Financial Development and the Current Account in Nigeria

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Abstract
This study explored the response of current account to different financial development indicators. Quarterly data from the period of 1981 to 2018 on current account, debt stock, stock market capitalization, stock market value traded, financial liberalization, total deposit money banks' asset, total monetary asset, private sector credit and real GDP were analyzed using Lag Augmented VAR (LAVAR) procedure. Based on the findings, the study was able to prove that only the current account exerted significant influence on its future values and sustainability, while financial development indicators did not influence the current account for Nigeria. Consequently, efforts should be directed at all stakeholders by developing financial development strategies that would improve the importation of industry raw materials and equipment to improve the volume of domestic production and exportation, thereby improving Nigeria's current account position and sustainability levels.
Keywords: Current Account; Financial Development; Lag Augmented VAR

I. Introduction

The current account according to policy makers is referred to as an intermediate target of monetary policy. That is, it is a variable that broadly reflects the point of view of macroeconomic policies. It is also a source of information concerning economic agents' behavior. The difference between exports and imports, net factor income (the difference between earnings from foreign investments and payments made to foreign investors) and net cash transfers reflects a country's current account position. This shows the totality of transactions between foreigners and domestic residents of a country in the market for current goods and services (Obstfeld and Rogoff, 2010). Monetary policy can influence macroeconomic variables such as inflation rate, exchange rate and interest rates; however, it becomes unsuccessful when handling a large current account deficit within a flexible exchange rate system (Hjortsoe, Weale and Wieladek, 2016).

The issue of current account imbalance has generated a lot of interest among scholars[1]. This is because movements in the current account are inter-related with the expectations and actions of financial market participants in any economy (Di Giorgio and Nistico, 2008). Furthermore, financial sector reforms have improved global competition and profitability levels due to the introduction of market-based instruments, the removal of financial market and capital account restrictions and the liberalization of these markets to promote innovation and competition (Spiegel, 2009; and Goldberg, 2013). As a result, financial sector developments have provided the guidance and foundation for globally competitive economies thereby improving the growth conditions in many economies, since these economies not only produce their goods and services for domestic consumption, but also export these goods and services internationally.

In the literature, there have been several debates on current account sustainability, its determinants and how it links to monetary policy[2]. Despite these debates and discussions on the relationship between current account and monetary policy,[3] as well as its determinants and sustainability levels[4], less attention has been paid on the response of current account to financial sector developments, especially in Nigeria. At first, it may seem that there might not be a direct connection, or that any connection would be at best indirect. However, since the

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[1] Pesenti, (2007); Di Giorgio and Nistico (2008); Ferrero, Gertler and Svensson (2008); Obstfeld and Rogoff (2010) and; Cesaroni and De Santis (2015).
[2] Di Giorgio and Nistico (2008); Ferrero *et al* (2008); Obstfeld and Rogoff (2010); Hohberger and Herz (2012) and; Cesaroni and De Santis (2015).
[3] Lane (1998); Ferrero *et al* (2008); Obstfeld and Rogoff (2010); Hohberger and Herz (2012); Danmola and Olateju (2013); and; Hjortsoe *et al* (2016).
[4] Di Giorgio and Nistico (2008); OECD (2011); Hohberger and Herz (2012); Beusch, Döbeli, Fischer and Yesin (2013); Mwangi (2014); Oshota and Badejo (2015); Wajda-Lichy (2015) and; Shuaibu and Oyinlola (2017).

current account balance of an economy ultimately reflect the differences between savings and investments with other economies, the financial system plays an important role of intermediation by providing the funds and link through which economies interact. Furthermore, the interaction between current account imbalances and monetary policy stance (which reflects the financial conditions within an economy) is arguably the key international dimension of monetary policy (Pesenti, 2007). By implication, it could be argued that there is a connection between the developments in the financial system and the current account.

In respect of the above, the relevant question now becomes what the most suitable current account response can be to sizable developments within the financial system. To the best of my knowledge, empirical investigation on the response of current account to financial system developments in Nigeria have been relatively sparse. The few studies in Nigeria that focused on this area largely focused on current account sustainability or its relationship with monetary policy (Danmola and Olateju, 2013; Oshota and Badejo, 2015; Shuaibu and Oyinlola, 2017). In addition, this study will investigate the concept of financial development from different aspects, particularly focusing on its depth, deepening, innovation, efficiency and liberalization. This will provide further insights on how the current account responds to the different financial development indicator in Nigeria. In essence, it becomes imperative to examine the response of current account to financial system developments in Nigeria since there are pertinent repercussions of current account sustainability within a sound financial system. The rest of the paper are organized as follows. Section 2 reviews the literature while the third section discusses the methodology. The fourth section analyzes and interprets the results, while the final section concludes the paper.

II. Review of Empirical Literature

There are quite a number of studies on current account sustainability, its determinants and its relationship with monetary policy. Earliest among these works include Lane (1998). Lane (1998) empirically investigated the role of monetary shocks in driving current account fluctuations in a set of (Vector Autoregressions) VAR and Dynamic Stochastic General Equilibrium (DSGE) models, using alternative identification schemes in the US, Japan, Germany, France, Italy, UK and Canada from 1974 Q1 to 1996 Q3. The study found out that monetary policy played a suitable role in influencing the US current account position. Chinn and Ito (2007) assessed several of the key assertions underlying the global saving glut hypothesis on financial development and current account sustainability in the US and Asian economies from 1971 to 2005. The results of the analysis revealed that the budget balance significantly improved the current account balance for industrialized economies. However, a more developed financial market led to smaller current account balances in countries with highly legalized institutions and a more open financial system.

Similarly, Higgins and Klitgaard (2007) examined the relationship between financial globalization and the U.S. current account deficit from the period of 1990 to 2006. The study suggested that improved holdings of US assets by foreigners was due to financial globalization, as against the previously held view that the current account deficit was the major reason why foreigners held US assets. Pesenti (2007) carried out a study to determine the most suitable monetary response to sizable movements in global net saving in the United States (US) within a DSGE framework. The results revealed that domestic price targeting (domestic inflation targeting) was the better policy strategy than consumer price index targeting. Finally, it suggested that a system of limiting the available exchange rate for foreigners is a substandard monetary policy strategy. In contrast to the above studies, Di Giorgio and Nistico (2008) examined the empirical relationship that exist between fiscal deficits, current account dynamics and monetary policy using a two-country DSGE model with incomplete markets. The results suggested that the degree of fiscal discipline is an important determinant for examining the dynamics of net foreign assets. The results lastly showed that any effort by the monetary authorities to stabilize the dynamics of net foreign asset would cause exchange rates to fluctuate.

Ferrero, Gertler and Svensson (2008) explored the response of current account adjustment and its implications in relation to monetary policy within a DSGE framework for countries such as US, UK, Italy, Sweden and China. The paper suggested that the monetary regime for these countries influenced the behavior of the domestic macroeconomic variables with inflation having the most impact; however, the international variables was not responsive to the monetary regime. On the other hand, Gruber and Kamin (2008) addressed the popular view that differences in financial development explain the pattern of global current account imbalances in the US, UK, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany and Italy. However, the results showed that improved financial system developments did not help to explain the global pattern of current account imbalances.

On the contrary, Obstfeld and Rogoff (2010) examined the global imbalances and the financial crises due to the 2008 financial crises. The study based their argument from a global perspective covering US, Middle East, Developing Asia, New Industrialized Asia, and Central and Eastern Europe. Their study revealed that in the US, the interactions among the macroeconomic variables were the major cause of the global financial crisis. Outside the borders of the US however, exchange rate and other macroeconomic policies in China contributed to

the US' ability to borrow cheaply abroad thereby financing its unsustainable housing bubble. Barrell, Davis, Karim and Liadze (2010) in their study sought to answer the question whether the current account balance help to predict banking crises in OECD countries. The study observed that the period between 2005 and 2008 were characterized by rising risks resulting from external sources to the banking system such as the current account imbalances and asset prices. OECD (2011) examined the impact of structural reforms on current account imbalances among OECD countries. The study observed that the response of the savings rate to financial market liberalization was larger in less developed countries and that financial market reforms may reduce saving and raise investment. The study concluded that structural reforms may reduce global current account imbalances by a fifth among the observed countries.

Hohberger and Herz (2012) carried out a study to determine whether a relationship exists among Fiscal Policy, Monetary Regimes and Current Account Dynamics in the Euro Area (Germany, Italy, Portugal, Spain, Greece, Ireland and the Netherlands were used as case studies). The study concluded that fiscal policy operations needed to choose between a stabilized current account or improved productivity since each country within the union could not carry out its monetary policy operations independently thereby making their economies more susceptible to productivity shock. Beusch, Döbeli, Fischer and Yesin (2013) carried out a panel examination on the relationship between merchanting and current account balances in several developed countries from the period of 1990 to 2010. The results revealed that merchanting significantly improved the current account position in the considered countries. Carrera, Rodríguez and Sardi (2015) carried out an empirical investigation on the relationship between inequality, financial deepening and current account using panel data on 29 advanced and developing countries. The outcomes of the analysis showed that a higher wage share results in a reduction in the current account position.

In a panel framework, Cesaroni and De Santis (2015) examined current account dispersion in 22 OECD and 15 EU countries from the period of 1985 to 2012. The results suggested that financial integration explained current account deterioration in the peripheral countries especially in the post-EMU period. Wajda-Lichy (2015) investigated the current account balance in the Euro area, with a specific focus on Netherlands and Germany from the period of 1994 to 2014. The study showed that the current account surpluses within the two economies negatively corresponded to private consumption and domestic investment; however, the scale of investment reduction was bigger than consumption. Hjortsoe, Weale and Wieladek (2016) also examined the relationship between Monetary policy and the current account using a quarterly DSGE framework from 1976 to 2006 for 19 OECD countries. The results suggested that a monetary expansion should ideally lead to a current account deficit in countries that have liberalized markets and product offerings.

In Kenya, Mwangi (2014) examined the determinants of current account from the period of 1970 to 2010. The study revealed that the determinants of current account for Kenya include GDP, exchange rate, current account's lag, inflation, budget deficit and balance of trade. Oshota and Badejo (2015) examined the determinants of current account balance in West Africa using a Panel ARDL approach from the period of 1980 to 2012. The results proved that all the modelled variables were found to significantly influence the current account balance within the region during the investigated period. Sadiku, Fetahi-Vehapi, Sadiku and Berisha (2015) carried out an empirical analysis on the persistence and determinants of current account deficit in Former Yugoslav Republic of Macedonia (FYROM). The results showed that financial development, fiscal balance and terms of trade had a positive impact on the current account balance.

Alawin and OQaily (2017) investigated the current account balance, inflation, industry and sustainable development relationship in Jordan from the period of 1990 to 2014. The study showed that the current account had a significantly negative relationship with inflation, while it suggested that importation should focus on capital essentials to improve domestic production of goods and services. Danmola and Olateju (2013) examined the impact of monetary policy on the current account in Nigeria between 1970 and 2010. The study suggested that the monetary authorities should adopt monetary policy strategies that would improve the importation of industry raw materials and equipment to improve the volume of domestic production and exportation, thereby improving the current account position. Finally, Shuaibu and Oyinlola (2017) investigated Nigeria's current account sustainability from the period of 1981 to the period of 2013. The study revealed that the current account was found to be sustainable for Nigeria and that structural reforms and changes did not affect current account sustainability for the period under consideration.

III. Methodology

Modelling the response of current account to innovations within the financial system demands the use of VAR framework. Consequently, this study adopted the lag augmented VAR framework in modelling the response of current account to financial system developments. The lag augmented VAR framework is very similar to the variable augmented VAR since it gives room for creativity while estimating the model. Furthermore, it gives more room for institutional knowledge to be adapted within the estimated models. This method allows us to include lags of the significant variables and restrict the insignificant lags to zero. This study

constructed the lag augmented VAR model for financial development indicators (financial depth, financial deepening, financial innovation, financial efficiency and financial liberalization) and current account. Hence, the lag augmented VAR model which would be used for testing the response of current account to financial development indicators can be written as follows:

$$\begin{bmatrix} FSD_t \\ CAB_t \end{bmatrix} = \begin{bmatrix} \eta_1 \\ \eta_2 \end{bmatrix} + \sum_{m=1}^{\rho} \begin{bmatrix} \alpha_{1m} & \beta_{1m} \\ \alpha_{2m} & \beta_{2m} \end{bmatrix} \begin{bmatrix} \Delta FSD_{t-m} \\ \Delta CAB_{t-m} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \qquad (1)$$

Where Δ is the first difference operator; p is the lag length; t denotes the year in the framework (t = 1, 2,.....T); ε_t is a normally distributed random error term for all t with a zero mean and a finite heterogeneous variance. The lag augmented VAR model captures the dynamics of the model based on the identified short run relationships.

IV.   Analyses and Presentation of Results

This paper applied quarterly data from 1981 to 2018 to examine the response of current account to financial system developments. Data on current account, total bank assets, total monetary assets, private sector credits, real output, stock market capitalization, stock market value traded and total debt stock were sourced from CBN Statistical Bulletin (2018), while Chinn-Ito Index (2019) and a dummy variable were used as proxies for financial liberalization. The analyses were divided into two, such that the first aspect examines the response of current account to financial development indicators such as banking sector development by size (financial depth), capital market development by size (financial deepening), financial market efficiency and financial liberalization (proxied by Chinn-Ito Index). The second aspect of the analyses served as a robustness check on the main analyses. Here, financial development indicators such as banking sector development by activity (financial depth), capital market development by activity (financial deepening), bond market development (financial innovation) and financial liberalization (proxied by a dummy variable, such that the periods before liberalization take the value of zero, while the periods of liberalization take the value of one) were used to check the influence of financial development on the current account. The essence of the robustness check is to further reinforce the main results.

The descriptive statistic result was displayed in Table 1. It showed that both the median and mean were within their minimum and maximum values, whereas, banking sector development by size showed the least variability with a standard deviation of 0.03, while banking sector development by activity was the most volatile with a standard deviation of 20.17. In terms of Skewness, all the variables were positively skewed except for financial liberalization, while the kurtosis of all the variables exceeded three (showing that the series is leptokurtic), except for banking sector development by size and financial liberalization which followed a platykurtic distribution. The Jarque-Bera statistic showed that banking sector development by size measure followed a normal distribution since its probability value is significant at 5% level.

[Insert Table 1 here]

The correlation matrix result displayed in Table 2 showed that the independent variables were weakly correlated with the dependent variable, implying that there ceases to be an evidence of a symbiotic relationship amongst the variables. In order to adopt the Lag Augmented VAR methodology as noted in section 3, all the variables must be of the same order (for instance, in their level form). A way of ensuring that the variables are of the same order is to place some restrictions on the variables (in case they are of different stationarity properties) such that all the variables are of the same order. The unit root results according to the ADF and PP statistics in Table 3 showed that all the variables were stationary in their level form implying that we can proceed with the use of the Lag Augmented VAR procedure. Subsequently, there is the need to select the optimal lag length for the series. In Table 4, the Akaike Information Criteria was selected due to its superiority on the basis of forecasting performance within a regression model, not only for in-sample analysis, but also for out-of-sample analysis.

[Insert Table 2 here]
[Insert Table 3 here]
[Insert Table 4 here]

From Table 5, the variance decomposition result showed that only innovations originating from the current account influenced its future values, even up to the tenth quarter. However, innovations originating from financial development indicators had no influence on the future current account values. Furthermore, the impulse response result in Table 6 showed that a standard deviation shock originating from the current account led to a positive response on itself in the first, fifth and ninth quarter, while it led to a negative shock on itself in the third and seventh quarter. The impulse response result also showed that the current account does not respond to a standard deviation shock originating from the financial development indicators. By implication, these results show that current account sustainability is affected contemporaneously by shocks from its past values

and this diminishes over time. These results are in line with previous studies by Higgins and Klitgaard (2007) for US; Gruber and Kamin (2008) for US and Europe; and Carrera *et al.* (2015) for developed countries. Their studies also suggested that financial development does not influence the current account.
[Insert Table 5 here]
[Insert Table 6 here]
[Insert Table 7 here]
[Insert Figure 1 here]

   As a way of providing robustness, this study used other financial development indicators as earlier explained to check the response of current account to financial development. Table 8 and 9 showed the respective correlation matrix and lag length criteria. The variance decomposition and impulse response results in Table 10 and Table 11 were in line with the main analysis, thereby providing further evidence that current account sustainability is affected by shocks from its past values. In essence, Nigeria's financial market players (banks, capital market players and other financial system operators) are not having significant influence on the nation's current account position, thereby dwindling their influence in the global community. As an illustration, Nigerian banks are required to pay in Naira denominations foreign currency remittances or inflows remitted into the domestic economy. By virtue of the way the system is organized, the dollar values of such remittances are kept with their corresponding banks in foreign countries, while these banks give her customers the Naira equivalent of such remittance. Therefore, the dollar effect of these remittances is not felt in the Nigerian economy and this limits the influence of these banks in the global community. Consequently, innovations arising from the financial system may not explain variations in the future current account values for Nigeria. The serial correlation tests in Table 7 and 12 showed that there are no evidences of serial correlation, while the AR inverse root tests in Figure 1 and 2 showed that both the main analysis and robustness models are stable.
[Insert Table 8 here]
[Insert Table 9 here]
[Insert Table 10 here]
[Insert Table 11 here]
[Insert Figure 2 here]

V. Conclusion

   This study explored the response of current account to financial development in Nigeria. Based on the findings, the study concluded that only the current account exerted significant influence on its future values and sustainability, while financial system developments did not influence current account sustainability. Consequently, efforts should be directed by all stakeholders at developing financial development strategies that would improve current account sustainability for Nigeria. These efforts must be channeled towards improving importation of industry raw materials and equipment to improve the volume of domestic production and exportation, thereby improving Nigeria's current account position and sustainability levels. In addition, efforts must also be directed at diversifying the nation's economy so as to ensure that the real sector gets more funding from the financial sector in order to ensure real sector growth, thereby improving the current account position and its sustainability levels for Nigeria.

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Appendix A: Main Result

Table 1: Descriptive Statistics

	CAT	BSDA	BSDS	CMDA	CMDS	BMD	FEFF	FLO
Mean	3.83	12.19	0.59	1.35	11.84	6.20	0.06	-1.24
Median	0.13	2.59	0.59	0.02	1.33	1.74	0.05	-1
Max	38.35	78.64	0.66	11.98	92.94	33.46	0.26	-1
Min	-49.60	0.13	0.52	0.00	0.08	0.17	0.01	-2
S.D.	10.08	20.17	0.03	2.61	20.11	8.45	0.05	0.43
Skew	0.86	1.86	0.16	2.37	2.12	1.63	1.35	-1.24
Kurt	10.82	5.12	2.15	8.21	7.21	4.64	5.51	2.53
J-Bera	406.24	115.76	5.16	314.20	226.51	84.02	85.73	40.21
Prob	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Sum	581.86	1853.48	89.01	205.03	1799.50	942.53	9.51	-188.00
SSD	15345.53	61405.58	0.16	1026.23	61076.04	10783.14	0.31	27.47
Obs	152	152	152	152	152	152	152	152

Source: Author's Computation from Eviews, 2020

Note: BSDS – Bank Size, BSDA – Bank Activity, CMDS – Capital Market Size, CMDA – Capital Market Activity, FEFF – Financial Market Efficiency, BMD – Bond Market Development, FLO – Financial Liberalization, CAT – Current Account.

Table 2: Correlation Matrix

	CAT	BSDS	CMDS	FEFF	FLO
CAT	1				
BSDS	0.44	1			
CMDS	0.43	0.63	1		.
FEFF	0.25	0.61	0.67	1	
FLO	0.18	0.54	0.30	0.51	1

Source: Author's Computation from Eviews, 2020

Table 3: Unit Root Test – Augmented Dickey Fuller and Phillip-Perron

VARIABLES	TEST	LEVEL		
		T-stats	P-value	Decision
CAT	ADF	-12.1446	(0.0000)***	I(0)
	PP	-16.2107	(0.0000)***	I(0)
BSDS	ADF	-8.6959	(0.0000)***	I(0)
	PP	-8.4279	(0.0000)***	I(0)
BSDA	ADF	-11.2691	(0.0000)***	I(0)
	PP	-11.2739	(0.0000)***	I(0)
CMDS	ADF	-10.1074	(0.0000)***	I(0)
	PP	-10.0243	(0.0000)***	I(0)
CMDA	ADF	-11.5956	(0.0000)***	I(0)
	PP	-12.0950	(0.0000)***	I(0)
FEFF	ADF	-3.1075	(0.0281)**	I(0)
	PP	-3.1046	(0.0283)**	I(0)
BMD	ADF	-11.7413	(0.0000)***	I(0)
	PP	-11.7434	(0.0000)***	I(0)
FLO	ADF	-12.1655	(0.0000)***	I(0)
	PP	-12.1655	(0.0000)***	I(0)

Source: Author's Computation from Eviews, 2020
Note: The ADF and PP critical value with intercept are -3.48(1%), -2.88(5%) and -2.58(10%)
***, ** and * denote significance at 1%, 5% and 10% levels, respectively.
Note: BSDS – Bank Size, BSDA – Bank Activity, CMDS – Capital Market Size, CMDA – Capital Market Activity, FEFF – Financial Market Efficiency, BMD – Bond Market Development, FLO – Financial Liberalization, CAT – Current Account.

Table 4: Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-155.3875	NA	0.0000	2.2432	2.3468	2.2853
1	-25.9248	248.0615	0.0000	0.7822	1.403740*	1.034743*
2	-0.5175	46.9057	1.50e-06*	0.776469*	1.9160	1.2395
3	18.6836	34.1054	0.0000	0.8576	2.5151	1.5311
4	48.3512	50.62161*	0.0000	0.7923	2.9678	1.6763
5	56.8022	13.8290	0.0000	1.0237	3.7172	2.1183
6	68.8517	18.8747	0.0000	1.2049	4.4163	2.5099
7	76.3401	11.2065	0.0000	1.4498	5.1792	2.9653
8	95.8452	27.8254	0.0000	1.5266	5.7741	3.2526

Source: Author's Compilation from Eviews, 2020
Note: * indicates lag order selected by the criterion; LR, FPE, AIC, SBC and HQ indicate sequential modified LR test statistic, Final Prediction Error, Akaike Information Criterion, Schwarzt Bayesian Information Criterion and Hannan-Quinn respectively.

Table 5: Forecast Error Variance Decomposition Results

Period	S.E.	CAT	BSDS	CMDS	FEFF	FLO
1	7.2680	100	0.0000	0.0000	0.0000	0.0000
2	7.2680	100	0.0000	0.0000	0.0000	0.0000
3	7.4737	100	0.0000	0.0000	0.0000	0.0000
4	7.4737	100	0.0000	0.0000	0.0000	0.0000
5	7.4854	100	0.0000	0.0000	0.0000	0.0000
6	7.4854	100	0.0000	0.0000	0.0000	0.0000
7	7.4860	100	0.0000	0.0000	0.0000	0.0000
8	7.4860	100	0.0000	0.0000	0.0000	0.0000
9	7.4861	100	0.0000	0.0000	0.0000	0.0000

| 10 | 7.4861 | 100 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Source: Author's Compilation from Eviews, 2020

Note: BSDS – Bank Size, CMDS – Capital Market Size, FEFF – Financial Market Efficiency, FLO – Financial Liberalization, CAT – Current Account.

Table 6: Forecast Impulse Response Results

Period	CAT	BSDS	CMDS	FEFF	FLO
1	7.2680	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000
3	-1.7415	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.4173	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000
7	-0.1000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0240	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000

Source: Author's Compilation from Eviews, 2020

Note: BSDS – Bank Size, CMDS – Capital Market Size, FEFF – Financial Market Efficiency, FLO – Financial Liberalization, CAT – Current Account.

Table 7: Diagnostic Test

Diagnostic Test	P-Value
LM Serial Correlation	0.7620

Source: Author's Compilation from Eviews, 2020
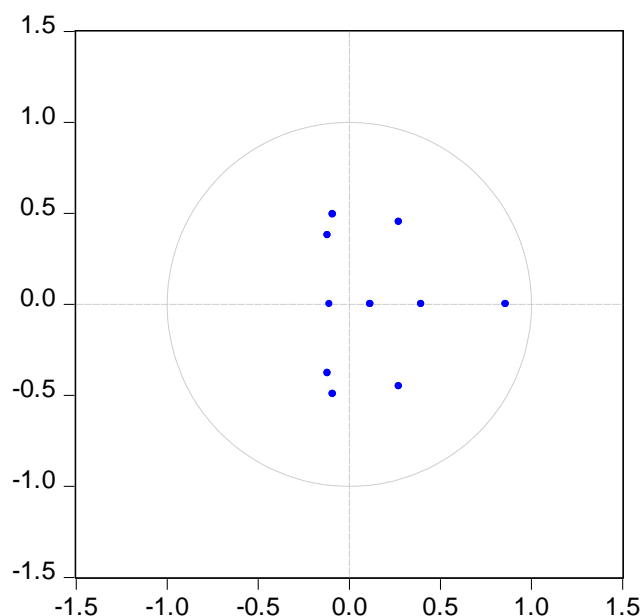
Figure 1: Inverse Roots of AR Characteristic Polynomial
Source: Author's Compilation from Eviews, 2020

Appendix B: Robustness Result

Table 8: Correlation Matrix

	CAT	BSDA	CMDA	BMD	FLD
CAT	1				
BSDA	0.15	1			
CMDA	0.29	0.80	1		
BMD	0.24	0.98	0.80	1	
FLD	0.24	0.34	0.32	0.38	1

Source: Author's Computation from Eviews, 2020

Table 9: Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1385.85	NA	113.7161	18.92309	19.0248	18.96442
1	-1189.61	376.4511	11.06957*	16.59336*	17.20365*	16.84133*
2	-1176.2	24.81689	12.97512	16.75102	17.86989	17.20563
3	-1145.05	55.52225*	11.96832	16.66732	18.29477	17.32857
4	-1127.35	30.34514	13.29084	16.76662	18.90264	17.63451

Source: Author's Compilation from Eviews, 2020
Note: * indicates lag order selected by the criterion; LR, FPE, AIC, SBC and HQ indicate sequential modified LR test statistic, Final Prediction Error, Akaike Information Criterion, Schwarzt Bayesian Information Criterion and Hannan-Quinn respectively.

Table 10: Forecast Error Variance Decomposition Results

Period	S.E.	CAT	BSDA	CMDA	BMD	FLD
1	7.3236	100	0.0000	0.0000	0.0000	0.0000
2	7.3236	100	0.0000	0.0000	0.0000	0.0000
3	7.3236	100	0.0000	0.0000	0.0000	0.0000
4	7.3236	100	0.0000	0.0000	0.0000	0.0000
5	7.3236	100	0.0000	0.0000	0.0000	0.0000
6	7.3236	100	0.0000	0.0000	0.0000	0.0000
7	7.3236	100	0.0000	0.0000	0.0000	0.0000
8	7.3236	100	0.0000	0.0000	0.0000	0.0000
9	7.3236	100	0.0000	0.0000	0.0000	0.0000
10	7.3236	100	0.0000	0.0000	0.0000	0.0000

Source: Author's Compilation from Eviews, 2020
Note: BSDA – Bank Activity, CMDA – Capital Market Activity, BMD – Bond Market Development.

Table 11: Forecast Impulse Response Results

Period	CAT	BSDA	CMDA	BMD	FLD
1	7.3236	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000	0.0000	0.0000

| 10 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Source: Author's Compilation from Eviews, 2020

Note: BSDA – Bank Activity, CMDA – Capital Market Activity, BMD – Bond Market Development.

Table 12: Diagnostic Test

Diagnostic Test	P-Value
LM Serial Correlation	0.9977

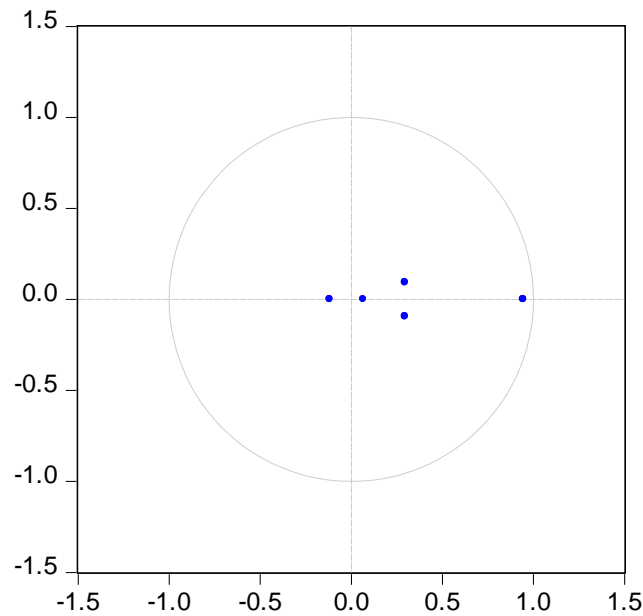*Source: Author's Compilation from Eviews, 2020*

Figure 2: Inverse Roots of AR Characteristic Polynomial
Source: Author's Compilation from Eviews, 2020

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