augments insurance development to positively affect economic growth.

3.   METHODOLOGY AND DATA

This section presents the model used to examine the direct and interactive effects of insurance and institutional quality on economic growth in 39 sub-Saharan African countries from 1991-2016. This is followed by the description of the data and sources.

3.1.   Model Specification

Taking a cue from previous studies like Barro and Sala-i-Martin (2003); Teixeira and Queirós (2016) and Asante et al., (2023), the equation employed is specified as:

$$y_{i,t} = \beta_1 y_{i,t-1} + \alpha_1 INS_{i,t} + \alpha_2 INSQ_{i,t} + \alpha_3 X'_{i,t} + \mu_i + \varepsilon_{i,t}. \tag{1}$$

Equation (1) is based on the typical cross-country catch-up equation, in which institutional quality and insurance are incorporated as arguments. In Equation (1), $y_{i,t}$ stands for GDP per capita for country i at the period t. INS represents insurance (life, non-life and total insurance). $INSQ$ denotes institutional quality. The four institutional-quality variables are polity2 (POL), economic freedom (ECF), the rule of law ($Rule$) and legal system and property rights ($PROP$). $X'_{i,t}$ is the vector of control variables associated with economic growth (including the interaction of insurance and institutional quality). These include government expenditure ($GOVE$), gross capital formation (GCF), human capital (HUM), and inflation (INF), μ_i signifies country-specific effect, $\varepsilon_{i,t}$ is the error term.

However, specifying in more detail the model estimated in this work (taking into cognizance the literature review in Section 2 and Hypothesis 3) is given as:

$$y_{i,t} = \beta_1 y_{i,t-1} + \alpha_1 INS_{i,t} + \alpha_2 INSQ_{i,t} + \alpha_3 (INS \times INSQ)_{i,t} + \alpha_4 GOVE_{i,t}$$
$$+ \alpha_5 HUM_{i,t} + \alpha_6 INF_{i,t} + \alpha_7 GCF_{i,t} + \mu_i + \varepsilon_{i,t}, \tag{2}$$

where $INS \times INSQ$ is the interaction term of insurance and institutional quality, $GOVE$ is the government expenditure, GCF denotes gross capital formation, HUM represents human capital and INF signifies inflation. All other variables remain as defined earlier.

Basically, from specified Equation (2), insurance and institutional quality can stimulate economic growth, and economic growth in turn impacts insurance and institutional quality as discussed in the literature review section. This implies that

insurance, institutional quality, and economic growth may have a bilateral causal relationship. In this circumstance, the endogeneity problem with empirical models becomes inevitable. Besides, the lagged dependent variable in the model inevitably leads to the interaction between the random disturbances and the explanatory variables, thereby rendering the traditional 'fixed effects' and 'random effect' panel estimators inconsistent. To obviate the endogeneity problem with explanatory variables, Arellano and Bond (1991) propose the use of instrumental variables to deduce the generalised method of moments (GMM) of corresponding moments conditions, namely, difference GMM. However, the method was extended by Blundell and Bond (1998) to what is now known as system GMM, which combines the use of a level and first difference series as instruments. This study adopts system GMM over difference GMM based on the argument that the former method performs poorly when there is persistence in time series as the lagged levels of the series provide only weak instruments for subsequent first difference series (Bond, Hoeffler and Temple, 2001). To solve the problem of weak instruments, the system GMM uses the level and first difference series, thereby providing a more efficient estimate. This study adopts the two-step system GMM because we envisage the presence of heteroskedasticity. It has been argued in the literature that in the presence of heteroskedasticity, the two-step system GMM can produce better asymptotic efficient estimates than a one-step system GMM estimator. We should note that the one-step system GMM can produce consistent estimates. The two-step GMM estimator computes corrected standard errors based on Windmeijer's (2005) finite sample correction method. The one-step GMM estimator produces robust standard errors, which are both heteroskedasticity consistent.

In line with economic growth literature, the second lags of endogenous variables are used. The exogenous variables (control variables) serve as instruments for themselves ("ivstyle"). The "collapse" option is used to keep the overall number of instruments at a reasonable level. This means that the GMM is specified such that instrumental variables (iv or ivstyle) capture the strictly exogenous variables, whereas the endogenous explaining variables are articulated in the gmmstyle.

In system GMM, the test for the validity of the instruments is verified by the Sargan/Hansen tests for over-identifying restrictions. When an instrument is strictly exogenous, it means that it is valid. A model is correctly specified when the null hypothesis of the Sargan/Hansen tests is not rejected. According to Roodman (2009), the Hansen test statistic performs better than the Sargan test statistic when the disturbances/residuals in the model are susceptible to heteroskedasticity or autocorrelation). In this study, we present both Hansen and Sargan's test statistics. In system GMM, for the validity of the estimations, the first-order autocorrelation must be present while the higher-order autocorrelation must be absent.

3.2.   Data Description and Sources

The study uses a heterogeneous sample of 39 sub-Saharan African countries (Table

A1, Appendix) The data series are annual and covered the period 1991-2016. The data utilized in the study are obtained from various sources including World Bank, World Development Indicator, Global Financial Development, World Governance Indicator data set by Kaufmann et al. (2010), and the Economic Freedom of the World index 2019 edition.

3.2.1. Dependent Variable and Insurance Variables

Economic growth is the dependent variable measured by the natural logarithm of GDP per capita at constant 2010 prices (in million US Dollars) in line with existing literature. The GDP per capita is obtained from the World Development Indicator published by the World Bank. Insurance is measured by the insurance premium. Life insurance is measured by life insurance premium volume as a ratio of GDP, non-life insurance is measured by non-life insurance premium volume as a ratio of GDP and total insurance is calculated as the sum of life and non-life insurance premium as a ratio of GDP. The data on insurance premiums are from Global Financial Development.

3.2.2. Institutional Quality Variables

On institutional quality variables, the polity2 index is used to measure political institutional quality. Polity2 is from the polity iv dataset constructed by Marshall et al. (2018). Polity2 data is a modified version of polity data. It measures the degree of democracy and autocracy and is scaled from -10 to 10. A score of 10 signifies a strong democratic system, while -10 represents a high level of autocracy. This index will allow us to know how political-institutional quality influences the relationship between insurance and economic growth. A study by Aluko and Ajayi (2018) also used poliy2 as a proxy for democracy, while Anwar and Cooray (2012) used it to proxy governance. The second and third institutional quality variables are the rule of law and legal system and property rights. These represent the legal-institutional quality. The rule of law index is obtained from the World Governance Indicator dataset developed by Kaufmann et al. (2010). The rule of law reflects how agents in society abide by and have confidence in the existing rules in society. It also concerns the quality of contract implementation and the right to property. The rule of law is scaled approximately between -2.5 and 2.5. The -2.5 shows that the rule of law is weak, while 2.5 indicates a strong rule of law. This dataset covers the period from 1996 to 2019. However, there are gaps in the years 1997, 1999, and 2001. Several studies (e.g., Lee et al., 2016; Lee, Wang and Ho, 2020) have used the rule of law as a governance indicator. The legal system and property rights data is extracted from the annual report of the Economic Freedom of the World index published in 2019 (Gwaltney et al., 2019). It is an index that captures the protection of individuals and their rightfully acquired property. The data is made available by the Fraser Institute. This index is scaled between 0 and 10. A higher value indicates a sound legal system and higher protection of life and property. For economic-institutional

quality, we use the economic freedom index (*ECF_INDEX*). The economic freedom index measures the degree to which the institutions and policies of countries are compatible with economic freedom. It measures the degree of freedom in the following five areas: a. Size of Government, b. Legal System and Property Rights, c. Sound Money, d. Freedom to Trade Internationally, and e. Regulation of credit, labour, and business. The economic freedom index is scaled between 0 and 10 and obtained from the Annual Report of the Economic Freedom of the World index 2019 edition.

3.2.3. *Control Variables*

Government expenditure is measured by the government's final expenditure on consumption as a percentage of GDP. Some studies like Alexiou (2009), Yasin (2000), and Alshahrani and Alsadiq (2014) have confirmed that government expenditure is a determinant of economic growth. Inflation indicates the rate of changes in the general price level. It is measured by the annual percentage of the consumer price index. Human capital is measured by the natural logarithm of the total labour force. The labour force consists of categories of people within ages 15 and above who engage in producing goods and services during a definite period. It includes people who are currently employed and people who are unemployed but seeking work, as well as first-time job-seekers. Human capital is expressed in logarithm form. Earlier studies such as Romer (1986), Lucas (1988), Mankiw et al. (1992), and Mauro (1995) have emphasised the importance of human capital to economic growth. Gross capital formation as a percentage of GDP comprises outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. All the control variables are from the World Development Index.

Table 1 contains the descriptive statistics of the variables. The correlation matrix of the variables is shown in Table A2 (Appendix). The descriptive statistics provide information on the mean, standard deviation, minimum, and maximum data values. The study makes use of unbalanced panel data because the number of observations of each variable differs across the 39 countries included in the study. The variables that mostly fall into this category are institutional quality variables except for polity2 data, where there is data for more years. From Table 1, we observe that all the variables show a high level of consistency as the mean value falls within the minimum and maximum values. The first column of Table 1 provides information about the mean of the variables. The mean of life and non-life insurance is very low, indicating their relatively small contribution to GDP. The mean of total insurance is 1.5492, which suggests that total insurance contributes about 1.55% to the GDP in sub-Saharan Africa. Among the institutional quality variables, the rule of law is the weakest, with a negative mean value, followed by polity2. Economic freedom and the legal system and property rights variables have mean values of 5.7373 and 3.9763, respectively. The maximum value of non-life insurance is 14.7226%, which is relatively high. A closer examination of the sampled countries' data shows that the maximum value relates to the non-life insurance

of Angola, which is within the ranges of 0.3979% and 14.7226%. Data from Global Financial Development shows that Angola had a booming non-life insurance market in the late 90s. However, the current data shows that from early 2000 to date, South Africa and Namibia are leading the rest of the sub-Saharan African countries. The maximum value of life insurance (15.381) is related to South Africa. The range of life insurance in South Africa is between 9.0218% and 15.381% during the study period. This implies that life insurance is more advanced in South Africa than in any country in sub-Saharan Africa. The standard deviation, which shows the actual deviation of the variables from their mean, is very low except for that of inflation. The standard deviation values for life and non-life insurance are very small, meaning that there is no significant variation in their levels. As regards the minimum value, life and non-life insurance have the minimum value among the variables. A close examination of the data shows that the least value of both life and non-life insurance is associated with Guinea. The correlation matrix shows that inflation is negatively correlated with economic growth while the remaining variables produce contrary results. All the institutional quality variables (rule of law, economic freedom index, legal system and property rights, and polity2 are highly correlated. Hence, to avoid the problem of multicollinearity, we include institutional variables one at a time.

Table 1.   Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
GDP Per capita	5.528	2.011	2.324	9.388
Non-life insurance	0.794	0.909	0.004	14.723
Life insurance	0.830	2.184	0.0004	15.381
Total Insurance	1.549	2.577	0.005	17.023
Inflation	55.871	798.522	-11.686	23773.13
Government expenditure	1.121	0.218	0.040	1.843
Gross capital formation	1.112	0.256	-0.414	1.742
Human capital	6.529	0.589	5.060	7.766
Polity2	0.443	6.726	-28	10
Economic freedom	5.737	0.922	2.525	8.117
Legal system and Property right	3.976	1.212	1.217	7.321
Rule of law	-0.635	0.624	-2.130	1.077

4.   EMPIRICAL RESULTS

We start the empirical analysis by examining the unit root properties of the data employed. We use LLC (Levin et al., 2002), the IPS (Im et al., 2003), and the ADF- and PP-Fisher Chi-square (Maddala and Wu, 1999) panel unit root tests. The results of the unit root tests are presented in Table A3 (Appendix). The results show that variables like

life insurance, non-life insurance, government expenditure, gross capital formation, inflation, and polity2 are stationary at level. In contrast, GDP per capita, human capital, legal system and property rights, and economic freedom are stationary at first difference.

As stated earlier, this study considers non-life insurance, life insurance, and total insurance (life insurance and non-life insurance). We investigate the direct impact of non-life insurance, life insurance, and total insurance and their interaction with institutional quality on economic growth. This is aimed at obtaining the direct effect of insurance on economic growth and the effect of insurance conditional on institutional quality on economic growth in sub-Saharan Africa. Tables 2, 3 and 4 present the results of the direct impact of non-life insurance, life insurance, total insurance, and institutional quality as well as their interactions on economic growth. Each of the tables consists of four models. Specifically, the results of non-life insurance, institutional quality, and their interactions are presented in Table 2. The results of life insurance, institutional quality, and their interactions are presented in Table 3, while Table 4 contains the results of total insurance, institutional quality, and their interactions with economic growth.

In Table 2, non-life insurance has a positive impact on economic growth in all the models, supporting our first hypothesis. The coefficient of non-life insurance is statistically significant at 1% in models 1, 3 and 4, while it is significant at 5% in model 2. This implies that non-life insurance contributes to economic growth. This outcome implies that an improvement in non-life insurance leads to increased economic growth in SSA. This finding is consistent with Zouhaier (2014), who found that non-life insurance promotes economic growth. Non-life can promote economic growth by allowing more efficient management of different risks, encouraging the accumulation of new capital, and mobilising domestic savings into productive investments.

On the institutional quality variables, in model 1, economic freedom, which stands for economic environment, has a significant negative impact on economic growth. The coefficient of economic freedom is significant at 1%. Likewise, the legal system & property rights fail to enhance economic growth in Model 3. The expectation is that economic freedom and legal & property rights will enhance economic growth. However, this finding should not come as a surprise considering the low confidence of economic agents on the market system and on the quality of contract enforcement, property rights, and police in SSA. The result is consistent with the finding of Gazdar and Cherif (2015). The rule of law and polity2 improve economic growth as their coefficients are significant at 1% in models 2 and 4. This finding shows that the legal environment and political environment contribute to economic growth. These results suggest that a sound legal system and stable political environment are necessary for increased economic growth in SSA. In sum, these outcomes show that countries with high-quality institutional environments (i.e., economic freedom, the rule of law, legal system and property rights, and polity2) would likely experience rapid economic growth. Indeed, studies like Nawaz et al. (2014), Siyakiya (2017), Salman et al. (2019), and Mohamed (2021) affirmed that institutional quality promotes economic growth.

Table 2.   Two-Step System GMM Estimation of the Relationship between Non-Life Insurance, Institutional Quality and Economic Growth
(Dependent Variable: Log of GDP Per Capita)

Variables	Model 1	Model 2	Model 3	Model 4
Lagged GDP per capita	1.005***	1.001***	1.014***	1.004***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-Life insurance	0.080***	0.068**	0.092***	0.063***
	(0.000)	(0.013)	(0.000)	(0.000)
Economic freedom	-0.008***			
	(0.000)			
Rule of law		0.023***		
		(0.000)		
Property right			-0.016***	
			(0.000)	
Polity2				0.001***
				(0.000)
Non-Life Insurance×Economic freedom	-0.001***			
	(0.000)			
Non- Life Insurance∗Rule of law		-0.007***		
		(0.006)		
Non-Life Insurance∗property right			-0.003***	
			(0.000)	
Non-Life Insurance∗Polity2				-0.001***
				(0.000)
Government expenditure	-0.113***	-0.172***	-0.148***	-0.155***
	(0.000)	(0.000)	(0.000)	(0.000)
Gross capital formation	0.077***	0.065***	0.118***	0.084***
	(0.000)	(0.002)	(0.000)	(0.000)
Human capital	0.014***	0.016***	0.012***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)
Inflation	-0.001*	-0.001*	-0.006	0.004
	(0.071)	(0.072)	(0.110)	(0.340)
No of observation	494	512	489	519
No of instruments	30	30	30	30
AR(1) p-value	0.009	0.008	0.012	0.007
AR(2) p-value	0.437	0.316	0.460	0.288
Sargan p-value	0.901	0.860	0.794	0.864
Hansen p-value	0.621	0.552	0.0662	0.407
No of countries	39	39	39	39

Note: Only the GDP per capita and human capital are in the natural logarithm. The brackets contain the *p*-values of the coefficients for two system GMM estimates. ***, ** and * signify *p*-value less than < 0.01, *p*-value less than 0.05 and *p*-value less than 0.10, respectively. Non-life insurance×economic freedom index is the interaction of Non-life insurance and economic freedom index, Non-life insurance×rule of law is the interaction of non-life insurance and the rule of law, Non-life insurance×legal system and property rights is the interaction of non-life insurance and legal system and property rights and Non-life insurance×polity2 is the interaction of non-life insurance and polity2. The Sargan/Hansen tests are for the over-identifying restrictions. AR(1) and AR(2) represent the Arellano-Bond test of first-order and second-order autocorrelation, respectively.

Concerning the interaction terms, the results show that none of the institutional quality variables enhances the impact of non-life insurance on economic growth. The coefficient of interaction terms of non-life insurance and economic freedom is negative and significant at 1% in model 1. In model 2, the coefficient of interaction between non-life insurance and rule of law is significant at 1%. Likewise, in models 3 and 4, the coefficients of the interaction term of non-life insurance and property rights, and non-life insurance and polity2 are significant at a 1% level. Concerning non-life insurance, hypothesis 3 is rejected. This implies that institutional factors do not complement non-insurance to enhance growth in SSA. This restrictive effect could be attributed to the poor quality of institutional environments in SSA.

On the control variables, government expenditure has an inverse effect on economic growth as its coefficient is negative and significant at 1% in all the models. Gross capital formation promotes economic growth in sub-Saharan Africa, as its coefficient is positive and significant at 1% in all the models. The human capital coefficient is significant at 1% in all the models. Human capital plays a critical role in economic growth across the world. Studies like Teixeira and Queirós (2016), Chen and Fang (2018), Han and Lee (2020) and Farida, Suman and Sakti (2021) also found that human capital enhances economic growth. As expected, inflation hurts economic growth in models 1 and 2, while we cannot confirm this in other models as its coefficient is insignificant. The lagged GDP per capita does not support the convergence hypothesis as its coefficient is positive and significant in all the models.

The validity of GMM estimations depends on the performance of the diagnostic tests. The test of AR(1) indicates that first-order autocorrelation is present in the models while second-order autocorrelation is absent in all the models. The Sargan/Hansen tests support the validity of the instruments used and the correct specification of the model in the estimations.

Table 3 displays the results for life insurance. Life insurance exerts a significant positive impact on economic growth in models 1 and 3, while its effect is insignificant in models 2 and 4. This result shows that life insurance promotes economic growth in sub-Saharan Africa. This finding supports Tyson (2015), who linked life insurance development to economic growth. It is also consistent with Haiss and Sumegi (2008), Li et al. (2007), and Lee et al., (2010), who found that life insurance enhances economic growth. According to Lee, Lee, and Chiu (2013), life insurance premiums boost insurers' role as risk transfer providers while increasing their prominence as institutional investors. On institutional quality variables, the results are similar to those obtained with non-life insurance. Economic freedom and, the legal system and property rights exert a significant negative impact on economic growth. On the contrary, the rule of law and polity2 promote economic growth as their coefficients are positive and significant at 1% in models 2 and 4, respectively. The results of the interaction term indicate that the interactions of life insurance with all the institutional quality variables are negative and significant except in model 2. This shows that institutional quality does not complement life insurance to impact economic growth in sub-Saharan Africa.

Table 3.   Two-Step System GMM Estimation of the Relationship between Life
Insurance, Institutional Quality and Economic Growth
(Dependent Variable: Log of GDP Per Capita)

Variables	Model 1	Model 2	Model 3	Model 4
Lagged GDP per capita	1.006***	1.001***	1.006***	1.003***
	(0.000)	(0.000)	(0.000)	(0.000)
Life insurance	0.010***	-0.001	0.004*	-0.009
	(0.000)	(0.428)	(0.077)	(0.116)
Economic freedom	-0.009***			
	(0.000)			
Rule of law		0.034***		
		(0.000)		
Property right			-0.003***	
			(0.000)	
Polity2				0.001***
				(0.000)
Life Insurance×Economic freedom	-0.003***			
	(0.000)			
Life Insurance×Rule of law		0.001		
		(0.671)		
Life Insurance×property right			-0.003***	
			(0.000)	
Life Insurance×Polity2				-0.001**
				(0.019)
Government expenditure	-0.036***	-0.113***	-0.077***	-0.078***
	(0.000)	(0.000)	(0.000)	(0.000)
Gross capital formation	0.039***	0.004	0.015	0.001
	(0.003)	(0.689)	(0.405)	(0.919)
Human capital	0.006***	0.020***	0.017***	0.013
	(0.000)	(0.000)	(0.000)	(0.000)
Inflation	-0.002***	-0.001***	-0.001***	-0.004***
	(0.008)	(0.000)	(0.000)	(0.000)
No of observation	479	487	474	488
No of instruments	30	30	30	30
AR(1) p-value	0.010	0.077	0.017	0.011
AR(2) p-value	0.396	0.324	0.399	0.366
Sargan p-value	0.572	0.834	0.999	0.239
Hansen p-value	0.750	0.549	0.786	0.724
No of countries	39	39	39	39

Note: Only the GDP per capita and human capital are in natural logarithm. The brackets contain the p-values of the coefficients for two system GMM estimates. ***, ** and * signify p-value less than < 0.01, p-value less than 0.05 and p-value less than 0.10, respectively. Life insurance×economic freedom index is the interaction of life insurance and economic freedom index, Life insurance×rule of law is the interaction of life insurance and rule of law, Life insurance×legal system & property rights is the interaction of life insurance and legal system and property right and Life insurance×polity2 is the interaction of life insurance and polity2. The Sargan/Hansen test is for over-identifying restrictions. AR(1) and AR(2) represent the Arellano-Bond test of first-order and second-order autocorrelation, respectively.

Table 4.   Two-Step System GMM Estimation of the Relationship between Total
Insurance, Institutional Quality and Economic Growth
(Dependent Variable: Log of GDP Per Capita)

Variables	Model 1	Model 2	Model 3	Model 4
Lagged GDP per capita	1.004***	1.004***	1.002***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)
Total insurance	0.004***	0.002	0.001**	0.009***(0.000)
	(0.002)	(0.169)	(0.029)	
Economic freedom	-0.002			
	(0.147)			
Rule of law		-0.010		
		(0.283)		
Property right			-0.010	
			(0.382)	
Polity2				0.005***
				(0.000)
Total Insurance×Economic freedom	-0.002***			
	(0.001)			
Total Insurance×Rule of law		-0.004***		
		(0.003)		
Total Insurance×property right			-0.001***	
			(0.000)	
Total Insurance×Polity2				-0.001***
				(0.000)
Government expenditure	-0.017***	-0.024***	-0.006***	-0.021***
	(0.001)	(0.000)	(0.002)	(0.000)
Gross capital formation	0.007**	0.008	0.013**	0.011***
	(0.017)	(0.157)	(0.011)	(0.006)
Human capital	0.005***	0.019***	0.005***	0.003**
	(0.002)	(0.007)	(0.001)	(0.059)
Inflation	-1.550***	-1.740***	-1.530***	-1.450***
	(0.000)	(0.000)	(0.000)	(0.000)
No of observation	581	596	576	614
No of instruments	31	31	31	31
AR(1) p-value	0.010	0.010	0.009	0.008
AR(2) p-value	0.772	0.781	0.711	0.923
Sargan p-value	0.876	0.994	0.890	0.923
Hansen p-value	0.422	0.701	0.295	0.346
No of countries	39	39	39	39

Note: Only the GDP per capita and human capital are in a natural logarithm. The brackets contain the p-values of the coefficients for the two system GMM estimates. ***, ** and * signify p-value less than < 0.01, p-value less than 0.05 and p-value less than 0.10, respectively. Total insurance×economic freedom index is the interaction of total insurance and economic freedom index, Total insurance×rule of law is the interaction of total insurance and rule of law, Total insurance×legal system and property right is the interaction of total insurance and legal system and property right and total insurance×polity2 is the interaction of total insurance and polity2. The Sargan/Hansen tests are for the over-identifying restrictions. AR(1) and AR(2) represent the Arellano-Bond test of first-order and second-order autocorrelation, respectively.

Concerning control variables, the coefficient of government expenditure is significantly negative at 1% in all the models. Gross capital formation has a significant positive effect on economic growth in model 1, while it has no effect in other models. Human capital promotes economic growth as it is significantly related to economic growth in all the models. Inflation impacts economic growth negatively as its coefficient is significant across models. There is a presence of first-order autocorrelation as indicated by AR(1), while AR(2) confirms the absence of second-order autocorrelation. The Sargan/Hansen tests support the validity of the instruments.

Table 4 contains the results of total insurance. The results are quite similar to those of life and non-life insurance. Aggregate insurance has a positive impact on economic growth, supporting the first hypothesis. Institutional factors namely, economic freedom, the rule of law, and Legal system and property rights do not have significant effect on economic growth. This implies a rejection of hypothesis 2 that institutional factors have a significant and positive effects on insurance in SSA. The restrictive effect of the institutional factors on insurance could be attributed to the fact that most of these institutional factors are just evolving in SSA and it will take time for economic agents to have full confidence in the market system, rule of law, contract enforcement, property rights, the police, and the courts. The coefficients of interaction terms of total insurance with institutional quality variables are all negative at 1% in all the models, thus rejecting the third hypothesis. This suggests that none of the institutional quality variables complements the effect of total insurance on economic growth.

Government expenditure produces a negative effect on economic growth. The coefficient of government expenditure is negative signed and significant at 1% in all the models. Gross capital formation has a significant positive effect on economic growth except in model 2, where it has no effect. The coefficient of human capital is positive and significant at 1% across the models. This result suggests that the existence of an efficient and knowledgeable workforce helps to stimulate economic growth. Were (2015) found that human capital is the most significant contributor to economic growth in developing countries. Inflation hurts economic growth. This result is consistent with Viphindrartin, Yunitasari and Wilantari (2021). On the diagnostic tests, AR(1) affirms the presence of first-order autocorrelation and AR(2) reject the presence of second-order autocorrelation, which meets the condition of system GMM validity of estimate. On the validity of the instrument, the Sargan/Hansen shows that the instruments are valid.

5.   DISCUSSION OF FINDINGS

The results show that non-life insurance, life insurance, and total insurance are determinants of economic growth in sub-Saharan Africa. Studies like Curak, Loncar, and Poposki (2009), Apergis and Poufinas (2020) found that non-life, life, and total insurance promote economic growth. Arena (2008), Han et al. (2010), Chang, Lee, and Chang (2014), and Din, Abu-Bakar, and Regupathi (2017) also found that both life and

non-life insurance contributed to economic development. Insurance contributes to economic growth by collecting and drawing relative premiums from many persons in the economy and making the funds available to investors over short and long periods. These funds are invested in new enterprises and/or used to expand existing ones, thereby increasing employment and output. The ability of insurance to provide reliable cover for risk to the people and stability for businesses helps to boost economic growth in sub-Saharan African countries.

Out of the four institutional-quality variables considered, only the rule of law and polity2 are positively related to economic growth; others hurt economic growth. It means that political and legal environments are determinants of economic growth in sub-Saharan Africa. Pereira and Teles (2014) found that the political environment enhances economic growth. The positive impact of the rule of law on economic growth is contrary to Ozpolat et al. (2016), who found that the rule of law negatively impacts the economic growth of poor countries. However, it is in line with Harmid and Ebrahimnasab (2015), who found governance of law and quality of law to promote life insurance significantly. The negative impact of the economic freedom index and legal system and property rights could be attributed to their low level in sub-Saharan Africa. For instance, Acemoglu et al. (2001, 2005) and Kerekes and Williamson (2008) found a positive relationship between property rights and economic growth. Aluko and Ajayi (2018) argued that the failure of institutional quality to positively impact banking development was a result of the low level of institutional quality across sub-Saharan Africa. The negative relationship between economic freedom and economic growth is consistent with Islam (1996), who found that economic freedom hurts economic growth in low- and middle-income countries. However, it contradicts Kouton (2019), who found that economic freedom positively impacts economic growth in sub-Saharan Africa.

Institutional quality fails to enhance the impact of insurance on economic growth in sub-Saharan Africa. This may be attributed to the low level of institutional quality in the region. Lee et al. (2016) found that a low level of institutional quality hinders the effect of insurance on economic growth. Beck and Webb (2003) and Harmid and Ebrahimnasab (2015) stated that the demand for life insurance depends on institutional quality. The quality of institutions can help boost or reduce the demand for insurance. If institutional quality increases the size of the insurance market, then insurance firms are better placed to mobilise funds for investment in the economy. Moreover, where property rights are guaranteed with a sound legal system; the investment ability of the insurers and the desire of the people to buy insurance are stimulated. This is because insurers know that contracts are secured, and in case of default, the legal system will mediate by both the insurer and the insured.

The positive contribution of gross capital formation to economic growth supports the findings of Uneze (2013), Zahonogo (2017), Akinlo (2020), and Ridha and Budi (2020). Also, studies such as King and Levine (1994) and Easterly and Levine (2001) have documented the positive impact of the rate of capital formation on economic growth. The availability of good infrastructural facilities, including roads, health care, airports,

water supply, and stable electricity, can attract foreign direct investment. It also allows firms to operate at an optimal level and produce at a lower cost. The positive impact of human capital shows that it is critical to growth in sub-Saharan Africa. Human capital is the source of an increase in productivity and technological progress. It provides a skilled and knowledgeable workforce that can efficiently tap the available potentials in the economy for economic development. Gyimah-Brempong and Wilson (2004) and Ogundari and Awokuse (2018) found that human capital promotes economic growth. Inflation hurts economic growth. However, few studies have shown that the effect of inflation on economic growth could be positive (e.g., Dornbusch et al., 1996, and Kodongo and Ojah, 2016). However, other studies like Were (2015), Zahonogo (2017), and Balcilar et al., (2018) found an inverse relationship between inflation and economic growth. The negative effect of government expenditure on economic growth could be attributed to its crowding-out effect. According to Apergis and Poufinas (2020), the effect of government expenditure on economic growth can be negative or positive.

6.   CONCLUSION

This research examines how institutional quality shapes the relationship between insurance and economic growth in SSA. Many studies have considered the direct effects of insurance and institutional quality individually on economic growth. However, none of the existing studies, especially in SSA, have analysed the interactive effect of insurance and institutional quality on economic growth to test the proposition that the economic growth effect of insurance development is higher when interacted with institutional quality. This paper, therefore, fills the gap by analysing the intermediary role of institutional quality in the insurance-economic growth nexus in sub-Saharan Africa. We make use of unbalanced panel data covering the period 1991-2018. The study uses a series of institutional quality variables related to the economic, political, and legal environment. Besides, we focus not only on the aggregate insurance data but also look at the two components, namely life and non-life, to have a comprehensive understanding of the issue.

The results show total insurance, life, and non-life contribute to economic growth in sub-Saharan Africa. This development calls for reforms to further increase insurance penetration in sub-Saharan Africa. Also, it is found that institutional quality, in most cases, negatively impacted insurance development except for polity2. Further, the results show that institutional quality does not complement insurance to promote economic growth in SSA. Finally, human capital and gross capital formation positively impacted economic growth, while inflation and government expenditure hurt economic growth.

What policy inferences can we draw from these results? First, the increased development of the insurance sector will promote increased growth in SSA. This suggests more reforms in the insurance sector to take advantage of the increasing population by broadening its operations. We, therefore, recommend financial reforms

and insurance policies, including recapitalisation and consolidation, to deepen the insurance market. Moreover, policymakers need to design policies to create awareness and education on the benefits of insurance to address the relatively low-insurance culture and development in SSA. Second, policymakers should improve the quality of institutions in SSA. Good-quality institutions will assist in boosting economic agents' confidence in the legal system, and contract enforcement, among others. Finally, the growth effect of insurance would be enhanced in SSA if institutions are significantly efficient. Thus, the quality of institutions needs to be improved in SSA to ensure that the growth-effect of insurance is maximised.

The limitation of the study is the use of the institutional factors individually in our estimation. Future research in this area should explore the possibility of constructing a broader measure that combines all the institutional factors. Such a multidimensional measure of institutions may likely yield more robust results. Another promising area for future research is investigating the threshold effect of institutional quality on the relationship between insurance development and economic growth. This will allow researchers to identify the threshold level of institutional quality below and above which insurance development can have a positive or negative impact on economic growth.

APPENDIX

Table A1.   List of the Selected SSA Countries

Angola	Chad	Gambia	Mauritania	Sierra Leone
Benin	Congo, Dem. Rep	Ghana	Mauritius	South Africa
Botswana	Congo, Rep	Guinea	Mozambique	Sudan
Burkina Faso	Cote d'Ivoire	Kenya	Namibia	Tanzania
Burundi	Equatorial Guinea	Lesotho	Niger	Togo
Cape Verde	Eritrea	Madagascar	Nigeria	Uganda
Cameroon	Ethiopia	Malawi	Rwanda	Zambia
Central African. Rep	Gabon	Mali	Senegal	

Table A2.   Correlation Matrix

	GDP	INS	Inf	GOVE	GCF	HUM	POL	ECF	Lspr	Rule
GDP	1									
INS	0.379	1								
Inf	-0.077	0.169	1							
GOVE	-0.049	0.305	-0.088	1						
GCF	0.152	0.084	-0.057	0.038	1					
HUM	0.037	-0.025	0.056	-0.371	-0.093	1				
POL	0.285	0.296	-0.015	0.135	0.049	-0.146	1			
ECF	0.225	0.211	-0.150	0.176	-0.134	-0.229	0.099	1		
Lspr	0.259	0.203	-0.066	0.252	-0.006	-0.186	0.140	0.664	1	
Rule	0.410	0.403	-0.096	0.350	0.182	-0.319	0.518	0.365	0.436	1

Table A3. Unit Root Result

Variable	Levine et al.		Im et al.		ADF		PP	
	level	1st diff	level	1st diff	level	1st diff	Level	1st diff
GDP per capita	-0.787	-13.264***	4.279	-13.755***	55.371	334.364***	63.306	511.819***
Non-life insurance	-3.580***	-12.4234***	-2.085**	-11.643***	115.764***	304.322***	131.874***	556.072***
Life insurance	-1.768**	-12.538***	-2.008**	-10.590***	150.789***	266.777***	185.787***	644.820***
Total insurance	2.888	-2.416***	-1.284*	-9.182***	84.251	236.933***	97.795**	547.142***
Government expenditure	-3.189***	-12.980***	-3.619***	-15.819***	126.324***	407.044***	138.773***	728.342***
Gross capital formation	-7.169***	-15.904*	-5.096***	-12.896***	131.017***	299.237***	111.881***	688.651***
Human capital	0.870	-8.431***	8.463	-5.534***	24.342	162.367***	64.198	125.710***
Inflation	-11.879***	-22.206***	-11.044***	-23.625***	264.467***	592.717***	292.512***	1071.78***
Polity2	-7.644***	-15.557***	-6.790***	-15.563***	186.078***	299.017***	200.376***	383.579***
Economic freedom	0.371	8.9E+07***	2.032	-11.983***	54.580	290.275***	53.112	563.018***
Legal system and property right	0.103	3.9E+07	1.655	-11.329***	51.532	276.151***	51.103	487.908***
Rule of law	-3.923***	-8.379***	-3.929***	-9.684***	146.750***	237.278***	185.158***	433.430***

Notes: ***, **, * indicate 1%, 5% and 10% levels of significance.

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