

## Socio-Economic Status, Savings and Income Inequality in Nigeria: The Behavioral Mechanism Approach

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### ABSTRACT

This study examined the impacts of socioeconomic status and savings on income inequality, to verify the transitional changes in socioeconomic status and saving rate, which in turn may affect the level of income inequality in Nigeria. The study employed the Behavioral Mechanism Approach (BMA), incorporating the Structural Vector autoregressive (SVAR) technique, which uses impulse response function and variance error decomposition to trace the behaviors of the chosen variables over time. The empirical results show that peoples' socioeconomic status negatively affected average income in the economy through their flair for conspicuous consumption. It also shows that socioeconomic status increases income inequality through a reduction in returns to capital and through changes in the levels of savings in the economy. The study recommends that the government may need to invest in behavioral changing policies such as education and enlightenment that can change conspicuous consumption. These can enhance income accumulation and alleviate inequality in the economy.

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## 1. Introduction

In economic literature, there has been an unresolved age-old debate on the relationship amongst socio-economic status, savings and inequality. It is well documented that persons are concerned with social and economic comparisons, especially as it concerns consumption (Becker, 1971; Dubey et al., 2017; Frank, 1985; Heffetz, 2011). People can easily recon with their neighbours' consumption pattern in as much as the consumption is not hidden. Therefore, people seem to increase their satisfaction by consuming more goods, thereby increasing their

social standing before other individuals. In other words, they want others to imitate their consumption pattern. This process is likely going to push consumption above equilibrium, thereby straining the level of savings and intertemporal utility. Socio-economic status affects the dynamics of savings by enforcing a behavioral change in individuals, thereby increasing income inequality (Heffetz, 2012).

Over the years, the rising trend of income inequality has been a source of concern globally and this portends a great threat to world's economy. The Week (2017) observed that 84.6 percent of the World's wealth is owned by 8.1 percent of the world's population. In Africa, income inequality seems to be increasing and escalating the population of the poor. For instance, the number of people living below 1.25 USD per day in Africa increased from 411.3 million in 2010 to 415.8 million in 2015 and further increased to 512.6 million in 2019 (see Agu and Nyatanga, 2020; World Bank, 2020). Furthermore, in Nigeria, income inequality has increased the gulf between the poor and the rich, as only one percent of the population benefits from 80 percent of the resources (Fasanya and Akinbowale, 2019). This scenario raises more questions than answers. This uneven distribution of income affects the level of savings in the economy, as richer households have higher inclination to save than the poorer households at the lower level of economic development (Dyran, 2004). Therefore, a rise in income inequality has the tendency of affecting economic growth and aggregate savings (Kuznets, 1955).

A number of studies like Buchanan and Stubblebine (1962), Becker (1971), Dubey et al. (2017), Frank (1985) and (Heffetz, 2011) noted that individuals are motivated by socio-economic status, especially as it bothers on income and consumption. This study therefore advanced the postulation that the individuals' level of socio-economic concern is a function of their level of development. For example, at the early stage of development, socio-economic status in terms of income acquisition and consumption can be regarded to be more important. However, with the advancement in production, technology, education, values and culture, physical consumption is discouraged. Therefore, the study proxy socio-economic status with the level of income, bearing in mind that over time, increased economic development reduces consumption (Dioikitopoulos et al., 2019).

This study argues that at the early stage of development, increase in average income induces production, technology, education and values. These factors force consumption to decline as development progresses. In other words, a rise in income elicits changes in behaviour, leading to a lower level of desires for socio-economic status, especially touching physical consumption. This is likely going to reduce the levels of saving at first, followed by an increase in savings along development path. This shows that in the long run, saving rate will increase. The declining level of consumption in the course of development was also corroborated by Clark and Senik (2010), Heffetz (2011), and Moav and Neeman (2012).

The long run level of income inequality hinges mainly on the interaction between the changes in saving rate and the returns to capital in the course of development. However, this study points out that their interplay with saving rate is further induced by economic and socio-economic status of the individuals (consumption of utility). From the neoclassical model, the capital stock and the returns to capital are inversely related. On this note, Dioikitopoulos et al. (2019) observed that these returns-to-capital on the average, favours the poor more than the rich who holds more of capital goods, since returns to capital decline when capital accumulation increases. Moreover, as the economy increases in capital acquisition, saving rate rises because of reduction in conspicuous consumption. On the contrary, the impacts of increased socio-economic spending affect the saving rate negatively. This is because there is a trade-off between consumption and saving. Moreover, lower saving rate leads to lower capital acquisition, which forces down the rate of interest. In an economy that does not have a mechanism for equitable income distribution, there would be a very wide gap in income inequality. Therefore, if individuals place higher preference on socio-economic status than on returns to capital, income inequality will worsen.

A number of studies have been done on the socio-economic status preferences (see Ghosh and Wendner, 2014; Micheletto, 2011; Wendner, 2010; Wendner and Goulder, 2008; Carroll and Samwick, 1997; Dupor and Liu, 2003). However, all these studies failed to link socio-economic status in the economy to savings and income inequality, which has been observed recently. There are scanty literatures on the interactions among socio-economic status, savings and income inequality, especially in Nigeria. The novel of this study is that socio-economic status and savings rate do not only impact on inequality as widely viewed. However, the level of inequality also affects both savings and socio-economic status of individuals in the economy. Therefore, this study employed Structural Vector autoregressive (SVAR) estimating technique to trace the innovations and interrelationships amongst the chosen variables. This is to verify the transitional changes in socio-economic status and saving rate that in turn affects the level of income inequality in Nigeria.

The subsequent sections are structured as follows: section 2 relates to the relevant literature. Section 3 deals with methodology and data. Section 4 presents the result and discussion while chapter 5 concludes the study.

## **2. Literature Review**

### **2.1 Savings and Inequality**

Recent studies related recent increase in income, consumption and wealth inequality to variances in saving rate amongst individuals. The main postulation of these theories rely heavily on the ex post differences and theories that support

Bewley and Bland (1977), who observed that the economy is an incomplete market environment where people save in order to safeguard against future unforeseen lower income.

These theories are captivating and useful in modeling the increase in uneven distribution of income and consumption. However, Saez and Zucman (2016) argue that (i) these theories could not fully explain the reduction in income and income inequality that was experienced from the 1980s. (ii) The theory also failed to explain why rich households save more but their wealth decline as capital accumulation increases. (iii) The theory equally failed to explain why there are various types of income inequality in the economies that have similar development stages.

The theory of this study is in line with previous studies. However, it explains the above-mentioned points (i to iii) that Saez and Zucman (2016) failed to explain. In order to achieve these, this study towed a different econometrical approach. First, the study puts aside the assumption of an incomplete market and market uncertainties that many studies undertook (Saez and Zucman, 2016; Agu et al., 2020). The study rather assumed *ex ante* as opposed to *ex post* heterogeneity about the economies' income endowments. Secondly, the study also assumes that the saving rate does not only depend on the rate of return on capital but also depends on the economic and social status of individuals over time. This economic and social concerns of individuals would enable this study explain the recent differentials in income and income inequality within the economy when the economy experiences a sudden shock in income. For instance, between 2013 and 2018, Nigeria experienced income shock as a result of decrease in oil price which was caused by several uncertainties in the international oil market, including over-supply of crude oil in the international market and the recent price decrease as a result of Covid-19 pandemic (Agu and Nyatanga, 2020).

## **2.2 Degree of Economic Status (DES)**

The relative income hypothesis by Smith (1759) and Veblen (1889) noted that individuals not only get satisfaction from their own consumption of goods and services but they also derive utility by comparing their own consumption level with those of other individuals. Veblen's findings were also corroborated empirically by Heffetz (2011) who noted that income and happiness have insignificant relationship. This result was also corroborated by Clark and Oswald (1996) and Frank (1985).

Bloch (2004), Banerjee and Duflo (2007), and Heffetz (2011) investigated peoples' economic status and noted that people depend on their relative consumption in order to boost their perceived economic status, noting that average income or wealth plays a significant role in influencing individuals' economic standing. In

addition, Banerjee and Duflo (2007), and Clark and Senik (2010) employed international data in their study of peoples' economic status and savings and observed that people in the poor economies derive more pleasure in terms of economic status than those in more developed economies. Moreover, Moav and Neeman (2012) observed that in any developed economy, if human capital, especially an academic title is available, people tend to pursue social and economic statuses with human capital than with consumption.

### **2.3 Saving Rate and Returns to Capital**

The standard neoclassical growth model stipulates that increases in capital accumulation necessitates lower returns to capital and consequently leads to a lower savings rate (Barro and Sala-i-Martin, 2004). Loayza et al. (2000) used US data in the study on the relationship between savings rate and income and noted that saving rates are lower in poorer economies than in richer economies. The study also shows that saving rate increases with the increase in income. However, this increase in saving rate as income increases, was premised on the fact that advancement in technology enhances returns to capital over time, hence, increasing the savings rate. Nevertheless, linking the increase in savings rate with increasing return to capital negates, the study concluded that over time, the return to capital is decreasing.

Strulik (2012) empirically studied the economic status preference and noted that increase in income and wealth cause rate of time preference to fall. In other words, when the income of people increases, they care less about their consumption, hence sparing funds that otherwise would have been spent on conspicuous consumption and this increases the level of saving. Consequently, this study's argument that people care less about their conspicuous consumption as the economy develops provides an alternative tool as regards economic standing/status preference. According to this tool, people lower their rate of consumption, hence increasing their rate of saving over time, even as the returns to capital declines at the same time.

Wendner (2010) studied the nexus between income and income inequality and attributed the recent increase in income and income inequality to variances in saving rates across households. This study assumes that the economy is an incomplete market situation where people save in order to safeguard against future unforeseen lower income. Khemili and Belloumi (2018) examined the direction of causality between poverty, income inequality and economic growth in Tunisia between 1970 and 2013. The study employed ARDL bound testing approach while noting that income inequality and poverty have a positive relationship in the long run. However, in the short-run, inequality and growth to poverty has a positive nexus. The study equally observed a unidirectional causality from economic

growth to poverty. However, the study failed to incorporate the effects of economic status, which formed the basis of our study.

Caselli and Ventura (2000) observed that positive differences in elasticity of substitution during productive activities explain the recent increase in income inequality. The study noted that such a positive change in production benefits the capital-intensive producers. This mechanism also supports Piketty and Zucman (2014) who observed that as economies develop, people benefit more when they engage in capital-intensive production. Nevertheless, these frameworks do not pretend to give explanations on the differences in savings rates between the rich and the poor economies as Dynan, (2004) suggests.

Moreover, Caselli and Feyrer (2007) noted that as developed economies experience convergence in technologies, they equally experience similar marginal product of capital. To this end, this study needs to explain further, why the economies that have similar share in factor of production experience different forms of income inequality. Therefore, this study adds to the literature by incorporating preference-based tool that works through the capacity of economic status of individuals (individuals have different behaviours in saving, though, this depends on culture, aspirations and characters of individuals) (see Acemoglu and Robinson, 2015).

Finally, as the aim of this study focuses on the effects of economic status which can mainly be seen through advancement in income and wealth, this study minimizes the influence of income that is acquired through labor. This is achieved by assuming that wages are uniform and labor is inelastic in supply. This assumption of income and wealth acquisition was in line with the novel studies by Piketty and Zucman (2014), and Saez and Zucman (2016). Therefore, changes in income and wealth inequality result in economic status of individuals in the economy in line with Saez and Zucman (2016).

### 3. Research Methods and Data

#### 3.1 Model Specification

##### 3.1.1 Endogenous Status Preferences

The utility of an individual is a function of both his consumption  $C_i(t)$  and his consumption relative to other groups,  $S_i(C_i(t), \hat{\alpha}(t))$ , where  $\hat{\alpha}(t)$  stands for a consumption reference level. The consumption status function  $S_i(t)$  is increasing in  $(C_i(t))$ , declining in  $\hat{\alpha}(t)$  and it is specified by  $S_i(t) \equiv \frac{C_i(t)}{\hat{\alpha}(t)}$ . The average consumption level is represented by  $\hat{\alpha}(t) = \int_0^1 C_i(t) d_i$  where the bar shows that individual households view the consumption reference level as exogenously determined. Therefore, current utility can be specified as:

$$U(C_i(t), S_i(t), \varepsilon(k(t))) = U(C_i(t) \left(\frac{C_i(t)}{\alpha(t)}\right), \varepsilon(k(t))) \quad (1)$$

The current utility increases in both individual and relative consumption:  $U_{C_i(t)} > 0$ ,  $U_{S_i(t)} > 0$  follows the usual concavity conditions in  $C_i(t)$  and  $S_i(t)$  in Equation (1).

Therefore, to capture the weight that is being applied to the absolute and relative consumption levels, we introduce the notion of the *degree of positionality* (DOP) which reflects the proportion of the total marginal utility of individual consumption that can be attributed to its impact on the increase in relative consumption. Formally, we specify this by

$$DOP_i(t) = \frac{\delta U / \delta S_i(t) (\delta S_i(t) / \delta C_i(t))}{\delta U / \delta S_i(t) (\delta S_i(t) / \delta C_i(t)) + (\delta S_i(t) / \delta C_i(t))} \quad (2)$$

Thus, if  $DOP_i(t) = 0.4$  for instance, then 40% of marginal utility of consumption arises from an increase in relative consumption, and 60% of marginal utility of consumption arises from an increase in own *absolute* consumption (holding  $S_i(t)$  fixed). To render our analysis tractable, we introduce the principle of matrix to capture the process succinctly.

In order to avoid ambiguity, the study assumed that  $DOP_i(t)$  comprises of a vector of explanatory variables. For example, if  $K$  is a member of the elements of the explanatory variables in our equation and  $\sum E[V_t \tilde{V}_t]$  denotes the residual of the covariance matrix. The identification process is therefore:

$$AV_t = \gamma \mu_t \quad (3)$$

where  $v_t$  and  $\mu_t$  denote the vectors with  $k$  as the lag length,  $V_t$  is the observed residual and  $\mu_t$  stands for the stochastic structural innovations.  $A$  and  $\gamma$  denote  $k \times k$  matrices which was evaluated. Naturally,  $\mu_t$  is orthogonal. So, the covariance is an identity matrix  $E[\mu_t \mu_t^t] = 1$ . Assuming  $\mu_t$  is orthogonal, the study-imposed restrictions on  $A$  and  $\gamma$  as applicable, giving:

$$A \sum \tilde{A} = \gamma \mathbb{B} \quad (4)$$

The reduced and the structural model of the vector autoregressive equations therefore are:

$$\gamma(L) = \gamma_0 + \gamma^+(L) \quad (5)$$

$$A(L) = -\gamma_0^{-1} A \gamma^- \quad (6)$$

$$\sum = \gamma_0^{-1} A \gamma_0^{-1} \quad (7)$$

Equation 5 is the structural model built into contemporaneous period relationships ( $\gamma_0$  and  $\gamma^+(L)$ ).  $\gamma_0$  denotes the relationship at lag zero while  $\gamma^+(L)$  denotes all positive lags. Equation 6 compressed each reduced coefficient of the model into its structural component  $\gamma_0$ . This was obtained by using the reduced and diagonal structural forms  $E[\mu_t \mu_t^t]$  and  $\sum E[V_t \tilde{V}_t]$  respectively as depicted in Equation 5.

More so, due to the problems of misspecification with long-run restrictions, the study used current period restriction on the  $\gamma_0$  matrix to obtain the changes in the

macroeconomic variables as shown in Equation 4. The non-linear SVAR in Equation 8 follows Omolade et al. (2019) and Agu et al. (2020) as identified:

$$\begin{bmatrix} V_t^{INEQ} \\ V_t^{SAV} \\ V_t^{RCAP} \\ V_t^Y \\ V_t^{LAB} \\ V_t^{TECH} \\ V_t^{CONS} \\ V_t^{INTR} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \gamma_{21}^0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ \gamma_{31}^0 & 0 & 1 & 0 & 0 & 0 & 0 & \gamma_{38}^0 \\ \gamma_{41}^0 & 0 & \gamma_{43}^0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & \gamma_{53}^0 & \gamma_{54}^0 & 1 & \gamma_{56}^0 & 0 & 0 \\ \gamma_{61}^0 & \gamma_{62}^0 & 0 & 0 & \gamma_{65}^0 & 1 & \gamma_{67}^0 & 0 \\ \gamma_{71}^0 & \gamma_{72}^0 & \gamma_{73}^0 & \gamma_{74}^0 & \gamma_{75}^0 & \gamma_{76}^0 & 1 & 0 \\ 0 & 0 & 0 & 0 & \gamma_{85}^0 & \gamma_{86}^0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mu_t^{INEQ} \\ \mu_t^{SAV} \\ \mu_t^{RCAP} \\ \mu_t^Y \\ \mu_t^{LAB} \\ \mu_t^{TECH} \\ \mu_t^{CONS} \\ \mu_t^{INTR} \end{bmatrix} \quad (8)$$

The model (8) above is a model with eight variables. Row 1 comprises of income inequality while row two contains the level of savings. Rows 3 and 4 contain returns to capital and income, which were derived from capital formation and from the GDP growth rate respectively. The labor variable, technology and consumption are contained in rows five, six and seven while the policy variable namely; interest rate is contained in row eight.

The error term  $\mu$  stands for a vector of reduced form uncertainties. The variables in the Equation 8 are positioned according to their power of influence on the order variables in the scheme of identification. For instance, the non-zero element  $\gamma_{ji}^0$  indicates that variable  $j$  impacts variable  $i$  in the current year. Income inequality in row one shows that income inequality responds to its own lagged values while row two that stands for savings shows that it only reacts contemporaneously to income inequality shocks as  $\gamma_{21}^0$  shows. Furthermore, row two also shows how income inequality responds to the shocks in variables in rows three to eight due to delays in information from the policymakers (Bernanke, 2008; Agu et al., 2020).

Rows three and four depicts goods market model. The zeros describe nominal rigidities in the economy (Elbourne, 2007).  $\gamma_{31}^0$  and  $\gamma_{38}^0$  indicates that income responds contemporaneously to interest rate and income inequality shocks while  $\gamma_{41}^0$  and  $\gamma_{43}^0$  show that income also responds contemporaneously. Rows five and six depict labor and technology. The coefficients  $\gamma_{53}^0$ ,  $\gamma_{54}^0$  and  $\gamma_{56}^0$  show that it is possible that changes in income and returns to capital affect each other in the current year on one hand and affects technology on the other hand. Vonnak (2005) and Bernanke (2008) observed that labor and technology affect productivity and impact the returns to capital. Technology is presented in row six and it responds only to income inequality, savings returns to capital and income. Row seven shows that technology reacts contemporaneously with all the variables in the model. Finally, row eight shows the interest rate variable which reacts to returns to capital, income and labor as can be seen in  $\gamma_{85}^0$  and  $\gamma_{86}^0$ .



### **3.2 Justification for the Estimating Technique (SVAR)**

The main objective of this study focuses on the effects of socio-economic status and savings on income inequality proxy by GINI index in Nigeria. In order to adequately model the data and ascertain the appropriate methodology to be used to trace the innovations in the macroeconomic variables, using a time series data requires the stationarity and the co-integration properties of the series, as to achieve the objective. However, Ibrahim (2015); Vonnak (2005), Peersman and Smets (2009), and Omolade et al. (2019) utilized levels of VAR in their work. These studies noted that modeling levels of VAR preserves important information which ordinarily would have been lost through differencing. These studies further explained that including lagged values to VAR models corrects the non-stationarity properties of the residuals in the model (Goudie, 2018). Many recent studies corroborated this idea (Elboure, 2007; Mordi and Adebisi, 2010; Ngalawa and Viegi, 2011; Agu et al., 2020) among others.

Therefore, to trace the innovations and the behaviours of the macroeconomic variables over time, the study needs a technique that can examine the shocks and how each variable responds to the shock in the other variables. We achieved this through Impulse Response Functions (IRFs) and Forecast Error Variance Decomposition (FEVD). The (IRF) measures how each variable responds to the current shocks of different variables because of the VAR disturbances. While FEVD shows the proportion of the variance of the error encountered while forecasting a variable due to a specific change in any variable. Hence, the study uses Structural Vector Autoregressive (SVAR) technique to achieve this aim. Utilizing SVAR require that some restrictions be imposed on the model, as to examine the presence of errors in the orthogonal structure of the model. The result of the non-recursive orthogonal errors as used to generate Impulse Response functions (IRFs) and the Variance Error Decomposition (VED) for the analysis.

### **3.3 Description and Measurement of Variables**

Table 1 below presents the details of quarterly data from 1980Q1 to 2019Q4 with the description and sources of data.

**Table 1.** Description and Measurement of Variables

Variable	Label	Description	Sources of Data
Inequality proxy by GINI Index	INEQ	Inequality refers to the disparity in the distribution of income, opportunities and status among members of a group or individuals in the society.	World Bank
Income (GDP growth rate)- representing the economic and social standing of individuals	Y	This is a derivative of the GDP. This value is gotten from deducting ( $GDP_t - GDP_{t-1}$ ) and represents the economic standing in the economy.	IMF (World Economic Outlook)
Savings	SAV	This is income not spent, or deferred consumption. It is income less consumption	World Bank
Labor	LAB	Labor is a commodity that is supplied by laborers in exchange for wages by demanding firms. This is a derived demand	IMF (World Economic Outlook)
Technology	TECH	This is the application of scientific knowledge especially in industry	IMF (World Economic Outlook)
Consumption	CONS	This is the spending for acquisition of utility.	World Bank
Rate of Return to Capital	RCAP	This is the ratio of monetary values of all the profits and revenues that accrue to domestic investment in capital goods.	World Bank
Interest rate	INTR	The interest rate comprises the real monthly average real price of loanable funds.	World Bank

### 3.4 Data Estimate and Interpretation

#### 3.4.1 Lag Length Selection (VAR)

Table 2 depicts that 2 lags are suitable for this study, as used by Elboure (2007) study. This is because all the 5 criteria chose 2.

**Table 2.** VAR Lag Order Selection Criteria

	LogL	LR	FPE	AIC	SC	HQ
0	-715.8496	NA	1.26e+09	30.73426	51.04533	60.84164
1	-469.8458	343.2630	65868.04	41.19119	43.67975	42.05024
2	-450.5490	104.0535*	15549.17*	18.88851*	53.55456*	40.49923*

**Source:** Research finding, 2020.

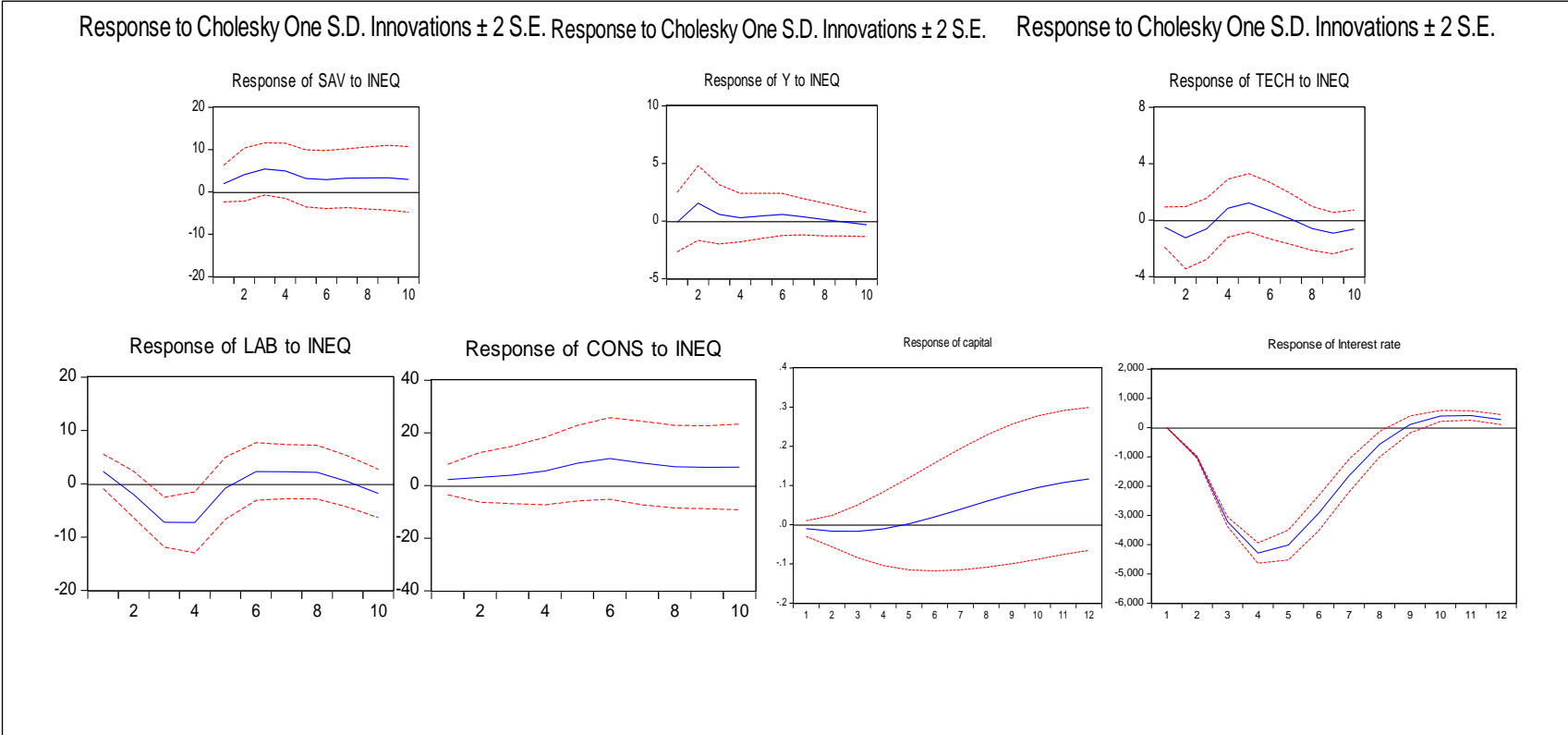
### **3.4.2 Structural VAR Estimation Results**

Recall that SVAR traces the innovations in the macroeconomic indicators over time. Therefore, the responses of all the chosen variables are shown and interpreted using both impulse response functions (IRFs) and variance error decomposition (VED) as follows.

### **3.4.3 Impulse Response Function**

Figure 1 showed the impulse responses to one-standard deviation responses of the shocks in chosen variables to the shocks Income inequality over time.





**Figure 1.** Responses of the Chosen Variables to the Shocks in Income Inequality  
**Source:** Research finding, 2022.



From Figure 1 above, the shocks in savings, income (Y) and consumption variables are significant to the reactions of income inequality. However, the shocks in the other variables to the shocks in income inequality proxy by GINI index were not significant but they give very important information in this study. This important information would be discussed using VED below. It was observed from the above figures that the responses of the chosen macroeconomic indicators to income inequality corroborated other studies. For example, Caselli and Ventura (2000) noted that the shock in productivity and the shock in income inequality are positively related provided the improvement in technology positively impacted on returns to capital relative to labor wages. Furthermore, Boppart (2014) observed that the effect of increase in total factor productivity on income inequality is a function of the speed of implementation.

#### **3.4.4 Variance Decomposition (VD) Analysis Results**

Table 3 shows the reactions of other macroeconomic variables to the shock in income inequality proxy by GINI index, while table 4 presents the responses of different macroeconomic variables to the shocks in savings. Table 3 shows that in response to the income inequality, the rate of return on capital rose slowly from 14.6 to 15.7 then lower to 14.7 due to lower level of saving which may not be unconnected to the changing in economic status effect. Consequently, this affects the innovation or the response of income inequality. For example, income inequality increases from 0.37 to 2.15 due to the change in economic status effect. The implication is that as income inequality is rising, the individuals that have income above the mean income level will have the tendency of increasing their relative wealth/income, whereas the income of those below the mean level will decline. Put succinctly, comparably, the rich will get richer while the poor get poorer.

The innovation in the level of savings over time plays a very important role in determining the speed of co-integration of the variables to equilibrium in the long run. This is even more important when consideration is made with respect to the differentials in initial wealth/income endowment. Bearing in mind the shocks in returns to capital in Table 3, the economic concerns (Y) slows the reduction in the rate of returns to capital 14.6 in period 3 to 15.7 in period 6; this shows a negative effect on the speed of co-integration to the long run equilibrium. These differentials are traceable to saving behaviour of individuals. For example, a decline in the level of the saving has a tendency of reducing the average speed of co-integration. Thereby, reducing the rate at which interest rate declines along the path to long run equilibrium. This has repercussions on the transitional changes/shocks in income inequality.

**Table 3.** Variance Decomposition of Inequality

Period	SAV	INEQ	RCAP	Y	LAB	TECH	CONS	INTR
3	45.3084	0.36671	14.5541	6.0678	0.6965	2.9975	4.2575	22.4358
6	31.5436	2.14968	15.7519	4.0434	0.3264	5.5878	2.6267	13.2007
9	47.9240	0.05468	14.7101	0.0769	0.4433	10.5780	1.7495	10.0043
12	52.5490	0.20390	4.52690	0.1621	0.5183	13.1002	0.9252	8.8101

**Source:** Research finding, 2022.

Table 3 also shows that the level of saving is high (45.3) in period 3 and declining to 31.5 in period 6, causing the returns to capital to rise slowly from 14.6 in period 3 to 15.7 in period 6. This has negative consequences on the wealthy individuals than the poor individuals. This has the tendency of declining the level of income inequality. This corroborates the classical views that as capital accumulation increases, the rate of returns to capital reduces (Acemoglu and Robinson, 2015; Piketty and Zucman, 2014; Saez and Zucman, 2016).

Additionally, in Table 3, recall that income was a proxy for economic status of individuals in the economy. Let's take into account the responses of the economic concerns (Y) on the consumption levels in the economy. The impact of the response of economic concerns on the income inequality is reducing from 6.07 in period 3 to 4.4 in period 6 and finally to 0.16 in period 12, causing the households to also reduce their conspicuous consumption pattern from 4.26 in period 3 to 0.9 in period 12, all things being equal. This finding corroborates the study of Strulik (2012) who empirically studied the economic status preference and noted that increase in income and wealth cause rate of time preference to fall. In other words, when the income of people increases, they care less about their consumption, hence sparing funds that otherwise would have been spent on conspicuous consumption and this increases the level of saving. Consequently, this study's argument that people care less about their conspicuous consumption as the economy develops provides an alternative tool as regards economic standing/status preference. According to this tool, people lower their rate of consumption, hence increasing their rate of saving over time, even as the returns to capital declines at the same time. With respect to the reduction in conspicuous consumption pattern, households initially increase their consumption level and this reduces the level of saving from 45.3 in period 3 to 31.5 in period 6. As proved earlier, when the capital accumulation increases, the returns to capital is decreasing as can be seen in Table 3. This causes the level of saving to increase to a new level (from 47.9 in period 9 to 52.5 in period 12). From the onset, the level of saving is higher than the level of consumption while the capital acquisition increases slowly while reducing the values of returns to capital. This affected the rate of interest, as the rate of interest declined in a slower rate from 22.4 in period 3 to 8.8 in period 12. The implication here is that the rich households benefit more than the poor households do, as the share of income of the rich household are larger because of their higher



returns to capital. Consequently, income inequality increases. This finding is in line with the studies of Barro et al. (2004) and Loayza et al. (2000).

**Table 4.** Variance Decomposition of Savings

Period	SAV	INEQ	RCAP	Y	LAB	TECH	CONS	INTR
3	10.9685	12.7321	12.1512	11.0311	4.1213	14.682	4.1553	21.1572
6	27.8833	6.2849	8.55205	5.02887	1.8923	20.817	3.0119	20.2788
9	20.5066	2.6639	6.7578	8.04313	1.1407	24.661	1.2033	15.5224
12	23.5038	2.2347	3.0940	10.0613	1.0463	26.517	4.2501	13.3917

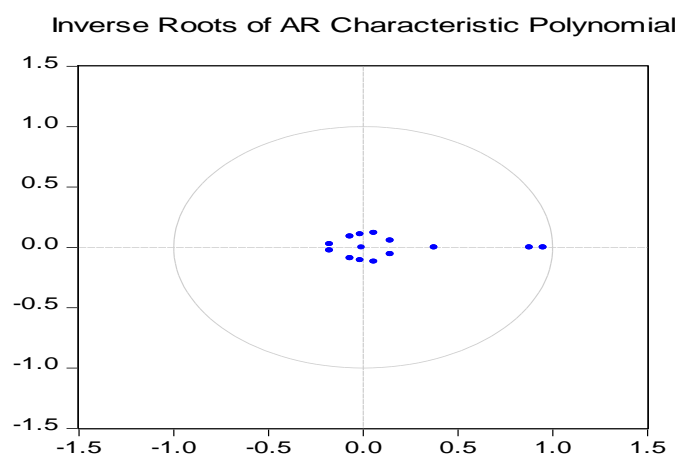
**Source:** Research finding, 2022.

In Table 4, the study considers the responses of the other variables to the shock in the level of saving, the result shows that the economic status effect (Y) is high (11.0) at the onset of the initial capital accumulation while the level of saving is low (10.0), then rises towards the steady state. This finding is in line with the study of Wendner (2010) who studied the nexus between income and income inequality and attributed the recent increase in income and income inequality to variances in saving rates across households. This study assumes that the economy is an incomplete market situation where people save in order to safeguard against future unforeseen lower income. The interest rate decreased and produced substitution effect that negatively affected the level of saving from 11.0 in period 6 to 27.9 in periods 9. Consequently, the status effect reinforces a behavioural change in the economy, which reduced conspicuous consumption from 3.0 in period 6 to 1.20 in period 9. Thus, this pushed the level of saving up to 23.5 in period 12. The study can therefore infer from the foregoing that the initial low level of saving prolonged movement to the steady state and this affected income inequality negatively, as the individuals with relatively more capital benefit from the extended period. This result also shows that the behaviour of saving in Nigeria and the innovation of income inequality has a close relationship. This is because the effect of income standing /status can explain the innovation in both rising level of saving and income inequality. This is in line with the study of Saez and Zucman (2016).

Considering the influence of technology shocks to the level of savings and consumption in the economy, the main tool that can explain the influence of rising technology on the innovation of income inequality depends largely on the reaction of savings in the economy. On the other hand, this reaction depends on the level of consumption out of the income (Y) of the individuals in the economy. For example, the response of technology has been increasing from the initial level from 14.6 in period 3 to 26.5 in period 12, signifying the increase in development in the economy. This in turn reduced the returns to capital as expected from 14.2 in period 3 to 5.1 in period 12. These shocks increased the level of saving from 9.0 in period 3 to 25.9 in period 6. The decline in economic status reduced the conspicuous consumption from 4.2 in period 3 to 3.0 in period 6. These reactions are determinants of income inequality in line with the studies of Bloch (2004),

Banerjee and Duflo (2007) and Heffetz (2011) who also noted that individuals depend on relative consumption to reinforce how their status are viewed in the economy. The economic implication here therefore is that the increase in income or economic status of individuals in Nigeria affects the level of income inequality. This determines if inequality is increasing or declining in the economy following the shocks in the macroeconomic variables.

#### 4. Diagnostic Test (Post Test)



**Figure 3.** Inverse Roots of AR Characteristics Polynomial Result

**Source:** Research finding, 2022.

The figure above shows the post estimation test result. This shows that the moduli of the eigenvalues of the dynamic matrix fall within the unit circle. This shows that the estimated VAR model is stable.

#### 5. Conclusion

This study aims at using behavioural approach to trace the developments in peoples' economic standing/status, savings and income inequality with the mind of relating savings and economic status to income inequality in Nigeria. This study's model assumes that individuals' economic positions are often times determines by their conspicuous consumption. In Nigeria for example, political office holders show their affluence by display of wealth through physical consumptions, building masions and spraying money at social events among others. While a number of theories and studies including Smith (1759), Veblen (1889), Duesenberry (1949), Moav and Neeman (2012) among others laid emphasis on consumption as what influences individual status, some literature hold that income and wealth determine peoples' status in the economy. Furthermore, Weber (1930) and Zou (1994) maintained that people prefer holding more cash relative to other individuals. The framework suggests that income distribution,

which is mainly done via taxation of goods, has the tendency of increasing income inequality as opposed to reducing it. This is because poorer people seem to prefer conspicuous consumption to show their status, hence paying more taxes on consumption of luxury goods. Inequality raises status nervousness, as individuals seem to compete with their rich neighbours. The result suggests that on the average, peoples' economic standing/status and the level of saving in the economy are negatively related. The study traced the innovations of economic status (Y), savings and income inequality therefore adding to the extant literature on the behaviours of macroeconomic variables because of the shocks in other macroeconomic variables over time. The novel of this behavioural tool used in this study is that it has the ability of tracing the determinants of income inequality and at the same time, traces the development in income inequality even when there is convergence in the economy. For policy implication, this study therefore suggests that some government policies geared toward increasing the income of the poor may not necessarily reduce inequality if the poor keep diverting their income to unproductive ventures such as conspicuous consumption. More so, government may need to invest in behavioural changing policies such as education and enlightenment that can change conspicuous consumption. These can enhance income accumulation and alleviate inequality in the economy.

Some possible extensions for future work should be:

- (i) Comparable analysis of Nigeria economic status with other countries within the region
- (ii) A panel analysis of sub-Sahara Africa to see if the findings will negate the finding of this study. This may be possible due to advantages/ limitations of panel Analysis.
- (iii) Other explanatory variables may be added in the future studies to see their effects on the economies' inequality.

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