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FINANCIAL INTERMEDIATION AND INCOME INEQUALITY IN NIGERIA: A COINTEGRATION APPROACH

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Abstract

The relevance of finance in solving several economic problems has been emphasized with several empirical literature. However, the practicability of some of these results remains tough in developing countries due to their peculiar features. This study explores financial intermediation influence on income inequality in Nigeria between 1985 and 2020 using secondary data gleaned from the Central Bank of Nigeria Statistical Bulletin. The result of the Fully Modified Least Square (FMOLS) showed that changes in financial intermediation measures such as money supply and credit to private sector will result into an increase in income inequality while changes in stock market capitalization result in a decline in income inequality. The outcome of this study implies that using institutions-based approach to address the problem of income inequality in Nigeria may not yield desirable outcome as only stock market capitalization yields a statistically significant result at 95% confidence level. Hence, the study recommends that there is a need to design a modern financial market and institutions-based approach devoid of any personal colouration for the country in order to tackle the menace of income inequality. Likewise, there is a need to inculcate international best practices on socio-economic management in order to attain desired economic growth and sustainable development in Nigeria.

Introduction

In contemporary economic activities, finance and growth have occupied a diverse position in economic discourse due to its unique influence in a functional financial scheme in terms of income redistribution, poverty eradication, economic growth and development. As such, the importance of financial intermediation cannot be overelaborated as they offer a wide range of financial services such as credit accretion, loan formation, risk management, delegated monitoring and exchange facilitation among various economic agents (Soyebo & Somoye, 2019). In an institution or market dominated arrangement, the nature and magnitude of financial activities usual determined the extent of government attainment of set macro-economic objectives.

Similarly, Beck, Demirguc-Kunt, and Levine (2007) observed the relevance of financial intermediaries should be considered in terms of role played in the financial system, (functional perspective) as against the use of prevailing institutional functions (institutional perspective). This position was borne out of the assessment that overtime, financial intermediaries' functions and activities have been more persistent than institutions which has earned them a unique feature and makes them an essential element in the economy.

Also, the connection between the healthiness of financial intermediary and business fluctuations is one of the rationales for the creation of financial safety net such guideline, deposit insurance and capital base, while the likelihoods of changes in public policies is a function of financial intermediaries' situations. But as intermediary sector developed, expand and transmuted intensely while their roles in the financial scheme remain relatively the same, despite several technological design and changes arising in the financial system (Doerr, Drechsel & Lee, 2021).

Thus, when financial institutions engage in a business in line with standard, they are creating a train of event that will create adequate utilization of resources and economic growth. Once these activities are sustained, the multiplier effect will spread across various segment of the economy and aid government attainment of various macro-economic objectives. Since financial intermediaries serves as conduct pipe in the transmission of government discretionary policies, they are essential in aiding the reduction in income inequality among the various class of citizens through an effective and efficient implementation of government policies in such direction.

However, despite the various claim activities and regular announcement of supernormal profit by various financial intermediaries, the impact of these activities was not felt on the level income distribution and inequality as there are clear cut divergence in economic in terms of employment, gender, geographical and socioeconomic status.

The continuous rise in commodity prices, combined with fixed minimum wages implies that households must reduce food consumption which clogs the wheel of progress in terms of poverty reduction and food security. This imminent problem poses a puzzle on the influence of financial intermediation activities on income inequality in Nigeria which is the focal point of this paper. The remaining segment of the paper comprise some stylized fact on Nigerian economy, a brief literature review, materials and methods, results and discussion as well as conclusion and recommendations.

Stylised Fact on Nigerian Economy

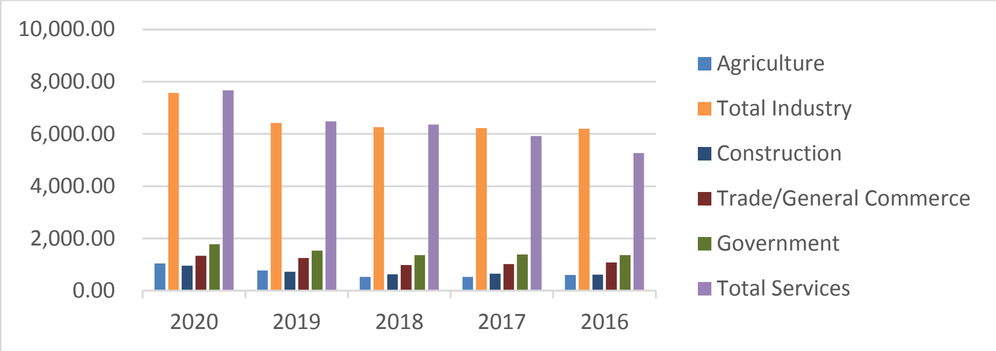


Figure 1: Sectorial distribution of Bank Loans in Nigeria

The figure 1 shows that majority of loans granted by banks in Nigeria between 2016 and 2020 goes into Industrial and Service sector

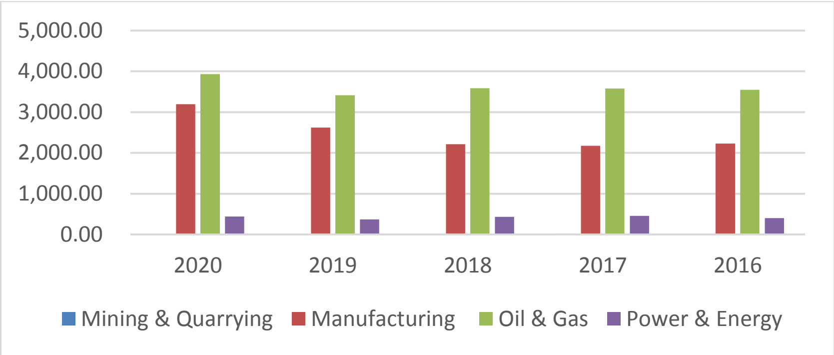


Figure 2: Sectorial distribution of Bank Loans to Industrial sector in Nigeria

Figure 2 shows the distribution of loans granted to the industrial sector and revealed that majority are channelled into Manufacturing and Oil & gas .

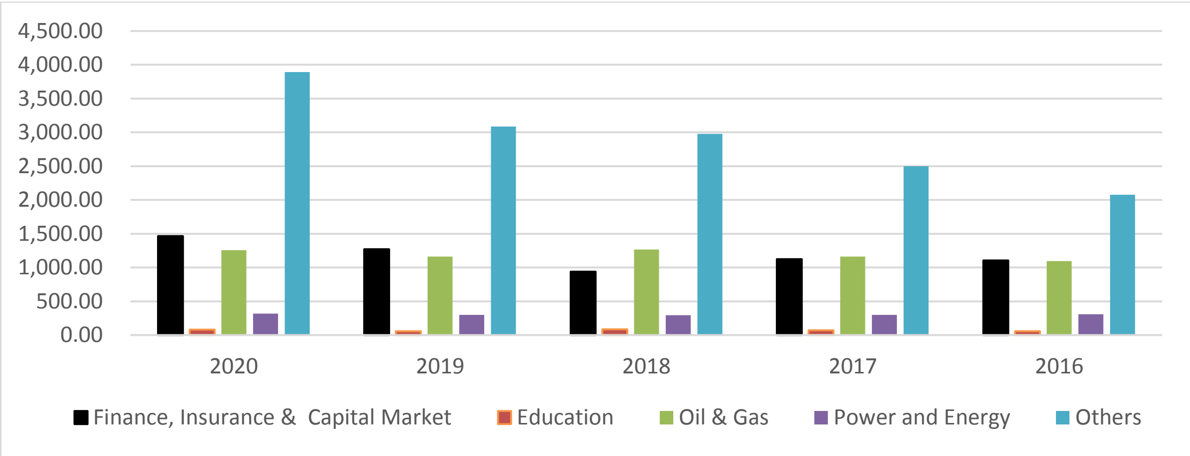


Figure 3 distributions of loans to the service sector in Nigeria.

The others comprise government, personal and professional as well as miscellaneous lending

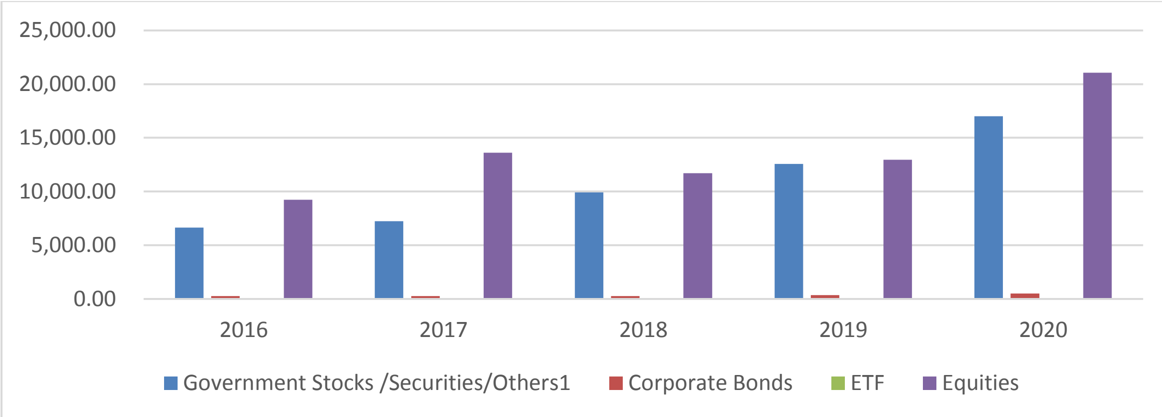
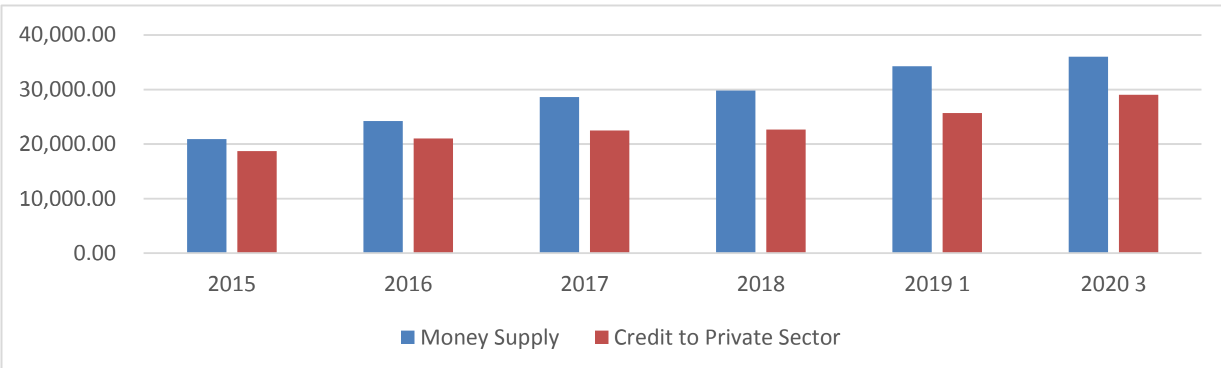


Figure 4 market capitalization of listed securities in Nigeria.

Figure 5: distribution of Money Supply and credit to Private sector in Nigeria between 2015 and



2020.

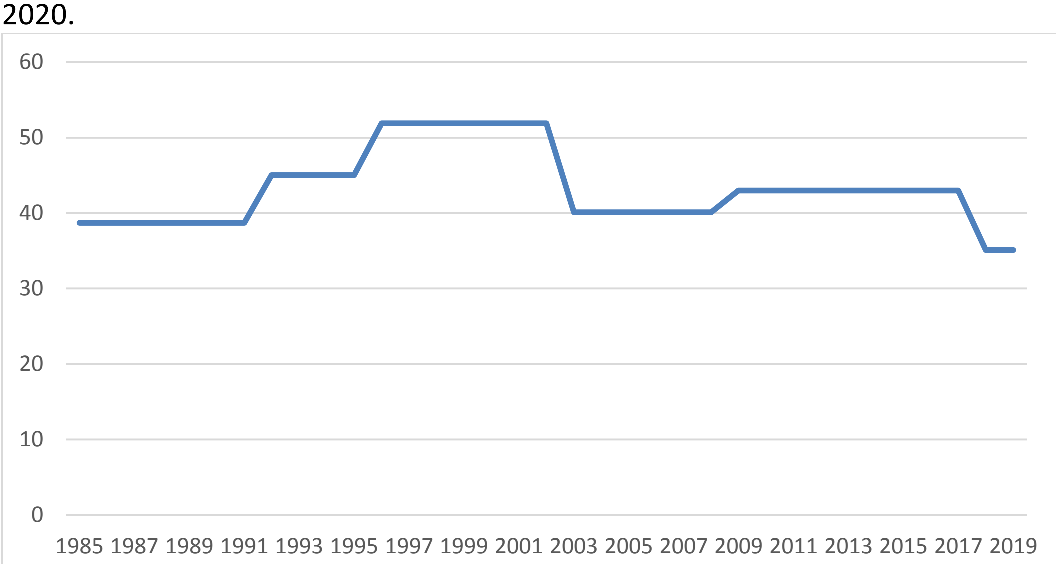


Figure 6: Trends in income inequality in Nigeria.

Literature Review

In discussion the interaction of finance and growth, the work of Levine (2005) offers an all-embracing basis in clarifying the essential roles offered by financial intermediaries towards economic growth attainment through fund aggregation, information generation on profitable ventures, relevant investment monitoring, risk management as well as facilitating the exchange among market markers. These roles are indispensable in all ecosystems but it may ineffective in an arrangement characterized by market imperfections and apparent inequality, because it results in poor capital accumulation and formation (Galor & Zeira 1993; Galor & Moav 2004). Rioja and Valev (2004) observed that countries characterized with little credit private sector experience lower growth arising from a marginal increase in credit private sector. The consequence is more pronounced in economies with improved financial development.

Cetorelli and Strahan (2006) revealed that a successful reforms in the financial sector tends to enhance the banking sector service deliver and increase the adoption of bank-based finance for firm creation and sustenance. Gupta and Yuan (2009) and Levchenko, Ranciere, and Thoenig (2009) opined that financial intermediation activities often boosts the growth of firms in sectors that depends heavily on external finance. Strieborny and Kukenova (2016) reported that businesses supported by banks in reducing uncertainty in financial information, often clearly outperform others in functional banking systems.

Arcand, Berkes, and Panizza (2015) reported that the nexus between growth and credit private sector may be nonlinear as financial depth tends to decline growth at the optimal credit private sector relative to the GDP. Berger and Sedunov (2017) studied the influence of banks' liquidity provision on economic growth base on the notion that money creation is a basic economic function of banks. The results of their statistical analysis revealed that bank liquidity creation applies a first-order influence on economic activity. Ebrahim (2020) opined that as the intermediating sector developed, there should be expansion in credit constraints through an effective borrower monitoring. Thus, intermediaries tend to exterminate temporary income inequality by expanding financial resources to economically disadvantage economic units in order to ignite a wealth recreation process that will enhancement entrepreneurship activities and occupational trend towards desired objectives.

Similarly, some studies showed the prospect of using the capital markets to influence the financial information creation and resources apportionment among competitive users. (Grossman & Stiglitz 1980; Kyle 1984; Merton, 1987; Holmstrom & Tirole 1993). This is possible due to the market size which provides liquid, lower transaction and good chance of profit making through new and appropriate financial information. Thus, the markets tend to provide adequate return to investors base on the extent of the market efficiency. Fang, Tian, and Tice (2014) explore the influence of stock liquidity firm innovation in United States, the result of the firm level analysis showed that the implementation of regulatory reforms aimed at increasing stock market liquidity often result in decline in innovation. This is because such stock market liquidity often results in aggressive takeovers and discourages firm management to undertake profitable investment decision especially innovative projects.

In terms financial agents' activities and income inequality, Clarke, Xu, and Zou (2016) studied the influence of financial agent development on income inequality using 91 selected countries between 1960 and 1995. Their statistical results showed that inequality declines as economies advance in financial intermediaries' activities, this result is in tandem with the theoretical models of Galor & Zeira (1993) and Banerjee & Newman (1993). Furthermore, the result is in line with the perception of Kuznets, relating to the interaction of Gini coefficient and financial intermediary development is a function of the sectorial structure of a biosystem, as an advanced modern sector is connected to a reduced drop in Gini coefficient for a particular level of financial intermediation and development.

However, there are no results to confirm the presence or otherwise of an inverted-U-shaped relationship between development in the financial sector and income inequality, as posit by Greenwood and Jovanovic (1990).

Ebrahimian (2020) emphasized that the job-creation consequence of financial intermediation is essential in the social sense, but its income redistribution consequences are counterproductive as the social surplus deteriorates due to a financial externality arising from financial intermediaries' activities. This implies that the existence of imperfect market in financial intermediation will result into an increasing utilitarian welfare and reduce income redistribution in the economy. Levine and Rubinstein (2020) stressed that financial frictions can prevent the poor from becoming an entrepreneur in low-income economies which yield inequality because they are vocationally disadvantage to accessed sufficient financial resources at lower cost in order to pursue investments with high return led to continuous cross-generational income inequalities.

Similarly, Meniago and Asongu (2018) examined the influence of financial expansion on income inequality using forty-eight selected African countries and the result of statistical analysis showed that financial development often to reduce income inequality while Delis, Hasan, and Kazakis (2014) explored the influence of banking reforms on income inequality and the result showed that banking reforms leading to improved banking operation of lead to decline in income inequality.

Methodology

The study gleaned annual secondary data on economic activities in the Nigeria from Central Bank of Nigeria Statistical Bulletin and the World Development Index between 1985 and 2019. It tests for the dynamic relationships between financial intermediation and income inequality in Nigeria using aggregate economic variables such as broad money supply, stock market capitalization and private sector credit while government expenditure is used as a control variable in the model due to its inverse propensity towards income inequality. The mathematical model employed in evaluating

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the connection between financial intermediation and income inequality in Nigeria is consequential from the financial accelerator general equilibrium model by Gilchrist and Zakrajsek (2011). The model specification for this study is stated as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_i - - - equation\ 1$$

$Y_i = Gini\ Index$

β_0 = Autonomous Income equality level

$\beta_1 - \beta_4$ = Regression coefficients

$X_1 = Broad\ Money\ Supply$

$X_2 = Market\ Capitalization$

$X_3 = Credit\ Private\ Sector$

$X_4 = Government\ Expenditure$

$\varepsilon_i = Error\ Term$

Thus, equation (1) forms the base line model for the study while other variables that can influence income inequalities are fused into the model in line with evidence from literature. The annual data set subjected to unit root tests after taking the natural (in order to account for inflationary trend) using the Augmented Dickey Fuller (ADF) (to establish the point of stationary in each variable) and the Johansen cointegration test (to establish the nature of cointegration among the variables). Base on the ADF and Johansen cointegration test result, the study employed the Fully Modified Ordinary Least Square (FMOLS) which is a model which is appropriate for first order stationarity time series.

Results and Discussion

The results obtained from the Descriptive statistics, Augmented Dickey-Fuller (ADF), Johansen Cointegration and Fully Modified Least Square regression for this study are presented in table 1, 2, 3 and 4 respectively.

Table 1: Descriptive Statistics

	GINI INDEX	MONEY SS	CREDIT PRIVATE	MKT CAP	GOVT EXP
Mean	42.9750	8132.598	6570.359	7121.009	2499.789
Median	43.0000	1729.440	1013.515	1062.100	1122.100
Maximum	51.9000	36014.88	29051.61	38589.58	10164.60
Minimum	35.1000	22.3000	13.0700	6.6000	13.0000
Std. Dev.	5.1757	11136.33	8967.999	9621.680	2867.569
Skewness	0.5967	1.2343	1.1319	1.3804	1.1602
Kurtosis	2.4068	3.1888	2.8776	4.4084	3.4576
Observations	36	36	36	36	36

Source: Authors' computation (2022)

Table 1 shows the results of descriptive statistics of the various data used in this study. It reveals that the average Gini Index within the period under review was 42.97 with a minimum of 35.1 and maximum of 51.9. this implies that there is a big income gap in Nigeria. Similarly, the average money supply within the period was

₦8132.59 billion with a minimum of ₦22.30 billion and maximum of ₦36014 billion. While the average credit to private sector within the period was ₦6570.34 billion with a minimum of ₦13.07billion and maximum of ₦29051.61 billion, the average market capitalization within the period was ₦7121 billion with a minimum of ₦6.6 billion and maximum of ₦38589.58. The same goes the average government expenditure within the period was ₦2499.78 billion with a minimum of ₦13 billion and maximum of ₦10164.6 billion. The descriptive statistics showed that there has been a tremendous increase in volume of all the measures of financial intermediation and control variable employed for this study within the period under consideration. In order to established the stationarity of the data set, they were subjected to unit root test using the Augmented Dickey-Fuller Test and obtained results is presented in table 2 below:

Table 2: Augmented Dickey-Fuller (ADF) Unit Root Test Result

Variables	Level			First Difference			Stationarity
	Statistics	Prob.	Critical Values	Statistics	Prob.	Critical Values	
Gini Index	-1.6069	0.7698	-3.5442	-5.8669	0.0002	-3.5484	I(1)
Money Supply	0.3892	0.9984	-3.5442	-4.7170	0.0031	-3.5484	I(1)
Credit to Private Sector	-1.1097	0.9125	-3.5484	-4.6819	0.0034	-3.5484	I(1)
Market Cap	-0.9588	0.9370	-3.5442	-4.5449	0.0050	-3.5529	I(1)
Govt Exp	-1.3063	0.8693	-3.5683	-10.3554	0.0000	-3.5484	I(1)

Source: Authors' computation (2022)

Table 2 presents the obtained outcomes of Augmented Dickey-Fuller Unit Root Results for level and first differences for all the annual time series data. The ADF test tolerates for diverse quantities with the research hypothesis that all variables follow a unit root process and to reject this, the ADF probability value must be less than or equal the level of significance value of 5%. The ADF test revealed that all variables are not stationary at level but tend stationary at first difference. Base on the observed stationarity, the study proceeds to the Johansen Cointegration Test using the Trace Test and Maximum Eigenvalue. The result is presented in table 3:

Table 3: Johansen Cointegration Test

Hypothesized No. of CE(s)	Trace Test			Maximum Eigenvalue		
	Statistic	Critical Value	Prob.**	Eigenvalue	Critical Value	Prob.**
None *	95.42463	69.81889	0.0001	45.62058	33.87687	0.0013
At most 1 *	49.80405	47.85613	0.0324	26.39811	27.58434	0.0703
At most 2	23.40594	29.79707	0.2267	11.54941	21.13162	0.5925
At most 3	11.85654	15.49471	0.1639	8.758249	14.26460	0.3068
At most 4	3.098286	3.841466	0.0784	3.098286	3.841466	0.0784

Source: Authors' computation (2022)

The table 3 shows that the Trace test and Maximum Eigenvalue statistics values of 69.4246 and 45.62058 are significant at 10% level of significance respectively. This implies that the null hypothesis of no long run cointegrating relationship is rejected. Instead, there are two possible cointegrating equations among the variables. Thus, income inequality broad money supply, stock market capitalization, private sector credit and government expenditure cointegrated for dynamic analysis as they move together in the long run. Base on all outcomes in table 2 and 3, the data has fulfilled all the necessary conditions for running the FMOLS and the result obtained are presented in table 4 below:

Table 4: Method: Fully Modified Least Squares (FMOLS)

Dependent Variable: GINI INDEX
Method: Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Money Supply	13.8801	24.5533	0.56530	0.5762
Credit to Private Sector	1.39972	16.6823	0.08390	0.9337
Market Capital	-15.6548	6.78663	-2.30670	0.0284
Govt Expenditure	27.3459	8.03240	3.40444	0.0020
C	-2.70280	14.0912	-0.19180	0.8492
@TREND	-2.00909	0.77375	-2.59654	0.0146

R-squared	0.490217	Mean dependent var	43.0971
Adjusted R-squared	0.402323	S.D. dependent var	5.19833
S.E. of regression	4.018806	Sum squared resid	468.373
Long-run variance	28.19503		

Source: Authors' computation (2022)

Table 4 shows the Fully Modified Least Squares result factors, standard errors, t-statistics and probability values for all the selected variables. The result factors displays the influence of each of the specified variables on income inequality in Nigeria and it is observed that a unit change in variables such as money supply (13.8801, $p > 0.05$) and credit to private sector (1.3997, $p > 0.05$) will result into an increase income inequality in the long run while such changes in stock market capitalization (-16.6548, $p < 0.05$) and government expenditure (25.3459, $p < 0.05$) will result into a decrease in the income inequality in the long run. This implies that money supply and credit to private sector are contributing to increasing income inequality in Nigeria (though insignificant) while stock market capitalization is contributing negatively to the increasing scourge which is significant at 5% level of significance.

Similarly, the coefficient of determination (R-square) value of 0.4902 indicates only that 49.02% of fluctuations in income inequality are traceable to variations in variables specified in this study standard error of the regression value of 4.0188 supports the overall fitness of the model in explaining income inequality.

Conclusion and Recommendations

This study evaluates the contribution of the financial intermediation towards income inequality in Nigeria using the financial acceleration theorem. The results of the FMOLS revealed that money supply and credit to private sector are contributing positively to the rising income inequality while stock market capitalization is helping to reduce the level of income inequality. This implies that money supply which is a monetary tool design to achieve some economic targets is not effective in checking income inequality.

Similarly, the volume of credit to private sector is contributing to the increasing income inequality while stock market capitalization is having a meaningful influence in reducing income inequality. The study concluded that though financial intermediation is expected to facilitate growth by aligning opportunity, there is no fairness in the channelization of funds using credit to private sector and money supply due to some personal and subjective interest of various decision makers. Thus, this study recommends that concerted efforts should be put in place by all stakeholders in the financial intermediation process to always consider greater good and general prosperity in their various investment and profit maximization activities. This is essential for the greater benefits of the present economy and posterity.

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