



# BULLION

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## Nominal Uncertainty Pass-Through to Domestic Inflation in Nigeria: Evidence from Time Varying Volatility Model



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### ABSTRACT

The deviation of inflation around its trend or a complete (partial) shift in the trend inflation can be associated with uncertainty shocks. This study applies the time-varying volatility model to investigate the existence and effect of external nominal uncertainty on domestic inflation uncertainty in Nigeria. The paper finds that external nominal uncertainties have transitory effects on domestic nominal uncertainties in Nigeria. The result established that external uncertainties leading to depreciation accelerates domestic nominal uncertainties, while external uncertainties prompting oil price rise decelerates domestic nominal uncertainties in the short-run. In addition, the result reveals that a long-run global uncertainty which triggers oil price decline can permanently escalate domestic nominal uncertainties. Therefore, the paper concludes that permanent effect of external uncertainties associated with oil price fall could lead to either a partial or complete shift in trend inflation, while a dual short run transitory effect (procyclicality and anticyclicality) resulting from exchange rate depreciation and oil price shocks respectively, can cause only nominal oscillation around trend inflation. The paper recommends the accretion of savings during positive oil price shocks, so as to strengthen external reserve buffers which could be used to smoothen and impede the rate of acceleration and transmission of global nominal uncertainties into domestic economy.

**Keywords:** Inflation, Uncertainty, Open Economy, Monetary Policy, Exchange rate

**JEL:** E27, E31, E52

### Introduction

#### Background to the Study

The long standing theoretical claim on the relationship between inflation and inflation uncertainty is one of the most revered in macroeconomics. Several studies, including more recently Zivkov, Kovacevic & Papic-Blagojevic (2020) Bamanga et. al. (2016), Karahan (2012), Viorica et. al. (2014) have established the empirical link in this regard, supporting the initial premise set by Friedman (1977), that rise in uncertainty is owed to increase in level of inflation in an economy. Believing that the inflation is born out of monetary policy inconsistency, owing to government desire to achieve lower unemployment level or raising output beyond its natural level. The reverse of this causal relationship was opined by Cukierman and Meltzer (1986), which also received various empirical backings. For instance, Grier and Perry (1998), Fountas, Ioannidis & Karanasos (2004), Berument, Yalcin, and Yildirim (2009) all proved that rising uncertainty leads to higher inflation. Thus, suggesting emergence of a bidirectional relationship between inflation and nominal uncertainty, mainly rooted from domestic policy shocks and surprises.

Nevertheless, it could be argued that domestic nominal uncertainty in an open economy may not necessarily be only due to domestic economy monetary policy inconsistency. Both export dependent and import dependent economies are very likely to be exposed to external uncertainties outside the domestic economy, and therefore, leading to transmission of global uncertainty from the Rest of the World (henceforth, RoW) through prices into the domestic economy. For instance, Renou-Maissani (2019), Choi et al. (2017), Razmi et al., (2016), Xuan & Chin (2015), Chou & Lin (2013) and Bhar & Mallik (2010) and Thoresen (1982), all contend that global oil price has impact on domestic inflation in various countries, by extension, this suggests global oil changes causing movement in the conditional variance of domestic price level. Hence, symptomatic of the existence of external nominal uncertainty pass-through to domestic economy.

Consequently, in an open economy such as Nigeria, characterized by oil export dependence, with foreign exchange accretion predominantly coming from the oil export while its depletion is aided by capital outflows and consumption of final and intermediate goods from RoW. In view of the peculiarities associated with oil price movement and changes in relative value of nominal exchange rate, there could be a degree of exposure to external uncertainties which may permit them to transmit nominal uncertainty from RoW to domestic inflation

uncertainty, thereby, raising inflationary pressures in the economy. Thus, irrespective of the transmission channel (either oil price or exchange rate), the effect of the nominal uncertainty pass-through could be argued to have a time-varying<sup>1</sup> impact on domestic nominal uncertainty, that is, by not having short-run transitory effect alone but also long-run permanent consequences. In the event of having a permanent effect, it means monetary policy changes may not be the exclusive cause of permanent changes in inflation in Nigeria but other exogenous factors<sup>2</sup> could as well be at play.

It is in this light that this paper sets out to investigate the time-varying impact of nominal uncertainty transmitted through exchange rate and oil price on domestic inflation uncertainties. Specifically the paper tries to provide answers to the following questions: Does exchange rate and oil price transmit nominal uncertainty to domestic uncertainties? Are the time-varying impacts of their pass-through having only transitory effects or are there permanent effects? And lastly, what bearing does the conceivable transitory or/and permanent effect have on domestic nominal uncertainty.

The key message in this paper is the realization that transmitted nominal uncertainties from RoW has time-varying impacts on the domestic economy when it passes through oil price channel. Nonetheless, the paper recognizes that nominal uncertainty has only short-run transitory impacts when transmitted through exchange rate for Nigeria. The transitory effect that pass-through exchange rate is associated with depreciation, which exhibits propensity to accelerate domestic nominal uncertainties, hence, propagating short-run cyclicalities around trend inflation, while external uncertainty that triggers short-run oil price rise transmits a retarding effect on domestic nominal uncertainties, inhibiting short-run cyclicalities on domestic price level. The implication of these dual transitory effects is that they induce nominal oscillation around trend inflation. Meanwhile, in the long-run, global uncertainties that instil oil price decline transmit permanent domestic uncertainties and this leads to a complete shift in trend inflation. This is believed to be partly responsible for the left-upward shift in aggregate supply which also mirrors a right-upward shift in the Philips curve signifying stagflation in Nigeria.

The rest of the paper is organised as follows; section two reviews the relevant literature, section three presents the methodology while section four is the result and discussion, Section five concludes the paper.

## 2. Related Literature

Since the seminal paper by Friedman (1977), inquest into the nexus between inflation and inflation uncertainty has been ongoing. Varied and extensive studies with contrasting results were found to be reported in the literature. For example, Zivkov, Kovacevic & Papic-Blagojevic (2020) Bamanga et. al. (2016), Karahan (2012), Viorica et. al. (2014) Fountas, Karanasos & Kim (2006), Fountas (2001) found that inflation has an accelerating effect on inflation uncertainty across different countries. These results were in strict compliance with the Friedman postulation. On the contrary Fountas, Ioannidis & Karanasos (2004) showed that it is inflation uncertainty that drives higher inflation in Germany and Netherlands. Similarly, the results in the case of France, Spain and Italy equally indicate that rising inflation uncertainty causes more inflation. However, this is inconsistent with Balaji, Durai & Ramachandran (2016) finding, which shows that Indian inflation uncertainty inversely affects inflation, thus leaning support to Holland (1995). With the exception of Bhar & Mallik (2010) which reported a positive effect of oil price on inflation in US, most of the studies were concerned with domestic nominal uncertainty and inflation nexus. Hence, effect of external nominal uncertainty on domestic inflation uncertainty leaves much to be desired.

Meanwhile the exogenous effect of external uncertainty passing-through oil price to inflation were reported across many studies. For instance, Bala and Chin (2018), Razmi et al., (2016), Xuan and Chin (2015) as well as Chou and Lin (2013) all contend that positive oil price shock increases inflation. However, the cross country study by Razmi et al., (2016) indicates that only Indonesia exhibits an inverse relationship between inflation and oil price increase. Meanwhile, Basnet and Upadhyaya (2015), Valcarcel and Wohar (2013), Hooker (2002) among others, found that oil price shock is absorbed and disappears in the short run without passing through domestic inflation. This signifies that the duration of nominal uncertainty passing through oil price affects inflation could vary, depending on time horizon and specificity of country.

Two broad modeling approaches with multiple frameworks were identified in the literature; Studies with linear modeling approach mostly applied the reduced form vector autoregressive model, autoregressive distributed lag model, structural vector autoregressive model and other variants of the VAR. These strands of studies emphasized the impact of oil price pass-through to inflation. Examples include Hooker (2002), Blanchard and Gali (2007), Chen (2009), Clark and Terry (2010), Ferrucci,

<sup>1</sup>Possibly because of the continued effect of Real Business Cycles on oil prices movement.

<sup>2</sup>This is the central motivation of this paper; experiencing stagflation coinciding with decline in global oil prices.

Jiménez-Rodríguez and Onorante (2010), Fukač (2011), Valcarcel and Wohar (2013) Choi et al. (2017) and Mukhtarov et al. (2019). They unanimously showed that oil price increases have short run impact on domestic inflation. Thus, the adjustment that accompanies the effect of rising prices due to a positive oil price shock will be a fall in output. This is because firms will cut down production as energy prices rise. This results in an upward shift of aggregate output in the short run.

Conversely, the studies identified with nonlinear approach rely on the presence of structural breaks in the specification of their models. This include evidences from De Gregorio et al. (2007), Farzanegan and Markwardt (2009), Ghosh and Kanjilal (2013) Chou and Lin (2013), Lamotte et al. (2013) showed that positive oil price shock has greater effect on inflation than a negative oil shock. This means that oil price shock could have both inflationary and disinflationary effects on the economy, resulting in volatility in general price level. Other strands of studies that relied on the time-varying effect of oil price movement on inflation include Gali and Gambetti (2009), Peersman and Van Robays (2012) and Baumeister and Peersman (2013). These studies show the effect of oil price shock at different time horizons on domestic inflation dynamics and other macroeconomic variables in the economy. Thus, reinforcing the evidences that oil price shocks over time could have different effects on inflation.

The multiplicity of methods used in the literature stand out across most of the studies and perhaps it accounts for the stark contrast in the findings reported in the literature. Thus, the novelty and departure of this study from the literature rests on the broad objective sets out in this paper, in the sense that, it investigates the possibility of external nominal uncertainty shock transmitted through oil price and exchange rate pass-through to domestic economy as inflation uncertainty. This is at variance with focus of the literature which centered on inflation. Specifically, the determination of whether the existence and effect are only transitory or permanent over the long run is crucial in explaining inflation dynamics around trend as well as shift in trend inflation.

Specifically, the determination of whether the existence and effect are only transitory or permanent over the long run is crucial in explaining inflation dynamics around trend as well as shift in trend inflation.

### 3. Empirical Analysis

This section comprises of three subsections; the first is the methodology, the second is the model specification and the third description of the data to be used.

#### 3.1 Methodology

The theoretical footing of this study is anchored on the baseline aggregate supply relations, providing a framework where interaction of price level determination, drawing from firms' aggregate output, expected price level, markup and other market intervention policies are observed. That is:

$$P = P^e(1 + \mu)f\left(1 - \frac{Y}{L}, \gamma\right) \quad 1$$

Where  $P$  represents the general price level of goods and services produced by firms,  $P^e$  is the expected price level (this influences wage bargain by labour unions),  $Y$  is the level of output,  $L$  is the labour force in the factor market and  $\gamma$  is any non-market based intervention by government which affects wage setting in the factor market. Recall that:

$$W = P^e f\left(1 - \frac{Y}{L}, \gamma\right) \quad 2$$

Where  $W$  is the wage bill paid to households by private firms (determined through wage bargain as well as labour market forces) and sometimes through public sector employers (minimum wage legislation). Thus:

$$P = (1 + \mu)W \quad 3$$

Equation 3 is too restrictive because firms' expenditure is shared between cost of energy and labour<sup>3</sup>. Invariably, oil exporting countries will supply more crude oil when firms in oil importing countries demand<sup>4</sup> for higher energy due to strong aggregate demand. Therefore a generalized form of the model is to allow for substitution between more capital that runs on energy and labour intensive technology.

$$P = (1 + \mu)W P^{oil} \quad 4$$

If substitutability allows firms to move along the line of isoquant, then:

$$P = (1 + \mu)W^\theta (P^{oil})^{1-\theta} \quad 5$$

Relative to oil input, labour input are assumed to be indexed for longer period. Hence, wages are comparatively stable and constant ( $\bar{w}$ ) than oil prices. Consequently,  $W$  is replaced with  $\bar{W}$ . Note, given quantity in an oil dependent economy, the crude oil prices takes prominence because it influences aggregate demand due to its effect on government consumption and investment, as well as transfers, the net effect of which, is reflected on price level. As such equation 6:

$$\Delta P = (1 + \mu)\bar{W}\Delta P^{oil} \quad 6$$

Under sticky price conditions, due to wage indexation, in the short run, firms' markup remains constant for a relatively long period of time. Therefore, over the time horizon  $\mu$  remains constant ( $\Delta\mu = 0$ ) which means it cannot affect price level. However, in open economy with high degree of

<sup>3</sup>From first principle, short run substitutability between energy and labour will depend on the level of technology.

<sup>4</sup>This is in line with the RBCs

openness and evidence of high exchange rate pass-through to domestic prices (see Bello & Sanusi, 2019 and Balcilar, Usman & Agbede, 2019). Therefore, the aggregate supply relation is augmented with exchange rate which allows external nominal uncertainties that pass-through trade with rest of the world be captured by exchange rate volatility:

$$\Delta P = \{(1 + \bar{\mu})\Delta P^{oil}, \Delta exr\} \quad 8$$

### 3.2 Model specification

The stochastic nature of international crude oil price movement is assumed to follow a regime that could largely be unobservable. This means that price level in an oil dependent economy could partly be determined by an underlying unobservable stochastic process. This realistic assumption is consistent with the regime switching Markov model (see Zivkov, Duraskovic, Manic, 2019). In modeling price regime switches, an autoregressive (hence forth, AR) process takes prominence in order to account for dynamic behaviour of price level as well as price persistence (see Bello and Sanusi, 2019

$$P_t = P_t^{oil} + exr_t + P_{t-1} + \xi_t \quad 10$$

This study extends the inquiry into a time varying stochastic volatility model in order to investigate the presence of a temporal (short run) and/or the permanent (long run) impact of external nominal uncertainty from oil and exchange rate pass through to domestic inflation uncertainty. Therefore, unlike the normal GARCH which allows for a constant mean reversion for all time, the time varying volatility allows mean reversion to a varying level. This suggests:)

$$\sigma_t^2 - z_t = \Omega(\varepsilon_{t-1}^2 - z_{t-1}) + \phi_i(\sigma_{t-1}^2 - z_{t-1}) \quad 12$$

$$z_t = \lambda + \psi(z_{t-1} - \lambda) + \varrho_i(\varepsilon_{t-1}^2 - \sigma_{t-1}^2) \quad 13$$

$\sigma_t^2$  is the volatility,  $z_t$  is the long run (permanent) time varying volatility which converges to  $\lambda$  with a degree of  $\psi$ .  $\sigma_t^2 - z_t$  from equation 12 converges to zero with a degree of  $(\Omega + \phi)$  and represents the short run (transitory) volatility. Where  $\phi_i$  and  $\varrho_i$  are the coefficients of short-run and long-run effects of external nominal uncertainty shocks coming from rest of the world. Note  $i$  represents the source of external uncertainty (that is oil price or exchange rate)

### 3.3 Data Description

In conducting this study, monthly data were drawn from the Central Bank of Nigeria statistical bulletin, the data span from year 2000 to 2019 for all the variables. Monthly headline Consumer Price Index

(CPI) was used as the measure of the general price level (inflation). Monthly crude oil price was taken in the US dollars while parallel nominal exchange rate was taken as the rate of exchange of the naira to a US dollar. All the variables were normalized by taking the natural logarithms. The volatility of the series was extracted in order to capture inflation uncertainty from the CPI. Similarly, volatility of both oil price and exchange rate were taken for the purpose of fitting into the component volatility model.

The descriptive statistics of the series is presented in table 1. The value of the standard deviation indicates that inflation is relatively more spread away from the mean than oil price and exchange rate. However, oil price has a relatively smaller mean suggesting existence of fat tail in its distribution around its mean. Similarly the skewness shows that the coefficient of inflation is smaller than that of oil price and exchange rate, suggesting that is more symmetrical.



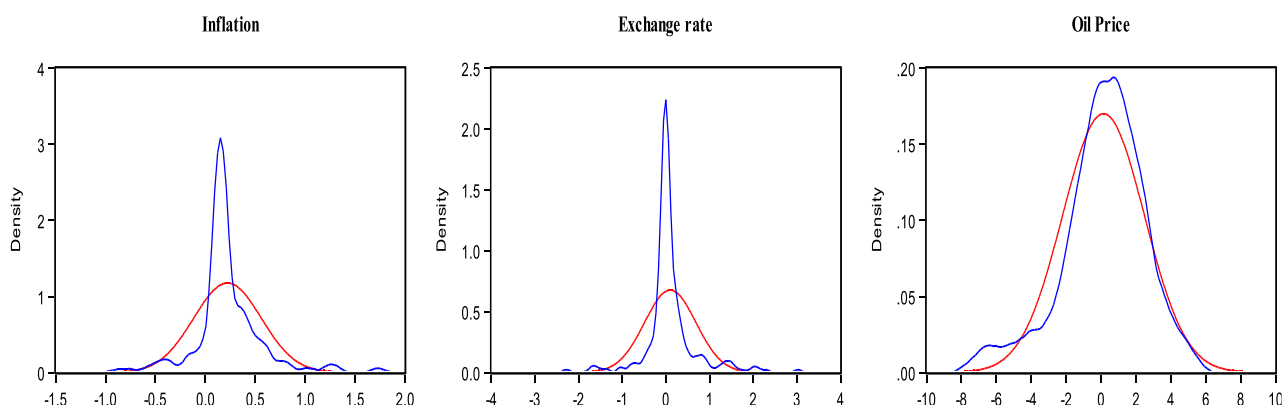
**Table 1: Result of Descriptive Statistics**

	Inflation	Exchange rate	Oil price
Mean	4.611541	5.175660	4.064469
Std. Dev.	0.641577	0.399556	0.511368
Skewness	-0.070093	1.123503	-0.312775
Kurtosis	1.955974	2.868627	2.068068
Jarque-Bera	11.09643	50.66297	12.59810
Probability	0.003894	0.000000	0.001838
Sum	1106.770	1242.158	975.4726
Sum Sq. Dev.	98.37755	38.15524	62.49794
Observations	240	240	240

The statistics shows that there are larger kurtosis in exchange rate and oil price than inflation. This suggests the existence of risk of transmitting shocks and being volatile over time. Thus, there are more uncertainties in oil price and exchange rate than inflation. The Jarque-Bera statistics indicates that the goodness-of-fit for all the variables are

consistent with the skewness and kurtosis of a normal distribution.

The plots of the variables are also presented in figure 1. There is an evidence of fat tail across the three variables. This suggests the possibility of clustering and excess kurtosis especially for oil price.

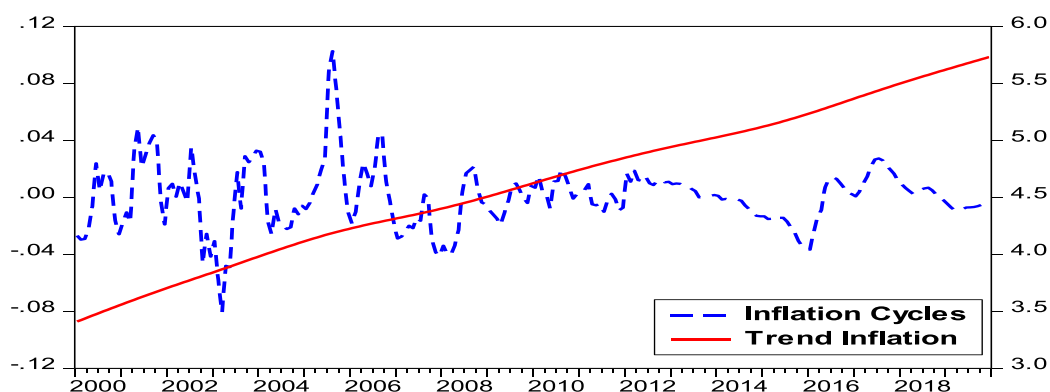


**Figure 1: Kernel Density of the variables**

Therefore the modeling of the fat tail follows a Gaussian distribution and it is expected that the standardized residuals will cluster over different time horizons.

Figure 2 is the plot of cyclical inflation and trend inflation for the period under review. It can be

observed that the frequency of the cycle are more in pre and during the global financial crises. This suggests responsiveness of domestic nominal uncertainty to external event.

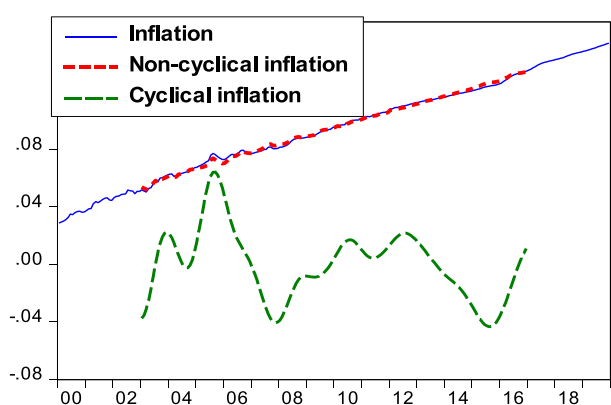


**Figure 2: Cyclicity and Trend Inflation**

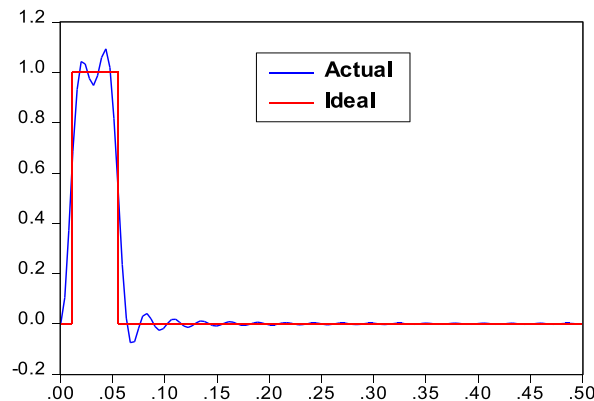
It is also worthy to note that period of less cyclicity are consistent with rising oil price within the period of 2012 to 2014. The plot also reveals the oscillation of the inflationary cycles around trend inflation which preempt short-run effect of uncertainty on the trend.

The Baxter-King Band filter was used to isolate and determine the range and duration of the cyclicity in inflation and this is as presented in figure 3. The plot shows the non-cyclical inflation (difference between actual and filtered series),

cyclicity as well as the inflation level. It is observed that the non-cyclical inflation is tracking the movement in the inflation level while the cyclicity in the inflation was observed to be within a band of +4 and -4, representing upper and lower band of the cycle.



**Fixed Length Symmetric (Baxter-King) Filter**



**Frequency Response Function**

cycles/period

The actual and ideal plot of the frequency response function showed a substantial movement in the moving average weight of inflation series. The behavior of the plot shows the extent the filtered series respond to the original inflation series at the given frequency. Thus, the frequency response for the periodicities is within the range.

**4. Result and Discussion**

The result of a preliminary test from the Augmented Dickey Fuller (ADF) result showed that inflation is stationary at levels while exchange rate and oil price were found to be integrated of order 1.

**Table 2: Result of unit root test**

Variables	Augmented Dickey-Fuller		Order of integration
	Levels	1 <sup>st</sup> Difference	
Inflation	-3.6931 (0.0246)*		I(0)
Exchange rate	-1.5831 (0.7970)	-10.6920 (0.0000)*	I(1)
Oil price	-1.9101 (0.06461)	-13.1399 (0.0000)*	I(1)

\*indicates statistical significance at 5% level

The model selection criteria reveals lag one as the optimal lag of the model. This result is consistent with the practice that central banks aim to keep inflation stable and therefore inflation is necessarily integrated of order 0.

The result of the time varying volatility model is presented in table 1, showing estimates of two important equations. The first part is the estimates of the conditional GARCH-in-mean equation, the parameters within this equation measure the

average impact of exchange rate and oil price on inflation uncertainty as well as the risk of having inflation or disinflation. The second part is the conditional variance equation which contains estimates of the time-varying volatility, indicating the transitory and permanent impact of external nominal uncertainty coming from RoW which is transmitted through oil price and exchange rate shocks on inflation uncertainty.

The result shows that the parameter of the GARCH-in-mean, that is, the coefficient of the standard deviation of the GARCH-term for inflation uncertainty, is negative and statistically significant. Essentially, this means that the risk<sup>5</sup> of inflation (disinflation) exists for the period under review. The result also reveals that the coefficients of exchange rate and oil price both bear negative signs, however the coefficient of exchange rate was found to be statistically insignificant while that of oil price was statistically significant. This means that the average change in the oil price by one percent reduces inflation uncertainty by about 14 percent in Nigeria. This suggests that an average rise in the unit price of oil has a retarding effect on inflation uncertainty<sup>6</sup> in Nigeria.

The result of the time-varying volatility equation in the conditional variance equation shows that nominal uncertainty transmitted through exchange rate has a negative but statistically insignificant coefficient in long-run on inflation uncertainty, suggesting that exchange rate uncertainty has no permanent effect on inflation uncertainty which also means that external nominal uncertainty from Rest of the World (RoW)

transmitted through exchange rate does not permanently pass-through to domestic inflation uncertainty. Meanwhile, in the short run, the coefficient of exchange rate was found to be positive and statistically significant. This signifies that, a rise in global nominal uncertainty passing-through exchange rate temporarily increases domestic uncertainty. Thus, for every unit rise in RoW's nominal uncertainty transmitted through exchange rate, leading to either depreciation or devaluation of the domestic currency, inflation uncertainty in Nigeria accelerates by 1.4 percent. However, in the long-run, the effect of such nominal uncertainty pass-through disappears. Suggesting that external nominal uncertainty transmitted through exchange rate to domestic inflation uncertainty is only transitory and has no permanent effect. This long-run anomaly in how exchange rate shock dies off, could be attributed to the CBN intermittent intervention in the foreign exchange market. In that, the observed behaviour of the central bank shows it allows the currency to depreciate when it sees the need to alleviate the pressure on the reserves. Hence, this finding indicates that the exchange rate management effort of the CBN has some long term benefit of preventing transmission of nominal uncertainty from RoW into domestic economy, which could have otherwise had a permanent accelerating-effect.

**Table 3: Result of Risk of Inflation and Behaviour of Inflation Uncertainty**

<i>Conditional Mean Equation</i>		
Parameter	Estimates	P-values
$\sigma$	-0.558*	0.004
Intercept	1.286*	0.007
$\beta_{exr}$	-0.082	0.234
$\beta_{oil}$	-0.139*	0.001
$\beta_{\pi-1}$	0.296*	0.000
<i>Conditional Variance Equation</i>		
Parameter	Estimates	P-values
Intercept	0.069*	0.001
$\psi$	0.904*	0.000

<sup>5</sup>Essentially what we are inferring here is that, once a probability value can be attached to uncertainty of inflation it becomes risk of inflation.

<sup>6</sup>This happens when excess demand for foreign exchange forces the rate of exchange to oscillate which in turn keeps the price of dollar-invoiced imported goods unstable, particularly in the short run (see Gopinath et al, 2016, Casas et al, 2017 Gopinath, Itskhoki and Rigobon, 2010). This also suggests the effect of exchange rate pass through.

<i>Long-run</i>	$\rho$	0.185*	0.000
	$\rho_{exr}$	-0.008	0.158
	$\rho_{oil}$	0.002*	0.000
	$\Omega$	-0.062	0.398
	$\Phi$	0.746*	0.000
<i>Short-run</i>	$\phi_{exr}$	0.014*	0.009
	$\phi_{oil}$	-0.002**	0.041

\*&\*\* denotes level of significance of the estimates parameters at 1% and 5% respectively

The result also shows that the coefficients of oil price are statistically significant in both short and long run. The short run coefficient carries a negative sign, which implies that a positive nominal uncertainty shock from RoW (international oil market), transmitted through oil price has a retarding effect on inflation uncertainty in Nigeria. This finding leans some support to Razmi et al., (2016) who also reveals a similar case for Indonesia, thus, suggesting that oil producing economies may benefit from positive oil price shock possibly due to the effect rising oil prices could have on government revenue of oil exporting countries, strengthening external reserve buffers, which could possibly reign on cost push factors embedded in aggregate supply. Hence, leading to a decrease in short-run inflation uncertainty.

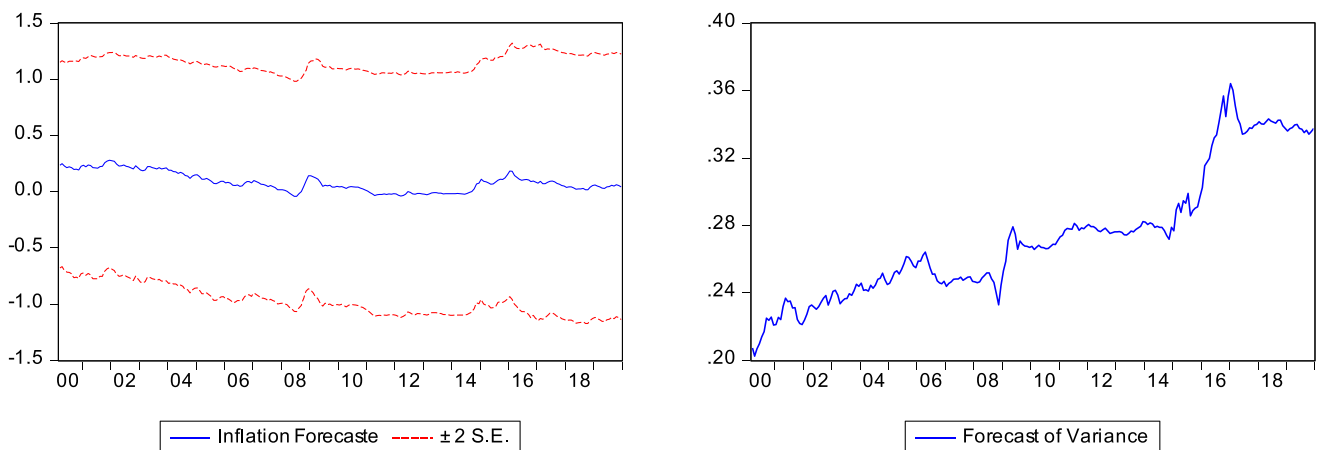
Meanwhile, in the long run, the result reveals that the coefficient of oil price shock carries a positive sign. This means that positive oil price shock accelerates inflation uncertainty in the long-run, possibly this is so because, nominal uncertainties passing through oil price are having a longer memory in aggregate supply of oil exporting countries, indicating period of oil price collapse and the uncertainty associated with it has a prolonged and permanent impact on oil exporting economies. Therefore, rising nominal uncertainty from RoW transmitted through oil price has a permanently accelerating effect on domestic inflation uncertainty in Nigeria. Further the result reveals that the coefficient of the uncertainty persistence is statistically significant, which suggests that domestic inflation uncertainty persist from short run into the long run not because of external nominal uncertainty transmitted through exchange rate but largely due to uncertainty associated with instability (volatility) in oil price.

Summarily, the paper finds that external nominal uncertainties passing through exchange rate and oil price both have short-run transitory impacts on domestic inflation uncertainty, however, a stark contrast was found in the transitory effect of external nominal uncertainties on domestic inflation uncertainties between the two channels.

Exchange rate was having a transitory accelerating-effect while oil price was found to be having a transitory retarding-effect. In addition, external uncertainties transmitted through oil price also has a permanent long run accelerating-effect on inflation uncertainty in Nigeria. This implies that external nominal uncertainties could influence a short-run oscillation around the trend inflation in Nigeria, while uncertainties transmitted through oil price could initiate a permanent shift in trend inflation in the long-run.

Thus, within the broad aggregate supply framework applied in this study, it can be deduced that external nominal uncertainty passing through oil prices causes the typical stagflationary feature observable in Nigeria (when oil price shock occur due to global factors). Hence, validating volatility persistence when oil price is falling which continues to result in upward adjustment in the aggregate supply, characterised with increasing inflation (with both risk and uncertainty) while output is falling. Noting the oil price has such temporal and permanent effect on inflation uncertainty, it can be inferred that the major role oil price (and its instability) plays on aggregate supply shock and consequently on general price level in Nigeria is that it is undermining demand side management effort.

A robustness check conducted on the model to see its reliability in terms of its forecasting power is presented in figure 2. The model appears to perform well in terms of the boundary of the forecasting error. The error appears minimal, which indicates the ability of the model to forecast inflation with a positive margin of error. In accordance with the forecaste, this model is considered a very good model because of two reasons. One of which is that it has the tendency to over estimate future inflation and not to underestimate it, which means on the path of monetary policy, there is no room for complacency on inflation. The second of which is because the forecast is tracking close to zero which signifies the capacity to minimise any fallout monetary policy has on output stability due to excessive tightening.



**Figure 4: In-sample Forecast of Actual Inflation and Variability of Inflation**

The variance of the forecast shows that the maximum deviation from the actual is 0.36 and the closest it is to the target is 0.2, which gives a difference of 0.16 which can be considered to be significantly low.

## 5. Conclusion and Recommendation

In recent times, sequence of global events relating to; (i) the tariff wars between major trading blocs which eventually escalated into intense geopolitics between the two largest economies, (ii) the subsequent collapse of major trade agreements and (iii) the eventual outbreak of a global pandemic, appears to heighten global macroeconomic uncertainties. This partly led to both nominal and real uncertainty shocks across many countries. These were observed to directly affect energy price (specifically decline and collapse of oil price) and net domestic export, elsewhere causing depreciation (devaluation) of currencies. It is in this view, that this paper attempts to investigate the pass through of external nominal uncertainties from RoW to domestic economy through exchange rate and oil price channels.

The paper finds that the external nominal uncertainties transmitted through exchange rate and oil price both have substantial short-run transitory effects on domestic price stability (inflation uncertainty). Specifically, nominal uncertainty transmitted through exchange rate has a short run accelerating-effect on domestic nominal uncertainty. In other words, it induces nominal procyclical effect over time with no evidence of any effect on trend inflation when exchange rate depreciates.

However, in stark contrast to this, nominal uncertainty transmitted through oil price was found to have both short and long run effect on

the economy, such that, in the short run, the transitory impact has a retarding effect on domestic nominal uncertainties, thus, implying nominal anticyclical effect due to oil price rise. While in the long run it has an accelerating effect on nominal uncertainties, suggesting co-movement between the two with enhanced cyclicity emanating from oil price. The paper concludes that external nominal uncertainties transmitted through exchange rate and oil price both have transitory effects on domestic nominal uncertainties. In the sense that, external uncertainties leading to depreciation accelerates domestic nominal uncertainties, while external uncertainties causing oil price rise decelerate domestic nominal uncertainties in Nigeria.

Therefore, these dual effects result in only nominal oscillation around trend inflation. In addition, global uncertainties triggering oil price decline permanently escalate domestic nominal uncertainties and this could lead to either a partial or complete shift in trend inflation. This is believed to be partly responsible for the upward shift in aggregate supply which is associated with stagflation in Nigeria.

This paper recommends the accretion of savings during positive oil price shocks, so as to have buffers that could smoothen and impede the rate of acceleration and transmission of global uncertainties into domestic economy. In addition, the monetary authority in Nigeria should mitigate the effect of exchange rate uncertainty on domestic inflation uncertainty by prompt intervention in the foreign exchange market.

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## Regulatory Forbearance and its Application in the Banking System during the COVID-19 Pandemic: Jurisdictional Experiences



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### Abstract

*This paper provides an overview of regulatory forbearance and its jurisdictional application in the banking system during the COVID-19 Pandemic. Over the years, regulatory forbearance has been used in the banking system and in recent times, it was prominently brought to the fore during the Pandemic as some banking system regulators applied it to cushion the adverse impact of the Pandemic on the sector and economy. The paper is descriptive in nature and draws on existing literature to explain the concept of regulatory forbearance, the types and those applied by regulators in some climes during the Pandemic. It also discusses the rationale for the use of regulatory forbearance such as financial stability and consumer protection, the challenges associated with it and how measures like stringent conditions can be instituted to ensure its effectiveness.*

**JEL Classification Codes:** G21, G28, G29

**Keywords:** Asset Quality, Capital, Financial Stability, Liquidity, Regulatory Forbearance, Regulators

### Introduction

Banking system regulators across the globe have the mandate to ensure safety, soundness and stability of the entire financial system in view of its critical role in the economy. To this end, they enforce necessary regulatory and supervisory requirements, which banks are expected to comply with. However, there are situations where regulators may refrain from applying or lessen the scope of regulatory and supervisory requirements on banks, often referred to as regulatory forbearance. As a discretionary decision of the regulator, it does not imply the absence of regulation.

Regulatory forbearance is usually employed to address the challenges faced by a bank or group of banks and in the event of a financial or macroeconomic crisis. In recent times, it has been utilised across the world as part of measures to address macroeconomic crisis occasioned by the COVID-19 Pandemic. Regulators also consider the systemic importance of a bank in granting forbearance. Morrison and White (2010) notes that regulators grant forbearance based on the systemic implications of a bank's failure, including its size and interconnectedness. It is considered as part of a long-run resolution strategy usually adopted during a crisis (Calomiris, *et al.*, 2012).

Diverse views have been expressed on regulatory forbearance, some school of thought posits that forbearance is optimal and saves a regulator significant amount of costs of resolving a problem bank (Mailath and Mester, 1994; Allen and Saunders, 1993; and So and Wei, 2004). Other school of thought argue that forbearance is suboptimal and costly to regulators as it creates a moral hazard for bank management and may ultimately increase the cost of resolving a problem bank (Acharya and Dreyfus, 1989 and Duan and Yu, 1994). Despite the disparate views on regulatory forbearance, regulators have continued to apply it, when expedient, in view of the utmost objective of maintaining financial stability.

The objective of this paper is to provide an overview of regulatory forbearance and its application in the banking system during the COVID-19 Pandemic This is with a view to understanding its dynamics and how various jurisdiction applied it. Following the introduction, the rest of the paper is divided as follows. Section 2 explains the concept and types of regulatory forbearance employed by banking system regulators. Section 3 details some jurisdictional application of regulatory forbearance during the COVID-19 Pandemic. Section 4 provides the rationale for regulatory forbearance and Section 5 highlights the challenges associated with it. Section 6 discusses the measures for effective regulatory forbearance and Section 7 concludes the paper.

## 2.0 Concept and Types of Regulatory Forbearance

The concept of regulatory forbearance has been defined by authors from various perspectives. Cobos (1989) defines it as any programme or set of procedures whereby supervisory restraint is exercised toward an insured depository institution that fails to meet established safety-and-soundness criteria. It is a deliberate and intentional policy choice; not merely the consequence of inaction, inability or unwillingness to address a particular high-risk situation.

Simply put, Bartholomew (1991) describes regulatory forbearance as a discretionary practice of not enforcing an existing rule. Lindgren *et al.*, (1996) states that it is an adjustment in the interpretation of rules to accommodate problem banks or failure to take action in a timely manner to prevent or address unsound banking.

In the perspective of Santomero and Hoffman (1998), it is the granting of time for a management turn-around, the orderly disposal of problem assets, and the generation of positive profits against which to charge-off losses. Claessens (1998) views it as the waiver of existing regulations and standards. Similarly, Honohan (2007) explains that regulatory forbearance is a waiver of any or all of the rules on capital, liquidity and lending requirements.

According to Choi and Sohn (2014), regulatory forbearance is the discretionary delay in enforcing appropriate actions that are supposed to be taken for reducing the cost of bank failure. They further describe it as the postponement of prompt corrective actions (PCA) or no PCA for problem banks. Lai and Ye (2015) defines regulatory forbearance as laxity in regulatory agencies' roles of supervision, oversight, and enforcement, which are mandated in laws but institutionalised in the political economy realm.

### 2.1 Types of Regulatory Forbearance

Regulatory forbearance has been employed by regulators not only to address challenges of a problem bank but also in the event of a financial or macroeconomic crisis. The various types of regulatory forbearance extended to banks, namely: capital, asset quality and liquidity forbearance, are explained below:

#### 2.1.1 Capital Forbearance

Capital forbearance is the discretionary enforcement of capital standards by regulators (Duan and Yu,1994). In times of financial or

macroeconomic crisis, regulators may lower capital requirements in order to minimise the adverse impact of the crisis on the banking system. Capital forbearance also occurs when a bank fails to meet the capital requirements and is allowed to continue operations with the expectation that it would be able to recapitalise. Regulators may also inject funds in the form of capital assistance, which has been considered as a form of regulatory capital forbearance (Duan and Yu,1999). The franchise value of an insolvent bank is important, which explains why a regulator may not close a problem bank hoping to arrange a merger or other forms of resolution to preserve the franchise value (Duan and Yu,1999). However, capital forbearance could create incentive for banks to report improved capital levels, especially where their capital positions are weak, thus, encouraging "zombie banks"-insolvent banks that are allowed to continue operations.

Capital is important for banks because it serves as a buffer against losses. Banks are expected to maintain adequate capital to cover the risks they are exposed to. This is usually measured by the capital adequacy ratio, a key regulatory requirement. There are instances where banks breach the capital adequacy ratio due to excessive risk-taking, rise in risk-weighted assets, significant losses, fraud and adverse movement in exchange rate, which could impact and erode their capital. In this regard, regulators may grant capital forbearance to banks under certain conditions and permit them to continue operations with the expectation that they would recapitalise.

#### 2.1.2 Asset Quality Forbearance

Asset quality forbearance is extended to individual or group of banks in respect of loan classification, loan loss provisioning, write-off, waiver on obligor/concentration limits and restructuring of loans, based on idiosyncratic, systemic or macroeconomic considerations. The forbearance, in some circumstances, may be useful but can be abused by banks because of the need to reduce provisions and conceal potential losses. This opacity could result in systemic risk and further deterioration in asset quality if it becomes prevalent in the banking system (Timotej Homar and Salleo, 2015). Regulatory forbearance could result in higher risk loans leading to rise in non-performing loans occasioned by lax credit lending practices, excessive loan concentrations to sector or geographic area and management override of policies and procedures. Also, unhealthy competition among banks results in the granting of loans to borrowers who already have non-performing loans without due consideration to the implications.



### 2.1.3 Liquidity Forbearance

Liquidity forbearance manifests where banks are allowed to continue operations when they are illiquid or fail to meet the liquidity ratio requirement. Liquidity ratio serve as a prudential tool as banks are required to hold certain liquid assets that could be used to meet unforeseen withdrawals by depositors. Where a bank is unable to meet its maturing obligations, illiquidity could result. This is a source of concern as it could require the intervention of the regulator to ensure that the bank becomes liquid. The regulator acts as a lender of last resort to provide emergency liquidity assistance. However, in some instances, an illiquid bank is allowed to frequently access the discount window or its interbank claims guaranteed by the regulator in order to assist the bank with its liquidity challenges, which are considered as regulatory forbearance. Liquidity challenges are indications of deeper problems that could affect the solvency of an institution and any delay in supervisory intervention could be risky and costly (European Systemic Risk Board, 2012).

The use of the aforementioned regulatory forbearance was prominent in the 1980s and 1990s during the banking crises in the United States and East Asia, respectively. In 1980s, regulators in the United States of America utilised regulatory forbearance during the savings and loans crisis. It served as a general policy for the entire savings and loans industry as institutions were not closed when they became insolvent (Bartholomew, 1991). The regulatory forbearance granted were reduction in the required capital levels, extension in amortisation of loan losses, consideration of intangible assets as capital and provision of deposits in failing savings and loans in return for net-worth certificates to be treated as regulatory capital (Claessens, 1998). It proved to be a cost-effective mechanism that prevented losses. In the late 1990s, regulatory

forbearance like blanket guarantees, capital and asset quality were applied during the East Asian crisis (Pomerleano, 2009).

Also, during the global financial crisis of 2007-2009, regulators granted regulatory forbearance instead of taken corrective actions. For instance, the Reserve Bank of India granted liquidity and asset quality forbearance to commercial banks. It introduced the "Special Regulatory Treatment" for restructuring of loans without downgrading the asset quality. Asset quality forbearance was predominantly applied by banks in the restructuring of loans in order to postpone the recognition of non-performing loans. The forbearance was withdrawn in 2015 although some exceptions were still allowed up to 2018 when all forbearance and restructuring schemes were completely withdrawn (Chari, *et al.*, 2019).

### 3.0 Jurisdictional Application of Regulatory Forbearance during COVID-19 Pandemic

COVID-19 pandemic has brought regulatory forbearance again to the fore following the widespread macroeconomic crisis occasioned by the Pandemic. The Pandemic, which started as a health crisis in the fourth quarter of 2019 in Wuhan, China rapidly spread to other countries in the first and second quarters of 2020. Efforts to address the global health crisis led to the adoption of several containment measures including lockdowns that adversely affected economic activities. Consequently, government and regulators across the world undertook several measures to cushion the adverse impact of the Pandemic and re-stimulate the economy. Specifically, banking system regulators released several policy measures and granted regulatory forbearance to banks. The regulatory forbearance and conditions granted by some regulators in the areas of capital, asset quality and liquidity are provided in the table below:

**Table1: Regulatory Forbearance in some Jurisdictions**

S/N	Regulator	Forbearance and Conditions
1	Australian Prudential Regulation Authority	<ul style="list-style-type: none"> <li>• Provided temporary relief on capital requirement by permitting banks to lend from their capital buffers as long as the minimum capital requirement was met.</li> <li>• Permitted banks not to treat deferred loan payment as impaired.</li> <li>• Restricted dividend payment.</li> <li>• Suspended the issuance of new licenses.</li> </ul>

2	Bank of Algeria	<ul style="list-style-type: none"> <li>Relaxed prudential requirements on capital, liquidity and non-performing loans.</li> <li>Liquidity ratio was reduced from 100.0 per cent to 60.0 per cent.</li> <li>Allowed banks to restructure and extend repayment on some credit facilities without making additional provision on them.</li> </ul>
3	Bank of Botswana	<ul style="list-style-type: none"> <li>Reduced capital adequacy ratio from 15.0 per cent to 12.5 per cent.</li> <li>Granted regulatory forbearance for the assessment of non-performing loans and expected credit losses.</li> <li>Relaxed the overnight funding rate by suspending the punitive 6 percentage points above the bank rate of 4.8 per cent.</li> <li>Expanded the collateral requirement for borrowing by banks to include corporate bonds listed and traded on the Botswana Stock Exchange.</li> </ul>
4	Bank of England	<ul style="list-style-type: none"> <li>Reduced countercyclical buffer of banks from 1.0 per cent of risk weighted assets to zero per cent for one year.</li> <li>Eased non-performing loan provisioning requirement for credit unions.</li> </ul>
5	Bank Negara Malaysia	<ul style="list-style-type: none"> <li>Reduced the net stable funding ratio from 100.0 per cent to 80.0 per cent.</li> <li>Permitted banks to restructure loans.</li> <li>Allowed the deferral of loan repayments for a period of six months.</li> <li>Permitted banks to convert outstanding balances on credit card facilities to three-year term loans.</li> </ul>
6	Central Bank of Argentina (Banco Central de la República Argentina)	<ul style="list-style-type: none"> <li>Granted six months regulatory forbearance on loan classification with the period for classifying credit facilities as non-performing increased by additional 60 days.</li> </ul>
7	Central Bank of Aruba	<p>Relaxed the following prudential requirements:</p> <ul style="list-style-type: none"> <li>minimum capital adequacy ratio was reduced from 16.0 per cent to 14.0 per cent.</li> </ul>

		<ul style="list-style-type: none"> <li>liquidity ratio from 18.0 per cent to 15.0 per cent.</li> <li>loan-to-deposit ratio was increased from 80.0 per cent to 85.0 per cent.</li> </ul>
8	Central Bank of Brazil (Banco Central do Brasil)	<ul style="list-style-type: none"> <li>Reduced capital conservation buffer from 2.5 per cent to 1.3 per cent.</li> <li>Relaxed loan loss provisioning rules by permitting banks not to recognise additional provisions for performing loans for six months.</li> </ul>
9	Central Bank of Ghana	<ul style="list-style-type: none"> <li>Reduced capital conservation buffer for banks from 3.0 per cent to 1.5 per cent.</li> <li>Revised provisions for loans in the category of other loans especially mentioned from 10.0 per cent to 5.0 per cent for banks specialised deposit-taking institutions (SDIs).</li> <li>Revised classification rule for loans that are past due for microfinance institutions.</li> <li>Restricted the declaration and payment of dividends.</li> <li>Directed banks and SDIs to desist from purchasing government and central bank securities using released liquidity.</li> <li>Monitored the institutions on a weekly basis.</li> </ul>
10	Central Bank of Liberia	<ul style="list-style-type: none"> <li>Granted three months regulatory forbearance on asset classification and provisioning for loans extended to borrowers in affected sectors of the economy.</li> <li>Permitted restructuring of loans on a case-by-case basis but not applicable to non-performing loans prior to the Pandemic.</li> </ul>
11	Central Bank of Kuwait	<p>Relaxed the following prudential requirements:</p> <ul style="list-style-type: none"> <li>Capital adequacy ratio was reduced from 13.0 per cent to 10.5 per cent.</li> <li>Risk weight for small and medium enterprises was reduced from 75.0 per cent to 25.0 per cent.</li> <li>Liquidity ratio from 18.0 per cent to 15.0 per cent.</li> </ul>

		<ul style="list-style-type: none"> <li>• Net stable funding and liquidity core ratios from 100.0 per cent to 85.0 per cent.</li> </ul>
12	Central Bank of Nigeria	<ul style="list-style-type: none"> <li>• Granted regulatory forbearance to banks to consider temporary and time-limited restructuring of tenor and loan terms for business and households in the oil and gas, agriculture and manufacturing sectors most affected by the Pandemic. The restructuring was subsequently to be considered on a case-by-case basis.</li> <li>• Granted regulatory forbearance to other financial institutions to also consider temporary and time-limited restructuring of tenor and loan terms for business and households affected by the Pandemic.</li> </ul>
13	Central Bank of the Republic of Guinea	<ul style="list-style-type: none"> <li>• Reduced liquidity coverage ratio from 100.0 per cent to 80.0 per cent.</li> <li>• Suspended classification and provisioning requirements for loans affected by the Pandemic.</li> <li>• Adjusted the foreign exchange net position limit from 20.0 per cent to 25.0 per cent of capital and the position in each currency from 10.0 per cent to 12.5 per cent.</li> <li>• Suspended dividend payments.</li> <li>• Deferred payment of supervision-related fees and deposit insurance premium for three months.</li> </ul>
14	European Central Bank	<ul style="list-style-type: none"> <li>• Permitted banks to operate below the level of capital defined by the Pillar 2 Guidance and capital conservation buffer.</li> <li>• Allowed banks to use capital instruments that were not eligible as common equity tier 1 capital to create capital buffers.</li> <li>• Eased the liquidity coverage ratio.</li> <li>• Suspended dividend payments and share buy-backs.</li> <li>• Granted regulatory forbearance in the treatment of loan loss provisioning for non-performing loans under public guarantees.</li> </ul>
15	Monetary Authority of Singapore (MAS)	<ul style="list-style-type: none"> <li>• Allowed banks to recognise regulatory loss allowance reserves as tier 2 capital.</li> <li>• Reduced the amount of stable funding that banks must maintain for loans to individuals and</li> </ul>

		<p>businesses that are maturing in less than six months from 50.0 per cent to 25.0 per cent.</p> <ul style="list-style-type: none"> <li>• Permitted financial institutions to consider measures taken by government in estimating accounting loan loss allowances.</li> <li>• Expanded the eligible collateral pool that banks can use to access liquidity from the three new MAS liquidity facilities.</li> <li>• Restricted dividend per share for financial year 2020 to 60.0 per cent of financial year 2019 level.</li> </ul>
16	Office of Superintendent of Financial Institutions, Canada	<ul style="list-style-type: none"> <li>• Reduced the domestic stability buffer for domestic systemically important banks from 2.3 per cent of risk weighted assets to 1.0 per cent.</li> </ul>
17	Reserve Bank of India	<ul style="list-style-type: none"> <li>• Granted regulatory forbearance on asset classification of loans to MSMEs and real estate developers.</li> <li>• Reduced liquidity coverage ratio from 100.0 per cent to 80.0 per cent</li> <li>• Permitted banks to grant moratorium period on term loans and the exclusion of the period from the number of days past-due for the purpose of asset classification.</li> <li>• Increased the limit of bank's exposure to a group of connected counterparties from 25.0 per cent to 30.0 per cent of the eligible capital base.</li> <li>• Permitted banks to assign zero per cent risk weight on the credit facilities extended under the emergency credit line guarantee scheme.</li> <li>• Allowed banks to use countercyclical provision buffers to make specific provisions for non-performing loans.</li> <li>• Permitted existing loans to MSMEs classified as 'standard' to be restructured without a downgrade in the asset classification.</li> <li>• Restricted dividend payments in 2020. However, this was subsequently relaxed in 2021 to allow banks may pay dividend from profits for the financial year ended March 31, 2021, subject to not more than 50.0 per cent of the amount determined in line with the dividend payout ratio prescribed in extant regulation.</li> </ul>

18	South Africa Reserve Bank Prudential Authority	<ul style="list-style-type: none"> <li>• Revised Pillar 2A capital buffer of 1.0 per cent of risk-weighted assets to zero per cent.</li> <li>• Permitted banks to utilise their capital conservation buffer set at 2.5 per cent of risk weighted assets.</li> <li>• Granted capital relief on loans restructured due to the Pandemic.</li> <li>• Restricted dividend payouts and bonuses to senior executives.</li> </ul>
19	State Bank of Pakistan	<ul style="list-style-type: none"> <li>• Reduced the capital conservation buffer from 2.5 per cent to 1.5 per cent.</li> <li>• Increased the regulatory retail portfolio limit from Rs. 125 million to Rs. 180 million.</li> <li>• Permitted restructuring and rescheduling of financing facilities with no classification required unless the payment obligation is past due by 180 days.</li> <li>• Relaxed the criteria for classification of trade bills by six months.</li> </ul>
20	United States Federal Reserve System, Federal Deposit Insurance Corporation and Office of the Comptroller of the Currency	<ul style="list-style-type: none"> <li>• Eased capital (capital conservation buffer and global systemically important bank capital surcharge) and liquidity requirements.</li> <li>• Permitted banks to modify loan conditions with respect to extension of repayment terms, waiver of fees and deferral of payments without categorising the loans as troubled debt restructuring.</li> </ul>
		<ul style="list-style-type: none"> <li>• Excluded assets used as collateral for money market mutual fund liquidity facility from the computation of prudential ratios.</li> <li>• Excluded the US treasury securities and deposits at the Federal Reserve banks from the computation of supplementary leverage ratio for big American banks.</li> <li>• Allowed loans whose conditions have been eased to be used as collateral at the discount window.</li> <li>• Reduced community bank leverage ratio from 9.0 per cent to 8.0 per cent.</li> <li>• Allowed banks to delay the implementation of the new accounting methodology for current expected credit losses.</li> </ul>

#### 4.0 Rationale for Regulatory Forbearance

Regulators are often faced with a dilemma of closing or allowing a problem bank to continue operations or in the event of financial or macroeconomic crisis. The reason for this is not far-fetched as banks are not only important because they carry out financial intermediation function but because they serve as the primary conduit for monetary policy transmission in the economy, which requires a sound and stable banking system as well as a stable macroeconomy to be effective.

Although banking is a profit-oriented business, the failure of banks is of public policy concern because of the negative externalities they create. This further explains why regulators may foot drag or delay in taking corrective actions on a problem bank and instead explore regulatory forbearance as a measure to restore the viability of the bank. The rationale for extending regulatory forbearance to a problem bank and in the event of a financial or macroeconomic crisis are premised on the following:

##### 4.1 Financial Stability

This is the principal objective for which regulators adopt regulatory forbearance. The failure of a bank, especially a systemically important bank, could have grave consequences for financial stability as well as macroeconomic stability. Therefore, the need to protect the banking system to ensure financial and macroeconomic stability as well as engender public confidence is paramount. However, the protection of the banking system should not be misconstrued as the protection of individual banks as failures and exits are vital to avoiding systemic risk. Essentially, regulatory forbearance is meant to allow a bank to continue operations if it is necessary for the protection of the banking system (European Systemic Risk Board, 2012).

##### 4.2 Consumer Protection

Banking system regulators around the world are concerned with the protection of depositors' funds, which is often paramount in the event of a financial or macroeconomic crisis. Thus, the need to ensure consumers' confidence in the system could make a regulator to delay in wielding the big stick on a problem bank and resort to regulatory forbearance. This helps to prevent run-on a bank in instances where depositors feel that the bank is in a grave situation. The assurances provided by the regulator serve to mitigate such effects.

##### 4.3 Limit Contagion

Regulatory forbearance can be a prudent regulatory measure to limit contagion in the banking

system. The application of regulatory forbearance by regulators to deal with a problem bank, financial or macroeconomic crisis could assist in preventing contagion and ensuring that the banks do not pose any risk to the financial system and economy in general.

##### 4.4 Litigation Cost

The application of regulatory forbearance creates and buys more time for a bank to recover or give the regulator some time to come up with a resolution mechanism that best suits the bank, thereby reducing the cost of litigation that would have been incurred if revocation of license/closure of the bank is considered as the first option. The litigation cost is often high as shareholders and other stakeholders tend to challenge the revocation of their bank's licence in court.

##### 4.5 Employment

The outright revocation of a problem bank's license produces a ripple effect as the impact is not only felt by depositors and shareholders but also employees of the bank as they suddenly lose their means of livelihoods. Although this may not be explicitly obvious, the extension of forbearance to a problem bank no doubt reduces the level of unemployment that would have occurred, if the bank's licence were to be revoked outrightly.

##### 4.6 Revenue to Government

Government earns revenue from banks in the form of company income tax, withholding tax and stamp duty, among others. Where a bank fails, the expected tax revenue to be earned by government is affected. The grant of regulatory forbearance allows a bank to continue operations, thus sustaining government's tax revenue earnings from the banking sector.

#### 5.0 Challenges of Regulatory Forbearance

Regulatory forbearance has been widely applied by regulators across the globe and it is evident that they would continue to consider this as an option for dealing with a problem bank and in the event of a financial or macroeconomic crisis. However, there are challenges associated with regulatory forbearance, which include:

##### 5.1 Moral hazard

Regulatory forbearance promotes moral hazard because it encourages banks to embark on more risky activities believing that they have nothing to lose as the regulator/government will always bail them out. Edwards (2011) notes that moral hazard incentivizes an insolvent or near insolvent bank to

"gamble for resurrection" by taking greater risks and where it eventually fails, the losses are borne by taxpayers. Regulators are often concerned with the loss of depositors' funds and instability in the banking system. Hence the use of regulatory forbearance.

### 5.2 Inefficient allocation of resources

Regulatory forbearance leads to inefficient allocation of resources as resources which should have been deployed by regulators for other purposes are channelled to a problem bank. The resources could be funds that would have been directed to support liquidity management in the banking system.

### 5.3 Cost to Taxpayer/High Cost of Closure

Regulatory forbearance affords regulators the opportunity to delay the application of prompt corrective action and allows a problem bank to continue in operation, with the bank ultimately failing. This, consequently, increases the cost of closure with the burden of cost borne by taxpayers. There are instances where regulators have channelled huge funds in anticipation that a problem bank would recover, but the bank fails with more cost incurred on closure.

### 6.0 Measures for Effective Regulatory Forbearance

Regulatory forbearance can be double-edged sword, which on one hand can be prudent, thus aiding a problem bank to recover, reducing the cost of distress, limiting contagion and ensuring the stability of the banking system. On the other hand, it can be counterproductive, leading to moral hazard as a bank management may engage in riskier behaviour believing it has nothing to lose, thus making the resolution of the bank costlier (Santomero and Hoffman, 1998). Nevertheless, it has become and will remain a discretionary rule employed by regulators in the management of a problem bank and in the event of financial or macroeconomic crisis.

Attempts have been made in several jurisdictions to reduce/eliminate regulatory forbearance, but it is still prominently used as the objective of financial stability tends to override the closure rule/revocation of a bank's licence except where it becomes absolutely inevitable and necessary. This indicates that there cannot be an end to the use of regulatory forbearance, which has been further buttressed by its application during macroeconomic crisis occasioned by the COVID-19 Pandemic. Certainly, it would be applied at the discretion of regulators, as there are no laws against it. However, the use of regulatory forbearance by regulators can be made more effective by adopting the following measures:

- Providing timelines to banks when regulatory forbearance is granted and exiting upon the expiration of the timeline. The unnecessary extension or continuous application of the forbearance would lead to moral hazard in the banking system. According to Lindgren *et al.*, (1996), regulatory forbearance when granted to a problem bank must be monitored and phased out under an enforceable compliance timetable.
- Attaching conditions to the regulatory forbearance for it to be optimal. Regulatory forbearance should not be a stand-alone measure but accompanied by stringent conditions to be adhered to, by a problem bank. The conditions include but not limited to, restrictions on dividend payment, bonus sharing, capital expenditure and advancement of loans to existing debtors.
- Ensuring effective and regular monitoring of a bank throughout the forbearance period. The success or failure of regulatory forbearance to restore a problem bank to viability depends on the effectiveness of regulatory monitoring, which can be passive or active. In passive monitoring, there is a degree of flexibility as the bank is allowed to pursue its strategies for recovery provided it is within acceptable risk exposure required by the regulator. Active monitoring involves more intrusive monitoring as the bank is required to submit its plan for recovery to the regulator, which is monitored effectively for compliance (Santomero and Hoffman, 1998).

### 7.0 Conclusion

Regulatory forbearance has been widely applied by banking system regulators in various countries. Although attempts have been made to minimise its use by applying PCAs and other supervisory actions, it is apparent that regulators would not jettison this approach as the overarching objective of ensuring the safety, soundness and stability of the banking system remains paramount. This was evident during the COVID-19 Pandemic as banking system regulators were left with no choice but to institute various forbearance measures to minimise the adverse impact of the Pandemic and maintain the stability of the financial system. Therefore, there is no doubt that regulators would continue to exercise their discretion to forbear, evaluating this option against closure when dealing with a problem bank and during financial or macroeconomic crisis. It should, however, be utilised if absolutely necessary with adequate measures put in place to ensure its effectiveness.



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## Surviving the COVID-19 pandemic with Knowledge, through Virtual organization: Evidence from Small Virtual Businesses in Nigeria



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### ABSTRACT

*This study examined the mediating roles of virtual organizations on the COVID-19 knowledge- survival relationship of small ICT firms in Nigeria. Simple random sampling and stratified sampling methods were adopted to draw a sample size of 398 registered small ICT firms. A total of 105 responses were received and analyzed from an electronic survey. Hayes' parallel mediation model was utilized in testing the study hypotheses. The findings indicated that COVID-19 knowledge predicts small firms' survival and that virtual organizations improve the effects of COVID-19 knowledge on firms' survival. These findings have implications for policymakers and owners/managers of small firms.*

**Keywords:** COVID-19 Knowledge, Virtual Organization, Survival, Technology, Mediating Roles

**JEL:** Classification: E24, O33

### Introduction

Survival often ranks tops on the mission of most organizations, because it is only through survival that firms achieve their set visions like growth, expansion, and delivery of top-notch products and services (Okwo et al., 2019; ). Survival is important because it gauges the viability and feasibility of a business venture or process (Esteve-Pérez et al., 2005). Firms that can survive through certain threats and challenges in their environments are considered as efficient or to have effective processes (Kaniowski et al., 2008; Schwartz, 2012). It is, therefore, important to have an understanding of the factors that influence the ability of a firm to survive threats and challenges.

Several drivers of survival have been discussed in the literature, and perhaps, knowledge is one of the most researched (e.g. Becerra-Fernandez et al., 2004; Skyrme 2001; Uriarte, 2008). Knowledge refers to the familiarity, awareness, or understanding of a phenomenon such as facts or objects (Gold et al., 2001), and it is a repository of the information and facts at one's disposal (Islam et al, 2016). Knowledge is an important aspect of an organization's life (Iannotta et al 2014), in part because knowledge drives understanding of the business terrain, and assists businesses to navigate through the various threats and challenges inherent in the environment (Simone & Desque, 2013). When a firm is knowledgeable about the trends and changes occurring in its business environment, it is more likely to be effective and efficient in tackling threats and challenges that would hinder its survival.

Interestingly, there is an array of studies that suggests that other factors that are impacting on firms' survival are purpose, connectivity, technology, boundary, and business process, (Camarinha-Matos & Afsarmanesh, 2007; Kim & Lee, 2013) and in particular, virtual organization (Merkevicius et al., 2015; Shao et al., 2000). This is because virtual organization involves doing business in entirely new and different ways from the traditional brick-and-mortar approach that requires a physical location (Camarinha-Matos & Afsarmanesh, 2007; Mehtab et al., 2017). These new and different ways of doing business have been proven as effective and efficient in surviving a business because it operates on very low overhead costs, a reduction of commuting costs, and more flexibility (Grosvenor, 2020; Motahari-Nezhad et al., 2009). Grosvenor, (2020) found evidence that when organizations have/adopt the various services of a virtual enterprise, they are more likely to resist turbulence, challenges, and threats. This accord with the organizational resilience theory, which suggests that firms, that are under crisis often consider building up

adaptive structures to stay afloat in their ventures (Coutu, 2002). In the same vein, Kovacs and Kot, (2017), found that virtual business services increase the performance of small businesses. Although performance is quite different from survival, they are highly related because only firms that are performing well most likely survive. This study suggests that the combination of these various dimensions of virtual organization might have a greater impact on the survival of small firms. Such an effort involving the combination we suggested in this study, that is, the impacts of the virtual organizations' dimensions on firms' survival, to the best of our knowledge has not been investigated yet.

Moreover, whereas evidence is indicating that knowledge about the COVID-19 pandemic has positive impact on the virtual organizations (Dua et al., 2020; Priego-Roche & Rieu, 2016); there is still a dearth of knowledge about how a combination of these variables may influence the survivability of small firms in a developing economy like Nigeria. Previous studies tend to suggest that virtual organization and knowledge about the COVID-19 pandemic were prompted by the observed effects of the pandemic. But this may not be the case since knowledge and technology enhance performance (Al-Hanawi et al., 2020; Iorfa et al., 2020). We contend that, the extent of knowledge a firm has about the pandemic, coupled with the extent of the levels of adoption of changes in technology, would determine its extent of resilience in its ventures in the pandemic era. Thus, the potential mediating roles of virtual organizations in the relationship between knowledge and survival have not been examined in previous studies. If such mediating roles are found, it would go a long way in explaining why having COVID-19 Knowledge can be key for small businesses in a developing economy like Nigeria to survive due to the influence of the virtual organizations activities.

This study will make several contributions to the body of existing literature in the area of COVID-19 Knowledge, virtual organization, and firms' survival. The first contribution will be in the area of empirical work because most previous studies have been primarily conceptual. Therefore, very few assertions can be made about how the COVID-19 Knowledge has assisted small businesses to survive. Thus, this study will contribute by attempting to fill this gap, by providing an empirical perspective from Nigeria. This would open up new vistas for further studies on how to survive businesses in a pandemic era. Second, this study hopes to put small businesses into the big picture of virtual organizations. The dominant conception about the virtual organization from this part of the world is that, it is a domain for larger firms. This study contends that small firms are embracing

virtual organizations in their operations and that this could have a positive impact on their survival rates. This contribution will assist small business owners, managers, and the government alike in designing workable structures that would encourage further adoption of virtual organizations. Lastly, this study seeks to make theoretical contributions by combining the organizational learning theory with the virtual organization theory. No study to the best of our knowledge has made such a combination in this area. Therefore, this study will contribute new knowledge by showing how the management of knowledge combined with virtuality can be utilized to explain the organizational resilience theory.

The remaining sections of this research consist of a review of literature on firms' survival, an examination of the potential influence of COVID-19 Knowledge and virtual organization on firms' survival, tests of our proposed hypotheses, and a discussion on the implications of our findings.

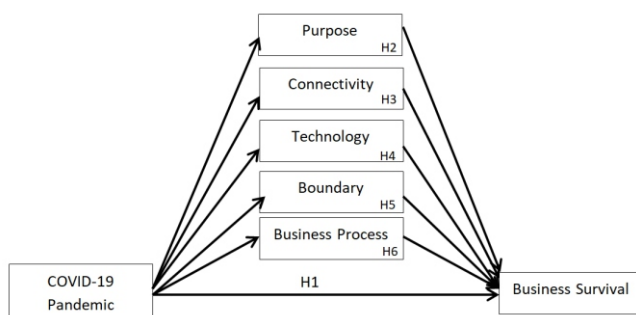
### Virtual Organization

The concept of virtual organization has been gathering interest since the last two decades when the use of technology made it possible to work in other locations aside from offices (Shao et al., 2000). The concept has assumed different terms such as virtual office, virtual corporations, etc. The idea behind virtual organization stemmed out from computer usage back then when the term "virtual memory" was used in describing how computers work concerning their storage capacity (Byrne, 1993). Three generic accounts exist on virtual organizations; the first account describes it as the extension of organizational activities externally by integrating the core competence and resources of other companies (Barnatt, 2015; Chandna & Salimath, 2018; Shao et al., 2000). This is often done by heavy reliance on information technology (IT), and virtual organization here, refers to a network of independent companies, e.g. suppliers and customers, linked by IT to share skills, costs, and access to another's markets. The second aspect of virtual organization is perceptual, an idea that it is abstract and only exists within the minds of those that are involved in such forms of businesses (Chandna & Salimath, 2018; Romero & Molina, 2010). Examples of such are virtual organizations can be seen in various social media such as Twitter, Instagram, and Facebook, where there are neither physical shops nor goods. The third forms of virtual organizations are organizations that are established with IT corporations, with intensive use of telecommuting (Barnatt, 2015; Chandna & Salimath, 2018; Romero & Molina, 2010; Shao et al., 2000). This study adopted the first sets of virtual organizations because the current pandemic places them as perfect cases for

study, given that it presents virtually every business with the extension option.

A virtual organization is essential for several reasons; it presents an avenue for firms to expand their services and to create alliances by adopting the competencies and resources of other firms. The consequences of these benefits of virtual organizations are enormous because apart from the fact that it enhances their performance, it enables them to compete favourably and to survive harsh conditions in their ventures (Goyal, 2009; Shao et al., 2000; Shettima & Sharma, 2020). There are five key dimensions of virtual organization: purpose, which comprise of the objective that provides the incentive for creating the new extension (Byrne, 1993; Shao et al., 2000); connectivity, representing the creation of linkage (Shao et al., 2000); technology which represents the enabling factors that give room for the breakthrough and makes the virtual form possible; boundary, which represents those that can share in the activities and those who stand to benefit and business process, which represent the specific order of the firms' time, space and resources (Goyal, 2009; Shao et al., 2000;). Scholars have focused on activities that enable firm survival and factors like the activities of businesses within the environment have often featured in these discussions (e.g. Esteve-Pérez

**Figure 1: : Conceptual Model of COVID-19 Pandemic Knowledge, Virtual Organization and Business Survival**



Source: Authors' Conceptualization

et al., 2005). This research integrates their results into its discussion below i.e. virtual organization which is currently trending but appears to have been neglected research-wise in Nigeria. Our conceptual model is in Figure 1.

### Theoretical Framework

This study builds its arguments around the organizational learning theory (Greve, 2020), the virtual organization theory (Robbins, 1990) to improve understanding of how knowledge about the COVID-19 pandemic might enhance the survivability of small firms during a pandemic in Nigeria. The organizational learning theory explains

how organizations adapt to their environments (Gavetti et al., 2012). The challenges posed by the COVID-19 pandemic can become detrimental to organizations, therefore the need to acquire more knowledge about the pandemic. Hager et al., (2020) have explained that knowledge about the pandemic can be either satisfactory or not. Organizational learning is essential in explaining how the goals and experiences of an organization cause them to change their routine behaviours. In other words, this study considers the COVID-19 a change that impacts their goals and experience (i.e. knowledge) and affects their routine behaviours.

The virtual organization theory on the other hand assumes that an organization will be willing to revolutionize and develop its rationale and open its system if it senses that its environment is turbulent (Nohria & Berkley, 1994) Shao et al., (2010) have explained that virtual organization comprises of purpose, connectivity, technology, boundary and business process, and that. At its core, this theory assumes that an organization will be able to survive the turbulence in its environment if it can revolutionize its purposes, expand its connectivity, adopt new technology, expand its boundary and improve on its business process. This study, therefore, assumes that turbulence caused by changes like the COVID-19 pandemic can increase knowledge by causing organizational learning, which will then enhance the virtual organization that would then foster the survival of firms.

### Hypotheses development

#### COVID - 19 knowledge and Firm Survival

Previous studies have found that COVID-19 knowledge is positively and significantly related to survival strategies like risk perception and precautionary behaviours (e.g. Iorfa et al., 2020; Hager et al., 2020). Most of these studies have been done in the health sector. However, limited studies involving COVID-19 knowledge have not been carried out in the area of business survival. However, since COVID-19 knowledge positively predicted individual survival instincts and precautions (Iorfa et al., 2020), there is a possibility that COVID-19 knowledge can foster the survivability of small firms in Nigeria. This could mean that owners/managers of small firms get more awareness and information about the pandemic; they may be more likely curious to explore various opportunities and engage in activities that will assist them to survive. Drawing on organizational learning theory, we argue that owners/managers can interpret knowledge about the pandemic as a leeway towards their firms' survival (e.g. Esteve-Pérez et al., 2005). If owners/managers are knowledgeable enough about the pandemic, and they adhere to all the

precautionary tips, they will stand a better chance of surviving their businesses. Such owners/managers may be more curious about learning new skills, pursuing new goals that will be of benefit to their firms. Thus, this study considers COVID-19 knowledge a significant predictor of business survival. Along these lines, we expect that there might be a positive relationship between COVID-19 knowledge and small firms' survival in Nigeria.

**Hypothesis 1:** COVID-19 knowledge is directly and positively related to small firms' survival in Nigeria.

#### *Virtual Organization and Firms' Survival*

The other links in our proposed mediation are the relationship between the virtual organization and survival, which involves a firm's activity of integrating several core competencies, skills, and resources, or creating positive alliances to achieve organizational goals, may be an important driver of survival (e.g. Chinedu et al., 2014; Kovacs & Kot, 2017).

There are several reasons why the purpose aspect of virtual organization might be related to survival. First, firms that run their activities based on the set objective that provides incentives for growth and expansion, are more likely to survive in turbulent times (Okwo et al., 2019). Such posture involves linking other organizational components together to create a cohesive force that enables the achievements of favourable outcomes like survival (Esteve-Pérez et al., 2005; Kaniovski et al., 2008; Schwartz, 2012). This is centered on the virtual organization theory which assumes that an organization will revolutionize its systems and purpose in the face of opportunities or threats (Nohria & Berkley, 1994; Kovacs & Kot, 2017). Organizations will pursue new purposes when they consider that the current opportunities or threats may/may not be favourable to their ventures. They will also adjust or redesign their objectives when they have enough knowledge about the various threats and opportunities inherent in their environment. Essentially, organizations strive to attain their purpose because once these are attained, the tendencies that the organization can survive are high (Nohria & Berkley, 1994; Kovacs & Kot, 2017). Similarly, the connectivity aspect of a virtual organization might be related to a firm's survival for several reasons as well. This is because it enables organizations to create linkages through structural changes, and this affords them the ability to deal with threats. This posture involves the coordination of the organizational parts with those of other organizations, and it is critical because it places the organization in a position that it can always gather scarce resources orchestrated by changes in the environment to enable it to survive (Barnatt, 2015; Chandna & Salimath, 2018; Romero & Molina, 2010;

Shao et al., 2000). Such posture can be seen in the replacement of communication media from saying face-to-face to a computer-based form. This is also in line with the virtual organization theory which assumes that threats and challenges will cause a firm to change transfer issues of organizational structures from human-driven to technology-driven (Barnatt, 2015; Romero & Molina, 2010)

It is also believed that technology will be positively related to the survival of businesses because, unlike humans that can be easily affected by the pandemic or are prone to stress and fatigue, technology does not suffer from any of these (Barnatt, 2015; Nohria & Berkley, 1994; Kovacs & Kot, 2017). Moreover, technology is more efficient and effective than human efforts; therefore, it could easily position firms in the pandemic in positions where they can operate their normal business activities while observing the entire safety tip required to survive their business in the pandemic. In line with the virtual organization theory as well, which assumes that organizations will adopt more electronic changes like the replacement of material files with electronic files, and the transfer of organizational structure from being human-driven to technology-driven. Firms that can adopt more technology as a result of their knowledge about the pandemic are susceptible to surviving than firms that do not (Barnatt, 2015; Camarinha-Matos & Afsarmanesh, 2007; Kim & Lee, 2013). The same argument is presented that boundary will be positively related to survival (Barnatt, 2015; Mehtab et al., 2017; Merkevicus et al., 2015). Majorly, expansion and growths are core indicators that a firm may survive, therefore, the organization that can gather widespread networks of individuals from separate organizations would conquer boundaries that may have been hindrances to their survival (Romero & Molina, 2010; Shao et al., 2000). A similar argument is made for that business process will most likely be positively related to firms' survival (Nohria & Berkley, 1994; Kovacs & Kot, 2017). This is because radical changes in the ordering of work activities across time and space towards the virtual value chain would most likely improve the effectiveness and efficiency of the business firms, which can translate to survival (Okwo et al., 2019). Given that knowledge management would most likely enhance firms' survival, and that virtual organization, might also same, we believe that if these effects are combined and tested on survival, there might be a significant impact on the survival of small firms in Nigeria, thus, we suggest the following hypotheses:

**Hypothesis 2:** The relationship between COVID-19 knowledge and firms' survival is mediated by purpose.

**Hypothesis 3:** The relationship between COVID-19 knowledge and firms' survival is mediated by connectivity.

**Hypothesis 4:** The relationship between COVID-19 knowledge and firms' survival is mediated by technology.

**Hypothesis 5:** The relationship between COVID-19 knowledge and firms' survival is mediated by boundary.

**Hypothesis 6:** The relationship between COVID-19 knowledge and firms' survival is mediated by the business process.

### Methodology

The proposed hypotheses of this study were tested with a sample of sole proprietors from the Information and Communication (ICT) sector, in the SMEDAN and NBS (2017)'s database. These are small firms that operate with not more than ten (10) employees and with a working capital of ten to less than one hundred million Naira (N 10 to less than 100Mil.), excluding land and buildings (SMEDAN National Policy on MSMEs, 2015). They provide services that range from computer software programming to subscribing services like mobile data, Televisions, electricity billings, etc., for their customers. We selected these firms because of their peculiarity in the use of technology which allows them to operate virtually, that is, from a non-physical location, rather than with the use of technological devices. The total population of registered small ICT firms in Nigeria is 128,105 (SMEDAN & NBS, 2017). Based on a simple random sampling technique, (Taro Yamane) a total of 398 small ICT firms were selected and utilized for this study. A stratified sampling method was further conducted to determine how to distribute the research instrument to the specific number of small ICT firms per states. Only small ICT firms in major commercial cities from the six geopolitical zones of Nigeria (e.g. Enugu, Jos, Kano, Lagos, Port Harcourt and Sokoto) were chosen for this study. The rationale behind this choice is that these states have the highest numbers of small ICT firms in Nigeria (SMEDAN & NBS, 2017).

A total of 398 questionnaires were mailed electronically to these firms (i.e. Enugu = 62, Lagos = 91, Jos = 64, Kano = 71, Port Harcourt = 59 and Sokoto = 51). The mails were sent to the owners/managers of these firms. The reason behind this choice is because we believe that these firms are not totally detached from their owners/managers, and the nature of the data that was required can only be provided by these sets of people. After about a week, a reminder was sent to them to ensure that they have gotten the

mails. After 3 weeks, the returned questionnaires were collated, and a total of 105 were counted as filled and was utilized in the analysis of this study. However, in order to ensure that there was no inadequacy concerns in the sampling, we conducted a sampling adequacy tests during the Confirmatory Factor Analysis (CFA) and the tests indicated a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.832; a Bertlett's Test of Sphericity Approx. Chi-Square of 8010.293 and a Sig. of  $p < .000$ . These results confirmed that there were no sampling adequacy concerns in the final sample size utilized in this study.

### Measures Scale Development

This study developed, designed, and formulated the items utilized in measuring the variables of the study. These items were formulated based on the assumptions of the virtual organization theory and the organizational learning theory utilized in this study, this was because the observed variable of this study stems from the assumptions of these theories. It was difficult to access and adopt already validated scales because most of the studies that have been conducted in this area had been theoretical or longitudinal studies that did not warrant the use of survey data like the current study (e.g., Shao et al., 2000). Since the firms under study here are small firms, which are not mandated by the law to keep or provide some records like financial records, and whose behaviours are usually a reflection of their owners/managers, this study, therefore, adopted the use of designed questionnaire to gather the required data. To ensure the validity of our formulated scales, we conducted Confirmatory Factor Analysis (CFA) on the data gathered with the scale, and only items that loaded above 0.50 were absorbed and utilized for subsequent analyses. The questionnaire was scaled thus: the controlled variable, (firms' age) was scaled categorized according to the number of years the firms had been in operation; the mediating and the outcome variables (virtual organization and survival) was designed on a five-point Likert scale, while the predictor variable (COVID-19 Knowledge) scale was a nominal scale of yes or no. An internal consistency analysis was utilized to determine the reliabilities of these scales, and only scales with alphas above 0.70 were utilized.

### Firms' Age

This represents the number of years that the business has been in operation. Firms' age would normally impact the performance levels of firms. In this study, firms' age was controlled for. This was because every of the small ICT firms in Nigeria is not in the same stage of their life-cycle. Whereas some of them are still in



their early start-up stage, (below five years), some are in their growth stages while some of them are already matured. To measure firms' age, we categorized the firms into 3: less than 5 years = 1; between 5-10 years = 2 and above 10 years = 3.

### COVID-19 Knowledge

This represents the awareness of the firm owners/managers about the safety tips of the COVID-19 pandemic, and whether they are adhering to/taking necessary precautions like physical distancing and avoidance of crowd. The question asked here, simply asked respondents to tick No comment (please cross check this paragraph) if they were aware and Yes if they were. No was coded as 0 and Yes as 1 in this study.

### Purpose

This refers to the objective which provides the incentive for the creation of a new organization, and which serves as the cohesive force to hold the virtual organization components at least temporarily together. A total of 4 items were used in measuring this dimension of virtual organization. This dimension measured the extent to which the owner/manager of small firms agree or disagree that the virtual activities have been incorporated as an objective in their business; the extent to which they agree or disagree that their firms' objectives have been adjusted to promote virtual organization; etc. With regards to validity, this scale was fit, the CFA indicated loadings of between 0.795 and 0.893, and the alpha indicated that the scale was reliable at 0.94.

### Connectivity

This represents the process of creating a connection through structural change, breaking of constraints, or overcoming previously existing barriers by a firm. This involves the various activities that the firm engages in a bid to be able to create unity within their structure. Four items were used in measuring this dimension as well: Owners/managers were asked to select the extent to which they agreed or disagreed that they have adopted new networks to enhance connectivity in their firm; the extent to which they agreed/disagreed that they have activated linkages among various components within the organization; etc. With regards to validity, this scale was fit, the CFA indicated loadings of between 0.835 and 0.891, and the alpha indicated that the scale was reliable at 0.94.

### Technology

Technology here refers to the enabling factors adopted by the firm that allows the breakthrough and makes the virtual form possible. It involves the various assets acquired by the firm that will further its pursuit towards virtual organization possible. 3 items were used to measure this dimension of the virtual organization. This measured the extent that owners/managers agree/disagree that they have invested in materials that would assist the smooth transmission into a virtual organization; the extent that they agree or disagree that they have assisted their employees to gain IT skills; etc. The CFA loadings indicated a fit in the scale ranging from 0.840 to 0.864, while that Cronbach's alpha indicated that the scale was reliable at 0.93.

### Boundary

This represents the coverage that the firm can reach with its virtual activities. It involves the separation of those who are part of the virtual organization and those who are not, in the absence of any visible physical borderlines. It defines who can share its activities and who receives benefits. Three items were used in this dimension as well: the extent to which the owners/managers agree or disagree that their activities are not limited to their immediate location; the extent to which they agree or disagree that their operations separate those who are part of the virtual organization and those who are not, etc., With regards to validity, this scale was fit, the CFA indicated loadings of between 0.811 and 0.869, and the alpha indicated that the scale was reliable at 0.89.

### Business Process

This represents the specific ordering of work activities across time and place, with a beginning, an end, and identified inputs and outputs: a structure for action." It represents the organizations' designs of the methods that their work activities will follow, and how they will be executed. This dimension was measured with 4 items that included the extent to which the owners/managers agree or disagree that they have ordered their operations to include virtual organization; the extent to which they agree or disagree that their structure has been designed towards virtual value chain. The scale had a very high validity that indicated a fit, i.e. between 0.830 and 0.865, and an internal consistency of 0.92.

### Firm Survival

This represents the firms' ability to weather through the various threats and challenges inherent within its environment and still be able to remain in operation.

It involves the firm's ability to grow and expand its activities albeit turbulence than its contemporaries in the same industry could not withstand. Three items were used in measuring this construct, e.g. the extent to which they agree or disagree that their management has never relaxed in taking drastic steps for the good of the business; the extent to which

they intend to make changes from their current business line and location soon; etc., With regards to validity, this scale was fit, the CFA indicated loadings of between 0.811 and 0.838, and the alpha indicated that the scale was reliable at 0.93

**Table 1: Pattern Matrix from Confirmatory Factor Analysis in COVID-19 knowledge**

	Component					
	1	2	3	4	5	6
Conn3	.891					
Conn2	.890					
Conn1	.874					
Conn4	.835					
Purp1		.893				
Purp3		.874				
Purp2		.840				
Purp4		.795				
Bus_Pro3			.865			
Bus_Pro1			.849			
Bus_Pro2			.840			
Bus_Pro4			.830			
Tech2				.864		
Tech3				.842		
Tech1				.840		
Surv3					.838	
Surv1					.830	
Surv2					.811	
Bound2						.869
Bound3						.863
Bound1						.811

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Only factor loadings > .50 are shown

Table 1 above presents the CFA of the items of the variable of this study. This analysis was conducted thus; data on a total of 21 items were loaded into the system in no particular order. The options selected included the: principle components extractions, Varimax rotation, and an absolute value option of 0.50. 4 of the items that measured connectivity loaded together with high values of between 0.835 and 891. This indicated that the respondents of the study recognized the items as valid in determining their perceptions of connectivity. Similarly, the 4 items measuring the purpose variable all had high loadings ranging from 0.830 to 0,893, an indication that the respondents also recognized these items as factors that represent their perceptions concerning the

purpose as a virtual organization. 4 items load well under business process as well, 3 items loaded fine under the technology and boundary and survival variables respectively. These loadings, therefore, confirmed that the scale utilized in this study was valid in two lights: constructs and contents. There is construct validity because the correlations between the various constructs (see Table 2) are not higher than any of the correlations between the individual items.

**Table 2: Descriptive Statistics and Correlations between Study Variables**

	Mean	SD	1	2	3	4	5	6	7	8
Firm Age	2.10	0.84								
Know. of COVID	0.60	0.49	.172							
Purpose	15.41	4.11	.511**	.129	<b>(0.94)</b>					
Connectivity	13.80	4.93	.366**	.319**	.353**	<b>(0.94)</b>				
Technology	10.74	3.95	.369**	.189	.483**	.424**	<b>(0.93)</b>			
Boundary	10.23	3.66	.406**	.318**	.446**	.285**	.369**	<b>(0.89)</b>		
Business Process	14.11	4.63	.221*	.257**	.334**	.411**	.435**	.400**	<b>(0.92)</b>	
Survival	10.50	3.86	.519**	.277*	.513**	.470**	.518**	.402**	.429**	<b>(0.93)</b>

\*\* . Correlation is significant at the 0.01 level (2 -tailed).

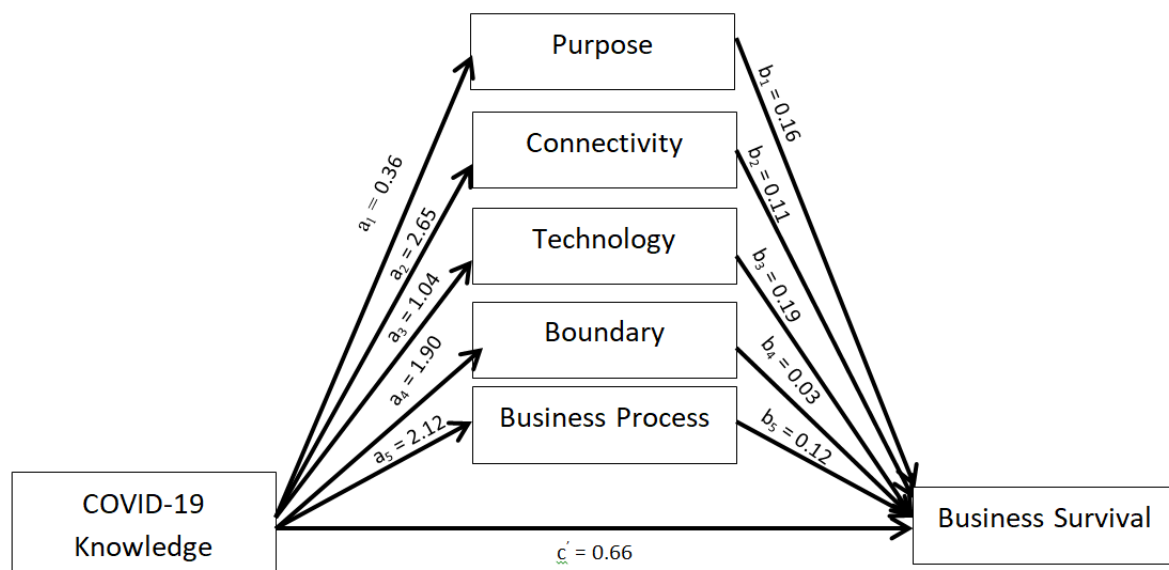
\* . Correlation is significant at the 0.05 level (2 -tailed).

The descriptive statistics (Mean and standard deviations) and the correlations of the key variable of the study are presented in Table 2. Generally, the correlations between the mediating variables are moderate, ranging from 0.285 to 0.483. There is a moderate relationship between COVID-19 Knowledge and firms' survival ( $r = 0.277$   $p < 0.01$ ). This implies that the higher the COVID-19 Knowledge that owners/managers have, the more chances they have to survive their businesses.

High correlations exist between the individual variables of virtual organization (purpose, connectivity, technology, boundary, and business process) and survival: Purpose and survival ( $r = 0.519$   $p < 0.01$ ); connectivity and survival ( $r = 0.470$   $p < 0.01$ );

technology and survival ( $r = 0.518$   $p < 0.01$ ); boundary and survival ( $r = 0.402$   $p < 0.01$ ); business process and survival ( $r = 0.429$   $p < 0.01$ ), an indication that higher virtual organizational activities foster survival of firms.

In testing the hypotheses of this study, data was collated on the various constructs of the study; for knowledge about the COVID-19 pandemic, for instance, the data was placed alongside with data collated for firms' survival, and the effect was determined. Also, the data for the dimensions of the virtual organization (purpose, connectivity, technology, boundary, and business process) were collated and utilized as mediators in the effect of COVID-19 Knowledge on small firms' survival in Nigeria.



**Figure 1: Results of the Structural Model**

Source: Outputs from PROCESS Plugins V.3

The results of the multiple mediation models as displayed in Figure 2 reveals the effects of COVID-19 Knowledge on the survivability of small businesses. The results indicated that there is a statistically positive significant effect of COVID-19 Knowledge on firms' survival ( $c'=0.66$ ;  $p>0.01$ ), meaning that the knowledge that firm owners/managers have concerning the COVID-19 pandemic does not significantly increase their chance of surviving their businesses. The results also did not indicate significant effects of COVID-19 Knowledge on the on purpose ( $a1 = 0.36$ ,  $p>0.01$ ), which means that the COVID-19 Knowledge will enhance the purpose of small businesses but not at a significant level. There is a significant effect of COVID-19 Knowledge on connectivity ( $a2 = 2.65$ ,  $p<0.01$ ), an indication that the COVID-19 Knowledge will cause small business owners/managers to create linkages with other firms in the industry. There is also a significant effect of the COVID-19 Knowledge on technology ( $a3 = 1.04$ ,  $p<0.01$ ), which implies that the knowledge fosters the use of technology. In the same line, there is a significant effect of COVID-19 Knowledge on the

boundary ( $a4 = 1.90$ ,  $p<0.01$ ), which means COVID-19 Knowledge allows small businesses to extend their boundaries. Contrarily, there is no significant effect of knowledge on the business process ( $a5 = 1.00$ ,  $p>0.01$ ), this implies that the COVID-19 Knowledge does not necessarily affect the business process.

The figure also presents the effects of the various dimensions of the virtual organization on firms' survival: no significant effect was found between purpose and firms' survival ( $b1 = 0.16$   $p> 0.01$ ) which implies that, although purpose will improve a firm's chances of survival, it does not predict it significantly. Similar findings were made between connectivity and survival; boundary and survival; and business process and survival respectively ( $b2 = 0.11$   $p> 0.01$ ;  $b4 = 0.03$   $p> 0.01$ ;  $b5 = 0.12$   $p> 0.01$ ). These findings imply that these dimensions have positive impacts on survival, although such impacts are not significant enough. However, the study also found that technology has a significant impact on the survival of firms ( $b3 = 0.19$   $p< 0.01$ ). This implies that technology drives small firms' survival.

**Table 3: Mediation Analysis**

Paths		Direct Effect	Indirect Effect	Total Effect	Decision
KN.→	Survival	0.66			Not Supported
KN.→	Purpose → Survival		0.057	0.72	Supported
KN.→	Connectivity → Survival		0.296	0.96	Supported
KN.→	Technology → Survival		0.198	0.86	Supported
KN.→	Boundary → Survival		0.058	0.72	Supported
KN.→	Business Process → Survival		0.247	0.91	Supported

Note: KN. = Knowledge about COVID 19 pandemic

Source: PROCESS V.3 output

Table 3 above presents the paths and their various values: the path from COVID-19 Knowledge to survival through purpose indicated an increase, i.e. a total effect:  $C = 0.72$  when the direct effect:  $c' = 0.66$  was combined with the indirect effect  $a1b1 = 0.057$ . This result implies that purpose improves the effect of knowledge on survival significantly. Similar findings exist among other paths: knowledge to survival through connectivity ( $0.29 \leq 0.66 \leq 0.96$ ); knowledge to survival through technology ( $0.19 \leq 0.66 \leq 0.86$ ); knowledge to survival through boundary ( $0.06 \leq 0.66 \leq 0.72$ ); and knowledge to survival through the business process ( $0.25 \leq 0.66 \leq 0.91$ ). These findings imply that the various dimensions of virtual organizations individually improve the effect of COVID-19 Knowledge of small firms' survival.

**Discussion**

The purpose of this study was to determine the intervening roles of the virtual organization on the

effect of knowledge about the COVID 19 pandemic on the survival of small businesses in a developing economy like Nigeria. The findings of the study revealed that COVID-19 Knowledge does not significantly predict the survival of small businesses, however when it is combined with the various dimensions of virtual organization, it significantly increases the chances of survival of small firms. These findings have supports from related research (e.g. Becerra-Fernandez et al., 2004; Skyrme 2001; Uriarte, 2008) the implications of these findings can be far-reaching for not just small businesses, but on other businesses as well. For instance, the positive effect found for COVID-19 Knowledge on survival could be explained to mean that there is an improvement in the survivability of firms, albeit that it is not significant. In other words, it could have been worse if there were no COVID-19 Knowledge at all. It means that COVID-19 Knowledge could have developed some levels of consciousness, no matter how small, that could have assisted owners/managers of these firms in devising

survival strategies for their firms. This also confirms the basic assumption of the organizational learning theory that the ability of a firm to manage the knowledge at its disposal, would determine its ability to survive.

The significant effect that the dimensions of the virtual organization showed in their mediating roles between the effect of knowledge and survival means a great deal for the owners/managers of these firms. The fact that purpose improved this effect means that knowledge would increase a sense of purpose for these firms, and this would increase their chances of survival. This finding has support from previous related studies (e.g. Barnatt, 2015; Chandna & Salimath, 2018). Also, the mediating role of connectivity in enhancing the knowledge-survival relationship implies that when firms gather more COVID-19 Knowledge, it will enhance their networking prowess with other firms, and this will increase their chances of survival, and this has empirical supports as well (e.g. Barnatt, 2015; Chandna & Salimath, 2018; Romero & Molina, 2010; Shao et al., 2000). The increasing effect of technology on the knowledge-survival effect is an indication that technology is often a sought-after media in recent times for businesses because it places them ahead of their contemporaries in business. This is particularly important because technology as an agent of change can be used to harness the COVID-19 Knowledge to increase the chance of a firm's survival. Studies like Kovacs and Kot, (2017) and Dua et al., (2020) have provided empirical backings to this effect.

This study also found that boundary also enhances the knowledge-survival relationship, which implies that the COVID-19 Knowledge will most likely condition firms to expand their boundaries like searching for other areas and employing other means through which they can survive their businesses (Romero & Molina, 2010; Shao et al., 2000). A similar assertion can be made for the effect of business processes on this relationship because knowledge would cause these firms to adapt or change the business processes that would enable them to survive the challenges caused by the pandemic. These findings also have received empirical supports (e.g. Barnatt, 2015; Chandna & Salimath, 2018; Romero & Molina, 2010). By these findings, this study has been able to make contributions by showing the effect of COVID-19 Knowledge on the survival of small firms, and as well as making theoretical contributions by showing that the organizational learning theory combined with the virtual organization theory will predict the organizational resilience theory.

## Conclusion

In conclusion, this study made 3 major contributions: small firms in Nigeria's perspective of virtual organization, an empirical view of the topic, and theoretical contributions in explaining how small firms in a developing economy like Nigeria can utilize their knowledge about the COVID 19 pandemic and virtual organization to survive through the pandemic. The study found that knowledge about the COVID-19 pandemic has an impact on the survival of small firms in Nigeria and that the individual dimensions of the virtual organization (purpose, connectivity, technology, and boundary and business process) all improve on this effect.

## Implications of the Findings

This study made several theoretical contributions through its findings. The study set out to determine the direct, indirect, and total effects of COVID-19 Knowledge through the virtual organization on the survival of small firms in Nigeria. The arguments of this study were built around two theoretical frameworks; the organizational learning theory and virtual organization theory. The organizational learning theory explains the relationship between the pandemic and firm survival as one of turbulence and only requires knowledge to reverse. Drawing from findings of previous studies, therefore, the study proposed that knowledge about the pandemic would foster small firms' survival in Nigeria (Iorfa et al., 2020; Hager et al., 2020). This study finding presents an extension in the applicability of the organizational learning theory in small ICT firms in Nigeria by indicating that knowledge gathered as a result of the impact of the pandemic enhances firms' survival.

This study found support for a mediating impact of the virtual organization in the relationship between COVID-19 Knowledge and survival, suggesting the important role of virtuality in the organization. Of note is that knowledge about the pandemic improves firms' chances of survival, although not significantly, but it shows that knowledge about the pandemic needs to be increased in order to survive more businesses. This knowledge, therefore, presents policymakers with options on how to ensure that small businesses operating within their terrain can survive the turbulence of the pandemic. With this finding, policymakers will be able to know the type of policies that should be designed that would help to not only grow small businesses, but that will also ensure their survivability. It will also guide them in their investments in infrastructures that should assist small firms in adopting virtuality in their organizations.

These findings also hold implications for the owners/managers of these small ICT firms because it highlights grey areas where they need to

concentrate more efforts towards improving. For instance, the study highlighted that knowledge about the pandemic increases the firms' chances of survival, therefore, these firms would have to increase their knowledge on the pandemic if they intend to remain in business. Similarly, the study highlighted

that virtual organization enhances this effect of knowledge on survival, therefore it implies that they need to adopt virtuality in their business operations as this will not only position for survival but will position for growth and expansion.



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## Can Stock Market Capitalization and Financial Development Predict Household Consumption in Nigeria?



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### Abstract

*The drastic digitization This paper investigates the relationship between stock market capitalization, financial development and household consumption in Nigeria. It uses time series data from 1985 to 2019 and employs impulse response function, variance decomposition and generalized method of moments. Findings show a positive and statistically significant relationship between household consumption and stock market capitalization but a statistically insignificant relationship between household consumption and financial development. The variance decomposition analysis shows stock market capitalization is a good predictor of household consumption. The results of Granger causality test show stock market Granger caused both household consumption and financial development. Hence, the study recommends effective monitoring of stock market performance as predictor of household consumption in Nigeria. Relevant authorities should continue to put their eyes on the stock exchange, as negative performance would mean that households that invested their savings in the market could be losing a source of their income for future consumption.*

### Introduction

Financial system is complex in both structure and functions. There are many different structures that constitute the financial system; they include banks, insurance companies, mutual funds, stock and bond markets, and so on (Mishkin, 2013). Households have several channels through which they can invest their surplus income for the purpose of future consumption or reinvestment. In a developing economy like Nigeria's, the percentage of Nigerians that own corporates stock or shares is negligible when compared with the entire population. Even in developed countries, the percentage of household owning shares is put at less than 30% by Poterba (2000), while Mishkin (2013) puts it at still less than that. Poverty has limited the ability of the poor to set aside some money for investment in the stock market. The speculative nature of the stock market makes it difficult for some households to hold shares for long. The constant fluctuations in stock market performance that makes it look like a game of chance explains why local investors are reluctant to commit large sums into equities (Hooke, 2007). Despite this, the stock market can play an important role in household consumption as source of investment income in form of dividend payouts, bonuses and appreciation in the value of the shares. It is widely believed that household consumption constitutes about two-thirds of nations' gross domestic product (Mankiw, 2007). Consumption expenditures are the most significant financial planning component of households. It is estimated that in Nigeria, household consumption contributed 59% to GDP between 1990 and 2017 (World Development Indicators, 2019). Household consumption plays a key role in the determination of welfare in a society and in gauging the dynamic effect of economic shocks (Keho, 2019). Normally, households receive income from their labour and investments. They then pay taxes to government. From the remainder they now decide how much to consume and how much to save (Mankiw, 2007). According to Tobin and Golub (1998), most individual wealth is held in assets the value of which can be quickly realized. The proceeds of selling these assets or pledging them as collateral for collecting loans can increase the individual's consumption whether s/he wishes to consume at a rapid rate for a short period or at a slow rate for a long period.

The links between household consumption and household financial level have been widely researched. Household access to finance has been recognized as an important factor in consumption smoothing and poverty reduction (Alemayehu et al, 2006). Poverty trap leads to liquidity constraints that also limit the ability of households to achieve consumption smoothing. According to Davig and

Hakkio (2010), previous experiences have shown that households and businesses pull back on consumption spending and new investments in response to contractions in credit availability and wider financial stress. Financial development encompasses developments in the banking sector and enhancement of financial infrastructure. This enables households to get good returns from their savings which helps to boost consumption. In addition, a highly developed financial sector makes possible the availability of easy consumer credit. Thus, both stock market and wider financial development shall be expected to boost household consumption in an economy. Hence, a priori, we shall expect positive relationship between household consumption, stock market capitalization and financial development. There is a strong connection between stock market and economic activities; hence, the reason why stock market is seen as a barometer of economic activities in any modern economy. Expectation is very important in analyzing stock market behaviour. The theory of efficient market hypothesis (EMH) is based on expectations in the market. Expectations in financial markets are equal to optimal forecast using all available information. EMH assumes that prices of securities in financial markets fully reflect all available information (Mishkin, 2013). Generally, stock market development is considered as a major contributor to economic growth by providing the enabling environment for growth and economic development (Abdullahi, 2017 and Abdullahi, 2020).

During periods of recession or when stock markets experience crisis, households' investments in general and particularly in the stock market suffer as a result; thus, we shall expect households' future consumption to contract. Worldwide, experience has also shown that stock markets around the world contract during recession. Do our data explain this phenomenon when analyzed using impulse response function, variance decomposition and Granger Causality? The banking sector and other segments of the financial sector such as insurance, mutual funds, venture capital and pension firms are the nucleus of financial development. Do contractions in the financial development variable predict contraction in current and future consumption? Do movements in households' consumption, stock market capitalization and financial development follow business cycle? If so, what can we learn from business cycle to help explain the variables in our study? The paper uses impulse response function, variance decomposition and Granger Causality to analyze the data in the study. Impulse response function and variance decomposition were used to measure short run dynamics in the model, while GMM was used to measure its long run dynamics. Because we are not

very sure of the actual form of our model, we use GMM to ensure that we do not fail to capture nonlinearities in the model. The study has implications for government policies, especially how monetary authorities such as the central bank can employ tools of monetary policy to influence household consumption in Nigeria. Measures that manipulate interest rate, deposit ratio, quantitative easing, banks' capital base, etc., have both direct and indirect effects on household consumption. The paper is structured into introduction, literature review and theoretical framework, methodology, results and analysis, implications and summary and conclusion.

### Literature review and theoretical framework

Tapsin and Hepsag (2014), in an analysis of household consumption expenditures in Europe noted that consumption-income ratio in the region remained nearly flat between 2000 and 2008; but, it rose in 2009 during the global finance crisis. But this rate returned to its previous level between 2010 and 2012. This provides further evidence to the theoretical assertion that Marginal Propensity to Consume (MPC) during higher income earning period is lower than during lower earning period. It is also the same thing as saying MPC of the poor is higher than the MPC of the rich. Empirical work by Iheonu and Nwachukwu (2020) showed that gross domestic product per capita and domestic credit to the private sector significantly improved household consumption among selected West African countries. Zhu (2008) and Campbell (2006) suggested that consumption patterns made households financially over-stretched and susceptible to adverse events. Hurst and Stafford (2004) document the extent to which homeowners used housing equity to smooth their consumption over time. They noted that unlike drawing down other forms of saving, accessing accumulated home equity can be quite costly for households. They predicted a large consumption stimulus as mortgage rates were reduced, allowing households with low pre-existing levels of liquid assets to more easily access their accumulated home equity. Yang et al (2018) discovered that sustained increase in household wealth and housing-ownership rate was accompanied by decrease in consumption rate. They also identified a negative correlation between housing price and household consumption. Honohan (2006) observed that although financial asset holdings by households were highly concentrated, deeper financial systems were correlated with improved income distribution. He cautioned that for low-income countries, the relevant question for poor households was not how much financial assets they had, but whether they had access to financial products at all. He

discovered that for households, deposit products tended to be the first to be used as prosperity increases, before more sophisticated savings products and borrowing.

Li et al (2020) examined impacts of digital inclusive finance on household consumption. The results suggested that the digital inclusive finance could promote households consumption. Mukhtar et al (2020) in a study on household consumption in Nigeria found that interest rates affected household consumption. They noted that a statistically significant relationship between interest rate and household consumption meant that Nigerian monetary authorities could boost household consumption by lowering interest rates. Tran et al (2017) examined impact of financial development on household welfare in Vietnam. Their findings showed that local financial development had significant positive effect on household annual income, consumption and consumption smoothing. They particularly noted that households with high demand for credit consumed more in financially developed localities, reflecting the role of local financial development in consumption smoothing. They also noted that local financial development reduced the probability that a household would cut its consumption as a result of negative income shock. But, Gloede and Rungruxsirivorn (2012), while providing new micro evidence on the relationship between financial development and welfare, showed that financial development was able to improve financing of consumption, but the effect of financial development on credit as an instrument to insure consumption risk was not supported. Their finding implied that consumption smoothing was just weakly improved by larger financial development. How important is the stock market effect on consumption, asked Ludvigson and Steindel (1999). Their results suggested that the question may be difficult to answer partly because the trend relationship linking consumption, wealth, and labor income exhibited some instability.

Coskun et al (2018), explored the linkage between wealth effects, arising from stock and housing market channels, and household final consumption for 11 countries between 1970 to 2015. They found that consumption was mostly explained by income and housing wealth was positively and significantly correlated with consumption. They also detected a negative linkage between consumption and stock wealth. Their work also suggested a long-run cointegration relationship among consumption, income, interest rates, housing wealth, and stock wealth. In addition, they found bidirectional causality between consumption and income, stock wealth, housing wealth, and interest rates. Overall, the evidence implied housing wealth, rather than

stock wealth, is the primary source of consumption growth in advanced countries. Di Maggio et al (2018) investigated how consumption responded to changes in stock market returns. They found that unrealized capital gains led to a MPC of 13 percent for the bottom 50% of the wealth distribution but a flat 5 percent for the rest of the distribution. They also found that households' consumption was significantly more responsive to dividend payouts across all parts of the wealth distribution. Their findings are consistent with near-rational behavior in which households optimize their consumption with respect to capital gains and dividend income as if they were separate sources of income. Sosa Cueto (2017) found that relationship between consumption and wealth was positive and statistically significant. However, the evidence does not show any direct relationship between aggregate consumer behavior and the S&P500 stock index. Thus, the stock market impact on consumption is only reflected through the changes in aggregate wealth. In a different work, Brei et al (2018) empirically investigated the link between financial structure and income inequality. Using data from 1989 to 2012 for a panel of 97 economies, they found that the relationship was not monotonic. Up to a point, more finance reduces income inequality. Beyond that point, inequality rises if finance is expanded via market-based financing, while it does not when finance grows via bank lending. Their findings are in line with a well-established literature indicating that deeper financial systems help reduce poverty and inequality in developing countries (Gurley and Shaw, 1956; Levine and Zervos, 1998; Hassan, Sanchezb and Yu, 2011).

There are several theories that try to explain consumption behaviour. Very prominent among them include Keynes absolute income hypothesis, Friedman permanent income hypothesis, Modigliani life cycle hypothesis, Duessenberry's relative income hypothesis, Robert Hall random walk hypothesis and David Laibson pull of instant gratification. Keynes shows that income is the main determinant of consumption through the concept of average propensity to consume (APC). He postulated that consumption is subject to a fundamental psychological law where a change in consumption is less than 1 (Diulio, 1998). Friedman's permanent income hypothesis postulates that consumption is a function of both current and expected income. What Friedman means by permanent income is income which households expect to receive over an extended period, while transitory income consists of any unexpected addition or subtraction from permanent income (Diulio, 1998 and Mankiw, 2007). Modigliani's life cycle hypothesis maintains that households stabilize consumption overtime as they relate consumption to expected lifetime income. He

believed that individuals being rational are capable of planning consumption over their entire life. Duessenberry's relative income hypothesis postulates that consumption decision is greatly influenced by the social environment in which the consumer lives. Robert Hall's random walk hypothesis combines permanent income hypothesis with rational expectations theory to produce his random walk hypothesis. He showed that if permanent income hypothesis is correct and if consumers have rational expectations, then changes in consumption over time should be unpredictable (Mankiw, 2007). David Laibson's pull of instant gratification is based on behavioral economics. Laibson observed that many consumers judged themselves to be imperfect decision makers. Consumers' preferences are considered time-inconsistent. The pull of instant gratification makes the consumer to change his mind frequently (Mankiw, 2007).

Middle class households divide their disposable income into consumption and savings. It is assumed that the level of consumption depends directly on the level of disposable income.

$$C = c(Y - T) \quad (1)$$

Where, C is consumption, Y is income and T represent tax. This is the well-known consumption function of the Keynesian school of thought. Keynes thought that income was the primary determinant of consumption and that interest rate does not have much role to play in consumption (Mankiw, 2007). Stock market investment is part of household wealth: a fall in stock prices makes people poorer and thus, depress consumer spending which also reduces aggregate demand (Mankiw, 2007). Tobit and Golub (1998), rightly observed that 'it is a convenient fiction to imagine the investor to divide his total wealth into as many portfolios as he has target dates, their relative sizes depending upon expected consumption requirement in relation to other income at the various dates'. Our household consumption model here is based on Tobit and Golub (1998), modifying it slightly to suit our situation:

$$\max E \left\{ \sum_{t=0}^T U(C_t, t) \right\} \quad (2)$$

Where U = Utility, C = Consumption, t = time and household seeks to maximize expected utility over time between t=0 and t=T, subject to the requirement that consumption is given by income minus saving:

$$C_t = Y_t + W_{t-1}[s + x(g - s)] - W_t \quad (3)$$

Where Y = income, W = Wealth, s = saving. Utility from current consumption and expected utility J of future consumption which depends on wealth, recognizing the trade trade-off between current consumption and wealth accumulation:

$$\max\{U(C_t, t) + E_t[J(W_t, t)]\} \quad (4)$$

The first order condition for maximizing consumption is to get the marginal utility of wealth equal to the marginal utility of consumption:

$$\frac{dU}{dC} = \frac{dJ}{dW} \quad (5)$$

This determines the saving-consumption decision which determines investible wealth (Tobit and Golub, 1998).

## Methodology

### Data

Because the percentage of Nigerians owning shares is not sizable, the direct relationship between stock market capitalization and household consumption might not be very strong. But, if it is looked at indirectly through other channels, it may explain any possible strong relationship. Besides, the rich that tend to own most of the shares have big consumption expenditures when you include nonfood consumptions and consumer durables. Domestic investors are not the only set of investors that invest in a stock market. In fact, emerging stock markets such as that of Nigeria attract a lot of investment from foreign portfolio investors. But, looking at the stock market as the barometer of the economy, one cannot just deny its possible correlation with household consumption. The fact that both household consumption and stock market capitalization increase with a boost in the economy indicates some correlation.

Financial development indicators are generally measures of financial structure that include system-wide indicators of size, breadth, and composition of the financial system; indicators of key attributes such as competition, concentration, efficiency, and access; and measures of the scope, coverage, and outreach of financial services (International Monetary Fund, 2005). It is expected to have positive relationship with consumption, since banks and other financial institutions themselves serve as important sources of providing saving facilities for households to save against future consumption as well as providing liquidity through credit facilities to finance consumption of households that are facing liquidity constraints. The data is annual data that range from 1985 to 2019. It was sourced from the World Bank, National Bureau of Statistics and the Nigerian Stock Exchange. The usual stationarity tests were conducted on the time series variables. Methods of analysis

The study measures the dual effects of stock market development and financial development on domestic household consumption. It also seeks to forecast changes in household consumption from changes that previously took place in stock market

capitalization and financial development. The methods of analysis used for the study are Granger causality, Impulse Response Function and Variance Decomposition. The impulse response function determines how each endogenous variable responds overtime to a shock in that variable and in every other endogenous variable (Pindyck and Rubinfeld, 1998). It traces the response of endogenous variables to different types of shocks. It measures the effects of shocks in the error terms. The term 'impulse response' is the tracing through of the effects of these shocks. Here there is no simple way to unambiguously identify shocks with specific variables. The error terms have common components that affect more than one variable. Thus, we find out which part of change in household consumption is attributable to each of stock market, financial development variable and the lag value of household consumption, through variance decomposition analysis. We develop a model for household consumption; then we relate current and lagged values of household consumption, stock market capitalization and financial development. To see what the model tells us about the dynamics of the household consumption function, we study the response of each of the endogenous variable to shocks in that variable and in the other endogenous variables. Variance decomposition also characterizes the dynamic behaviour of the model. It breaks down the variance of the forecast error for each variable into components that can be attributed to each of the endogenous variables.

### Model

The model has the following empirical format:

$$HC = \alpha + \beta SM + \delta FD + \mu \quad (6)$$

Equation (6) is transformed into a dynamic model. The dynamic model posits that present stock market capitalization and previous stock market capitalization can influence present level of household consumption. The dynamic model also posits that present level of financial development and previous level of financial development can influence present level of household consumption. Also, the model captures the impact of previous level of household consumption on present level of household consumption. Its dynamic format is

$$HC_t = \alpha + \beta_1 SM_t + \beta_2 SM_{t-1} + \delta_1 FD_t + \delta_2 FD_{t-1} + \gamma HC_{t-1} + \mu_t \quad (7)$$

### Results and analysis

#### Granger Causality Test

The results of the Granger causality test show that stock market Granger caused both household consumption and financial development; see table 1.

**Table 1:** Results of Granger Causality Tests

Source: Author's computation using Eviews

#### Impulse Response Function:

Table 2 provides the results from VAR analysis. The results from the impulse response function show that in Figure 1a, one standard deviation shock in household consumption i.e. one period change in the error term, led to initial rise in household consumption (HC) variable while both stock market capitalization (SM) and financial development (FD) did not move from zero. But in the second period, both HC and SM rose, though in different magnitudes; while financial development variable falls. But, over time, all the three variables stabilize. In Figure 1b, it shows response of each variable to one standard deviation shock in stock market capitalization. It shows that in the first period both HC and SM increase, while FD decreases. But towards the third period, both HC and SM began to fall while FD rose. Later on as time passed all the three variables stabilized. In Figure 1c, a one standard deviation shock in financial development led to the rise in all the three variables. However, FD is affected more than the other two variables. In the second period both HC and SM continue to rise while FD falls. Towards the fourth period they all fall before beginning to stabilize from the fifth period.

**Table 2:** Results of VAR analysis

Source: Author's computation using Eviews

#### Figure 1: Impulse Response function

Source: Author's computation using Eviews

#### Variance Decomposition:

Variance decomposition breaks down the variance of the forecast error for each variable into different components. The results from the variance decomposition in Table 3 show the variance decomposition for the household consumption. Column 3 shows the percentage of HC forecast variances that can be attributed to shocks in HC alone, as opposed to SM and FD. Column 4 shows percentage of HC forecast variances that can be attributed to shocks in SM; while column 5 shows percentage of HC forecast variances that can be attributed to FD. In the seventh period, about 85% of the forecast variance will be attributed to HC; about 14% to SM and about 1% to FD. It can be noticed that the greater the forecast time horizon, the larger the proportion of forecast variance attributable to non-household consumption variables.

**Table 3:** Variance Decomposition

Source: Author's computation using Eviews

The results of these analyses showing strong correlation between household consumption and stock market capitalization has been found by the work of Di Maggio et al (2018). It also indirectly supports the work of Tokoya and Adekeye (2021), Sosa Cueto (2017), Iheonu and Nwachukwu (2020) and Mukhtar, Abdullahi and Murtala (2020). Mankiw (2007) had also noted that holding stock market investment as part of household wealth implied that a fall in stock prices made people poorer and, thus, depressed consumer spending, which also reduced aggregate demand. The weak relationship between household consumption and financial development also supported the work of Gloede and Rungruxsirivorn (2012). Figure 2 shows the graphs of the residuals of the variables after conducting a VAR analysis. HC and SM show strong similarity while FD did not show much similarity to the two.

Figure 2: VAR Residuals

**Source:** Author's computation using Eviews

**Implications**

The main implication of this work is that stock market movement can be used to predict the behaviour of household consumption in Nigeria, while financial development is a weak candidate in forecasting the behaviour of household consumption in Nigeria. This further cemented the role of the stock exchange as barometer of economic activities in an economy. Considering that consumption is considered to contribute more than 50% of economic activities in an economy, any variable that can predict consumption may reasonably predict the economy. A fall in stock market activities may be a good predictor of a fall in consumption activities in Nigeria while a rise in stock market activities is expected to have equally positive effects on household consumption. Thus, aside households, all those supplying the consumables used by household should follow stock market performance as it could mean a rise or fall in the consumption of their goods and services. Authorities should continue to put their eyes on the stock exchange, as negative performance will mean that households that invested their savings in the market could be losing a source of their income for future consumption. In respect of the question posed at the beginning of the paper, as to whether household consumption, stock market capitalization and financial development followed business cycle, the answer is yes and no. Since there is no certainty about the financial development variable, considering the results here, our answer in the case of FD is no or rather inconclusive. But, in the case of household consumption and stock market capitalization, since both are strongly correlated and we know from experience that stock market is one of the important

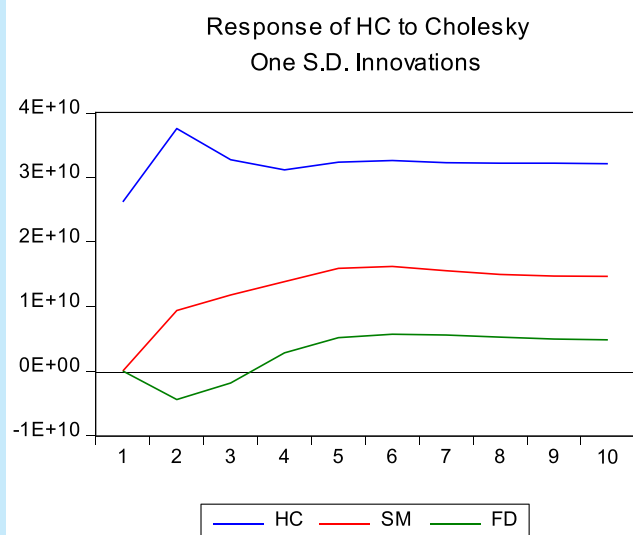
indicators of activities in an economy, we can say that HC and SM follow the business cycle.

**Summary and conclusion**

The paper analyzed the relationship between household consumption, stock market capitalization and financial development. It discussed the major theoretical and empirical works in this field; then proceeded to put forward a theoretical framework that formed the bedrock of the work. It used time series data on the three variables with different econometric analysis methods. The result of the impulse response function, variance decomposition and generalized method of moment show that there is strong positive relationship between household consumption and stock market capitalization, and that stock market performance can be used to predict the behaviour of household consumption. Contrarily, the forecast ability of financial development variable in the model was weak. The result of the analysis in the case of stock market capitalization is in line with our a priori expectation, while the result of the financial development contradicts it. It is recommended that government, firms and household should view stock market performance as a good indicator of economic activities in Nigeria and, in particular, the household consumption. Thus, stock market performance can be used to predict household consumption. Government, through the Securities and Exchange Commission and other regulatory agencies, should continue to ensure a level playing field in the floor of the Nigerian Stock Exchange and ensure that market manipulators do not harm the market through negative practices which will later negatively affect the larger economy.

**Figures**

Figure 1 a-b-c:



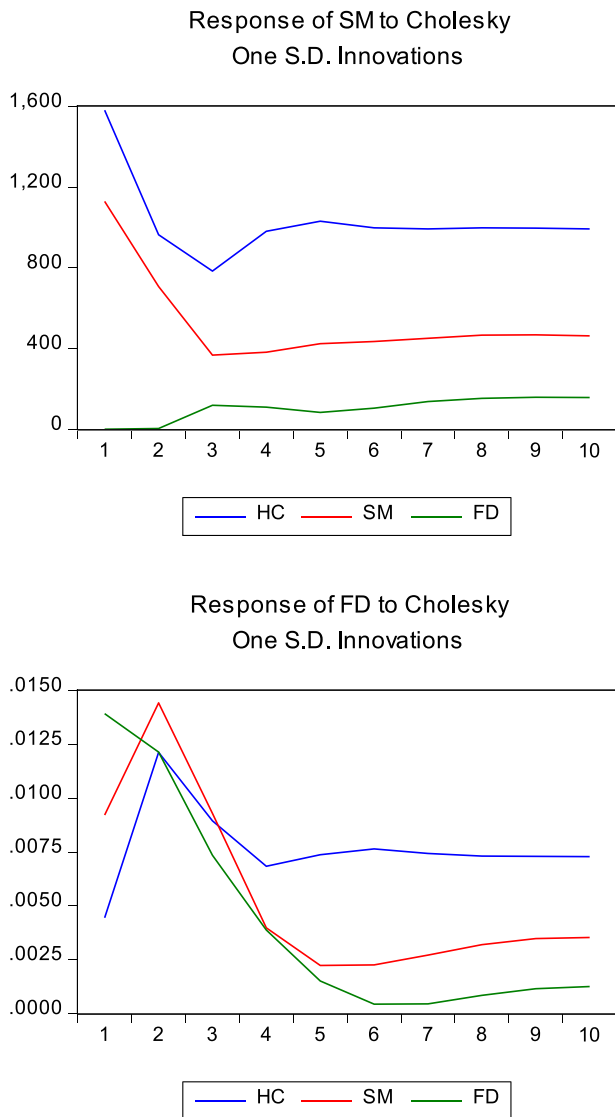


Figure 2

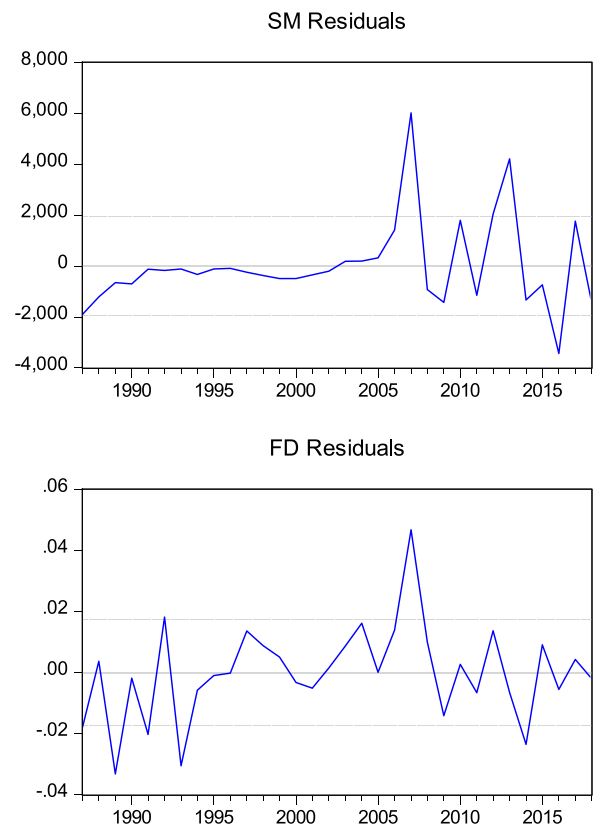
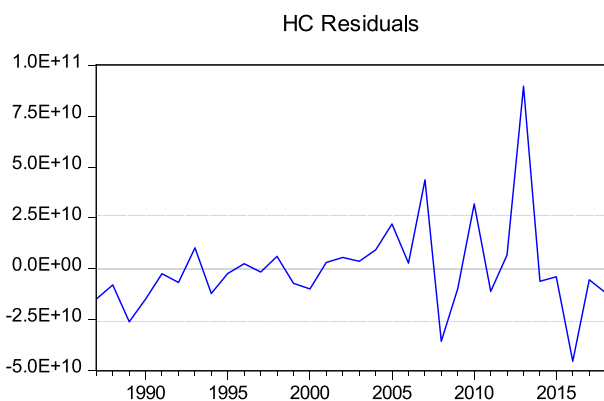


Table 1

Null Hypothesis:	Obs	F-Statistic	Prob.
SM does not Granger Cause HC	33	3.25662	0.0489
HC does not Granger Cause SM		0.91469	0.4123
FD does not Granger Cause HC	32	0.71947	0.4961
HC does not Granger Cause FD		2.41046	0.1088
FD does not Granger Cause SM	32	0.29768	0.7449
SM does not Granger Cause FD		6.76385	0.0042

Table 2

VAR Results

	HC	SM	FD
HC(-1)	0.830246 (0.31542) [ 2.63219]	-1.02E-09 (2.3E-08) [-0.04367]	-2.71E-14 (2.1E-13) [-0.13005]
HC(-2)	-0.111210 (0.18488) [-0.60151]	1.45E-08 (1.4E-08) [ 1.06090]	6.73E-14 (1.2E-13) [ 0.55203]
SM(-1)	10914676 (4699002) [ 2.32276]	0.625128 (0.34851) [ 1.79370]	5.66E-06 (3.1E-06) [ 1.82689]
SM(-2)	-2542769. (4901218) [-0.51880]	-0.125435 (0.36351) [-0.34507]	-4.27E-06 (3.2E-06) [-1.31910]
FD(-1)	-3.18E+11 (3.1E+11) [-1.02692]	207.3631 (22947.3) [ 0.00904]	0.871996 (0.20415) [ 4.27143]
FD(-2)	4.05E+11 (2.6E+11) [ 1.54138]	7902.970 (19473.0) [ 0.40584]	-0.242451 (0.17324) [-1.39953]
C	-2.48E+09 (4.2E+10) [-0.05892]	-1218.366 (3118.08) [-0.39074]	0.061459 (0.02774) [ 2.21560]

Table 3

## Variance Decomposition of HC:

Period	S.E.	HC	SM	FD
1	2.62E+10	100.0000	0.000000	0.000000
2	4.70E+10	95.12306	3.990016	0.886924
3	5.85E+10	92.69067	6.635519	0.673809
4	6.78E+10	90.21211	9.113465	0.674427
5	7.69E+10	87.68724	11.33779	0.974977
6	8.53E+10	85.92817	12.83406	1.237772
7	9.27E+10	84.91265	13.68012	1.407230
8	9.94E+10	84.33581	14.16338	1.500809
9	1.06E+11	83.96859	14.48231	1.549095
10	1.11E+11	83.69072	14.73004	1.579237



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## Social Capital Investment and Sectoral Productivity in Nigeria (2005-2017)



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### Abstract

In many developing countries, the approach for lifting the poor out of poverty has focused on how to build physical and human capital, while social capital, which is critical for the effectiveness of all other types of capital, has been largely ignored. The effects of social capital investment on sectoral productivity in Nigeria was investigated in this study. Annual time series data from 2005 to 2017 sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Bank Development Indicator were utilized in the study. Granger causality technique was used in the analysis of data. The findings revealed a bi-causation link, with institutions found to granger cause agricultural and non-agricultural sector productivity, but no causality was found between agricultural and non-agricultural sector productivity and social network as well as trust level. The implication of the result is that, social capital, specifically the level of trust required to create personal relationships in business and other institutions, does not stimulate productivity growth. It was suggested that families and educational institutions should through policy instill in students the importance of being trustworthy, honest, and law abiding in their interpersonal connections and contractual agreements with others in society.

**Word Count: 196**

**Keywords:** Social capital, Investment, Agricultural sector, Industrial, Sector, Service sector, Productivity

### Introduction

Productivity has traditionally been linked to traditional elements such as physical and natural capital, technology, and human capital in development economics. Meanwhile, it's becoming clear that inequalities in many economies at the individual, household, and state levels can't be fully explained by differences in traditional inputs like land, labor, and physical capital (Iyanda, Afolami, Obayelu, Ladebo, 2014). Poverty reduction, better education and health, more fair income distribution, and other social components of development are included in a broader view of economic growth and development (Rasak, 2019). As a result, social capital is a key aspect in a country's economic growth and development, making growth and development a multi-dimensional notion (Iyanda, 2015). According to World Bank (2002), society is more than just a collection of individuals because of shared values and rules for social behaviour expressed in personal connections, trust, and a common sense of civic responsibility. It is the combination of trust, civic standards, and networks that enable collective action and improve market performance by lowering transaction costs (Rasak, 2019). Macro-level social capital refers to the governmental institutions that influence people's ability to cooperate for mutual benefit, such as the rule of law, contract enforcement, and the absence of corruption, transparency in decision-making, an efficient administrative system, and a reliable legal system (Clague, Keefer & Knack, 1999).

Traditional resources (physical capital, human capital, etc.) are supplemented with other resources (social networks, trust, norms and values, and so on) to achieve better outcomes (Coleman, 1988). As a result, communities with a bigger stock of social capital are in a better position to benefit from increased economic growth chances (Isham et al, 2002). In general, social capital is defined by organizations and networks, trust and solidarity, collective action and collaboration, information and communication, social cohesion and inclusion, empowerment, and political activity, all of which are necessary for material gain and welfare advancement (Abdul-Hakim et al, 2010).

Social capital is all around us, and it can benefit us in a variety of ways, both subtle and obvious. For example, trust is the foundation of most personal relationships, which is a key determinant of human wellbeing; trust can also give people the confidence to lend a small sum of money to a colleague or a friend in need, or to let neighbors borrow tools and appliances; and living in a trustworthy community reduces the need for personal security and policing expenditures (Saguaro, 2003). However, depending

on the motives behind its formation, some social capital may be beneficial while others may be deleterious; depending on these motives, social capital destruction is faster than its formation because it is a behavioral act involving a series of underlined processes. Negatively motivated social capital can obstruct the course of the individual, the society, and the economy as a whole (Jane et al., 2004). Incomplete property rights, transaction costs, poor government policies, economic inequality, inadequate legal and business institutions, capital market inefficiencies, and cultural differences are all structural barriers to growth and development (Yeager, 1999). The majority of these development roadblocks are caused by (or result from) a lack of social capital (Rasak, 2019).

### Statement of Problem

The strategies used in Nigeria to create economic growth opportunities are mostly macro in nature. Furthermore, poor assistance focuses on enhancing the poor's physical and human capital, allowing them to enhance their economic activities, productivity, and income. Another important form of capital, social capital, appears to be overlooked when it comes to creating economic growth opportunities for the poor. This is unfortunate, because a growing corpus of recent research has shown that social capital is a key factor of productivity (Ebi, Emmanuel & Ubi, 2013). It is a helpful tool for tackling many of the social ills that plague modern communities, such as crime.

Despite the social and economic relevance of social networks in the development process in both developing and developed countries, few studies on the impact of social capital on productivity in the basic sectors of the economy have been conducted. Instead, research aiming to explain factors influencing earnings distribution have frequently relied solely on the human capital paradigm, ignoring the vital relevance of social capital and neighborhood effects. In light of this, the purpose of this research was to answer the following questions:

- i. What is the effect of social network on sectoral productivity in Nigeria?
- ii. What is the effect of institution on sectoral productivity in Nigeria?
- iii. How does the degree of trust affect sectoral productivity in Nigeria?

The research adds to the body of knowledge on the significance of social capital in generating productivity for development. The study will assist the government in identifying areas of social capital that are lacking in the society and need to be addressed, so motivating the government to develop

appropriate programs and policies to aid the growth of social capital. The research is divided into four components. The study's background was described in section one, while section two concentrated on the literature review. The data analysis and conclusion were presented in sections three and four, respectively.

### Literature Review

An economy is made-up of several sectors on the basis of which several classifications have been drawn in the literature. The three basic sectors of an economy are the primary, secondary, and tertiary sector (Akita & Hau, 2008). The primary sector is predominantly agriculture; the secondary sector refers to manufacturing which is often used interchangeably with industrial sector while the tertiary sector is synonymous with services. Conceptually, agriculture is the production of food, feed, fiber and other items through the growing and harvesting of plants and animals. Agriculture comprises of crop production, cattle, forestry, and fishing (Iganiga & Unemhilin, 2011). It involves and comprises of crop production, livestock and forestry, fishery, processing and marketing of those agricultural produce (Mabuza, Taeb & Endo, 2008). Industrialization can be considered as a transition in the direction of an economy from a largely agrarian economy to manufacturing and industry oriented one. Industrialization is often associated with the growth in industrial output as a result of mechanized system of production. Services is a varied collection of economic activities not directly involved with the creation of commodities, mining or agriculture'. Alternative definitions and categorization schemes of service abound in the literature. The essential features of services on which most of the classifications are based are: non-transferability and non-storability. Other linked qualities of services that need to be noted are services are heterogeneous and flexible in production and imperfect completion.

On the other hand, although social capital has been popularized in the past two decades following studies by Bourdieu (1986), Coleman (1988) and Putnam (1993), the concept of social capital has a long intellectual history in social sciences dated back to about 100 years when Hanifan (1916) invoked the concept of social capital to explain the importance of community participation in enhancing school performance. In his study on local government performance in Italy, Putnam (2000) proposes social capital as follows: whereas physical capital refers to tangible goods and human capital to the attributes of humans, social capital refers to relationships among individuals- social networks and the norms of reciprocity and trustworthiness that

result from them. In that sense, social capital is strongly tied to what is called "civic virtue". It is often regarded as the degree of trust, cooperative norms and networks and affiliations within a society (Coleman, 1988). Institutions, relationships, and conventions that shape the quality and quantity of a society's social interactions are referred to as social capital by the World Bank.

Theory-wise, Amartya Sen's capacity approach model connects "Absolute deprivation to the relative deprivation in terms of goods, incomes, and resources (Sen, 1981). Sen believes that every human being should be able to exercise a set of fixed (i.e., invariant across societies and time) capabilities in order to avoid being called poor. The concept is that the amount of material needs/resources required to acquire these talents may differ over time and between cultures in order to meet this requirement (as opposed to the capabilities themselves). As a result, poverty is context-dependent on the methods to eliminate it, but not on the non-material aspirations that characterize poverty's fulfillment. As a result, the socioeconomic milieu in which an individual lives lends a feeling of relativism to the concept of poverty. "Poverty is an absolute notion in the space of capacities, but it will very often adopt a relative shape in the space of commodities or qualities (Sen, 1981). The difficulty of evaluating broad definitions of capacities is a flaw in Sen's method. As a result, research in this field tends to measure outcomes rather than capabilities; for example, life expectancy and literacy rates are used as proxies in practice to capture non-directly measurable concepts like the ability to live a disease- and disability-free life, and the capability of critical thinking and autonomy/freedom of thought, respectively. In applied research, these metrics are arguably the greatest approximation of the intangible concepts of capabilities. The study of economic growth was offered by Solow Growth Theory, which was based on a basic neoclassical production function. Technical development, expanded labor supply, and capital accumulation, according to Solow, are important factors of GDP growth. Other elements that contribute to GDP growth include the availability of natural resources and human capital. In fact, in industrialized countries, human capital accounts for a significant portion of income. Furthermore, the high investment ratio (big physical capital stock) may contribute to GDP growth. Solow residual, on the other hand, is the change in total factor productivity, which is a measure of technical development. In other words, it refers to the amount by which output would grow as a result of advances in production procedures while all other inputs remained constant.

Existing research on the economic role of social

capital is primarily based on qualitative measures such as questionnaire or household survey data. These research have proven that social capital plays an important influence in the economy. Obikili (2013) found that farmers in townships with higher social spending spend more on education individually, even after controlling for various characteristics of the farmers and townships, in a study on the relationship between social and human capital in colonial Western Nigeria based on data on cocoa farmers' expenditure in 1952. The researchers concluded that there is a link between social and human capital during the colonial period. Ayanlere, Omotesho, and Muhammad-Lawal (2018) looked at the impact of social capital dimensions on fertilizer usage intensity among small-scale farming households in Kogi State, Nigeria, using data from a multistage sample of 352 farming households and descriptive statistics and the Tobit regression model. According to the findings, the intensity of fertilizer use increases when social capital indicators such as the heterogeneity index and the decision-making index rise.

Weaver and Habibov (2012) look at data from Canada's General Social Survey to see how social capital and human capital affect people's reported incomes. The main findings were that both social and human capital had an impact on income, with human capital having a greater impact on economic mobility than social capital. Agyapong, Agyapong, and Poku (2017) used data from Ghana to find a similar association between social capital, innovation, and performance of micro and midsize companies (MSBs) in emerging economies. The research was based on a survey design and cross-sectional data acquired by questionnaire from 500 MSBs in Ghana's Ashanti Region. The findings highlight the importance of social capital and innovation in MSB performance in emerging economies.

In another study, Durojaiye, Yusuf, Falusi, and Okoruwa (2012) looked at the impact of social capital on the profitability of food traders in Southwestern Nigeria, using data from 392 food traders who were randomly selected from rural and urban markets in the study area. Descriptive and Ordinary Least Square regression analysis were used to arrive at the conclusion. It was discovered that aggregate social capital has a significant impact on the profitability of food sellers. The effect of social capital on the profitability of food traders is evident from the cohesion index, membership density index, decision making index, cash contribution, and labour contribution when social capital is disaggregated into its constituents. Olawuyi and Mushunje (2019) investigated social capital and the adoption of alternative conservation agricultural

practices in South-Western Nigeria using cross-sectional data obtained from 350 sample units selected from South-Western Nigeria using a multistage sampling technique. This study used descriptive statistical tools and cross-tabulation techniques to profile the Farmers' years of farming experience ( $p < 0.1$ ), frequency of extension visits ( $p < 0.05$ ), and social capital vs. density of social group memberships ( $p < 0.05$ ) all played a role in the number of conservation agricultural (CA) practices adopted by smallholder farmers to varied degrees. Although social capital, as measured by occupational group participation and social group variety, had a favorable impact on the number of CA practices implemented, it was not substantial, owing to the study area's "knowledge gaps" about agricultural technologies. However, the marginal treatment effects (MTEs') statistical analyses revealed that the treatment effects differed significantly across the variables, as well as with unobserved heterogeneity. Mukaila, Sakariyau, Dauda, Paiko, and Zubairu (2012) used a set of household data generated from the administration of a structured questionnaire to 600 households in Minna metropolis, a multiple linear regression analysis, and participatory poverty assessment methods to investigate Social Capital and Poverty Reduction in Nigeria. The findings suggest that social capital has a positive relationship with poverty reduction in cities.

### Data Analysis

The ex post facto research design is used in this study. This research method was chosen because it is a quasi-experimental research design that is particularly beneficial in evaluating how an independent variable with data already compiled prior to the study such that its value cannot be manipulated. This study adapts Ayanlere, Omotesho, and Muhammad-Lawal (2018) theoretical framework on the influence of social capital aspects on fertilizer usage intensity among small-scale farming households in Kogi State, Nigeria. In the theoretical framework, social capital is one of the assets available to households for generating income and enabling consumption, with physical assets and human capital being the other assets. These assets are pooled by the household to engage in economic activities, either within the household or on the outside labor market. A traditional model of household economic behaviour under constrained utility maximization formalizes this link in a set of structural equations (Ayanlere, Omotesho and Muhammad-Lawal, 2018). The set of structural equations can be summarized by a reduced-form equation that expresses household consumption directly as a function of asset endowments and other exogenous characteristics of the household, as well as the economic environment in which it makes

decisions, based on the Keynesian theory that household consumption behavior is a function of the level and composition of income

$$Y = f(HSC, Z) \quad (1)$$

Where  $Y$  is per capita household spending,  $HSC$  denotes the household's aggregate social capital indicators, and  $Z$  denotes a vector of other independent factors.

This study examines the role of social capital in three critical sectors of the economy: agricultural, industrial, and service sectors. The dependent variables in each of the three models are the growth rate of the agriculture sector, the growth rate of the service sector, and the growth rate of the industrial sector, respectively, in accordance with the adapted model in the theoretical framework and based on the six dimension of social capital elected by Grootaert, Narayan, Jones and Woolcock, (2016) comprising of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, empowerment and political action. This study used social network (SNW), institution (INST), and degree of trust (DOT) to capture social capital. Social network is proxy using social inclusion; institution (INST) is proxy by CPIA public sector management and institutions clusters average; and degree (DOT) is measured using adult literacy. Social network is proxy by the policies for social inclusion and equity cluster because the measure includes gender equality, equality of public resource use, building human resources, social protection and labour, and policies and institutions for environmental sustainability all of which are important indicator of the nature and extent of a household member's participation in various types of social organizations and informal networks including the various forms of division and difference that can lead to conflict. Also, bank credit as a percentage of GDP which was introduced by Garcia, et al, (2005) was used as proxy for degree of trust in line with Garcia, Martinez and Radoselovics (2008). The choice of this proxy for trust is because all financing exchange specifically borrowing are highly intensive in trust relationships (see Garcia, Martinez & Radoselovics, 2008). The choice of CPIA public sector management and institutions cluster as the proxy for institution is because the measure includes property rights and rule-based governance, quality of budgetary and financial management, efficiency of revenue mobilization, quality of public administration, and transparency, accountability, and corruption in the public sector which are core features of institutional quality.

The effect of social capital investment on growth agricultural sector (GAGR) can be given as:

$$GAGR = \alpha_0 + \alpha_1 SNW + \alpha_2 INST + \alpha_3 DOT + e_{it} \quad (2)$$

The effect of social capital investment on growth of industrial sector (GAGR) can be given as

$$GINDS = \beta_0 + \beta_1 SNW + \beta_2 INST + \beta_3 DOT + e_{2i} \quad (3)$$

The effect of social capital investment on growth of service sector (GAGR) can be given as

$$GSS = \lambda_0 + \lambda_1 SNW + \lambda_2 INST + \lambda_3 DOT + e_{3i} \quad (4)$$

The functions (1, 2 and 3) are linear simultaneous equations systems, where  $e_{1i}$ ,  $e_{2i}$ , and  $e_{3i}$  represent the error term, and the models (1, 2 and 3) are linear simultaneous equation systems. Because the aforementioned linear simultaneous equations models involve interdependence and joint effects, OLS cannot be used to estimate them; otherwise, inconsistent estimates would result. The study was based on Multivariate Granger causality analysis to provide consistent estimates the causality relationship between social capital and sectoral productivity. The general description of the Multivariate Granger system is presented as follows:

$$\begin{pmatrix} y_{1t} \\ y_{2t} \end{pmatrix} = CD_t + \sum_{t=1}^p \begin{pmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{pmatrix} \begin{pmatrix} y_{1t-1} \\ y_{2t-1} \end{pmatrix} + \begin{pmatrix} \mu_{1t} \\ \mu_{2t} \end{pmatrix} \quad (5)$$

In the model set up,  $y_{1t}$  does not Granger cause  $y_{2t}$  if and only if  $\alpha_{21}=0, i = 1, 2, \dots, p$

$$\begin{pmatrix} \Delta X_t \\ \Delta Y_t \end{pmatrix} = \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} + \sum_{t=1}^p \begin{pmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{pmatrix} \begin{pmatrix} \Delta X_{t-1} \\ \Delta Y_{t-1} \end{pmatrix} + \Pi \begin{pmatrix} X_{t-1} \\ Y_{t-1} \end{pmatrix} + \begin{pmatrix} \mu_{1t} \\ \mu_{2t} \end{pmatrix} \quad (6)$$

Where  $\begin{pmatrix} x_{t-1} \\ y_{t-1} \end{pmatrix}$  is an error correction term derive from long run cointegration relationship,  $\mu_{1t}$  and  $\mu_{2t} \times \sum x$ . The expected signs of the coefficients of the explanatory variables are:

$$\frac{\partial GAGR}{\partial SC} > 0, \frac{\partial GINDS}{\partial SC} > 0, \frac{\partial GSS}{\partial SC} > 0$$

The data included in the analysis spans the years 2005 to 2017. The information was gathered from the World Bank Development Indicator (WDI) 2018. The independent variable, social network is measured using social inclusion; institution (INST) is proxy by CPIA public sector management and institutions clusters average; and degree (DOT) is measured using adult literacy. The result of the data analysis was facilitated using Econometric View (EViews) software package version 9 ad the result was interpreted at 5% level of significance.

In this study, the estimation is done using the Granger causality approach. The test is used to determine if past changes in a variable are responsible for the current observation or not, because the relationship that exists in theory may not function in real life due to elements that aren't clearly defined in the theory (Ajisafe et al 2006).

**Table 1: Descriptive Statistics**

	GINDS	GSS	GAGR	SNW	INST	DOT
Mean	12257.51	19138.77	13488.58	3.323077	2.846154	51.93047
Median	12062.05	19748.68	13429.38	3.300000	2.800000	51.07766
Maximum	13791.25	25374.78	17179.50	3.500000	2.900000	54.77318
Minimum	11068.22	10624.12	9516.990	3.100000	2.800000	51.07766
Std. Dev.	873.0900	5294.997	2467.730	0.164083	0.051887	1.620593
Skewness	0.265078	-0.290417	-0.096046	-0.029974	0.154303	1.278019
Kurtosis	1.788546	1.672936	1.825389	1.345714	1.023810	2.633333
Jarque-Bera	0.947205	1.136669	0.767331	1.484305	2.166974	3.611713
Probability	0.622755	0.566468	0.681359	0.476088	0.338413	0.164334
Sum	159347.6	248804.0	175351.6	43.20000	37.00000	675.0961
Sum Sq. Dev.	9147433.	3.36E+08	73076270	0.323077	0.032308	31.51585
Observations	13	13	13	13	13	13

**Source:** Author, 2019

In Table 1 the p-values values of the Jarque-Bera statistics for all the variables are not statistically significant at 5% level of significance which indicates that the variables; growth of industrial sector, growth service sector, agricultural sector, social network, institution and degree of trust are not normally distributed.

**Table 2: Correlation Analysis Matrix**

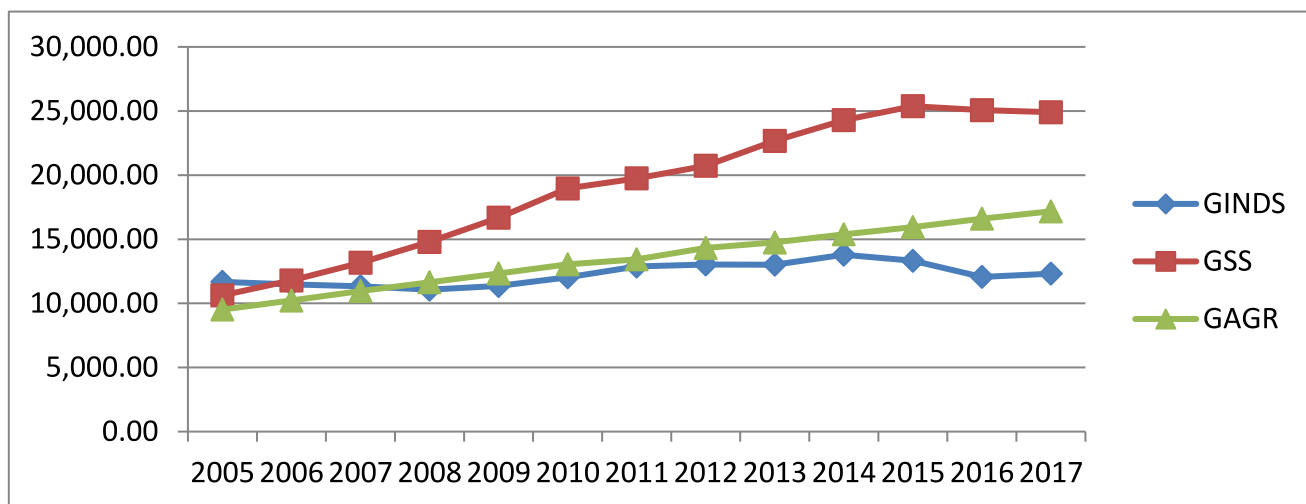
	GINDS	GSS	GAGR	SNW	INST	DOT
GINDS	1.000000	0.749626	0.665729	0.765431	-0.341328	-0.497043
GSS	0.749626	1.000000	0.985520	0.914441	-0.326137	-0.783889
GAGR	0.665729	0.985520	1.000000	0.909630	-0.337732	-0.752178
SNW	0.765431	0.914441	0.909630	1.000000	-0.429166	-0.659244
INST	-0.341328	-0.326137	-0.337732	-0.429166	1.000000	-0.140859
DOT	-0.497043	-0.783889	-0.752178	-0.659244	-0.140859	1.000000

Source: Author, 2019

The results as presented in Table 2 showed that there was a negative association between most of the social capital variables and sectoral output variables. In the Table, social network have a significant positive association with growth of services and agricultural sectors but it shows a negative association with institution and degree of trust. While the association between social network and institution was not significant, social network shows a significant association with degree of trust. Also, institution show an insignificant negative association with growth of industrial sector, services sector, agricultural sector, social network and degree of trust while degree of trust shows a

negative association with growth of industrial sector, services sector, agricultural sector, social network and institution. Although, the association among degree of trust, industrial sector and degree of trust was negative but not statically significant, its association with services sector, agricultural sector and social network is significant statistically. Meanwhile, the correlation coefficients of these variables are moderate since they are below 0.95 indicating the absence of the problem of multicorrelation among the independent variables. The line graph showing the trend of industrial, agricultural and service sectors productivity in Nigeria is presented as follows:

Figure 1: Industrial, Agricultural and Service Sectors Productivity in Nigeria 2005-2017



Source: Authors, 2019.

Figure 1 showed that between 2005 and 2006 industrial sector growth was above both the service and agricultural sector growth in Nigeria. However from 2006, the services sector grew above both the service and agricultural sectors. The growth in services sector remains above that of agricultural sector while growth in agricultural sector was above the growth in industrial sector from 2006 down to 2017. Meanwhile, the output in these three sectors

has been crawling in terms of growth. Even the service sector which shows considerable better performance in terms of growth is below expectation.

In order to determine the effect of social capital on the growth of sectoral output in Nigeria. The result of Granger causality test is presented in Table 3:



**Table 3: Causality Test**

Hypothesis	F-Statistics	Prob
Panel A: Causality from other variables to Sectoral Productivity		
<b>SNW → GINDS</b>	1.98586	0.2178
<b>INST → GINDS</b>	4.44310	0.0355
<b>DOT → GINDS</b>	2.04428	0.2104
<b>SNW → GSS</b>	1.25352	0.3508
<b>INST → GSS</b>	1.05428	0.4052
<b>DOT → GSS</b>	0.58981	0.5836
<b>SNW → GAGR</b>	0.09370	0.9119
<b>INST → GAGR</b>	0.09370	0.9119
<b>DOT → GAGR</b>	0.27856	0.7661
Panel B: Causality from Sectoral Growth to other variables		
<b>GINDS → SNW</b>	3.01394	0.1241
<b>GSS → SNW</b>	2.06972	0.2072
<b>GAGR → SNW</b>	1.49876	0.2965
<b>GINDS → INST</b>	12.9893	0.0066
<b>GSS → INST</b>	4.79722	0.0270
<b>GAGR → INST</b>	10.9359	0.0100
<b>GINDS → DOT</b>	0.00949	0.9906
<b>GSS → DOT</b>	0.10233	0.9043
<b>GAGR → DOT</b>	0.06291	0.9396

Source: Author, 2019

The Granger causality test results in panel A of Table 3 suggest a bi-causality relationship between institution and sectoral productivity in Nigeria, as institution was found to granger cause industrial sector productivity, while no causality was found between social network and degree of trust with growth of the service and agricultural sectors at 5%. At the 5% level of significance, the industrial, services, and agricultural sectors as components of sectoral productivity granger cause institution in Nigeria in panel B. Meanwhile, production in the three sectors does not increase as a result of the level of trust and social network that exists. Obikili (2013) drew a similar conclusion on the relationship between social and human capital in colonial Western Nigeria. As a result, the study demonstrated that there is a link between social and human capital, and that this link existed during the colonial period. The findings also corroborated those of Johannes (2011)'s study on the causal influence of social capital on several wellbeing metrics. Social capital has been shown to improve household welfare, reduce poverty, and enhance school enrolment. Social capital was also found to have a positive causal effect on individual labour force participation.

### Conclusion and Recommendations

The effect of social capital on sectoral production in Nigeria was investigated in this study. This analysis is necessary since it is obvious that in Nigeria, the strategies for generating economic growth are

primarily macro in character. Furthermore, assistance to the poor focuses on enhancing their physical and human capital, to raise their income. The other key form of capital, social capital, is often overlooked, which is regrettable because a growing body of recent research has shown that social capital has a considerable impact on a country's advancement.

In general, the findings show that social capital has little impact on sectoral productivity in Nigeria. This conclusion is based on the findings, which reveal that of the components of social capital studied, only institution granger cause agricultural and non-agricultural sector productivity. Also productivity in each sector (agriculture, industry, and services) granger cause institution. This indicates that in Nigeria, the level of social capital, specifically the level of trust required to create personal relationships in business and other institutions, which is a crucial predictor of human wellbeing does not stimulate productivity growth. This may be due to the high level of dishonesty, corruption, and unethical behaviour among citizens and key business political leaders in Nigeria's. According to the study, government should develop policy to ensure that no party to a contractual agreement violates the terms and conditions of the agreement. In addition, the family institution and the school should instil in pupils the importance of being trustworthy, honest, and law-abiding in contractual agreements and their general interactions with others in society.

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## A Bound Testing of Tripartite Socio-economic Spells and Institutional Quality Mismatch in Nigeria.



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### Abstract

The paper examines the relationship between inclusive growth and socio-economic development factors with institutional quality being a controlled variable in Nigeria between 1998 and 2018 using Autoregressive Distributed Lag (ARDL) Bounds testing approach. The results of the analysis disclose that financial inclusion and the preferred development strategy indicator (TCI) had a positive statistically significant impact on inclusive growth both in the short-run and long-run. While the contemporaneous institutional quality measure was found negative, its lagged index however had a positive and statistically significant impact on inclusive growth in the long-run. This implies that, given its far-reaching effects, a broad-based productive employment growth cannot be assessed in an institutional vacuum. Therefore, the study recommends the adoption of labor-augmenting development technology for

massive employment generation in order to lift millions of the active poor households out of poverty as well as bridging the inequality gaps.

**Keywords:** Inclusive growth, Institutions, Development strategy, Bounds testing, ARDL, Nigeria.

**JEL:** Classification: O43, G21, P28, O15.

### Introduction

Despite the critical importance of fostering a broad-based productive employment growth along with its substantial potentials for addressing the mounting tripartite socio-economic evils of poverty, inequality and 'joblessness' in many developing economies, very few studies have contextually assessed the impact of institutional quality on these development dynamics. Whereas the field of modern development economics has continued to attract much attention on the crucial role of institutional quality in shaping a country's destiny. To this end, it is therefore believed that the direction and dimensions of any nation's economic transformation and sustainable development is a product of its political and institutional characteristics in terms of its resilience, capacity and character (Lin, 2004).

In effect, the proposal for broad-based productive employment growth and socio-structural policy reform could be the triple-win solution to these long-standing tripartite socio-economic monsters concurrently ravaging most of the economies in Sub-Saharan Africa and that of Nigeria's in particular over the last two decades. Based on this conviction, Tobin (1955) argued that without sustained low unemployment, the purported war against poverty and inequality will ever remain a mirage. Thus, moreover, given the negative impacts of COVID-19 particularly on economic growth, it is inevitable that the unemployment rate as well as the poverty rate might steadily continue to be on the rise if no concrete measures are taken. Therefore, achieving such a noble growth process that is both participatory and of benefit-sharing will at best only remain elusive without the adoption of appropriate development strategy because this seems to be the only primary step to be taken in order to effectively address the characteristically tripartite developmental problems of poverty, inequality and unemployment of the low-income developing countries (LIDCs) like Nigeria (Olanrewaju, et al., 2019).

The state institution, by virtue of its relative capacity to equitably create economic opportunities along with

equal access to them by all, has always been regarded as the only viable agent that has vested interest in ensuring growth without 'living anyone behind', especially those hitherto excluded from the growth process (Stiglitz, 2016). Therefore, adopting appropriate development strategies can hardly be over-emphasized for all economies, especially for resource-rich developing Sub-Sahara African countries, and Nigeria in particular, for them to realize their growth and development potentials. To this end, a high premium has relentlessly been placed on institutional-factor based strand of the development literature as the underlying causes for observed differential growth patterns across countries, both for the advanced Organization for Economic Cooperation and Development (OECD) and the emerging economies (Acemoglu & Robinson, 2013; Lectard & Rougier, 2018).

Ideally, institutions connote 'high degree of resilience in terms of character and capacity, together with associated productive activities and resources in order to provide stability and meaning to the citizenry's socio-economic life'. Thus, the state institution is designed to perform specific functions namely, the formulation and implementation of socio-economic policies for inclusive growth and development. However, the effectiveness of the state successfully, or otherwise, achieving this constitutional goal would determine its quality.

However, while the concept of Institutional quality is widely discussed among policymakers and international development community, there is yet no strong consensus around a single definition of the term. The most frequently used definition of institutional quality rests on World Bank's notion of "good governance." It is broadly described as "the manner by which political power in a country is exercised in the management of economic and social resources for development." This includes (i) the process by which governments are selected, monitored, and replaced (efficiency–dynamic and static), (ii) the capacity of the government to effectively formulate and implement sound policies (specificity or predictability), and (iii) the respect of citizens and the state for institutions that govern economic and social interactions among them (credibility or legitimacy) (Kaufman, Kraay & Mastruzzi, 2010; Alonso, Garcimartin & Kvedaras, 2020).

Consequently therefore, when we contextualize the peculiarities of a country's specific circumstances, this would help a great deal to disclose the role of the state institutional quality in enhancing the relationship between financial inclusion and inclusive growth. While there exist a plethora of studies analyzing the effects of institutional quality on specific developmental problems (e.g poverty, inequality,

health, education, malnutrition, growth among others, there appears to be no convincing empirical evidence that institutional quality leads to inclusive growth via an inclusive financial system, or the feedback effect is found, in the resource-rich economies like Nigeria.

Notably, in the literature, studies that directly address the issue of causal linkage between a country's endowment structures and its sustainable socio-economic transformations are not only of recent phenomenon, but scarce and scanty. The available few ones were found to suffer from a number of theoretical and empirical problems: (i) their inability to see financial inclusion and inclusive growth as an analytical outcome of a strong and effective institutional governance or quality; (ii) failure to acknowledge the impossibility of 'an inherently exclusive market' as the best inclusive growth strategy; and (iii) the supposed evidence showing the superiority of the liberalized financial sector with too much reliance on cross-sectional econometric studies known usually to suffer from defectively contextual concepts and samples heterogeneity. Against this backdrop, we reflect on how could the 'improved' political governance and the supposedly financial sector liberalizations for 'inclusion' in Nigeria have enhanced fostering inclusive growth; or else, what needs to be done to achieve broad-based socio-economic transformations of the resource-rich and labour-abundant economy. The paper is structured as follows: Section 2 presents the review of literature on the linkage between socio-economic development factors and institutional quality. Section 3 describes the data and methodology. Section 4 analyses and discusses the empirical results while Section 5 concludes.

## 2. Theoretical Issues and Review of Literature

Although, there is still not yet a separate standard theory for inclusive growth (Tella, 2012; Obina & Dada, 2015), the theoretical framework of inclusive growth is laid on the foundation of the neoclassical and endogenous growth model. However, combining the new institution economics (NIE) and the new structural economics (NSE) of comparative advantage conforming (CAC) as against comparative advantage defying (CAD) with neoclassical endogenous growth model, could offer a robust and standard model of inclusive growth, particularly in resource-rich and a labour- abundant developing economy like Nigeria.

The basic weakness of the neoclassical and endogenous growth theories is therefore, their inability to see inclusive financial development and/or inclusive growth as an analytical outcome of a strong state, effectively addressing the unfolding realities of the tripartite socio-economic problems of

poverty, inequality and unemployment which are concurrently ravaging most low-income developing economies around the globe. The main argument emphasizes an exclusive provision of strategic guidance through the state's 'visible hand' for improved productive technology (A), and capital (human and financial) accumulation, as well as efficiently stimulating socio-economic capability which are crucial for attaining and sustaining inclusive growth. Moreover, the neo-liberalism with institutional considerations being taken as given seriously lacks in explanatory power; and such a conventional thinking has thus been challenged severally by theoretical political alternatives, conceptualized by practical innovative social movements (Akinlo, 2015; Gupta et al., 2015), among others.

However, it has now become widely recognized amongst the development economists that special efforts must be made to ensure the poorer segment of society must be empowered to participate in, and share the benefits of, the economic growth process. Thus, the present study is rooted upon the Tobin (1955)'s dynamic aggregative model which incorporates the state's preferred development strategy and institutional capacity as the key drivers of productive employment growth for resource-rich and labour-abundant low income developing countries is adapted viewing sustainable inclusive growth as an outcome of analytical interactive institutional governance.

## 2.1 Empirical Review

La Porta, et al. (1998) assess 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 that the larger governments tend to be, the better their performance and vice versa. Moreover, the importance of historical factors such as, the economic, political, and cultural theories of institutions, were found to explain the variations in government performance across countries.

On the issue of institutional quality, Ajayi (2002) examines the theory and facts of how the quality of institutions and policies applied to the African situation. He observed that the missing link in Africa's growth process is the absence of adequate policies and efficient institutions. He found that corruption; ethno-linguistic fractionalization and civil strife as the institutional quality measures which 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.

In consonance with Ajayi's advocacy, Sachs (2005) describes the less developed countries (LDCs) as being caught in a structural poverty trap due to severe underdevelopment of their productive forces resulting majorly from an unindigenious conventional democratic developmental state. The author discovers that 'development from within still remains the best, if not the unique opportunity; and that genuine development of African economies cannot be attained by transplanting or mono-cropping foreign models' (Sachs, 2005: 1802). This implies therefore that only a 'home grown' inclusive development framework is much needed for orchestrating and sustaining triple-win solutions to the tripartite socio-economic problems.

Under the widely used institutional quality due to Kaufmann, Kraay and Zoido-Lobaton (2002), Rodrik, Subramanian and Trebbi (2006) and Zhuang, de Dios and Lagman-Martin (2010) respectively took a closer look at two critical issues of institutional quality measurements and direction of causality between institutions and economic development for categories of two datasets of 79 and 137 countries around the world, and for the developing Asian countries. The results show that the quality of institutions 'trumps' everything else. Once institutions are controlled for, conventional measures of geography and economics have at best weak direct effects on incomes, even though they have a strong indirect effect on the quality of institutions. In effect, their findings are consistent with Levy and Fukuyama (2010) that, improving governance in these three dimensions could be used as potential entry points of development strategies for many other developing economies elsewhere.

Correspondingly, George (2011) critically reviews the debate of growth and development since 1950s in order to place and conceptualize the term inclusive growth. In his study, he argues that the basic objective of inclusive growth is the smooth functioning of nation state and to avoid socio-economic and political unrest. Thus, the inherent agendum is to maintain conventional economic growth structure without breaking its persistent momentum. However, the paper concludes that it is practically difficult to achieve this latest developmental outcome (i.e inclusive growth) without actually breaking the conventional growth structure.

Also, in their study on 'Why Nations Fail', Acemoglu and Robinson (2013) provide a quick overview of the literature on how institutions matter for development, and such the success or failure of any nation is largely contingent upon its political institution, and not the economic institutions, geography, culture or value systems. The authors, thus, view a country's political

institution as the main determinant of other economic institutions, which in turn determines the country's ultimate success or failure. The study argues that countries with "extractive" political systems — in which power is wielded by small elites — either fail to grow broadly or wither away after short bursts of economic expansion. In their opinion, more specifically, economic growth depends on widespread technological innovation and that only could be sustained by intellectual property environment underpinned by political equality for a shared-economic prosperity.

Assessing the role of institutions in development, Nawaz, Iqbal and Khan (2014) and Kebede and Takyi (2017) respectively employed the fixed effects and System-Generalized Method of Moments (SYS-GMM) for a panel of 35 Asian countries, and the Wald panel causality and system GMM techniques for 27 Sub-Saharan African countries. The empirical findings though supportive of the hypothesis that institutions exert positive impact on the long-run economic growth, the 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. The studies respectively maintain that growth experiences differ across developing Asian and Sub-Saharan African economies depending on the stages of economic development. Hence, the policy implication of the study is that different countries require different set of institutions to promote inclusive growth and development.

Correspondingly, Dal Bo and Finan (2016) undertake an empirical review of the role of political and legal institutions in development. On political institutions, the authors found that researches over the last 20 years have identified that generally, countries with 'better' political institutions, do equally adopt more 'inclusive' economic institutions. And more specifically, there is an association between economic performance and the quality of political governance, yet these correlations do not, in any way, imply causal links between political institutions and economic development. However, arguments for causality have been made in both directions. Hence, the authors suggest that for better understanding, future research needs to explore "the links' between the quality of political institutions and growth, both in terms of causal effects as well as the details of which institutions matter and how".

With respect to the choice of appropriate development strategy, Lin (2014) and Siddique (2016) respectively tested the effects of adopting both the CAC and CAD strategies on economic performance

on samples of 122 and 113 countries for the periods 1962 to 1999 and 1963 to 1999. As a proxy variable for CAD, both studies use the relative size of capital-intensive production, with inclusion of a variety of institutional control variables such as index of economic freedom, the costs of starting a business, ratio of trade dependence, financial development indicators, etc.). The findings indicate that the CAD strategy indeed has a statistically significant negative effect on growth and leads to an increase in inequality. The authors argues that the government that adopts a CAD strategy which attempts to encourage firms to ignore the existing comparative advantages of the economy in their entry (choice) of industry (technology) is responsible for giving firms subsidies in order to compensate for losses arising from policy burdens and cannot distinguish these losses from operational ones. The firms would then lobby government for both ex ante and ex post policy favours. In this case, the economy would be full of rent-seeking and unproductive profit-seeking activities which hinder economic growth.

Sequel to Lin (2014)'s, the review of growth experiences among developing countries in the last seventy years, were undertaken by Lin and Wang (2020). The study provides a new narrative from the perspective of New Structural Economics (NSE), pointing to several defects of the legendary structuralist and neoliberal policies. The fundamental question addressed in this paper is, "why is catching up so difficult and why there is such a divergence among developing countries with different ideas and strategies?" In their findings, the authors disclose that the major difficulty for many of the developing countries not to have experienced development convergence lies not in the new structuralist ideas, but in escaping from the old ones especially the neoliberal paradigm. To them, the prerequisite for competitiveness and convergence is for a country to conform to the existing comparative advantages of her endowment structure which could provide a solid foundation for structural transformation of industrial upgrading and innovations. Thus, they place much emphasis on the active and assertive role of the state in development; capable of removing market failures and providing the improvement of hard and soft infrastructure to facilitate and coordinate employment generation, poverty elimination and catching up in the economy.

Similarly, Gnanangnon (2020) investigates the effect of both CAF/CAD development strategy, and Aid for Trade (AfT) on structural change in production based on the Generalized Methods Moments (GMM) and an unbalanced panel dataset comprising 81 countries over the period 1996-2016,. The main findings of the analysis shows that the coefficient of the variable capturing AfT was negative and statistically significant, whereas the interaction term was though

found positive, but not statistically significant at the conventional levels. Thus, on average, there exists no combined effect of AfT and development strategy (CAF or CAD) on the extent of structural change in production. However, it was therefore suggested that Aid for productive capacity building from the international financial institutions and donor countries must be accompanied by the adoption of the CAF development strategy for the achievement of economic diversification and structural transformations in production in the developing economies.

In another theoretical exploratory study, Alonso, Garcimartin & Kvedaras (2020) utilizing more appropriate dynamic econometric tools analysed a newly built dataset considered as the underlying variables which are linked with the quality of institutions (static and dynamic efficiency, predictability, and legitimacy) for the period 1990 to 2010. These variables were development level, income distribution, tax revenue, trade openness and education. The results show that institutional quality is conditioned by variables that can be manipulated by public policy, such as income per capita trade openness, education, taxation, and patterns of income redistribution. However, the authors conclude that per capita income, taxation and trade openness as well as income redistribution rather than mere inequality condition institutional quality.

Categorizing the countries into developing and emerging economies, Khan et al. (2020) examine the role of institutional quality in financial development using the latest dynamic global panel models including generalized method of moment (GMM). The study utilized sample datasets of 189 developing and emerging countries. The main findings show that while the institutional quality variables such as political stability and regulatory quality enhance financial development positively, other governance indicators like rule of law, control of corruption and government effectiveness have no significant effect on financial development in developing countries. On the other hand, in the emerging economies, control of corruption has a positive and statistically significant impact on financial development with voice and accountability indicator showing a negatively statistically insignificant effect on the dependent variable. Overall, the study suggests that quality institutions of political governance are key drivers of financial and economic development in both developing and emerging economies.

In another more recent study of a comprehensive content analysis of 109 countries, Evrensel (2021) investigates the question of whether constitutions are proxy for institutional quality based on the OLS and 2-stage least squares estimates. The results of the novel study showed that there exists a statistically significant

correlation between measures of institutional quality such as corruption control and some of the constitutional scores. However, when institutional quality-related variables are replaced by constitutional scores which emphasize the regimes, state religion and religious freedom as well as referring to state as mother, father or holy had a negative statistically significantly effect on income per capita. This conclusion suggests the case of resource cursed situations as being the lots of low- and low middle-income developing countries like Nigeria.

### 3. Methodology and Model Specification

The study adopted ex-post facto research design using time series data based on bounds testing approach to cointegration within the autoregressive distributed lag (ARDL) framework. The conventional cointegration test is mainly dependent on the joint Wald- test (F-statistic) which asymptotic distribution is non-standard under the null hypothesis of no cointegration among the variables of interest. That is:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

$$H_0: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0 \text{ for } i = 1, 2, \dots, 5$$

This cointegration test involves two sets of critical values namely, the lower critical bound  $I(0)$ , (implying a no cointegration relationship), and the upper critical bound  $I(1)$ , indicating the existence of cointegration. Thus, if the F-statistic is less than the lower critical bound value, the null hypothesis  $H_0$  cannot be rejected. Conversely, if the F-statistic should exceed the upper critical bound value, then there is evidence of cointegration and  $H_0$  should be rejected. However, when the F-statistic lies between the two critical bound values, the test is rendered inconclusive, and therefore, other econometric analysis will be employed.

The structurally modified Tobin (1955)'s dynamic aggregative productive function has provided the theoretical base for the present study. The theory emphasizes the critical role of institutions of political governance in the attainment of a broad-based productive employment, placing a high premium on the importance of resources and monetary expansion in the growth process. The idea of this formulation is not just simply constant returns to scale in capital and labour but rather that of a constant-returns-to-scale aggregate production function in which production depends on three factors; capital, labour and resources of the form:

$$Y = F(A_K K, A_L L, A_R R) \quad (3.1)$$

where,  $Y$  is output,  $K$ ,  $L$  and  $R$  are services from capital, labour, and natural resources respectively. However, in order to capture the effect of institutional



quality on inclusive growth of a country-specific combination of resources endowment and inclusive financial system to promote a broad-based productive employment growth, the augmented Tobin (1955)'s dynamic aggregative model is specified as follows:

$$Y_t = (1-T)A_t K_t^{\alpha_1} H_t^{\alpha_2} L_t^{\alpha_3} G_t \tag{3.2}$$

where Y is output, A is the efficiency parameter or level of technical progress meant to augment physical capital (K) such as machinery, building and finance; human capital, both skilled (H) and unskilled labour (L), and  $\alpha_1 + \alpha_2 + \alpha_3 = 1$  exhibiting the standard assumption of constant return to scale.

G is defined as a vector of institutional factors. Dividing equation (3.2) through by L to have productive employment growth per worker:

$$y_t = (1-T)A_t k_t^{\alpha_1} h_t^{\alpha_2} g_t \tag{3.3}$$

The production function is assumed to be homogenous of degree one. All technological change is assumed to be factor-augmenting, and  $A_i$  is the augmentation level of factor i. In general, resources might be renewable and augmentable, like capital, or exhaustible like stocks of minerals.

Therefore, addressing the tripartite socio-economic problems characteristically associated with most of the developing economies given their labour abundance and scarcity of capital, the functional formation of a socially interactive and adaptive governance framework (GAF) which essentially incorporates resource-endowment factors of a country is simply expressed as:

$$RGDPE_t = \alpha + \beta_1 RGDPE_{t-1} + \beta_2 IFI_t + \beta_3 GEF_t + \beta_4 TCI_t + \beta_5 HDI_t + \varepsilon_t \tag{3.4}$$

where RGDPE is the real GDP per person employed (as proxy for participation) suggested by the UNDP International Policy Centre for Inclusive Growth (IPC-IG) (2011), Ramos and Ranieri (2013) for capturing both participation and benefit-sharing in the growth process. IFI is the measure of index of financial inclusion, GEF is a composite variable of institutional quality, TCI is indicator for measuring the preferred development strategy, and HDI represents a combination of three indicators: income poverty, inequality (as proxy for benefit-sharing) and human capital development (health and literacy).

The ARDL representation of equation (3.4) within the VECM framework is therefore, formulated as:

$$RGDPE_t = \beta_0 + \sum_{j=1}^p \beta_{1j} \Delta RGDPE_{t-j} + \sum_{j=1}^p \beta_{2j} \Delta IFI_{t-j} + \sum_{j=1}^p \beta_{3j} \Delta GEF_{t-j} + \sum_{j=1}^p \beta_{4j} \Delta TCI_{t-j} + \sum_{j=1}^p \beta_{5j} \Delta HDI_{t-j} + \alpha_1 IFI_{t-1} + \alpha_2 GEF_{t-1} + \alpha_3 TCI_{t-1} + \alpha_4 HDI_{t-1} + \varepsilon_{1t} \tag{3.5}$$

where all the variables are as earlier defined,  $\Delta$  is the first difference operator. p represents the lag length and  $\sum$  is the summation sign. The residuals  $\beta_0$  is the drift component, and  $\beta_1$ - $\beta_5$  denote the short-run coefficients, while  $\alpha_i$ 's represent the long-run coefficients.

The study adopted ex-post facto research design using time series data sourced from the Central Bank of Nigeria's Statistical Bulletin, National Bureau of Statistics' final Accounts, International Financial Statistics (IFS), World Development Indicators (WDIs) and Worldwide Governance Indicators (WGI), 2020.

#### 4. Data Analysis and Discussion of Results

Data were analysed using Autoregressive Distributed Lag (ARDL) Bounds test. The pre-estimation tests include correlation analysis, unit root tests and cointegration tests.

##### 4.1 Correlation Analysis

Table 1 summarizes the correlation among the series. As expected, there is a positive correlation between the real GDP per person employed and the various measures of socio-economic variables used. Similarly, there is relatively positive and strong relationship between financial inclusion and the indicator of human development, for  $r = 0.57$ . Moreover, it is interesting also to have found out from the correlation matrix that the index of the preferred economic development strategy (TCI) has positive relationship ( $r = 0.26$ ) with the indicator of inclusive growth (RGDPE). However, in contrast, there is a weak and negative relationship respectively between institutional quality index and human development indicator ( $r = -0.26$ ) and TCI ( $r = -0.32$ ). These suggest that even though the poor institutional quality of many resource-cursed countries like Nigeria could be the only plausible explanation for this reversed process. Thus, this may suggest that improvement in the country's institutional quality could reduce inequality, poverty and joblessness which are largely responsible for financial and socio-economic exclusions over the years.

**Table I: Pair-wise Correlation Matrix Results**

Variable	RGDPE	IFI	HDI	GEFE	TCI
RGDPE	1.00				
IFI	0.78	1.00			
HDI	0.75	0.57	1.00		
GEFE	0.09	0.12	-0.26	1.00	
TCI	0.26	0.47	0.46	-0.32	1.00

Source: Authors, 2022

## 4.2 Unit Root Tests

Conventional unit root tests were performed on all the five variables using Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) techniques to test for the presence of unit root in the series. Table 2 shows that all the series with the exception of technology choice

index (TCI), were found to be non-stationary at level with constant and time trends. This shows that the variables RGDPE, IFI, HDI, GEFe were stationary at first difference. However, none of the variables is integrated at I(2). Therefore, since the data does not contain I(2) series, it lend support to the use of ARDL bounds testing approach to co-integration.

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

Variables/Tests	<i>t</i> - statistics	Critical Value	<i>t</i> - statistics	Critical Value	Order of Integration
	Levels		First Difference		
<b>ADF Test</b>					
<i>RGDPE</i>	-1.289177	-3.808546	-5.067941*	-3.831511	I(1)
<i>IFI</i>	-1.742065	-3.020686	-3.569860	-3.029970	I(1)
<i>HDI</i>	-0.564264	-3.020686	-5.158457**	-3.029970	I(1)
<i>GEFE</i>	-2.474180	-3.808546	-4.990408*	-3.831511	I(1)
<i>TCI</i>	- 3.601364**	-3.029970	-4.596634*	-3.052169	I(0)
<b>PP Test</b>					
<i>RGDPE</i>	-1.233050	-3.808546	-5.072366*	-3.029970	I(1)
<i>IFI</i>	-1.765608	-3.020686	-3.492154	-3.029970	I(1)
<i>HDI</i>	-0.454842	-3.020686	-5.167196*	-3.029970	I(1)
<i>GEFE</i>	-2.460908	-3.808546	-5.047892*	-3.831511	I(1)
<i>TCI</i>	- 3.916442**	-3.808546	-3.590812	-3.029970	I(0)

**Note:** The asterisk (\*, \*\*, \*\*\*) denote the rejection of the unit root hypothesis at the 1%, 5% and 10% significance levels respectively.

**Source:** Authors, 2022

Therefore, the null hypothesis for the presence of unit root at levels was rejected for all the variables with the exception of technology choice index (TCI), suggesting that all the series were integrated only after differencing them.

## 4.3 Optimal Lag Length Selection

To determine the optimal lag length, we applied the conventional selection criteria which include Final

Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Criterion (HQ), the Sequential Modified (LR) and Schwarz Information Criterion (SC). The FPE, AIC, HQ, LR and SC recommended a lag length of two (Table 3). Thus, we settled for the optimum lag length of VAR as 2 via the five criteria.

**Table III: Results of the Lag Length Selection**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-142.0716	NA	3.641228	15.48122	15.72976	15.52328
1	-82.11668	82.04356	0.102705	11.80176	13.29297	12.05413
2	-6.461187	63.70989*	0.001007*	6.469599*	9.203501*	6.932284*

\* indicates lag order selected by the criterion

**Source:** Authors, 2022

#### 4.4 Long-run Analysis and Cointegration Test Results

In order to establish the existence of a long-run equilibrium relationship among the variables, the co-integration test applied in this study was the Autoregressive Distributed Lag (ARDL) Bounds testing to co-integration procedure proposed by Pesaran et al., (2001). This approach has certain econometric advantages in comparison to other co-integration procedures (Engel & Granger, 1987; Johansen & Juselius, 1990). One, the approach is applicable

regardless of whether the underlying regressors are stationary at  $I(0)$  or  $I(1)$  or a mixture of both. Moreover, unlike most of these traditional co-integration procedures which are valid for large sample, the approach is not only suitable for small sample size study (Pesaran et al., (2001), but it is of equally far more superior to them all (Narayan, 2005; Halicioglu, 2007). In addition, it provides unbiased estimates of the long-run model and valid t-statistics even when some of the regressors are endogenous (Harris & Sollis, 2003).

**Table IV: Bounds testing to Cointegration**

Estimated Model	Optimal lag length	F-statistics	Diagnostic tests	
			R <sup>2</sup>	Adj-R <sup>2</sup>
Rgdpe = f(lfi, hdi, gefe, tci)	2, 2, 2, 2, 2,	16.21678*	0.965	0.921
Significant Level		Critical Values		
		Lower bounds (I(0))	Upper I(1)	bounds
	1%	3.74	5.06	
	5%	2.86	4.01	
	10%	2.45	3.52	

**Note:** \*, \*\* & \*\*\* represent significance at 1%, 5% & 10% level respectively

**Source:** Authors, 2022

The Bounds test results are reported in Table 4 above. The calculated F-statistics (16.21678) was found to exceed the upper Bounds critical values of 3.52, 4.01 and 5.06 for significance levels of 10%, 5% and 1% respectively. This implies that the null hypothesis of no co-integration can be rejected at the three conventional significance levels. In other words, there exists a long-run relationship among the series. Thus, inclusive growth indicator (RGDPE), institutional quality index (GEFE), index of financial inclusion (IFI), proxy for the country's resource endowment and development strategy (TCI) and human

development indicator are co-integrated or co-moving in Nigeria during the period investigated. The evidence that there exists a long-run relationship among the variables suggests the estimation of the autoregressive distributed lag (ARDL) bounds testing approach to cointegration framework for specifically achieving the stated objective.

#### 4.5 Results of Institutional Quality and Inclusive Growth using ARDL Model

The evidence that there exists a long-run relationship among the variables suggests the estimation of the autoregressive distributed lag (ARDL) bounds testing approach to cointegration framework

**Table V: Results of the Estimated Short-Run and Long-Run ARDL Model**

Short-Run Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IFI)	0.0050	0.0018	2.8073	0.0377
D(IFI(-1))	-0.0087	0.0026	-3.3119	0.0212
D(HDI)	0.0026	0.0134	-0.1922	0.8651
D(HDI(-1))	0.0050	0.0149	0.0343	0.9740
D(GEFE)	-0.1057	0.1716	-0.6162	0.5647
D(GEFE(-1))	0.3455	0.2695	1.2818	0.2661
D(TCI)	0.0079	0.0072	1.0900	0.3254
D(TCI(-1))	0.0177	0.0073	2.4423	0.0585
ECM(-1)	-1.5205	0.3093	-4.9157	0.0044

<b>Long-Run Estimates</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
IFI	0.0079	0.0009	8.5698	0.0004
HDI	0.0104	0.0041	2.5443	0.0516
GEFE	-0.2618	0.2543	-1.0290	0.3507
TCI	0.0087	0.0028	3.0803	0.0275
C	0.8652	0.4863	1.7790	0.1354

**\*, \*\* & \*\*\* denote significance at 1%, 5% and 10% level respectively**

**Source: Authors, 2022**

Looking at the short-run dynamics, the estimates of the error correction model presented in Table 5 confirms the results of the long-run estimates. The error term (ECM (-1)) is negative and highly statistically significant, corroborating the results of the cointegration tests of the existence of a stable long-run relationship among the variables. Also, both the short-run and long-run estimates disclose an evidence to support the literature that indicator of financial inclusion and institutional quality factor are positively related to inclusive growth. A positive relationship was found between the lagged institutional quality index the explained variable, indicative of the fact that as quality of institutional governance becomes better, the broad-based productive capacity of the economy is significantly enhanced with approximate coefficient elasticity of one. This generally suggests that an improved institutional quality would bring about a rise in real GDP per person employed via broad-based financial inclusiveness in Nigeria. This by extension could enhance the development of social infrastructure services such as health and education would generate substantial productive employment capabilities.

Moreover, the development strategy indicator (TCI) and the measure of formal financial services (availability and usage of banking services) which presumably only conceivable under a strong and purposeful institutional leadership were found having a positive impact on broad-based inclusive growth indicator during the period investigated. The plausible explanation for the statistically non-significance influence of institutional quality measure on the core socio-economic indicators earlier discussed in this paper could partly be attributed to the failure of successive Nigerian governments adopting inappropriate development strategy so as to convert the nation's huge potentialities into realities of transformative development over the years.

These results are partly consistent with the recent suggested developments in the literature (Sachs, 2005; Zhuang, 2010; Chang, 2011; Acemoglu &

Robinson, 2013; Akinlo 2015; Alonso et al., 2020; Evrensel, 2021) in which a positive relationship between quality institutions of governance and economic development have been reported.

However, the study validates the findings of Lin, 2014; Siddique, 2016; Gnanon, 2020; Lin & Wang, 2020) who discovered that the structural transformations and sustainable inclusive development of the resource-rich developing economies can hardly be attained in an institutional vacuum. 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 poor and the vulnerable group.

#### Stability Test

To ensure the reliability of the estimated coefficients of the ARDL-Bounds testing approach developed by Pesaran et al. (2001), we employed AR root stability test. The single autoregressive equation was found stable since all the five roots have modulus less than one and lie inside the unit circle. The results are respectively presented in Table 6 and Figure 1 (see appendices A1 & A2).

#### Diagnostic Tests for Residuals

From the results of the diagnostic tests conducted and reported in Table 7 (see appendix A3), the Breusch-Godfrey Lagrange Multiplier (LM) test for all the augmented 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% 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 certified the equal variance assumption. Similarly, the Ramsey RESET test did not reject the null hypothesis of 'no misspecification in all the estimated equations, confirming that the error correction 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 multicollinearity 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.

## 5. Concluding Remarks and Recommendations

The paper contextually examined the institutional effects of an inclusive financial system on inclusive growth in Nigeria during the period 1998 to 2018. The time dimension coincided with the post-financial liberalization regimes and the preparations towards ushering in of democratic governance. The theoretical model reveals that as the state's 'visible hand', in terms of competence and character, improves, tripartite socio-economic woes subside and hence spurs inclusive growth and vice versa.

The empirical results support the hypothesis that institutional quality exerts positive impact on structural innovative and transformative development. One of the most important findings that emerged from the study was the strength of the relationship between the variable of financial inclusion and inclusive growth as measured by the real GDP per person employed.

While the country's resources endowment indicator (TCI) behaved in contrast to the a-priori expectation being positive and weakly statistically significant, in the short-run, revealing the country's wrong adoption of a comparative advantage defying (CAD) development strategy as opposed to the comparative advantage conforming (CAC), it was statistically significant.

Moreover, while the lagged variable of institutional quality with formal banking services impacted positively and had statistically significant impact on inclusive growth, the contemporaneous governance measure was negative. In addition, index of financial inclusiveness was found as the most significant of all the variables with the institutional factor reinforcing its positive impact on the real GDP per person employed over the period investigated. Thus, an inclusive

growth, besides being the policy-priority of every purposeful government, its far-reaching effects cannot be assessed in an institutional vacuum. Our findings suggest that the adoption of CAC as against indiscriminate adoption of CAD is the key determinant for the achievement of sustainable economic diversification and structural transformations for the resource-endowed developing economies.

In view of the findings, we recommend that the CAC development strategy which reflects the relative human capital resource-base of the economy should receive the utmost policy priority if the government indeed is committed to lifting millions of the poor people out of poverty, sizably bridging inequality gaps through a broad-based financial empowerment for sustainable productive employment generation and development.

Therefore, government in Nigeria specifically needs to invest massively in human capital development through innovative and responsive education so as to build both capacity and character of the governed, and as well as the government, for a cutting-edge sustainable economic transformations and development.

Given the multi-dimensional nature of institutional governance quality and its attendant indicator measurement problems, more research work is needed to find out the levels of commitments to development in the low-income developing countries. Therefore, further studies may have to explore certain aspects of institutional quality that could decisively match the current socio-economic disorders using the very recently constructed dynamic global indicator of institutional quality-commitment to development index (CDI). The index comprises of eight components namely, Development finance, Investment, Migration, Trade, Environment, Security, Technology and health. This focuses on both policy efforts and outcomes of the state institutions of governance. Also, a further area of research could investigate the constructions of IFI and TCI respectively to include availability in addition to accessibility and usage dimensions, and value-added generated in knowledge-based sectors in addition to that of manufacturing sector's.

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APPENDIX

Appendix A1

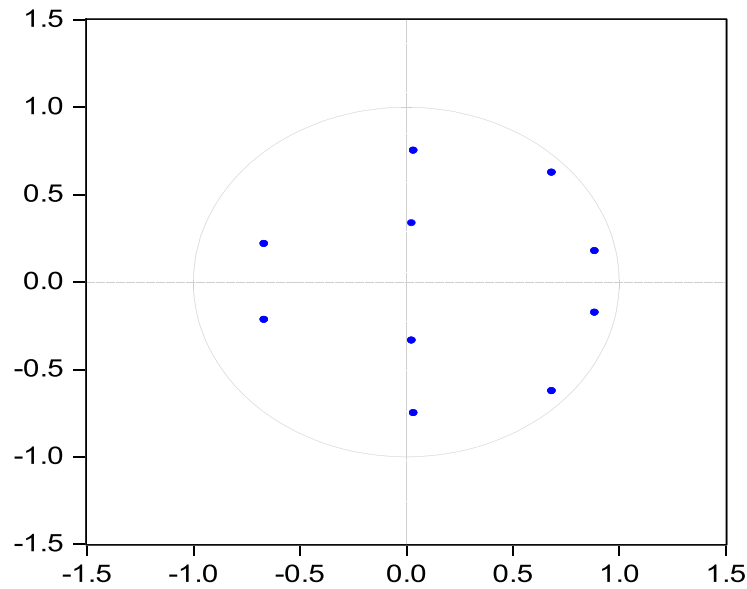
Table 6: Stability Test

Root	Modulus
0.684796 - 0.625701i	0.927603
0.684796 + 0.625701i	0.927603
0.887033 - 0.176802i	0.904482
0.887033 + 0.176802i	0.904482
0.035216 - 0.750362i	0.751188
0.035216 + 0.750362i	0.751188
-0.666300 - 0.216538i	0.700603
-0.666300 + 0.216538i	0.700603
0.026579 - 0.335880i	0.336930
0.026579 + 0.335880i	0.336930

No root lies outside the unit circle.  
 VAR satisfies the stability condition.

Appendix A2

Figure 1: Inverse Roots of AR Characteristic Polynomial



Appendix A3.

Table 7: Diagnostic Tests

Test	F-statistic	Probability
$X^2$ SERIAL	2.92753	0.1453
$X^2$ ARCH	0.27874	0.7608
$X^2$ HARVEY	1.25593	0.4286
$X^2$ RAMSEY	1.12501	0.4319
NORMALITY TEST		0.5500

Note:  $X^2$  SERIAL is for serial correlation,  $X^2$  ARCH is for autoregressive conditional heteroscedasticity,  $X^2$  WHITE is for white heteroscedasticity and  $X^2$  RAMSEY for Ramsey Reset test.



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