Estimating the Relationship Between Economic Growth and the Moderating Effect of Institutional Quality on Trade Openness in Nigeria?

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Abstract - This study examined the relationship between economic growth and the resulting effect of institutional quality on trade openness in Nigeria. Data used in the study were obtained from the World Development Indicators (WDI) published by the World Bank for the period 1990-2020. The Analysis of Covariance (ANCOVA) model was employed to investigate the relationship among the variables of interest. The study's findings show that the effect of institutional quality on trade openness positively influences economic growth in Nigeria. Also, the study's findings suggest that trade openness, without the moderating effect of institutional quality, negatively influences economic growth in Nigeria. The findings further indicate that economic growth is negatively related to the moderating effect of institutional quality on all sectors. That is, institutional quality is only effective when it moderates international trade-related activities. Finally, the findings show that foreign direct investment and imports (control variables) negatively influence economic growth in Nigeria. The study recommends that the Nigerian government put friendly international trade policies in place, such as reducing the tax paid on goods and services coming into or going out of Nigeria. It also recommends that the government of Nigeria strengthen regulations and control corruption in international trade activities, as it is an effective way of promoting economic growth in Nigeria. It further recommends policy reforms regarding the moderating effect of institutional quality on economic activities other than international trade. The study finally recommends that the Nigerian government strengthen the enforcement of contracts and other related regulations to attract foreign investors into Nigeria.

Index Terms: Institutional Quality, Trade Openness, Economic Growth, ANCOVA Model, Nigeria.

JEL: L51, F13, F43, C54.

I.   INTRODUCTION

This research aims to assess how institutional quality dynamics might affect the efficacy of trade-in in generating growth and development in Nigeria. Generally, the proximal growth drivers have long been a source of dispute in economic research. The endogenous growth model contends that a faster economic activity rate can accelerate innovation, providing companies with greater invention involvement through technical importation(Sachs et al., 1995).The diffusion of information and succeeding impacts of output performance is dependent on the societal spillover effects of institutional excellence. Furthermore, endogenous growth

theories indicate that openness to trade toward international commerce improves long-term growth by enhancing accessible technology or knowledge spillovers(Coe et al., 2009). The concept of trade openness having a greater influence on economic growth is supported by absorption capacity and the adoption of new technologies (Phelps, 1966). As a result, the Solow-Swan neoclassical growth model identifies three factors that drive an economy's output: technological change, labour, and capital;however, country-specific differences in growth are due to different effective framework conditions, such as the institutions that guide policy and program implementation (Solow, 1956; Swan, 1956).Nations with high civil freedoms and "strong institutions" have higher economic performance(Kormendi&Meguire, 1985). The performance of a country's governance influences its growth performance.

Economists have looked at the significance of institutions in increasing growth prosperity(Glaeser et al., 2004; Henisz, 2000; Bommadevara&Sakharkar, 2021; Sarwar&Hayat, 2021). And the nations' economic paths change depending on the quality of their economic, political, and social institutions(Farole et al., 2011). As a result, it is critical to recognize that the framework of institutions is not a replacement for growth drivers but rather a chosen accompaniment. Some other strand of literature emerged showing the importance of trade openness togrowth and development (Burange et al., 2019; Makun, 2017). They proposed that trade results in static profits due to efficient resource reallocation;itushers in dynamic benefits by extending the national product market, providing hands-on learning and knowledge transfer, increasing production, and fostering healthy competition (Kraay, 1999; Lee, 1995).

Exposedness to externalities from outside the country also boasts the non-export performance industries, increasing total economic progression(Dollar, 1992; Froning, 2000; Romer, 1986). In addition, increased competition via trade liberalisation reduces deadweight losses experienced by domestic monopolies and oligopolies, resulting in further profits (Krishna &Mitra, 1998). While the prevalent message implies that trade has a beneficial influence on growth, several research contradicts this (Jebran et al., 2018; Sheikh et al., 2020). Studies (Freund &Bolaky, 2008; Winters, 2004) have identified the quality of institutions as a deeper predictor of growth and development, with trade serving as animplementor.

This study adds to the current literature by experimentally examining the moderating influence of institutions on trade and economic advancement in Nigeria.While numerous incisive studies have studied the effect of trade on growth, an evident gap in the existing research is how the quality of institutions moderates the benefits of trade openness on growth in Nigeria, which has yet to be experimentally investigated. Furthermore, research (Brambor et al., 2006; Uyi, Ehigiamusoe& Lean, 2019) has demonstrated that a particular variable can impact or modify the connection between two other variables, implying a conditional hypothesis. As a result, the challenge necessitating this study is that it is currently unknown if trade openness impacts economic performance in Nigeria changes depending on the level of institutional quality. However, Nigeria's economy has become much more connected globally. Dueto rising rivalry, regulatory paradigm adjustments, and operational environment changes, the external sector has experienced a transformation. Similarly, the institutional framework of the Nigerian economy has experienced significant transformation during the previous three decades. Nonetheless,

despite rapid growth, this country is plagued by inadequate technology and somewhat poor growth.

Variances can explain the disparities in economic growth across nations in human capital, physical capital, technical advancement, and so on (Acemoglu et al., 2012), but institutions are what govern the society (North, 1990), influencing the economy through encouragement by establishing norms or imposing limitations on human conduct (North, 1990). Therefore, improved institutional quality can alleviate economic issues such as information asymmetry, transaction costs, and risk by enhancing market efficiency, asset allocation, and property rights. Thus, according to this research, higher institutional quality creates better circumstances for economic activity and, as a result, the credit market. Therefore, trade openness can influence economic performance directly and indirectly through institutional quality.

Consequently, the study calculated the levels of institutional quality necessary for trade openness before economic performance can be unfettered. This is significant because previous studies have suggested that trade reform alone may not drive economic performance unless other fundamental factors, such as institutional quality, which may cause differences in the proximate measure, are adequately accounted for in explaining the efficacy of trade openness. This research will greatly strengthen the existing evidence on the relationship between trade openness and economic performance in Nigeria. This theory is tested in this research, which includes multiplicative interaction variables in the model. Furthermore, the marginal effect was computed after this model was estimated, confirming that the effect of trade openness on economic performance varies with the level of institutional quality.

Conclusively,this present study will be different from the previous studies in terms of the methodology, study period, and variables, thus forming a gap in the literature.

The research then moves on to the following phase;section tworeviews existing literature, and the third section discusses the data and model formulation. The fourth portion contains the analysis and explanation, and the last section contains the conclusion and policy implication.

II.   EMPIRICALREVIEW

In recent years, literature on trade liberalization or openness and economic growth has received substantial contributions from trade researchers. Dollar, 1992; Sachs & Warner, 1995; and Frankel &Romer, 1999) are among the most prominent studies on the openness-growth nexus in the literature. A number of dimensions have been considered to investigate the relationship between trade and economic growth. Some researchers consider growth in exports and increased investment, while others consider improvement in the current account of a country. The bottom line here is that the impact of trade on economic growth might be positive or negative, or mixed, but positive cases are more common in the literature.

Some of the positive results can be found in the work of Zahonogo (2017), who investigated the impact of trade openness on economic growth in developing countries, focusing on Sub-Saharan Africa (SSA).The study employed the Pooled Mean Group (PMG) technique on a time series of 42 countries ranging from 1980 to 2012, using three measures of trade openness. The findings show that trade openness has a positive and significant long-run impact on economic growth, but the effect is nonlinear. The nonlinearity of the result suggests that the benefits of trade openness to growth are not automatic. This finding conforms

withUlasan, 2015; Ismail et al., 2010; and Ercakar, 2011. Similarly, and most recently, is the work done by Votsoma, Bita, and Zamo (2020) on the effect of institutional quality regulation on the relationship between economic growth and trade openness. The findings show that government efficiency and regulation quality were the major contributors to the positive effect of trade openness on economic growth. In a country-specific study, Sakyi (2010) investigates how trade openness and FDI impact economic growth in post-liberalization Ghana. The empirical findings using the ARDL bounds testing approach show that trade openness and FDI inflows positively and significantly impact economic growth in both the short and longrun. However, the level of their impact was reduced when both variables interacted.

In the same vein, Akinlo and Okunlola (2021) investigate the interactive effect of trade openness and institutional quality on economic growth in SSA. The study employed the Pooled OLS, Fixed Effect, and Dynamic GMM estimation techniques on 36 SSA countries' data spanning from 1986 to 2015. The findings reveal a positive impact of trade openness on economic growth when interacting with a high institutional quality variable. However, further findings show that institutional quality variables negatively impact growth. Also, Aremo and Arambada (2021) examine the individual and joint effects of trade openness and financial openness on economic growth in SSA. The SSA countries were divided into low-income countries and middle-income countries. Using the difference between the generalized method of moments (GMM) and system GMM, the results indicate that trade openness positively impacts economic growth in low-income countries while showing a mixed result in middle-income countries. Further findings show that financial openness and joint trade do not

enhance growth in low-income and middle-income countries. Using 24 selected SSA countries to study the effect of trade openness on economic growth, Adamu, Bala, and Sidi (2015) find that trade openness has a positive and significant impact on economic growth after employing the fixed effect model. Further findings reveal that trade openness exerts more impact on economic growth indirectly through human capital development. Similarly, Asfaw (2014) empirically assessed the link between trade policy and economic growth in SSA. The Generalized Least Squares (GLS) method was used in 47 SSA countries in the study.The findings show a positive impact of trade openness on economic growth and investment. Trade openness shows a bidirectional relationship with economic growth based on the causation result.

Analysing the determinants of trade openness in SSA focusing on the role of domestic institutions, Ngouhouo, Nchofoung and Kengdo (2020) find that institutional quality variables positively enhance trade openness using the GMM estimator on 36 countries over the period 1996-2017. Further findings also show that GDP per capita was found to trade enhancing. In a country-specific study, Lawal et al. (2016) empirically examine the relationship between trade openness, financial development and economic growth in Nigeria using the ARDL bound testing approach. The research findings show that a two-way positive relationship between financial development and economic growth exists on one hand and trade openness and economic growth on the other hand. Based on the same finding but in a different country, Malefane and Odhiambo (2018), using the ARDL bound testing approach in South Africa, find a positive and significant impact on economic growth in the long run. All other country-specific studies on the nexus between trade openness and economic growth that found positive and significant

relationships include; (Sakyi, Commodore and Opoku; 2015 in Ghana; Aboubacar, Xu and Ousseini (2014) in Niger; Keho (2017) in Cote d'Ivoire; Omoke and Opuala-Charles (2021) in Nigeria; etc.). Furthermore, Cinar and Nulambeh (2018) analysed the effect of FDI and trade openness on economic growth in 36 selected SSA countries. The results show that both FDI and trade openness have positive and significant effects on economic growth. In a thesis work titled the effect of trade openness on economic growth in SSA countries, covering the period 1996-2015, Sisay (2017) finds trade openness to be positive and significant to economic growth. Institutional quality plays a major role in accelerating economic growth and influencing trade openness and other macroeconomic variables to either positively or negatively impact economic growth. This is demonstrated in the works of Matthew and Adegboye (2014); Akinola and Okunlola 2021; Ngouhouo et al. 2020; Asamoah, Mensah, and Bondzie 2019; Votsoma et al. 2020; Conteh, Yijun, and Sessay 2021; etc.).

A more recent study done by Yemeogo and Omojolaibi (2021) on the relationship between trade openness, economic growth, and poverty level in 40 selected SSA countries finds that trade openness, FDI, and institutional quality impact positively and significantly on economic growth in the long run. Also, the pairwiseDumitrescuHurlin panel causality test result indicates a bidirectional relationship between trade openness, economic growth and poverty. A similar study by Asamoah, Mensah, and Bondzie (2019) found a positive and significant impact of trade openness on economic growth when institutional variables are considered. Furthermore, studies were done by Babatunde (2015), Bruckner and Lederman (2012), and Calderon, Cantu, and Zeufack (2020) also conform to the earlier studies of the positive impact of trade

openness on economic growth in SSA countries using different methodologies.

By contrast, some studies have found that trade openness is harmful and does not promote economic growth. The most recent study is the work done by Conteh et al. (2021) on the effect of trade openness and institutional quality on economic growth in 27 selected SSA countries covering the period 1946 to 2016. The findings revealed that trade openness negatively and significantly affects economic growth using a panel dynamic estimator. However, when trade openness and institutional quality variables interacted, the impact turned positive and significant. In a country-specific study, Alajekwu, Ezeabasili and Nzotta (2013) examined the effect of trade openness and stock market development on economic growth in Nigeria. The result shows a negative and significant impact of trade openness on economic growth using the OLS analysis. The Pairwise Granger causality test result also corroborates this finding by showing that there is no directional causation between trade openness, stock market development, and economic growth. In a similar study, Malefane and Odhiambo (2019) analyse the dynamic effect of trade openness on economic growth in Lesotho using the ARDL bound testing technique on data covering 1979-2013. The study's findings show that trade openness has a significant adverse effect on economic growth in the short and long run. Using the 23 selected SSA countries dataset, Akpan and Atan (2016) find that trade openness negatively and significantly affects economic growth. However, introducing the institutional quality variable in the interaction model led to trade openness having a positive impact on economic growth. Similarly, in a country-specific study, Polat et al. (2013) found that trade openness adversely hampers economic growth in South Africa from 1970 to 2011. Further findings show that financial

development enhances economic growth. Using the dataset of 13 countries in SSA, Mputu (2016) finds that trade openness hampers economic growth while terms of trade enhance growth.

Furthermore, some empirical studies also reported mixed or conflicting findings (Fankem and Oumarou 2020, Malefane and Odhiambo 2018, Omoke and Opuala-Charles 2021, Udeagha and Ngepah 2020, and others).

Unlike Omoke et al. (2021), who researched a similar topic using quality of governance as the measure of institutional quality, total trade, import trade and export trade amongst other variables, employing datasets from various sources covering the period 1984 to 2017, which was estimated using the Auto-Regressive Distributed Lag (ARDL) that was proposed by Pesaran, Smith and Shin (2001). This present study will be different in the methodology, study period, and variables, thus forming a gap in the literature. Specifically, it will adopt control of corruption (COC) and Regulatory Quality (R.Q.) as the measures of institutional quality, Trade openness, import, and exchange rate, amongst others variables, and apply the Analysis of Covariance (ANCOVA) model technique for estimation.

III.   METHODOLOGY

A.   Theoretical Framework

The model employed to achieve the objective of this study is the Analysis of Covariance (ANCOVA) model. However, the theoretical framework is built on the Solow Residual economic growth theory. In a paper titled "technical change and the aggregate production function," published in 1957, Robert Solow noted that 'technological progress improves the production function.' This means that with the same amount of factor inputs, say capital and labour, the

output can vary depending on the efficient use of factor inputs, which is technological progress in the Solow Residual theory, and it is given by:

$$\frac{\Delta A}{\Delta A} = \frac{\Delta Y}{\Delta Y} - \alpha \frac{\Delta K}{\Delta K} - (1 - \alpha)\frac{\Delta L}{\Delta L} \qquad (1)$$

Where:

A = current level of technology

Y = output

K = capital input

L = Labour input, and α is a parameter.

According to Mankiw (2009), '$\frac{\Delta A}{\Delta A}$ is the change in output that cannot be explained by changes in inputs. As a result, the growth in total factor productivity is computed as a residual – that is, as the amount of output growth that remains after we have accounted for the determinants of growth that we can measure directly.'

Given the preceding paragraph, 'total factor productivity can be influenced by government regulations and control of corruption (high institutional quality), and trade openness as it promotes the accessibility of knowledge spillovers. Phelps (1966) notes that 'the concept of trade openness having a greater influence on economic growth was supported by absorption capacity and the adoption of new technologies. Countries that trade with other countries around the world adopt new technologies through imports. Thus, in Mankiw (2009), 'total factor productivity captures anything that changes the relation between measured inputs and measured output.' Therefore, in this study, the variables that are considered to change 'the relation between measured input and measured output' are trade openness, institutional quality, imports, exchange rate, foreign direct

investment and other relevant control variables.

B. Model Specification

The most widely used estimation method of the parameters of a regression model is the ordinary least square (OLS) because it is the best of all available estimation techniques. However, the nature of the data used in a study can make the ordinary least square method unsuitable. For example, models that are not linear in parameters due to the nature of the data used in a study cannot be estimated by the method of ordinary least squares. The method suitable for estimating the parameters of such models is the method of maximum likelihood. However, the least-squares method can be used if it is possible to linearize the parameters by employing appropriate log transformation techniques. Fortunately, the least square estimation technique is appropriate for the estimation of the parameters of equation 3, as the ANCOVA nature of the model does violate the properties or assumptions of the least-squares method of estimation. Even though some of the regressors are qualitative, the least-squares method is still very suitable. Thus, this study used the least-squares method to estimate the model's parameters employed to achieve the study's objectives.

The functional form of the relationship between the dependent variable, GDP growth rate, and the explanatory variables of the study is linear as equation (1), which is on the basis of the Solow residual theory, is linear. Thus, we express the model in its functional form as follows:

$$GDPGR_t = f(TO_t, IMP_t, EXR_t, FDI_t, COC_t, RQ_t) \quad (2)$$

Where:

$GDPGR$= gross domestic product growth rate, which is a proxy for economic growth.

TO= trade openness measured as (export + imports)/GDP (% of GDP).

IMP= imports measured in billions of naira.

EXR= nominal official exchange rate of naira per U.S. dollar.

FDI=foreign direct investment measured in billions of naira.

COC= control of corruption, a proxy for institutional quality.

RQ=regulation quality, another proxy for institutional quality.

Note: control of corruption and regulation quality are categorized into weak and strong institutional quality. That is, they are indicator variables.

t=time measured in years.

Data on all the above variables were obtained from World Bank Development Indicators (WDI) for the period 1990-2020. The choice of variables was informed by endogenous growth theories, which posit that 'openness to trade toward international commerce improves long-term growth by enhancing accessible technology or knowledge spillover.' Moreover, Solow-Swan's neoclassical growth model contends that 'country-specific differences in growth are due to different effective framework conditions, such as the institutions that guide policy and program implementation.' Technically, institutional quality and trade openness are embedded in 'technological progress' in the Solow residual growth model. Also, the variables were considered because so many of them were used in previous related studies conducted by Ngouhouo et al. (2020), Mathew and Adegboye (2014), Akinlo and Okunlola (2021), Asamoah et al. (2019) and Votsoma et al. (2020).The econometrics form of equation 2 is as follows:

$$GDPGR_t = \beta_0 + \beta_1 TO_t + \beta_2 IMP_t + \beta_3 EXR_t + \beta_4 FDI_t + \beta_5 COC_t + \beta_6 RQ_t + \alpha_1(COC_t \times TO_t) + \alpha_2(RQ_t \times TO_t) + \mu_t \qquad (3)$$

Where $COC= 1$ for observations equal to or greater than -1.1

$\qquad = 0$, otherwise (that is, for observations less than -1.1)

$RQ= 1$ for observations equal to or greater than -0.9

$\qquad = 0$, otherwise (that is, for observations less than -0.9)

Note that 1 is considered strong institutional quality, 0 otherwise (weak)

The β's and α's are parameters; μ is the error term assumed to be well behaved. All other variables remain as previously defined. Assuming equation 3 satisfies the assumptions of the classical linear regression model, and the error term is well behaved, then we obtain:

AverageGDP growth rate function for strong control of corruption:

$$E\ (GDPGR_t/COC_t{=}1) = \beta_0 + \beta_5 \qquad (4)$$

Average GDP growth rate function for strong regulation quality:

$$E(GDPGR_t/RQ_t = 1) = \beta_0 + \beta_6 \qquad (5)$$

Average GDP growth rate function for weak control of corruption and regulation quality (proxies for institutional quality):

$$E\ (GDPGR_t/COC_t{=}0, RQ_t = 0) = \beta_0 \qquad (6)$$

Average GDP growth rate function for strong control of corruption/trade openness:

$$E\ (GDPGR_t/COC_t = 1, TO_t) = (\beta_0 + \beta_5) + (\beta_1 + \alpha_1)TO_t \qquad (7)$$

Average GDP growth rate function for strong regulation quality/trade openness:

$$E\ (GDPGR_t/RQ_t = 1, TO_t) = (\beta_0 + \beta_6) + (\beta_1 + \alpha_2)TO_t \qquad (8)$$

In equations (7) and (8), β_5 and β_6 are differential intercepts, which show by how much the mean strong effect of institutional quality on economic growth differ from the weak effect, and α_1 and α_2 are the differential slope coefficients, that is, slope drifter, which show by how much the moderating effect of institutional quality on trade openness (strong institution, that is, the category that receives the dummy value of 1) differ from the absence of moderating effect of institutional quality (that is, the category that receives the value of 0). Note that with the help of the dummy variable technique, we have been able to capture the effect of strong institutional quality on trade openness, whichinfluences economic growth. According to Gujarati and Porter (2009), "dummy variables are a flexible tool that can handle a variety of interesting problems."

Equation (3) is a regression model with a mixture of qualitative and quantitative independent variables. The covariates, that is, the quantitative regressors, were held constant while deriving equations (4), (5), (6), (7) and (8). Based on endogenous economic growth theories and findings of related studies conducted by Ngouhouo et al. (2020), Votsoma et al. (2020), etc., trade openness and institutional quality are expected to impact economic growth positively. The expected economic sign of the exchange rate is vague as the evidence from previous related studies is mixed; foreign direct investment is expected to affect economic growth positively.

IV.   EMPIRICAL RESULTS AND DISCUSSION

This section consists of descriptive statistics, pre-estimation tests, and main estimation and post-estimation tests results of the variables and parameters of interest. Table 1 shows the descriptive statistics of the variables used in the study. The variables are quantitative and qualitative. For example, control of

corruption and regulation quality, proxies for institutional quality, were categorized as strong and weak institutional quality. 1 represents observations that are considered strong, whereas 0 denotes observations that are considered weak. Other variables in table 1 are GDP growth rate, trade openness, imports, exchange rate and foreign direct investment.

Table 1: Descriptive Statistics of the Variables.

	GDPGR	TO	IMP	EXR	FDI	COC	RQ
Mean	4.916505	51.44405	21.41681	133.6889	2.976168	0.612903	0.83871
Median	3.784648	55.84639	21.4643	128.6517	2.697492	1	1
Maximum	33.73578	81.81285	36.48173	382.611	10.83256	1	1
Minimum	-1.616869	20.72252	10.66634	8.038285	0.65216	0	0
Std. Dev.	6.267551	17.58325	7.987359	106.4388	2.204364	0.495138	0.373878
Skewness	3.250457	-0.320179	0.464158	0.911469	1.893408	-0.463586	-1.841822
Kurtosis	15.62454	1.992361	2.188705	3.221632	7.207854	1.214912	4.392308
Jarque-Bera	260.4529	1.841136	1.963298	4.355788	41.39276	5.226325	20.03085
Probability	0	0.398293	0.374693	0.11328	0	0.073302	0.000045
Sum	152.4117	1594.766	663.9213	4144.355	92.26122	19	26
Sum Sq. Dev.	1178.466	9275.12	1913.937	339876.2	145.7766	7.354839	4.193548
Observations	31	31	31	31	31	31	31

Table 1 shows considerable variations in the mean values of the variables of interest. This is desirable as the parameters of the method of estimation, which is the ordinary least squares, pass through the mean value of some of the variables and variations in the mean values promotethe estimator's efficiency. Moreover, one of the classical linear regression model assumptions is that the values of the explanatory variables in a regression model vary considerably. Variations in the mean and median values indicate variations in individual values. The table further shows that the gap between the maximum and minimum values of the

variables is not too wide. As a result, there are no outliers. The table also shows that only the standard deviation, a measure of dispersion, of the exchange rate is large. The standard deviation of the rest variables is moderate. The skewness and kurtosis are also moderate, so the possibility of Heteroscedasticity is slim.

It was noted in the preceding paragraph that some of the explanatory variables and the dependent variable in equation 3 are quantitative. And since the data are time series, unit root test is necessary. Table 2 shows the Augmented Dicky-Fuller unit root test results on the variables of interest.

Table 2: Unit Root Test Results.

Variable	ADF Test Statistic	5% Critical Value	Order of Integration	P-value	Decision
GDPGR	-4.456740	-2.963972	I(0)	0.0014	Stationary at Levels
TO	-4.018239	-3.644963	I(1)	0.0245	Stationary at First Difference
IMP	-3.844222	-3.568379	I(0)	0.0278	Stationary at Level
EXR	-3.694477	-2.967767	I(1)	0.0096	Stationary at First Difference.
FDI	-6.006262	-2.967767	I(1)	0.0001	Stationary at First Difference

As shown in table 2, the variables are integrated into different orders. Since the study employed a multiple linear regression model, a rule of thumb will be relied upon to determine whether the result of the estimated parameters in equation 3 is spurious. Note that if the value of Durbin-Watson is less than the value of R-squared in a simple or multiple linear regression output, it is an indication that the result is spurious. It is this rule of thumb that is considered in this study.

The estimated results of equation 3 (analysis of covariance model) are reported in table 3. Note that the HAC standard errors and covariance (Bartlett Kernel, New-West) were used to correct possible problems of autocorrelation and Heteroscedasticity. The pre-estimation test results in table 2 suggest the presence of autocorrelation and Heterescedasticity in equation 3, as the quantitative regressors are not all stationary at levels. A former test of autocorrelation and Heterescedasticity will be reported to justify using Newey-West autocorrelation and Heterescedasticity fixed standard errors. The results in table 3 show that the GDP growth rate is positively related to the moderating effect of control of corruption on trade opennessas the value of the parameter of (COC*TO) is positive and statistically significant at the five percent level. This means that institution quality in the form of control of corruption in international trade positively and significantly influencesthe GDP growth rate in Nigeria. This finding is similar to the findings of the research studies carried out by Votsoma, Bita and Zamo (2020), which suggests that government efficiency in the form of control of corruption and regulations is the major contributor to the positive effect; of trade openness on economic growth in Nigeria.'Also, the findings of the research study conducted by Sakyi (2010) indicate that the Ghana economy witnessed growth due to institutional quality's effect on trade openness. Even in Sub-Saharan African countries, institutional quality has been found to influence trade openness, which positively influences economic growth, as Akinlo and Okunlola (2021) study shows.

However, control of corruption in general, that is, control of corruption that is not specific to the moderation of trade openness, negatively and significantly influence the GDP growth rate as the value of the

differential intercept is negative (-16.63408). Note that the value of the intercept of the results in table 3 represents weak institutional quality, whereas the values of the parameters of control of corruption (COC) and regulation quality (R.Q.) denote differential intercepts. They explain how much strong institutional quality effect on GDP growth differs from weak institutional quality effect on GDP growth. And since the coefficient of control of corruption is negative, it means weak effect of control of corruption on GDP growth outweighs strong effect.

Table 3: Estimated ANCOVA Regression Results of Equation 3.

Dependent Variable: GDPGR				
Included observations: 31				
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
COC_TO	0.276991	0.128731	2.151703	0.0427
RQ_TO	0.401541	0.44958	0.893148	0.3814
COC	-16.63408	7.779658	-2.138151	0.0439
RQ	-32.12505	32.85202	-0.977871	0.3388
LTO	-12.56785	17.56029	-0.715697	0.4817
LIMP	-9.182267	6.725061	-1.365381	0.1859
LFDI	-0.693478	1.186659	-0.584395	0.5649
EXR	0.016004	0.013926	1.149189	0.2628
C	92.07346	87.51888	1.052041	0.3042
R-squared = 0.393047				
Prob(Wald F-statistic) = 0.001016				
Durbin-Watson stat = 1.702457				

The results further show that the moderating effects of regulation quality on trade openness positively influence economic growth in Nigeria. However, this finding is not statistically significant at the five percent level. Regulation quality, in general, negatively and insignificantly, at the five percent level, influences GDP growth rate as the value of its coefficient is negative (-32.12505). This means that weak regulation quality effect on GDP growth rate outweighs the effect of strong regulation quality.

These findings suggest that regulation of international trade and control of possible corruption in the trading activities between Nigerians and foreigners are effective ways of promoting economic growth in Nigeria. However, control of corruption and regulation of activities in general in Nigeria

do not positively influence economic growth. This finding is similar to the findings of Jonathan, Fidelia, Anthony and Onyinye (2020), Iyoboyi and Pedro (2014), Okoi, Okoi and Bassey (2015), which suggest that institutional quality does not positively influence general economic activities in Nigeria.

Holding other variables constant, the results in table 3 show that trade openness without the moderating effect of institutional qualities negatively influences GDP growth in Nigeria. However, this finding is not statistically significant at the five percent level. The results also show that the GDP growth rate is negatively related to imports and foreign direct investment in Nigeria. Again, this finding is not statistically significant at the five percent level. By contrast, the exchange rate, holding other variables constant, positively influencesthe GDP growth rate in Nigeria. These findings

are similar to the findings of studies were undertaken by Conteh et al. (2021), Malefane and Odhiambo (2019), which show that trade openness without the moderating effect of institutional quality hasan adverse effect on economic growth in the countries of interest.

Note that the value of Durbin-Watson Stat. (1.702457) in table 3 is greater than the value of R-squared (0.393047), indicating that the reported result is not spurious. Moreover, so many of the explanatory variables are not individually statistically significant, which explains why the R-squared value is quite low. However, the explanatory variables are jointly significant as the p-value of the F-statistic is less than 0.05.

Former residual diagnostic tests are important in order to ascertain whether some important assumptions of the classical linear regression model are violated in an estimated regression result. Table 4 shows the Breusch-Pagan-Godfrey Heteroskedasticity test result:

Table 4: Heteroskedasticity Test: Breusch-Pagan-Godfrey	
F-statistic 9.116104	Prob. F(8,22) 0.0001
Obs*R-squared 23.81567	Prob. Chi-Square (8) 0.0025
Scaled explained SS 27.33909	Prob. Chi-Square (8) 0.0006

Since the probability Chi-square value in table 4 is less than 0.05, we do not reject the null hypothesis that there is no problem of Heterescedasticity in the model specified in equation 3. In addition to the problem of autocorrelation, this problem has been

corrected in the results presented in table 3 as the HAC standard errors and covariance (Bartlett Kernel, Newey-West fixed) were reported. The CUSUM test results (reported in figure 1 below) suggest that the estimated model (equation 3) is dynamically stable.

Figure 1: Stability Test Result.
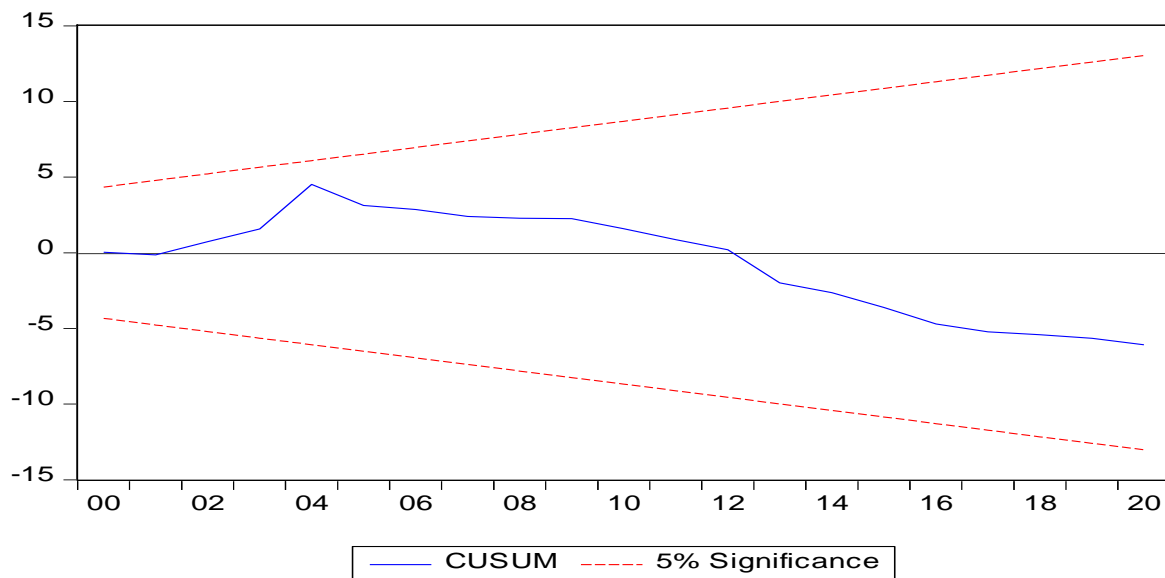
V.   CONCLUSION AND POLICY RECOMMENDATIONS

This study investigated the relationship between economic growth and the moderating effect of institutional quality on trade openness in Nigeria. Trade openness is basically about trading activities between locals and foreigners. Institutional qualities such as control of corruption and regulation quality are not limited to external sector economies; they cut across all sectors. In this study, the effect of institutional quality on all sectors and the economy was investigated. Also, to achieve this study's main objective, the moderating effect of institutional quality on trade openness, holding all other sectors constant, and the effect on economic growth in Nigeria were investigated. Furthermore, the study used GDP growth rate (GDPGR) as the dependent variable, while the explanatory variables consist of control of corruption (COC), an essential institutional quality measure in a country where corruption is becoming endemic to the growth of the economy and to the proper functioning of the entire socioeconomic framework, and regulatory quality (R.Q.) being another important measure of the quality of the country's institutions. Other explanatory variables are exchange rate (EXR), trade openness (O.P.) which is the key variable, import (IMP) and foreign direct investment (FDI). Annual data was sourced for the listed variables above from the World Bank Development Indicators (WDI) covering the periods 1990 to 2020 and was estimated using the ANCOVA model.

The study's findings are in parts: first, we find that the effect of institutional quality on trade openness positively influences economic growth in Nigeria. This finding is statistically significant at the five percent level. Second, the study's findings suggest that trade openness negatively influences Nigeria's economic growth without institutional quality's moderating effect. This is an interesting finding as it justifies the inclination that institutional quality plays a role in economic growth. Third, the findings indicate that economic growth is negatively related to the moderating effect of institutional quality on all sectors. Institutional quality is only effective when it moderates international trade-related activities—suggesting the need to strengthen further the existing institutions in country

with special emphasis on corruption control. This implies extending the operations and activities of the various anti-graft agencies, such as the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices and other Related Offences Commission (ICPC), to the various socioeconomic bodies in the country to monitor their activities and as well apprehend persons indulging in corrupt practices in these institutions. This is valid as there are strong indications that the existence of corruption in the various institutions has the capacity to render the existing regulatory quality (R.Q.) impotent and insignificant, as revealed by the result of the study.Finally, the findings show that foreign direct investment and imports (control variables) negatively influence economic growth in Nigeria. This may imply the declining investment portfolio from abroad that began during the onset of the global financial crisis that affected the entire world economy but the effect was felt much harder in the less developed economies.Next to it is the rising importation in the country thatbegan with the discovery of crude oil and deepened with the country's over-reliance on oil as the main foreign exchange and revenue earner.

Based on these findings, this study recommends that the Nigerian government put friendly international trade policies in place, such as reducing the tax paid on goods and services coming into or going out of Nigeria. The government of Nigeria should strengthen regulations and control corruption in international trade activities, as it is an effective way of promoting economic growth in Nigeria. Also, there should be policy reforms regarding the moderating effect of institutional quality on economic activities other than international trade. Finally, the Nigerian government should strengthen the enforcement of contracts and other related regulations so as to attract foreign investors into Nigeria. This will lead to a positive relationship between foreign direct investment and economic growth in Nigeria. By reckoning with the uniqueness of this study, a major limitation comes into reality, the fact that the study is country-specific, whereas the region of Africa is made up of countries with almost similar economic peculiarities. Hence, the study makes a case for further research in this respect that will adopt almost similar variables for each country in the African continent, especially countries with growing institutional collapse in the face of economic backwardness.

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