Institutional Quality, Financial Inclusion and Inclusive Growth: Causality Evidence from Nigeria

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Abstract

The study examines the causal interactions among the institutional, financial and inclusive growth variables by employing Toda-Yamamoto (TY) Granger non-causality test within the augmented VAR framework. Annual time series, data from 1998 to 2017, were used. The TY analysis showed that all the variables, with the exception of financial inclusion index, Granger-caused inclusive growth, but without any evidence of feedback. However, a bidirectional causal relationship was found between inclusive finance and the interaction of institutional quality and financial inclusion. Thus, the null hypothesis of block exogeneity can be refuted when real GDP per person employed (RGDPE) is taken as the dependent variable. This implies that while the effects of institutional quality could vary widely in an economy, institutional quality appears to be the dominant driving force behind inclusive growth. It is, therefore, recommended that institutional improvement, beyond the present liberal democratic threshold, is much needed to effectively harness the human capital resource-base. The Nigerian government should adopt a labour-intensive development strategy, such that poor active households are comprehensively integrated into productive activities for optimal value-chain finance-growth inclusiveness. This should be able to address the protracted tripartite socio-economic problems of poverty, inequality and unemployment in line with Lin's comparative advantage conforming hypothesis.

Keywords: Institutional Quality, Financial inclusion, Development Strategy, Inclusive Growth and Causality

JEL Classification: O43, G21, P28, O15

I.   Introduction

A key development issue is investigating the causes of lingering underdevelopment of the resources-endowed low-income developing countries (LIDCs), particularly Sub-Sahara African countries. A number of questions on these issues are of vital importance, and these are raised as follows: What is the nature and trend of institutional quality, financial inclusion and inclusive growth in Nigeria? Are there causal links among the variables of institutional quality, financial inclusion and inclusive growth, as measured by the

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real GDP per person employed in the resource-rich and labour-abundant Nigerian economy? To what extent has institutional quality impacted on the link between financial inclusion and broad-based productive employment growth in Nigeria?

Undoubtedly, these questions have continued to motivate a sizeable body of scholarship over the last few decades, but with two main divergent views on the role of institutions of political governance in development. Several scholars (such as La Portal, et al., 1998; Glaesier, et al., 2004; Acemoglu & Robinson, 2013; Tella & Ayinde, 2015; Kebede & Takyi, 2017; Olanrewaju, 2018) stress that institutional factor is endogenous to a country's financial development and economic growth and thus, considerably accounts for growth variance, both across countries and over time within countries. In this view, finance-growth nexus is assumed as an outcome of institutional quality. However, the link from institutions, through financial development, to growth remains critically controversial in developing economies like Nigeria. Other authors (Sachs, 2005; Durlauf, et al., 2005; Kurtz & Schrank, 2007; Rodrik, 2008; Briguglio, 2016), on the other hand, hold a different theoretical perspective on the link between institutional quality and growth. They dismiss governance, and assert that poor countries cannot afford quality institutions of governance. Therefore, the existence of causality running from institutional quality through financial inclusion, to such a broad-based productive employment growth becomes highly uncertain, and could as well run the other way.

Traditionally, institutions of political governance are designed to perform specific functions, like the formulation and implementation of socio-economic policies for a broad-based productive employment growth and development. The effectiveness of the state to successfully, or otherwise, achieve this constitutional goal determines its quality (UNDP, 2011). Thus, prioritising the quality of institutional governance is the fulcrum upon which other drivers of inclusive growth must rest and revolve, in order to solve the protracted socio-economic problems of pervasive poverty, huge inequality gaps and 'jobless growth' plaguing many low-income developing economies. Unfortunately, recognising the centrality of institution in achieving an inclusive growth in these economies remains a challenge (Saez, 2012; Stiglitz, 2016).

The industrialised economies, like the United States and Europe, the Newly Industrialised Economies (NIEs) in Asia, and the BRICS' countries (Brazil, Russia, India, China and South Africa) have more than 75 per cent of their population having access to financial services for productive activities (Martinez & Mlachila, 2013; Jerome, 2016). Countries with stronger institutions have higher levels of

financial inclusion and equitable growth (Ozughalu & Ogwumike, 2015). For instance, countries that took off and caught up with the advanced economies in the last three to four decades, or so, were mostly labour-abundant East Asian economies but with strong institutions. In contrast, for instance, the population in many low middle-income developing countries (LMIDCs), generally, and Nigeria, in particular, have limited access to formal financial services. About 42 per cent of the adult population precisely are currently financially-excluded in Nigeria (EFInA, 2017).

Interestingly, with the unbroken democratic rule in Nigeria since 1999, it is imperative to see how the 'improved' political governance has helped in fostering inclusive growth in the country. This study, therefore, is guided by the work done on the financial inclusion-growth link, and the belief that the quality of institutions underlies the causal interactions between financial inclusion and inclusive growth. Using the Toda-Yamamoto Granger non-causality procedure within the augmented VAR framework, the study investigated the causal interactions among the variables of institutional quality, financial inclusion, technology choice index and real GDP per person employed. The rest of the paper is structured as follows: Section 2 presents the review of literature on the relationship between inclusive growth and institutional quality. Section 3 describes the data and methodology. Section 4 discusses the empirical results, while Section 5 concludes the paper.

II.   Literature Review

Many researchers have asserted that the level of growth and development in most emerging economies is determined, to a very large extent, by the quality of institutions (La Porta, *et al.,* 1998; Rodrik, *et al.,* 2006; Haq and Zia, 2006; Eicher and Rohn, 2007; Zhuang, *et al.,* 2010; Chang, 2011; Acemoglu & Robinson, 2013; Iheonu, *et al.,* 2017; Kebede & Takyi, 2017; Olanrewaju, 2018). This suggests that countries with relatively high institutional quality in terms of capacity and character tend to formulate and implement policies and programmes that would more quickly break the 'mould' of long-aged pervasive poverty, huge inequality gaps and mounting unemployment rate, characterising most developing economies across the globe.

From a cross-country perspective, La Porta, *et al.,* (1998) assessed the determinants of the quality of governments in 152 countries, using government performance measures, such as public-sector efficiency, public good provision, size of government, and political freedom. The study found that countries that are poor, close to the equator, ethnolinguistically-heterogeneous, use French or

socialist laws, or have high proportions of Catholics or Muslims exhibit inferior government performance. Moreover, the authors stressed that the larger the government size, the better the performance and vice-versa. Therefore, factors such as, the economic, political, and cultural theories of institutions explain the variations in differential growth patterns across countries.

Ajayi (2002) examined the theory and facts of how the quality of institutions and policies applied to the African situation. He argued that the missing link in Africa's growth process is the absence of adequate policies and efficient institutions. He found that corruption, ethno-linguistic fractionalisation and civil strife are the institutional quality measures that have deleterious effects on growth. He also found that the conventional economic factors responsible for growth in Africa generally, and Nigeria in particular, do not fully explain its growth process. The study is relevant to the present as it has created useful insight into the problem, which the present study sets out to solve.

Consistent with Ajayi's findings, Sachs (2005) described the less developed countries (LDCs) as being caught in a structural poverty trap, due to severe underdevelopment of their productive capacity. He contends that in spite of these odds, LDCs still have a latent potential for evolving national inclusive and sustainable development strategies, capable of breaking the vicious circle of underdevelopment and poverty within the framework of mixed economies, properly regulated by lean, clean and democratic developmental states. He strongly opines that 'development from within is the best, if not the unique opportunity; and that genuine development of Africa cannot happen by replicating foreign models. This study further provides the desired stimulus for the present study. The policy implication of findings is that a 'home grown' inclusive framework should evolve for the triple-win solutions to the tripartite socio-economic problems.

Rodrik, et al. (2006) examined the respective contributions of institutions, geography, and trade in determining income levels around the world for categories of two datasets in 79 and 137 countries, using the institutional quality measures due to Kaufmann, et al. (2010). The results show that the quality of institutions 'trumps' everything else. Once institutions are controlled for, conventional measures of geography have, at best, weak direct effects on incomes, even though they have a strong indirect effect on the quality of institutions. Similarly, once institutions are controlled for, trade almost becomes insignificant with the 'wrong' negative sign.

In a much-related study, Haq and Zia (2006) explored the relationship between good governance and pro-poor growth in Pakistan from 1996 to 2005, utilising three broad indicators of governance: political governance (i.e., voice and accountability, political instability and violence); economic governance (i.e., government effectiveness and regulatory quality); and institutional dimensions of governance (i.e., rule of law, control of corruption). The study tested for the linkage between governance and poverty (as well as governance and income inequality), using simple ordinary least square (OLS) regressions. The basic findings are that "voice and accountability and political stability are negatively and significantly correlated with poverty." The study is relevant to the present study, as it provides a suitable framework for the role of institutional governance in the context of sustainable inclusive growth. The policy implication is that in developing a model of inclusive growth, the strategic role of government cannot be overemphasised.

Reviewing the empirical evidence on institutional determinants of differential economic performance, Eicher and Rohn (2007) developed an array of endogenously-selected and weighted economic indicators that are combined into one index of institutional quality in the OECD countries for the period 1994 to 2006. They observed that despite evidence in favor of convergence, the impact of institutions on economic growth in the advanced and highly industrialised countries, widely considered as 'first world', has not been fully explored. However, they argue that strong explanatory power can be attributed to institutional factors in the global sample of countries.

Zhuang, et al. (2010) took a closer look at two critical issues of governance and institutional quality measurement and the direction of causality between institutional development and economic development in the developing Asian countries. Applying a simple classification framework under the widely used world governance indicators (WGIs), they found that the Asian economies with government effectiveness, regulatory quality, and rule of law scored above the global means and grew faster on average during the period 1998-2008, than those economies below the global means. Their findings are also consistent with Levy and Fukuyama (2010) who found that, improving governance in these three dimensions could be used as potential entry points of development strategies for many other developing economies in the region and elsewhere.

In another study, Ajakaiye and Jerome (2011) examined the role of institutions in the transformative agenda of the Nigerian economy and conducted a comparative analysis of Nigeria and Indonesia. The analysis of both countries revealed that the economic institutions and political framework were stronger in

Indonesia than Nigeria. However, going by the current reforms in the various sectors in Nigeria, the country can place itself on the path of prosperity by emphasising the need for institutional strengthening and reinvigorating manufacturing sector, which has been regarded as a key driver of structural transformation.

In another study, Tella (2012) reviewed the empirical studies on theoretical constructs of economic growth and development models from the classical to the endogenous and inclusive growth. The review showed that while a number of emerging countries (e.g. Malaysia, Singapore, Bangladesh, Mexico, and the BRICS' countries with the exception of Russia) could link their development plans to specific models that provides avenue for measurement and evaluations, the Nigerian growth and development programmes, since independence, are hardly based explicitly on any growth model. However, he concludes that, the route to sustainable development is, firstly, financial inclusiveness, which will then translate to inclusive growth. Thus, an important policy organ like the Central Bank of Nigeria should be able to direct or re-direct the nation's vision towards financial inclusion in order to engender inclusive growth, for such has significantly assisted many developing and emerging countries to overcome the issues of chronic poverty and inequalities in recent times.

In order to capture the institutional quality in the dataset of 94 to 109 countries, from 1990 to 2010, Kuncic (2013) computed the latent institutional quality variables, clustering around three homogenous groups of formal institutions: legal, economics and political. Findings from the study revealed that many developed countries (North America, Australia, central and northern Europe or Japan), in terms of income, longevity and literacy, are ranked the best with the calculated institutional quality variables strongly correlating with real GDP per capita, and with the strength of correlation in the order of legal, economic and political institutional quality. In contrast, the least developed countries (South and Central America, Sub-Sahara Africa, etc.), have worst quality of all the three sets of institutions.

Lin and Chang (2014), empirically investigated the effects of the comparative advantage conforming (CAC) and comparative advantage defying (CAD) strategies on economic performance, for a sample of 122 countries for the period 1962-1999. As a proxy variable for CAD, the author used the relative size of capital-intensive production, while also including a variety of institutional control variables (index of economic freedom, the costs of starting a business, ratio of trade dependence etc.). The results indicated that the CAD strategy indeed has a statistically significant negative effect on growth and leads to an

increase in inequality. The author asserted that, while CAC or CAD development strategy cannot be assessed in an institutional vacuum, a country should follow its comparative advantage in order to develop. Moreover, the government that adopted a CAD as against CAC, encouraging firms to ignore the existing comparative advantages of the economy would be full of rent-seeking and unproductive profit-seeking activities, which hinder economic growth and development.

Benchmarking the framework for assessing the inclusiveness of the process and benefits of growth in 112 economies across all geographies and stages of development, the World Economic Forum (2015) analysed and presented the results of the 1st edition of the inclusive growth and development with benchmarks spanning seven policy areas and fifteen sub-areas, while work on refining the data and methodology would continue in two respects. These are improvement of the indicators and empirical investigation of the relative significance of sub-policy pillars. To overcome the challenge, the key factors of the institutional-enabling environment have been regarded as determinative of the quality of growth over time, measured by levels of productive employment and median household income. This study appears to be relevant to the present study as it provides basis for constructing the model for inclusive and sustainable development.

In another study, Iheonu, Ihedimma and Onwuanaka (2017) employed four institutional quality indicators control of corruption, government effectiveness, regulatory quality and rule of law using data set of 12 West African countries from 1996 to 2015 to assess the impact of institutional quality on economic performance. The result showed that all the indicators of institutional quality have positive and significant impact on economic performance when the fixed and random effect estimation technique was employed. However, only government effectiveness was found to be significant after considering the variable endogeneity using the panel two-stage least technique. The study recommended for improved institutions to enhance economic performance in West Africa. It also emphasised the need for more effective governance.

Kebede and Takyi (2017) employed the Wald panel causality technique to investigate whether institutional quality is the consequence or cause of economic growth in 27 Sub-Sahara African countries. While the co-integration test results show evidence of a long-run relationship between institutional quality and economic growth, the causality test results provide a unidirectional causality from economic growth to institutional quality but with no evidence of causality from institutional quality to economic growth. However, debt servicing

and dependence on natural resources were, respectively, found to be negatively affecting economic growth and institutional quality. This conclusion suggests the case of resource cursed situations as being the lots of low- and low middle-income developing countries like Nigeria.

Olanrewaju (2018) also examined the relationships between institutional quality, financial inclusion and inclusive growth in the resource-rich and labour-abundant Nigerian economy using the Bounds testing approach to cointegration within an ARDL framework. The results showed that while the evidence of financial inclusion and institutional factors positively related to inclusive growth, the relationship between the real GDP per person employed (RGDP) as a measure of inclusive growth and the interacted variable of institutional quality and financial inclusion (IFIGEFe) equally revealed a positive and statistically significant relationship. However, the composite institutional quality index appeared to be the dominant driving force behind growth inclusiveness in the economy. The implication of the findings is that institutional factors could be said to have an overall significant impact on inclusive growth in Nigeria.

Although existing empirical research have established the links between institutions and differential growth paths across countries, country-specific studies that address the issue of causality running from institutional quality through financial inclusion to inclusive growth are sparse. In addition, there is no study to the best of our knowledge that considered the combined effects that institutional quality and financial inclusion could have on growth inclusiveness in Nigeria. Therefore, in filling the gaps, this study determines the causal interactions among the socio-economic variables of institutional quality, financial inclusion and real GDP per person employed in Nigeria from 1998 to 2017, using Toda-Yamamoto Granger non-causality test within the augmented VAR framework.

III.   Methodology
III.1   Model and Data

Tobin (1955) dynamic aggregative production function, which stresses the importance of both resources and monetary expansion in the growth process, can be considered as the theoretical base for 'the new growth path'. It is, generally, assumed that there is a causal link between inclusive growth and institutional governance, as well as, other control variables, such as financial inclusion, human capital development, civil society (Levy & Fukuyama, 2010), and preferred development strategy, technology choice index (CAC) as against (CAD) (Lin & Chang, 2014; Bruno, *et al.*, 2015). Thus, the growth patterns

in an economy reflect the country's institutional and contextual environment, which is compatible with the endowment structure of the country and its potential comparative advantage. While the quality of institutions in terms of capacity and character is an influencing factor (exogenous) on the one hand, it is equally an endogenous variable (being influenced by other factors), on the other hand (Tella & Ayinde, 2015).

The major focus of this study is to explore the interactive causal linkage among variables of interest, following Hufty (2011) and Djezou (2014) on the nexus between inclusive growth and the quality of institutional governance. The model can be specified as:

$$RGDPE_t = \alpha + \gamma RGDPE_{t-1} + \beta_1 IFI_t + \beta_2 GEF_t + \beta_4 IFI * GEF_t + \beta_5 TCI_t + \varepsilon_t \qquad (1)$$

where *RGDPE* (as proxy for participation and benefit-sharing in the growth process) represents the productive contribution of the actual working population which captures the problems of poverty, inequality and unemployment. *IFI* represents a composite financial indicator capturing information on various dimensions of financial inclusion (accessibility (proxied by Accounts ownership per 1000 population), availability (measured by the number of bank branches or the number of ATMs per 100,000 population, and usage), *GEF* refers to the Worldwide Governance Indicators average. *RGDPE* and *IFIGEF,* respectively, represent interactions of inclusive growth variable with institutional quality and financial inclusion. TCI is constructed as the value-added to labour ratio in manufacturing over the total value-added to aggregate labour force ratio, to capture the impact of structural transformation in a resource-rich and labour-abundant developing nation like Nigeria (Lin & Chang, 2014). A high TCI value is, therefore, indicative that a country follows a CAD strategy as opposed to a CAC strategy. Annual data from 1998 to 2017 were used and were sourced from the Central Bank of Nigeria, National Bureau of Statistics, IMF's International Financial Statistics (IFS), and the World Bank.

III.2   Estimation Techniques

To address the causality issues, the study used the Toda and Yamamoto (1995) Granger non-causality technique to examine the causal relationships among the variables of interest (real GDP per person employed, financial inclusion indicator and institutional capacity of the state) in Nigeria. As pointed out by Toda and Yamamoto (hereafter TY), if the system contains unit roots or if there is uncertainty as to whether the variables are *I*(0) or *I*(1), the TY technique is more appropriate for its relatively small size distortions, thus, overcoming the problems of arbitrary level of integration and sensitive values of the nuisance parameters

in the ECM procedures. The TY introduced a Wald test statistic that asymptotically has a chi square (X^2) distribution, irrespective of the order of integration or cointegration properties of the variables.

The TY approach employed a modified Wald test for restrictions on the parameters of the VAR (k); where k is the lag length of the system. The basic idea of the TY approach is to artificially augment the correct order, k, by the maximal order of integration, d. Once this is done, a (k + d) order of VAR is estimated and the coefficients of the last lagged d vectors are ignored. The TY augmented Granger causality test conducted was based on the multivariate system of equations formulated as follows:

$$Y_t = \alpha_0 + \sum_{i=1}^{k} \theta_i \, Y_{t-i} + \sum_{i=k+1}^{k+d} \theta_i \, Y_{t=i} + \sum_{i=1}^{k} \delta_i \, X_{t-i} + \sum_{i=k+1}^{k+d} \delta_i \, X_{t-i} + v_{1t} \qquad (2)$$

$$X_t = \beta_0 + \sum_{i=1}^{k} \varphi_i \, X_{t-i} + \sum_{i=k+1}^{k+d} \varphi_i \, X_{t-i} + \sum_{i=1}^{k} \pi_i \, Y_{t-i} + \sum_{i=k+1}^{k+d} \pi_i \, Y_{t-i} + v_{2t} \qquad (3)$$

Where X_t represents institutional quality, Y_t depicts the real GDP per person employed as a measure of inclusive growth, and $\alpha, \beta, \theta's, \delta's, \varphi's, and \pi's$ are parameters of the model. While k and d are respectively optimum lag length of a VAR and maximal order of integration of the variables, v_{1t} and v_{2t} are the independent white noise residuals with zero mean and constant variance.

Granger causality implies that if it is only the lagged values of the institutional quality variables in equation (2) that are significant, we can infer that institutional quality Granger-causes inclusive growth. On the other hand, if the lagged independent variables in the two equations are significant, then we can infer a bi-directional causality. However, if it is only the lagged value of inclusive growth variable in equation (3) that is significant, we conclude that inclusive growth Granger-causes institutional quality. In other words, we can jointly test if the estimated lagged coefficients are different from zero using the F-statistic. When the joint test rejects the two null hypotheses that the lagged coefficients are not different from zero, causal relationship between the variables is thereby confirmed.

IV.   Results and Discussion
IV.1   Unit Root Tests

The paper used Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) techniques to test for the presence of unit root in the series. Table 1 shows that all the series with the exception of logarithm of the technology choice index (LTCI), are not found to be stationary at level with constant and time trend. This

shows that the variables LRGDPE, IFI, GEFe, RGDPE*GEFe and IFI*GEFe are stationary at first difference.

Table 1: Unit Root Tests (Augmented Dickey Fuller (ADF) and Philips-Perron (PP)

Variables/Tests	t-statistics	Critical Value	t-statistics	Critical Value	Order of Integration
	Levels		*First Difference*		
ADF Test					
LNRGDPE	-2.7966	3.6736	-4.7982**	-3.6908	I(1)
IFI	-1.6285	-3.6908	-3.3672*	-3.0522	I(1)
TCI	-5.0377**	-3.8753	-5.8491*	-3.1754	I(0)
GEFe	-2.2221	-3.6908	-4.9752**	-3.7105	I(1)
RGDPEGEFe	-2.8151	-3.6908	-4.9904**	-3.7105	I(1)
IFIGEFe	-1.6729	-3.6908	-3.8433*	-3.0522	I(1)
PP Test					
LNRGDPE	-2.7966	-3.6736	-4.8848**	-3.6908	I(1)
IFI	-1.8030	-3.6908	-3.3766*	3.2978	I(1)
TCI	-1.4678	-4.6679	-2.0946	-1.9628	I(1)
GEFe	-2.0175	-3.6908	-4.9752**	-3.7104	I(1)
RGDPEGEFe	-2.8151	-3.6908	-5.1956**	-3.7105	I(1)
IFIGEFe	-1.6729	-3.6908	-3.9091*	-3.7105	I(1)

Note: The asterisk (*, **,***) denote the rejection of the unit root hypothesis at the1%, 5% and 10% significance levels respectively.
Source: Authors, 2019

Essentially, the null hypothesis for the presence of unit root was rejected for all the variables except technology choice index (TCI) at levels, indicating that all the series were stationary at first difference.

IV.2   Optimal Lag Length Selection

To determine the optimal lag length, we specified a VAR (1) model and applied the conventional selection criteria. The results of lag length selection of the VAR are presented in Table 2. Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Criterion (HQ), the Sequential Modified (LR) and Schwarz Information Criterion (SC) recommended a lag length of one (1). Thus, we settled for the optimum lag length of VAR as 1 via the four criteria. The diagnostic test results indicate that neither the augmented VAR (3) ($k + d = 3$) nor the VAR (4) ($k + d = 4$) is stable. Hence, we estimated the augmented VAR (2) ($k + d = 2$) with

V_t = f(LNRGDPE, TCI, IFI, GEFe, RGDPEGEFe, IFIGEFe) and conducted a series of diagnostic tests to check the robustness of VAR (2).

Table 2 Results of the Lag Length Selection

Endogenous Variables (LNRGDPE LNTCI IFI GEFe RGDPEGEFe IFIGEFe)					
LagLogL	LR	FPE	AIC	SC	HQ
0 -26.11699NA		1.43e-06	3.568555	3.865345	3.609478
1 58.52253	103.4483*	8.33e-09*	-1.835837*	0.241697*	-1.549373*

 * indicates lag order selected by the criterion
Source: Authors, 2019

IV.2   Results of Causal Interaction among Institutional Quality, Financial Inclusion and Inclusive Growth using Toda-Yamamoto Granger Causality Tests

The main focus of this study was to investigate the causal interactions among the series, with the aim of determining the directions of causation among them, especially in the lower middle-income economy of Nigeria during the period. Table 3 reports that institutional quality indicator, the measure of interacted institutional-inclusive growth (RGDPEGEFe) and all the variables as a group were found to Granger-cause inclusive growth (LNRGDPE). However, causality runs from real GDP per person employed, financial inclusion, institutional quality, as well as, the interacted institutional-inclusive growth variables to interacted institutional-inclusive finance variable (IFIGEFe), and all the variables in the model combined. The causality analysis exposed a one-way causal relationship among the variables with the exception of index of financial inclusion. However, a bidirectional causality exists between the interacted institutional-finance indicator and financial inclusion index. Meanwhile, the study found evidence of the preferred development strategy variable (TCI) Granger causing the GDP per person employed, as a measure of inclusive growth, in the long-run without any feedback relationship observed. The same was true for the causal relationship between technology choice index and financial inclusion indicator (IFI).

The real GDP per person employed (LNRGDPE) neither unilaterally Granger-cause institutional quality nor technology choice index. When GEFe is taken as the dependent variable, the chi-square statistics of 0.405, 1.720, 1.556, 0.324 and 1.638 for LNRGDPE, TCI, IFI, RGDPEGEFe and IFIGEFe, respectively are not significant (see Appendix A). Thus, the null hypothesis of block exogeneity is not refuted when GEFe is taken as the regressand in the model. Similarly, when TCI is

treated as the predicted variable, the chi-square statistics of 0.020, 0.118, 0.442, 0.058 and 0.232, respectively for LNRGDPE, IFI, GEFe, RGDPEGEFe and IFIGEFe are not significant (see also Appendix A). The implication of this also is that the null hypothesis of block exogeneity cannot be refuted when TCI is taken as the dependent variable.

Table 3: Toda-Yamamoto Granger Causality/Block Exogeneity Wald Tests

Dependent variable: LNRGDPE

Excluded	Chi-sq	df	Prob.
TCI	7.352504	2	0.0253
IFI	2.135088	2	0.3439
GEFE	8.269739	2	0.0160
RGDPEGEFE	5.730449	2	0.0570
IFIGEFE	2.892087	2	0.2355
All	27.41441	10	0.0022

Dependent variable: TCI

Excluded	Chi-sq	Df	Prob.
LNRGDPE	0.020115	2	0.9900
IFI	0.118405	2	0.9425
GEFE	0.442349	2	0.8016
RGDPEGEFE	0.058168	2	0.9713
IFIGEFE	0.232326	2	0.8903
All	11.03876	10	0.3545

Dependent variable: IFI

Excluded	Chi-sq	Df	Prob.
LNRGDPE	8.151152	2	0.0170
TCI	7.290444	2	0.0261
GEFE	8.927683	2	0.0115
RGDPEGEFE	6.986030	2	0.0304
IFIGEFE	10.16282	2	0.0062
All	58.58364	10	0.0000

Dependent variable: GEFE

Excluded	Chi-sq	Df	Prob.

LNRGDPE	0.405461	2	0.8165
TCI	1.719642	2	0.4232
IFI	1.556344	2	0.4592
RGDPEGEFE	0.323598	2	0.8506
IFIGEFE	1.637462	2	0.4410
All	7.843053	10	0.6442

Dependent variable: RGDPEGEFE

Excluded	Chi-sq	Df	Prob.
LNRGDPE	0.014613	2	0.9927
TCI	1.571198	2	0.4558
IFI	1.143261	2	0.5646
GEFE	1.056546	2	0.5896
IFIGEFE	1.136615	2	0.5665
All	13.29596	10	0.2076

Dependent variable: IFIGEFE

Excluded	Chi-sq	Df	Prob.
LNRGDPE	9.571365	2	0.0083
TCI	3.563676	2	0.1683
IFI	11.61397	2	0.0030
GEFE	10.57195	2	0.0051
RGDPEGEFE	7.838700	2	0.0199
All	65.08847	10	0.0000

Source: Authors' estimation, 2019

However, given the high chi-square statistic of 8.269 for institutional quality when real GDP per person employed is the dependent variable, it suggests that institutional quality variable (GEFe) is exogenous in the inclusive growth regression. Similarly, the indicator of comparative advantage conforming (TCI) and the interacted institutional-inclusive growth variable (RGDPEGEFe), having the chi-square values of 7.353 and 5.731, equally show that inclusive growth are respectively Granger-caused by these two variables. However, we found the evidence of the resources endowment variable (TCI) causing inclusive growth in the long-run without any feedback relationship observed. In other words, inclusive growth is collectively influenced by all the explanatory variables. Thus, the null hypothesis of block exogeneity of non-causality is refuted when

LNRGDPE is taken as the dependent variable. This implies that a broad-based economic growth is largely influenced by the quality of institutions of governance, an inclusive finance, resource-based development strategy (CAC technology), and the interactive governance variables when these are taken together.

When IFI and IFIGEFe, respectively, were taken as the dependent variables, the chi-squares of 8.151 and 9.571 for LNRGDPE were significant. The null hypothesis of block exogeneity can also be refuted, consistent with the recent suggested developments in the literature (Khurtz & Schrank, 2007; Levy & Fukuyama, 2010; Zhuang *et al.,* 2010; Chang, 2011), in which a feedback relationship between institutional quality and economic development have been reported. However, IFI and IFIGEFe do not respectively Granger-cause institutional quality (GEFe).

These results partly support the findings of Haq and Zia (2006), Basu and Das (2010) and Kebede and Takyi (2017) in which uni-directional causality was reported, either from good governance to economic growth or the other way around. Our findings, however, indicate that the evidence of feedback effects was found to be stronger between the interacted variables of institutional quality and financial inclusion on the one hand, and IFI and the proxy for inclusive growth on the other hand, depending on the level of development. It was, however, found that real GDP per person employed (LNRGDPE) neither Granger-cause institutional quality nor technology choice index. Thus, our findings revealed that while interacted institutional factor exerts a positive and bi-directional causal effect on inclusive finance in the long-run, the study found only a one-way causal relationship from institutional quality and resources endowment indicators to inclusive growth. However, the strong bi-directional causality relationship between the interacted institutional variable and index of financial inclusion confirms the findings of Khurtz & Schrank (2007); Zhuang *et al.* (2010); and Chang (2011), who found evidence of two-way causal relationship between institutional quality and economic development for some group of countries.

Furthermore, the finding of strong uni-directional causality running from institutional quality through financial inclusion to inclusive growth is in line with the findings of La Portal *et al.* (1998) and Glaesier *et al.* (2004), but differs from that of Levy and Fukuyama (2010) and Onwusu and Odhambo (2014) for some developing economies. The implications of this in the short-run are that efforts to improve institutional governance in Nigeria would have positive impact on the socio-economic life of the citizens, including the extreme poor and the most vulnerable individuals. In consonance with the a-*priori* expectation, institutional

quality was found to be the fundamental cause of a broad-based productive employment growth, having relatively significant causal effects on both formal financial services (availability and usage of formal banking services) and inclusive growth during the period investigated. The only plausible explanation for these fairly positive results might partly be the transition to democratic governance since 1998.

From the results of the diagnostic tests conducted and reported in Appendix B, the Breusch- Godfrey Langrange Multiplier (LM) test for all the VAR models did not reject the null hypothesis, which stated that 'there is no serial correlation'. This indicated that the error terms were not serially correlated at the 95 per cent confidence intervals. Similarly, the results of the heteroscedasticity tests (with no cross terms) did not reject the null hypothesis of 'homoscedasticity'. This implied that the error terms had constant variance, as the disturbances satisfied the equal variance assumption. However, the Ramsey RESET test did not reject the null hypothesis of 'no misspecification in all the estimated equations, confirming that the models were free of specification errors. These results indicated that the short-run models passed all the relevant diagnostic tests, since there could be no suspicion of multicolinearity among the variables when the functional forms of the models were well specified and the disturbances had equal variances. Moreover, the problem of endogeneity was largely unexpected when the error terms were serially uncorrelated, with the regressors being the lagged values.

Employing the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests utilised by Pesaran & Shin (1998), the study also estimated the recursive coefficients of the residuals to test for the stability of the long-run estimated parameters. In Appendix C, it can be inferred from Figure 4 that the plot of CUSUM stays within the critical 5 per cent bounds that confirms the long-run relationships among variables and thus shows the stability of coefficients. However, CUSUMSQ statistics exceed the 5 per cent critical bounds of parameter stability, thus indicating instability of the coefficients and which only seems appropriate to be attributed to several factors such as socio-structural problems like insecurity (insurgency/terrorism, kidnapping, banditry), institutional corruption as well as very weak democratic framework in Nigeria, particularly between 2007 and 2013.

The policy implications based on the Lin's growth identification and facilitation framework for a resource-rich and labour-abundant developing countries like Nigeria, is that more credible institutional capacities and competencies are required to anchor and coordinate an inclusive growth-enhancing process over a longer term. In addition, the inverse relationship between institutional quality

and the preferred development strategy index, and the feed-back evidence existing between the interacted institutional-financial variable calls for an uppermost policy-concern of any inclusive growth-oriented institutional leadership that would effectively tackle those peculiar tripartite socio-economic challenges earlier discussed.

V.   Conclusion and Policy Recommendations

This paper investigated the causal interactions among the institutional, financial and inclusive growth variables in Nigeria and the extent to which the proposition of factor endowment structure holds within the institutional quality framework for the period 1998-2017.

The study concluded that institutional quality had a significant causal effect on financial inclusion and inclusive growth in Nigeria. Therefore, by virtue of its relative capacity to create equitable socio-economic opportunities, state institutions could play a vital role in mobilising both human and natural resources in the country to achieve the much-desired broad-based productive employment growth. It is, therefore, recommended that institutional improvement beyond the present liberal democratic threshold is much needed to effectively harness the human capital resource base. Specifically, the Nigerian government should adopt a labour-intensive development strategy such that poor active households are comprehensively integrated into productive activities for optimal value-chain finance-growth inclusiveness. This should be able to address the protracted tripartite socio-economic problems of poverty, inequality and unemployment in line with Lin's comparative advantage conforming hypothesis.

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Appendices

Appendix A: Toda-Yamamoto Granger Causality Tests

Dependent Variables in the Regression

Regressor	LNRGDPE	IFI	TCI	GEFe	RGDPEGEFe	IFIGEFe
LNRGDPE	0.00	0.02	0.99	0.82	0.99	0.01
IFI	0.34	0.00	0.94	0.46	0.56	0.00
TCI	0.03	0.03	0.00	0.42	0.46	0.17
GEFe	0.02	0.01	0.80	0.00	0.59	0.01
RGDPEGEFe	0.06	0.03	0.97	0.85	0.00	0.02
IFIGEFe	0.23	0.01	0.89	0.44	0.57	0.00
JOINT	0.00	0.00	0.36	0.64	0.21	0.00

P-Values Reported

Appendix B: Diagnostic Tests

Test	F-statistic	Probability
X^2 SERIAL	3.0767	0.3915
X^2 BREUSCH-PAGAN-GODFREY	1.2580	0.4474
X^2 WHITE	0.9898	0.5567
X^2 RAMSEY	2.7165	0.1979
NORMALITY TEST		0.8090

Note: X^2 Serial is for serial correlation. X^2 ARCH is for autorgressive conditional heteroscedasticity. X^2 WHITE is for white heteroscedasticity and X^2 RAMSEY for Ramsey Reset test.

Appendix C: Recursive of the Residuals (CUSUM and CUSUMSQ)