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Structural Response of Poverty to Shocks in Financial Development and Growth in Nigeria

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Abstract: The study examined the structural responses of poverty to shocks in financial development and economic growth in the case of Nigeria using variance decomposition, impulse response function and annual time series data from 1981 to 2020. The result of the innovation accounting using variance decomposition as expounded by Cholesky showed that apart from poverty's own shock fluctuations, the biggest shock effects to poverty reduction were from ratio of broad money supply to GDP, economic growth and Trade openness. A major policy implication of this finding is that in Nigeria financial development helps to reduce poverty by facilitating transactions services and allowing the poor to benefit from financial services particularly savings products which increase their income through interest earned and enhance their ability to undertake profitable investments and other activities.

Keywords: Poverty, Financial Development and Growth.

1. Introduction

Poverty has been widely acknowledged as a major global development challenge. Financial Market failure and lack of access to financial services are some of the fundamental causes of poverty (Stiglitz, 1981 and Levine 2008). Financial market failure particularly asymmetric information and high fixed cost of small lending, limit the access of the poor to formal finance.

Financial development on the other hand is an effective instrument that can bring about poverty reduction (Stiglitz 1993, DFID 2004, Jalilian and Kirk Patrick 2002; 2005, Odhiambo 2010, Umo 2012, Rewilk 2017 and Ho and Iyke 2018a&b). This it does directly by widening the access of the poor to financial services and indirectly through its positive influence on economic growth which creates productive opportunities for the poor. Thus, expanding the supply of financial services which can be easily accessed by the poor directly contributes to poverty reduction. Even if it does not directly impact on the living standards of the poor as argued by Ho and Iyke (2017), it will indirectly open up avenues

for the poor to earn income through its influence on economic growth. This line of reasoning is in perfect consonance with the trickle-down theory which states that financial development leads to poverty reduction through wide range of opportunities created by economic growth.

However, as the above assertion may seem, there is also the argument that countries that have experienced rapid financial sector development have at the same time suffered greater income inequality thereby suggesting that efforts to reduce poverty may not have materialized despite rapid development in the financial sector (Dewi et al 2018). Furthermore, on growth creating opportunities for the poor, Fields (2002) argued that the extent of the influence of growth on poverty reduction depends on the growth rate itself and the level of inequality. Pradham (2010) in agreement contended that economic growth may not be a sufficient condition for poverty alleviation hence the claim that a well-developed financial system will usher in economic growth which in turn reduce the level of poverty is ambiguous. For instance, if financial development increases income inequality then the country will enjoy positive economic growth without any benefit to its poorest household. In this case, high income group will be richer while the low-income group will be poorer.

Thus, though a large number of literatures find that financial development produces faster economic growth, it is still very unclear whether financial development reduces poverty. This is because while the link between financial development and poverty reduction may appear simple in theory, it may be much more complex in reality. It is against this background that studying the relationship between financial development economic growth and poverty reduction becomes very imperative especially for Nigeria considering the steady progress the country has made over the years in its financial sector. According to the Central bank of Nigeria (CBN) statistical bulletin 2020, the depth of the financial sector showed some significant improvements as the ratio of broad money supply (M_2) to GDP which measures the systematic relevance of the financial sector increased from 10.39% in 1981 to 15.41% in 2001 then to 19.82% in 2011 and further increased to 23.35% in 2020. The banking sector also showed stronger capacity to finance real sector activities with substantial credit flow to the core private sector thus ratio of private sector credit to GDP increased from 6.15% in 1981 to 9.29% in 2001 then to 15.07% in 2011 and in 2020 it stood at 18.83%. However, in spite of the phenomenal growth in Nigeria's financial sector, the Nigeria's economic growth performance has been dwindling and has still remained fragile not strong enough to significantly reduce the prevailing level of poverty ravaging the country hence leading to this present research effort.

Very few studies to the best of my knowledge have attempted to examine these shock effects as it relates to Nigeria. Earlier studies in this regard did not attempt to test the strength of their findings beyond the scope by testing for shocks, structural innovations and impulse response functions. The present study however departs from earlier ones by trying to evaluate the strength of our findings beyond the sample period by applying variance decompositions and impulse response functions to determine the structural response of poverty to shocks in financial development and economic growth in Nigeria.

The rest of this paper is structured as follows; Section II deals with the literature review while section III describes the methodology to be used followed by a discussion of major findings and result in section IV while section V concludes the study.

2. Literature Review

Theoretically, poverty may respond to shocks from financial development in both direct and indirect ways. Financial development affects poverty reduction through facilitating access to formal financing for the impoverished. This leads to a reduction in poverty through several means. First, financial development makes it simpler for the poor to obtain money, which allows them to raise their welfare and consumption due to the ease of obtaining credit (Fowowe and Abidoye 2012). Second, when more people use the financial sector, there is more rivalry amongst financial institutions, which improves the standard of living of the impoverished by offering better rates, goods, and financial services (Beck et al 2007). Third, the issues of moral hazard and adverse selection brought on by asymmetric information are lessened by financial development. Finally, by providing capital for profitable initiatives, financial development can indirectly aid in the alleviation of poverty through economic growth. Thus, financial development has a good impact on economic growth, which in turn reduces poverty.

On empirical front, Kirkpatrick (2000) examined the contribution that financial sector development can make to economic growth and poverty in developing counties. The study argued that financial market imperfections particularly asymmetric information and high fixed cost of small scale lending are the major constraints to pro poor growth in developing countries and therefore recommended that for a stable and efficient financial sector development which is vital for growth and poverty reduction there is the need for robust prudential regulation of financial institutions. Holden and Prokopenko (2001) in reviewing the current thinking on the nexus between financial

development and poverty alleviation concluded that a well-developed financial sector fosters economic growth and contributes to poverty alleviation. The paper identified sound financial stability as the necessary conditions for efficient financial development and poverty reduction.

Jeanneney and Kpodar (2011) using a sample consisting of 65 developing countries (Nigeria inclusive) and 121 observations for the period 1980-2000 investigated how financial development directly reduce poverty through the McKinnon conduit effect and indirectly reduces poverty through economic growth. Employing ordinarily least square regression techniques and dynamic panel generalized method of moment, the study found that financial development is pro poor with the direct effect being stronger than the indirect channel through economic growth. The study also observed that financial sector development is accompanied by financial instability which is harmful to poor but the study concluded that the benefits of financial development to the poor outweighs the cost. Kashif and Samina (2012) examined the role of financial development in poverty reduction through industrial growth in Pakistan from 1971-2010 using Johnson's co integration test and error correction model. The study found a positive significant relationship between financial development and poverty reduction in Pakistan. Based on the above finding the study therefore concluded that in the absence of a well-developed financial system, a strong manufacturing sector cannot exist. According to the study, a strong and healthy manufacturing sector creates employment opportunities which enhances growth and poverty reduction.

In a sample of 89 countries covering the period 1990 to 2011, Dhrif (2013) examined the impact of financial development on poverty reduction. The study decomposed the effect of financial development on poverty reduction into two opposite effects namely growth effect and a disparity effect. The empirical result of the simultaneous equation regression revealed three major findings. First, while the indirect effect of financial development is not robust and ambiguous, the direct effect channels by way of insurance, access to credit facilities and savings is robust to poverty. Secondly these effects highly depended on the magnitude and sign of the impact of financial development on inequality and growth. Finally, institutional equality is a significant determinant of finance – poverty nexus.

Donou-Adonsou and Sylwester (2016) attempted to determine to what extent banks and micro fiancé institutions reduced poverty in developing countries. The study utilized three different measures of poverty namely, headcount ratio, poverty gap and squared poverty gap (to proxy poverty) whole it is used ratio of private sector credit to GDP as the only indicator of financial development. Applying instrumental variables approach to a panel of 71

developing countries spanning 2002-2011, the study found that banks reduced poverty gap when head count ratio and poverty gap were used as poverty measures. However, when squared poverty was used as a proxy for poverty banks failed to have any significant effect on poverty reduction. The result revealed that microfinance institution did not contribute to poverty reduction regardless of the measure of poverty used. Thus, while banks had the ability to reduce poverty in developing countries micro fiancé institutions on the other hand did not at least at the aggregate level.

By incorporating institutional quality into the finance– poverty debate. Cepparulo et al (2017) empirically investigated if the quality of financial institutions affected how financial development contributes to poverty reduction. The study used a sample of developing countries which covered the period 1984-2012 and an interaction term constructed as a product between financial development and institutional quality. The empirical result of the study indicated that the pro poor effect of the financial development reduced as the institutional quality increased. The study explained that the differential impact can be attributed to the ability of banks to perform functions that mirrors those institutional frame work that works well.

Using vector error correction model and time series data from 1986-2016, Onwuka and Nwadiubu (2019) examined the effect of financial development on poverty alleviation in Nigeria. The result of the study showed that financial development had a positive significant effect on poverty alleviation when credit to private sector and broad money supply were used as proxies however when interest rate spread was used as proxy the effect was negative and insignificant.

Ho and Iyke (2018a) tested the validity of the trickle-down hypothesis in the case of china from 1985-2014 within the context of finance-growth poverty nexus. In testing for the validity of the trickle down hypothesis which asserts that a well-developed financial sector enhances poverty reduction by promoting economic growth, the study employed two standard indicators of financial development namely the ratio of domestic credit to private sector to the total nominal GDP and the ratio of money and quasi money to GDP. Economic growth was proxied by the percentage change in real GDP per capita while poverty was proxied by household final consumption expenditure per capita which is a standard proxy for poverty reduction. The study after accounting for structural breaks in model specifications found that in china financial development caused economic growth which in turn caused poverty reduction. The empirical findings of the study therefore provided a strong empirical backing to the trickle-down hypothesis in china.

Ishaq and Marafa (2020) analyzed the effect of financial sector development on poverty reduction in Nigeria. Specifically, the study sought to determine whether the provision of financial services otherwise known as McKinnon Conduct effect or provision of credit is more effective in reducing poverty in Nigeria from 1980-2018. Using an Autoregressive distributed lag model estimation technique, the study found that availability and improvement in financial services is more effective in reducing poverty than credit growth. The study also found out that financial instability has detrimental effects on the poor and also limits the growth effects of financial development especially in the short-term.

Hassan and Meyer (2020) investigated the nonlinear effect of financial development on income inequality using annual data from 1970-2018 and ARDL bounds testing technique. The result of the study revealed that financial development had a nonlinear effect on income inequality. The result further showed that the link between the two variables was U-shaped suggesting that at early stages, financial development narrows the income inequality gap before reaching certain thresholds where the gap is widened.

Bolarinwa (2022) re-examined the relationship between financial development and poverty reduction in Africa from 1996 - 2015. The study developed a more robust measure of financial development that accurately reflected the condition of financial development in Africa. The study found that while financial development reduces absolute poverty, it has little effect on relative poverty. Although private lending helped to alleviate poverty, comprehensive financial development and financial inclusion had no impact on poverty in African countries. In addition, poverty levels rose as a result of stability and efficiency. Given the continent's low degree of financial inclusion, the study concluded that if the poor have access to credit, financial development will likely reduce poverty on the continent. However, in the current state of financial development in Africa, policymakers should not expect much from financial development for poverty reduction.

3. Methodology

3.1. Theoretical Framework

McKinnon (1973) conduit effect provide the theoretical ground for linking financial development to poverty reduction. This effect also referred to as the direct effect in literature argues that financial development positively influences poverty reduction. According to McKinnon conduit effect, financial development leads to increase in savings which is beneficial to the poor as it increases

investment undertaken by the poor. This conduit effect as proposed by McKinnon can be represented thus

$$P_t = \mathcal{F}\,(FD_t, X_t) \tag{1}$$

Where P_t is poverty, FD_t is financial development and are other X_t control variables affecting poverty.

Jeanneney and Kpodar (2011) on the other hand introduced the indirect effect of financial development on poverty reduction through economic growth. In empirical literature, there are a number of studies on the importance of economic growth on poverty reduction (Nallari and Griffith 2011; Chhibber and Nayyar 2007 and Dollar and Kraay 2002). A general consensus among these studies is that growth has a positive and significant impact on poverty reduction. Thus, the indirect effect of financial development on poverty reduction can be represented by;

$$P_t = \mathcal{F}(Y_t) \tag{2}$$

Where P_t is poverty and Y_t is growth.

According to empirical literature, economic growth is a necessary but not sufficient condition for poverty reduction (DFID, 2004 and Dollar and Kraay, 2002). Consequently, equation (2) now becomes

$$P_t = \mathcal{F}(Y_t, X_t) \tag{3}$$

Where represent other variables, which include financial development indicators that affect and complement economic growth in influencing poverty.

3.2. Model Specification

To examine the structural responses of poverty to changes in financial development and economic growth in Nigeria, a Vector Auto regression (VAR) estimation technique is employed. The impulse response function and variance decomposition generated from the estimated VAR model will be interpreted. This innovative accounting approach helps us to test the robustness of the analysis. Specifically, variance decompositions analysis helps us to determine the relative strength of the causality among the variables beyond the sample period while impulse response function will tell us how shocks in one variable might work throughout the contemporaneous connection to shocks in other variables. The model is specified first in its functional form in equation 4 following the theoretical framework described in 3.1 then transformed into a vector estimation equation in equation 5.

$$POV = F(M2, PSC, CDPG, INT, INF, TO) \tag{4}$$

The model above can be stated more compactly as below:

$$Y_{it} = \propto_i + \beta_i \sum_{i=1}^{n} y_{t-i} + \lambda_i \sum_{i=1}^{n} x_{t-i} + V_i \tag{5}$$

Where
Y_{it} = Vector of endogenous variables (such that $POV_{it} = FD_t \ldots TO_t$); α_i = Vector of constant terms; β_i = Coefficient of the autoregressive terms; λ_i = Coefficients of the explanatory variables (vector of coefficients); v_i = Vector of innovations.

3.3. Explanation of Variables

Poverty (POV)

POV captures the size of poverty in a given year such that if we compare the present value of poverty to its previous values it tells us whether poverty has increased or reduced. A number of proxies for measuring poverty has been suggested in the literature such as income, headcount data for the poor as well as the Gini coefficient however in the present research study, household final consumption expenditure will be used. This is because empirical studies have shown that consumption expenditure is usually more reliably documented and quite stable when compared to income of the poor (Datt and Ravallion, 1992). Furthermore, this measure of poverty is now being widely used in empirical studies (Ho and Iyke 2017 and Dewi et al 2018).

Financial Development Indicators (M_2 and PSC)

Financial development is a multidimensional concept which comprises of financial depth, access, efficiency and stability. In the present study we use the two major proxies that are often used in literature i.e. ratio of broad money supply to GDP (M_2) and ratio of private sector credit to GDP (PSC). The ratio of broad money supply to GDP (M_2) measures the depth of the financial sector. It measures the real size of the financial sector of a developing economy. The ratio of broad money supply to GDP (M_2) also called monetization variable was used in McKinnon (1973), Shaw (1973), Dauda and Makinde (2014) Ho and Iyke (2017), Dewi *et al.,* (2018), Ishaq and Marafa (2020).

Private sector credit on the other hand comprises the value of credit by financial intermediaries to the private sector. It excludes credit to the public sector but simply represent the credit channeled from savers through financial intermediaries to private businesses which may include the poor and a comparatively comprehensive measure of a credit (Beck *et al.,* 2007). It best

captures the intermediation ability of the financial sector which is most times referred to as the credit channel. The credit to private sector as a proxy for financial development has been used in studies such as Beck *et al.,* (2007), Ho and Iyke (2017) and Ishaq and Marafa (2020).

Economic Growth (GDPG)

Economic growth is the increase in the total quantity of goods and services produced per person in an economy over a period of time (Ho and Iyke, 2018a&b). Economic growth is measured by the percentage change or the growth rate of nominal GDP measured at current basic prices. This indicator has been widely used in other studies such as Jalilian and Kirkpatrick (2002), Rewilak (2017), Dewi *et al.* (2018).

Interest Rate Spread (INT)

Interest rate spread is the difference between borrowing and lending rates by financial institutions. The rate influences the amount of savings channeled to investment. It therefore captures the transactions cost of financial intermediation. The expected sign of (INT) should be negative. This variable was used in Onwuka and Nwadiuba (2019).

Inflation Rate (INF)

This represent the increase in the level of prices of goods and services that households consume. It is calculated from the consumer price index which measures the percentage change in prices of goods and services that household consume. It was added as a control variable since empirical evidence from literature shows that it negatively affects the well-being of the poor (Easterly and Fisher 2001). It was used in Beck *et al.,* (2007), Dauda and Makinde (2014), Rewilak (2017).

Trade Openness (TO)

Trade openness is the sum of exports and imports as a share of GDP. It captures the degree of international openness. According to Dauda and Makinde (2014), trade openness (TO) is expected to benefit the poor by giving them better access to goods and services, thereby enhancing their well-being. Other studies such as Christaensen *et al.,* (2003) found that poverty is affected by trade openness as it affects the savings ratio of the population. Trade openness was used in the following studies. Beck *et al.,* (2007), Rewilak (2017) and Ishaq and Marafa (2020).

3.4. Data Sources

The study utilized annual time series data covering the period 1981-2020. The data was obtained from different secondary sources which includes Central Bank of Nigeria Statistical Bulletin for various years, Central Bank of Nigeria Annual Reports for various years and National Bureau of Statistics reports and publications.

4. Results and Discussion

4.1. Descriptive Statistics

Descriptive data analysis was essential in determining the statistical properties of the data so as to select the proper functional form of the estimable model. The study conducted a descriptive statistics analysis with the aim to give the estimable models the proper functional form and generate reliable estimates. The essence of the analysis was to determine the normality of the data, measures of central tendency and measure of dispersion. To test for the normality of the variables, the study used the Jargue-Bera test which compares the skewness and Kurtosis coefficients of the variables. For a variable to be normally distributed, its skewness should equal to zero, Kurtosis should be equal to three (3) and the JB statistics should be equal to zero i.e not be significant since the null hypothesis is not normally distributed. The study further sought to determine the spread of the data by estimating the mean and the standard deviation for all the variables contained in the models. The mean, standard deviation, skewness and kurtosis of all the variables in the model are presented in table 4.1

Table 4.1: Descriptive Statistics

	POV	*GDPG*	*M2*	*PSC*	*INT*	*TO*	*INF*
Mean	26.09269	24.51020	15.23250	11.29350	-15.02375	36.07770	19.60000
Median	22.31924	15.04199	12.64000	8.090000	-15.85500	35.00293	12.46000
Maximum	82.54923	180.6840	24.90000	22.75000	-2.250000	68.76650	72.81000
Minimum	-63.59029	4.472441	8.460000	5.810000	-26.62000	11.07268	4.670000
Std. Dev.	29.73086	29.31598	5.284782	5.477433	7.856645	15.22918	17.37050
Skewness	-0.219387	4.023121	0.614805	0.766897	0.251169	0.279834	1.637168
Kurtosis	3.712318	21.49223	1.732462	1.849072	1.717917	2.127761	4.509212
Jarque-Bera	1.166533	677.8410	5.197656	6.128600	3.160133	1.790047	21.66499
Probability	0.558072	0.000000	0.074361	0.046687	0.205961	0.408598	0.000020
Sum	1043.708	980.4078	609.3000	451.7400	-600.9500	1443.108	784.0000
Sum of Sq Dev.	34473.03	33517.65	1089.228	1170.089	2407.348	9045.187	11767.63
Observations	40	40	40	40	40	40	40

The mean shows the average or expected value of the sample. The maximum and the minimum numbers show for each variable the highest and the lowest among all the values respectively. All variables were closely dispersed from their mean values as shown by their small standard deviations. From the values of skewness, kurtosis and the Jarque-Bera probability; poverty (Pov), ratio of broad money supply to GDP (M_2), interest rate spread (INT) and Trade Openness (TO) were normally distributed at 5% significant level. At one percent significant level, all the variables were normally distributed apart from inflation rate (INF) and Economic growth (GDPG). These results suggest that the data is good for the study as they would help in explaining data in a simpler and meaningful way.

4.2. Unit Root Test Result

Macroeconomic time series data are generally characterized by stochastic trend which can be removed by differencing. Thus, in order to verify the reliability of the time series data used for the analysis, a unit root was conducted using Augmented Dickey Fuller (ADF) test to determine whether the variables under investigation are stationary or non-stationary. A variable is stationary if the absolute ADF value is greater than the absolute test critical value at a chosen level of significance. The time series behaviour of each of the series is presented in table 4.2 below

Table 4.2: Augmented Dickey Fuller (ADF) test

Variable	*Level Form*		*First Difference*		*Order of*
	ADF Stat	*1% Critical Value*	*ADF Stat*	*1% Critical Value*	*Integration*
POV	-5-6932	-3.6105			I(0)
GDPG	-11.3823	-3.6105			I(0)
M_2	-0.7147	-3.6105	-5.7150	-3.6156	I(1)
PSC	-1.0373	-3.6105	-5.7615	-3.6156	I(1)
INT	-1.7005	-3.6105	-8.2954	-3.6156	I(1)
INF	-3.2088	-3.6105	-6.0467	-3.6156	I(1)
TO	-1.8212	-3.6105	-7.8786	-3.6156	I(1)
LBF	-3.2606	-3.6463	-6.2434	-3.6105	I(1)
GCF	-0.5070	-3.6056	-5.5675	-3.6105	I(1)

Source: Author's computation using E-Views 9, 2022

From table 4.2, it is observed that except for POV and GDPG which are stationary (i.e integrated of order zero) at their level forms, all the other variables (M_2, PSC, INT, INF, TO) were non-stationary in their various level forms. At 1% critical value, the null hypothesis of non-stationary (i.e a case of unit root)

was rejected in the case of (POV and GDPG) while it could not be rejected in the case of (M_2, PSC, INT, INF, TO). However, the non-stationary variables (M_2, PSC, INT, INF, TO) were later made stationary after first difference. Hence, we conclude that while POV and GDPG are integrated of order zero, I (0), M_2, PSC, INT, INF, and TO on the other hand are integrated of order one I (1).

4.3. Innovation Accounting

In this section we shall present the results of the variance decomposition and impulse response function which we used to investigate the structural responses of poverty to shocks in financial development and economic growth.

4.3.1. Variance Decomposition Analysis

The variance decomposition shows the effect of a shock in one variable on the other variables. The variance decomposition method used was the cholesky decomposition. This method is most preferred to the other non-orthogonal factorization methods because shocks to one standard deviation fulfils the adding up properly which the others do not. The rows show the forecast variance percentage due to each shock and should sum up to 100. The result is presented in the Table 4.3.1 below.

Table 4.3.1: Variance Decomposition of POV to other variables.

Variance Decomposition of POV								
Period	*S.E.*	*POV*	*GDPG*	*M2*	*PSC*	*INT*	*TO*	*INF*
1	3012.891	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	3707.223	91.15491	1.910674	2.172952	2.410881	0.645286	0.822943	0.882354
3	5223.414	81.72074	4.595040	9.460180	1.887441	0.495027	1.101587	0.739982
4	6652.623	74.52828	5.506471	14.82099	1.303369	0.377770	0.894508	2.568612
5	8292.443	69.72273	7.251984	15.88573	1.178660	0.265843	2.382545	3.312510
6	9820.806	66.77517	8.416966	16.35089	0.931526	0.189839	3.224841	4.110766
7	11330.29	64.86967	8.879089	16.27638	0.839041	0.157846	4.691164	4.286818
8	12747.17	63.80344	8.726906	16.32719	0.754928	0.127808	5.790495	4.469227
9	14152.00	63.10118	8.307195	16.22692	0.741537	0.128079	7.002143	4.492948
10	15534.68	62.70867	7.771055	16.15310	0.724661	0.148516	7.973452	4.520542

Source: Author's computation using E-Views 9, 2022

From the result in table 4.3.1, it is observed that poverty reduction responded positively to its own shock such that the largest contribution to the poverty variable was the variance in poverty (POV) itself. In the short run, the response of poverty to its own shock was very high. For instance, shocks to poverty causes 91.2% fluctuations in poverty (own shock). However, in the long-run, the response of

poverty to its own shock reduced. For example, looking at the 10th period, a shock in poverty caused 62.7% fluctuations in poverty. In the short run, the effect on poverty due to shocks in the other variables were low and increased over the long-run. From the 3rd period, shocks of poverty to itself reduced and fluctuations in poverty due to shocks in the other explanatory variables increased. For example, apart from poverty owns shocks, the next highest shock effects to poverty were from M_2 and GDPG. Shocks in M_2 led to 16.2 percent fluctuations in poverty in the ninth period as compared to 2.2% in the second period. On the other hand, shock in GDPG led to 8.9% fluctuations in poverty in the 7th period when compared to 1.9% in the second period. With regard to shocks in the financial development indicators, shocks in ratio of broad money supply to GDP (M_2) led to most fluctuations in poverty reduction especially in the long run. In the 10th period for instance, shocks in ratio of broad money supply to GDP led to the 16.2% fluctuations in poverty reduction when compared to 2.2% that it was in the second period. Shock in ratio of private sector credit to GDP (PSC) led to the least fluctuations, starting out from 2.41% in the second period and declined to 0.72% in the 10th period. Next to M_2 in terms of positive response was GDPG. Growth which increased from 1.9% in the second period to 8.9% in the seventh period before declining to 7.8% in the 10th period.

Furthermore, trade openness and inflation rate also led to fluctuations in poverty reduction increasing steadily over the years from 0.8 in the second period to about 7.97 and 4.52 percent in the tenth period respectively. Interest rate on the other hand had very little or no combination to fluctuations and variations in poverty reduction in Nigeria as its contribution declined over the years. Its contribution in the second period was about 0.65% before declining to 0.15% in the tenth period.

4.3.2. Impulse Response Function

The impulse response functions trace out the response of the dependent variable in the VAR system to shocks in the error terms for over a period of 10years. The impulse response graph for study is presented in the graph below, it shows the various responses of poverty to GDPG, M_2, PSC, INT, TO and INF. The result in the graph shows that poverty responded positively to shocks in poverty, economic growth, and financial development proxied by ratio of broad money supply to GDP and Trade openness. The response of the above variables was statistically significant.

On the other hand, the graph showed that there was little or no response from poverty to shocks in ratio of private sector credit to GDP which is another

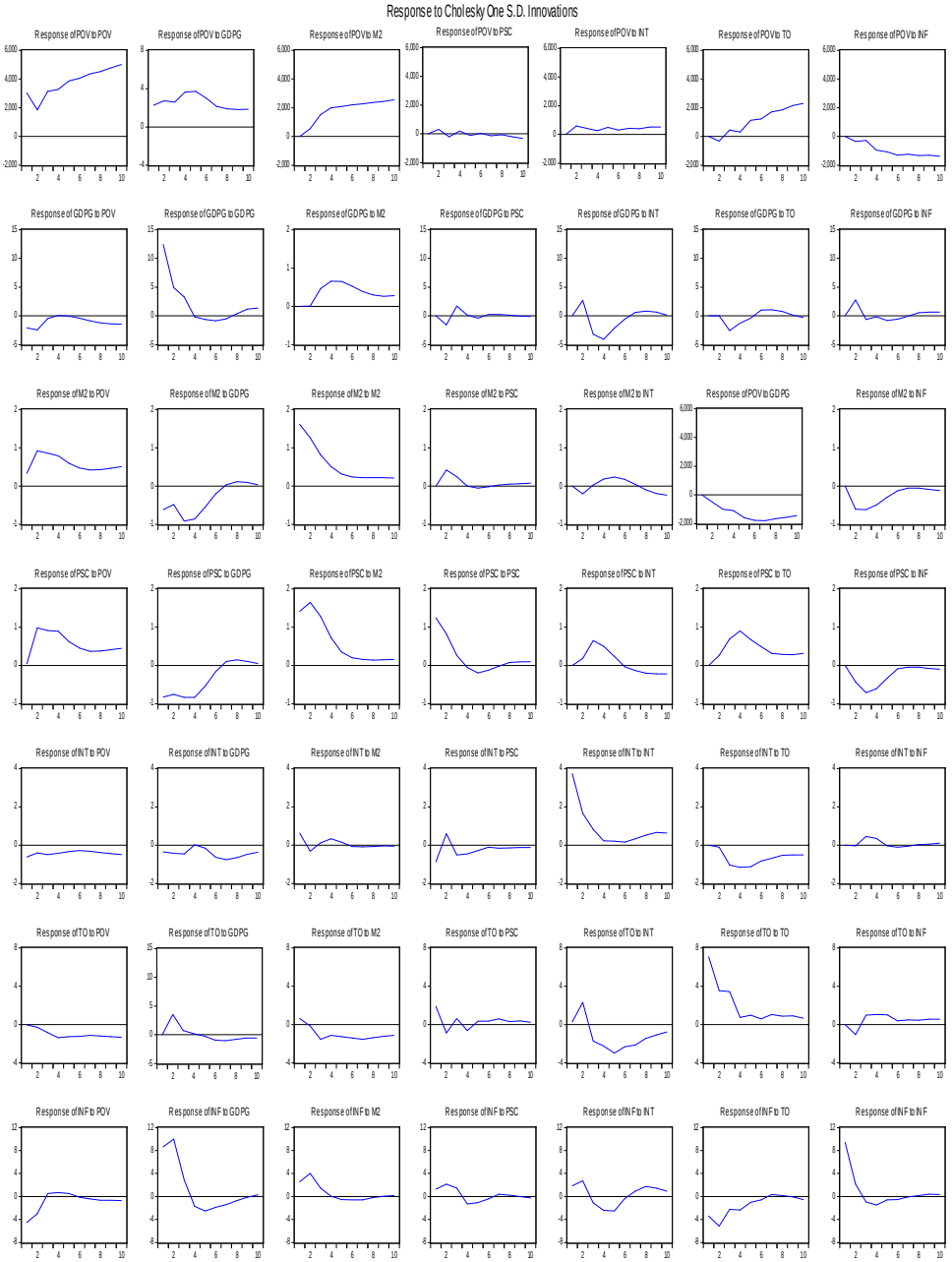

Figure 4.3: Response to Cholesky One S.D Innovations

indicator of financial development. On the 6th year for instance the response was negative. Furthermore, the graph showed that poverty reduction only responded marginally or slightly to shocks in interest rate while it responded negatively to shocks in inflation rate from the first year to the tenth year.

5. Conclusion and Recommendations

The study examined the structural responses of poverty to shocks in financial development and economic growth in the case of Nigeria using variance decomposition, impulse response function and annual time series data from 1981 to 2020.

The order of integration of the variables were investigated using Augmented Dickey Fuller unit root test. The result obtained showed that the stationary properties of the variables were a combination of I (0) and I (1).

In order to capture the different aspects of financial development, two major indicators of financial development commonly used in the literature on finance-growth link were utilized namely ratio of broad money supply to GDP (also called the monetization variable) which measures the ability of the financial sector to provide transaction services and saving opportunities and ratio of private sector credit to GDP which measures the ability of the financial system to channel funds from savers to productive agents and possibly the poor.

The result of the innovation accounting using variance decomposition as expounded by Cholesky showed that apart from poverty's own shock fluctuations, the biggest shock effects to poverty reduction were from ratio of broad money supply to GDP, economic growth and Trade openness. A major policy implication of this finding is that in Nigeria financial development helps to reduce poverty by facilitating transactions services and allowing the poor to benefit from financial services particularly savings products which increase their income through interest earned and enhance their ability to undertake profitable investments and other activities. Secondly, this finding suggests that financial development leads to poverty reduction through wide range of opportunities created by economic growth which is in line with the studies of Dollar and Kray (2002), Ho and Iyke (2017, 2018b), Dewi et al (2018), all of which argued that financial development indirectly open up avenues for the poor to earn income through its positive influence on economic growth.

A similar result was also obtained from the impulse response functions which showed that poverty responded positively to shocks from ratio of broad money to GDP, economic growth and Trade openness. This finding is consistent with the proponents of trade openness who argue that trade openness is expected

to benefit the poor by giving them better access to goods and services thereby enhancing their well-being.

The result further showed that private sector credit made very little contribution to variations in poverty in Nigeria thus demonstrating that, contrary to popular belief, increasing private sector credit increased rather than decreased the incidence of poverty in Nigeria. A major take away from the negative association between financial development when proxied by credit to private sector and poverty reduction is that increase in the supply to credit to the private sector is not enough to trickle-down financial resources to the poor except it is accompanied by other intervening policies like good governance and equitable distribution.

References

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, Inequality and the Poor. *Journal of Economic Growth*, *12*(1), 27–49.

Bolarinwa, S. T., Olaoye, O. O., Ullah, W. & Agbi, B. (2022). Does Financial Development Really Matter for Poverty Reduction in Africa? *Forum for Social Economics*, 51(4), 415-432.

Cepparulo. A., Cuestas, C. J. & Maurizo, I. (2017). Financial development, institutions and poverty alleviation: An empirical analysis. *Applied economics*, 46(36), 3611-3622.

Central Bank of Nigeria (2020). Statistical Bulletin, 2020. Central Bank of Nigeria, Abuja.

Chhibber, A. & Nayyar, G. (2007). Pro-Poor Growth: Explaining the Cross-Country Variation in the Growth Elasticity of Poverty. Brooks World Poverty Institute Working Paper No. 14

Christiaensen, L., Demery, L. and Paternostra, S. (2003). Macro and Micro Perspectives of Growth and Poverty in Africa. *The World Bank Economic Review*, 17(3), 17-347

Datt, G. & Ravallion, M. (1992). Growth and distribution components of changes in poverty measures. A decomposition with applications to Brazil and India in the 1980s. *Journal of Development Economics*, 38(2), 275–295.

Dauda, R.O., & Makinde K.O., (2014). Financial sector development and poverty reduction in Nigeria. A vector auto regression analysis. *Asian economic and financial review,* 4(8), 1040-1061.

Dewi, S., Majid M.S., Aliasuddin & Kassin S., (2018). Dynamics of financial development, economic growth and poverty alleviation. *South east European journal of economics and business,* 13(1), 17-30.

Department for International Development (2004). The importance of financial sector development for growth and poverty reduction. Department for international development (DFID), Policy division working paper.

Dhrifi, A. (2013). Financial development and poverty: what role for growth and inequality. *International journal of academic research in accounting, finance and management sciences*, 3(4), 119-129.

Dollar, D., & Kraay, A. (2002). Growth Is Good for the Poor. *Journal of Economic Growth*, *7*(3), 195–225

Donou-Adonsou F., & Sylwester K. (2016). Financial development and poverty reduction in developing countries. New evidence form banks and microfinance institutions. *Review of development finance,* 6, 82-90.

Easterly, W. and Fischer, S. (2001). Inflation and the Poor. *Journal of Money, Credit, and Banking,* 33(2), 160-178

Fields, G. (2002). *Distribution and Development: A New Look at the Developing World*. MIT Press.

Fowowe, B., & Abidoye, B. (2012). A quantitative assessment of the effect of financial development on poverty in African countries. Department of economics, university of Ibadan, Nigeria.

Hassan, A.S. & Meyer, D.F. (2020). Financial development - Income inequality Nexus in South Africa: A Non-Linear Analysis. *International Journal of Economics and Finance Studies*. 12(2), 335-351.

Ho, S.Y., & Iyke, B.N., (2017) Does financial development lead to poverty reduction in China. Times series evidence. *Journal of economics and behavioral studies*, 9(1), 99-112.

Ho, S., & Iyke, B. N., (2018a). Finance growth poverty nexus: A re-assessment of the trickle down hypothesis in china. *Economic change and restructuring,* 51(3), 221-247.

Ho, S.Y., & Iyke, B. N., (2018b). Financial development, growth and poverty reduction: Evidence from Ghana. MPRA paper no 87121, Available online at http://mpra.ub.uni-muechen.de/87121.

Holden, P. & Prokopenko, V. (2001). Financial development and poverty alleviation: Issues and policy implications for developing and transition countries. IMF working paper, WP/01/160

Ishaq, S. & Marafa, A.A. (2020). The effect of financial sector development on poverty reduction in Nigeria: An Empirical Investigation. *International Journal of Economics and Financial Issues,* 10(4), 9-17.

Jalilian, H. & Kirkpatrick, C. (2005). Does financial development contribute to poverty reduction? *The journal of development studies*, 41(4), 636-656.

Jalilian, H. & Kirkpatrick, C. (2002). Financial development and poverty reduction in developing countries. *International journal of finance and economics*, 7, 97-108.

Jeanneney, S. G., & Kpodar, K. (2011). Financial development and poverty reduction: Can there be a benefit without cost? *The journal of development studies,* 47(1), 143-163.

Kashif I. & Samina K. (2012). Contribution of financial development in poverty reduction through industrial growth. *International journal of asian social science*. 2(5), 567-576.

Kirkpatrick, C. (2000). Financial development, economic growth and poverty reduction. *The Pakistan development review,* 38(4), 363-388.

Levine, R. (2008). Finance and the poor. *The Manchester School, 76*, 1-13. http://dx.doi.org/10.1111/j.1467-9957.2008.01078.x

McKinnon R.I. (1973). Money and capital in economic development. Brookings Institution Press.

Nallari, R., & Griffith, B. (2011). Understanding Growth and Poverty: Theory, Policy, and Empirics. Directions in Development; poverty. World Bank.

Odhiambo, N.M. (2010). Financial deepening and poverty reduction in Zambia. An empirical investigation. *International journal of social economics*, 37 (1), 41-53.

Onwuka, I. O. & Nwadiubu, A. (2019). Effect of Financial sector development on poverty alleviation - the Nigerian Experience (1986-2018). Advances in Social Sciences Research Journal. 6(6), 39-51.

Pradhan, P. R. (2010) Nexus between finance, growth and poverty in India: The co integration and causality approach. Asian social science, 6(9), 114-122.

Rewilak, J., (2017). The role of financial development in poverty reduction. *Review of development finance*, 7, 169-176.

Shaw, E. S. (1973). Financial deepening in economic development. New York Oxford University Press.

Stiglitz, J. E., & Weiss A. (1981). Credit rationing in markets with perfect information. *The America economic review,* 71(3), 393-410.

Stiglitz, J. E. (1993). The Role of the State in Financial Markets. *The World Bank Economic Review*, 7(1), 19-52, https://doi.org/10.1093/wber/7.suppl_1.19

Umo, J. U. (2012). Escaping Poverty in Africa: A perspective on strategic agenda for Nigeria. Millennium Text Publishers, Lagos Nigeria.