RESEARCH ARTICLE

ANALYSIS OF FINANCIAL INSTABILITY AND SUSTAINABLE ECONOMIC GROWTH IN NIGERIA

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ARTICLE INFO	ABSTRACT
	This paper explored the extent to which financial instability impacts on sustainable economic growth in Nigeria. Specifically, it identified the particular financial instability indicators that severely impede the growth of the economy. To evaluate the objectives, the variables were tested for stationarity and since they were not integrated of the same order, Vector Autoregression, impulse response and variance decomposition analyses were appropriately employed. The result of the analyses shows that broad money velocity (M2/GDP) and money supply errors (MSERROR) significantly reduce the growth of the economy. In other words,the growth of the economy is a negative and significant function of broad money velocity and CBN money supply errors while stock market prices, Exchange rate, Inflation mis-targeting and banking system return on asset (ROA) exert negative but insignificant impact on economic growth. The result of the impulse response analyses suggest that the level of money stock velocity has dominantly made negative significant impact on real GDP and also revealed that RGDP responds negatively to a shock in CBN money supply mismatch. Thus, all indications emanating from our findings reveal that instability in the Nigerian financial sector impct negatively and insignificantly on economic growth. In other words, financial instability deteriorates the growth of the economy. The researchers therefore call on the Central bank of Nigeria not only to adopt appropriate broad money velocity for the country, but to also narrow its money supply mistargeting if financial instability in Nigeria should be reduced to boost economic growth.

INTRODUCTION

1.0 INTRODUCTION

The rate at which financial instability registers itself in most developing economies and Nigerian economy in particular is becoming worrisome that one wonders the extent to which this anomaly might be affecting the growth of the economy. In this study, the researchers discussed the concept of financial instability, causes of financial instability and pictorially illustrated the causal factors of financial instability/crisis in an economy. The analyses was carried out based on the objective of determining the extent to which instability has constituted an impediment on economic growth.

2.0 THE CONCEPT OF FINANCIAL INSTABILITY

Financial instability does not have a consensus definition. However the study of financial instability incorporates oscillation of some variables (Sadghi-Khorasgani, 2010).

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Hannig and Jansen (2010) contend that financial instability occurs when shock to the system dramatically worsen information problems so that financial intermediation between savings and productive investment opportunities breaks down. One obvious thing is that financial instability is generated through indiscriminate policy, currency mismatch, hazard, or shock or anything that can worsen the financial sectors' balance sheet. Financial instability and crisis has been attributed to policy error by the Central Banks. Modern economists associated credit crunch thesis to institutional or restrictive monetary policy constraints (Wray, 2001; Wojnilower, 1980). Other economists used exchange rate instability, debt accumulation and changes in financial asset prices as variables for financial asset (Okpara, 2011). Financial instability is the cause of incubated financial bubbles which when it has excessively accumulated beyond its elastic limit, burst to wreck havoc in the economy. Financial instability of course jeopardizes financial stability to become inimical to the growth of the economy, it is for this reason that proper regulation and adequate supervision and enforcement are required to avert instability and ensure stability in the financial sector.

Causes of Financial Instability

Asymmetric information

Financial instability is majorly caused by the breakdown of information flows in the financial system. In other words, asymmetric information- a situation which one party has more privileged information in the financial market than others. Asymmetric information is at times caused by financial market uncertainties that lead to speculative mania or insiders information. Asymmetric information is associated with two basic problems namely; adverse selection and moral hazard. Adverse selection is a situation where potential bad credit risks (before transaction) are selected by credit seekers. In other words, it has to do with selecting investors with adverse outcome. While moral hazard arises because the lender has been subjected to the hazard (having lent to the borrower) for undesirable activity that is less likely to recoup the loan (Okpara, 2011). Both moral hazard and adverse selection have the ability to deteriorate the balance sheets of banks and non banks financial institutions to cause credit crunch that impacts adversely on financial stability (Okpara, 2011).

Institutional factors

Factors such as weak corporate governance, undue interference from board members, insiders' abuse and fraudulent practices pose problems to balance sheet and invariably to financial stability. Thus, factors that engenders financial instability can be grouped into endogenous and exogenous factors. The asymmetric information and institutional factors permeating through the balance sheet and causing financial instability are the endogenous factors whereas structure and operation of the international and financial market that transmits through currency mismatch to financial instability are the exogenous factors. We also have the hybrid factors which involves unstable policies that transmits through bold balance sheet of the banking system and currency domain to affect the stability of the financial system.

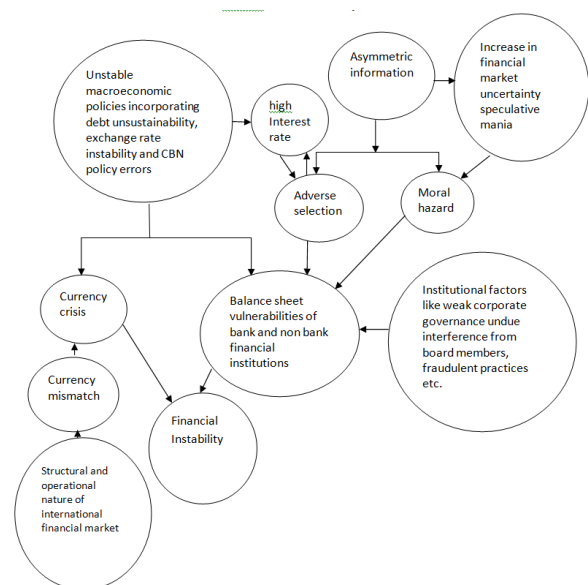### Inconsistent macro-economic policies

Krugman (1999) posits that unstable and inconsistent macro-economic policies can lead to currency crisis. Indiscriminate expansionary monetary and fiscal policies may deteriorate the currency exchange rate thereby leading to financial instability. Also, government at times regards the banks as a captive market for sourcing domestic public debt to finance its deficit that was incurred owing to spending on frivolities. The Central Bank lacks a clear mandate and independence from political pressures. Politicians wishing to boost their political ego do not worry about the inter-temporal consistence of their fiscal plans and borrow indiscriminately to finance their budget. This has the effect of deteriorating the balance sheet of the banking system to generate instability in the financial sector. On the other hand, in a mono-cultural economy like Nigeria, unstable macro-economic policy that triggers off deterioration in the banking system balance sheet and hence financial instability may be caused by fluctuations in the oil price.

Flaws in the structure and operation of international financial market

Financial position of domestic economy of the emerging markets is subject to the vulnerability of the foreign economy's financial markets since global portfolio is concentrated in the currencies of a few large countries and International Financial Centre. It is not possible or usual for emerging countries to borrow in their own currencies, this leads to exchange rate depreciation and currency mismatch that may further escalate the cost of debt servicing. The exchange rate depreciation has adverse effect on the emerging banking sector's balance sheet which by repercussion engenders instability in its financial sector. Bhagwati (1998) contended that capital flows can be unstable due to prevalence of other distortions while Eichengreen (2004) noted that weakness in financial system suggests that emerging markets are vulnerable to crisis because of the reluctance of international investors to hold debt securities denominated in emerging market currencies. A typical example of the effect of flaws in the structure and operation of international financial market is the financial crisis that entered into the Nigerian economy in the second quarter of 2008. The bubble it came with just like in other emerging and developed economies of the world bursted and caused havoc. The relationship between causal factors and financial instability is represented in Fig. 2.1 as follows.

Causal Factors of Financial Crisis: Pictorial Analysis.

Source: Adapted from Okpara (2013)

Fig. 2.1. Relationship Between Causal factors and Financial Instability

3.0 MATERIALS AND METHODS

To determine the extent to which instability in the financial sector affects the growth of the economy, we state the hypothesis in null form as follows:

Ho: Economic growth is not a negative and significant function of financial instability in Nigeria.

Vector Auto Regression was employed to evaluate this hypothesis. A VAR is the generalization of the univariate autoregressive model which captures all the interdependencies between multiple time series. This approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lag values of the endogenous variables contained in the system. The VAR in most cases does well in forecasting than more sophisticated macroeconomic models.

The interpretation for VAR models comes from three major techniques namely; the impulse response functions, variance decomposition and Granger causality test. The Vector Auto Regression are presented in table 3.1 as follows: Having provided the Vector Auto Regression, the researchers determined the VAR lag order selected by various criteria as follows:

The VAR lag order selection criteria shows that lag order 1 is selected at 5% level based on sequential modified LR test statistic, Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ). We therefore adopted lag order 1 in estimating the unrestricted VAR. In the VAR above, the relevant equation is the real GDP equation in column 1.

To clarify issues, the real GDP equation was estimated using the Ordinary Least Square methods. The result of this is shown in Table 3.3. The result of table 3.3 shows that broad money velocity (M2/GDP) and money supply mis-targeting or error (MSERROR) significantly reduce the growth of the economy (proxied by the real RGDP). In other words, broad money velocity and CBN money supply errors exerts negative and significant impact on the growth of the economy. Debt sustainability (Debt/GDP) is positively but insignificantly related to economic growth while stock market prices, Exchange rate (Exrate), Inflation mis-targeting (INFMSTAG) and banking system return on asset (ROA) exert negative but insignificant impact on economic growth. Thus, with the exception of Net foreign asset (NFA) which exerts positive and significant impact on economic growth and debt sustainability that is positive but insignificant, all other

Table 3.1. Vector Auto Regression

Vector Autoregression Estimates
Date: 03/10/17   Time: 18:55
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	RGDP	M2GDP	DEBTGDP	SP	EXRATE	NFA	MSERROR	INFMISTAG	ROA
RGDP(-1)	0.637927	-0.000291	6.87E-05	-2.471783	0.001108	-0.193705	0.000645	0.002051	0.001065
	(0.21290)	(0.00046)	(2.6E-05)	(2.08971)	(0.00383)	(0.19477)	(0.00295)	(0.00265)	(0.00058)
	[2.99644]	[-0.63603]	[2.66878]	[-1.18284]	[0.28914]	[-0.99452]	[0.21896]	[0.77292]	[1.82733]
M2GDP(-1)	-131.0643	0.673594	0.024795	-1535.423	1.337102	-109.3883	-0.370304	0.726852	-0.140341
	(69.1813)	(0.14851)	(0.00837)	(679.061)	(1.24551)	(63.2922)	(0.95738)	(0.86211)	(0.18947)
	[-1.89451]	[4.53575]	[2.96218]	[-2.26110]	[1.07354]	[-1.72831]	[-0.38679]	[0.84310]	[-0.74070]
DEBTGDP(-1)	2335.858	-9.641282	-0.135181	-12758.96	-42.18401	-5021.478	-5.431756	14.57977	-7.319366
	(2978.91)	(6.39466)	(0.36043)	(29240.0)	(53.6310)	(2725.33)	(41.2244)	(37.1221)	(8.15858)
	[0.78413]	[-1.50771]	[-0.37505]	[-0.43635]	[-0.78656]	[-1.84252]	[-0.13176]	[0.39275]	[-0.89714]
SP(-1)	-0.051320	0.000149	-6.41E-06	0.235497	-0.000788	0.003078	0.000491	-7.60E-05	1.68E-05
	(0.02768)	(5.9E-05)	(3.3E-06)	(0.27169)	(0.00050)	(0.02532)	(0.00038)	(0.00034)	(7.6E-05)
	[-1.85410]	[2.50209]	[-1.91477]	[0.86679]	[-1.58127]	[0.12155]	[1.28164]	[-0.22020]	[0.22128]
EXRATE(-1)	3.336905	0.026481	0.001981	315.6743	1.006227	45.87441	0.047014	0.012821	0.054946
	(14.8152)	(0.03180)	(0.00179)	(145.421)	(0.26673)	(13.5540)	(0.20502)	(0.18462)	(0.04058)
	[0.22524]	[0.83266]	[1.10519]	[2.17076]	[3.77250]	[3.38455]	[0.22931]	[0.06945]	[1.35415]
NFA(-1)	0.754599	-5.32E-05	-0.000109	3.441065	-0.002941	0.737522	-0.002932	-0.001093	-0.001580
	(0.31661)	(0.00068)	(3.8E-05)	(3.10773)	(0.00570)	(0.28966)	(0.00438)	(0.00395)	(0.00087)
	[2.38338]	[-0.07828]	[-2.83818]	[1.10726]	[-0.51602]	[2.54619]	[-0.66929]	[-0.27700]	[-1.82221]
MSERROR(-1)	-45.55506	0.158418	0.003558	62.20788	-0.053973	12.50803	0.402186	0.164896	0.059256
	(18.7914)	(0.04034)	(0.00227)	(184.450)	(0.33831)	(17.1917)	(0.26005)	(0.23417)	(0.05147)
	[-2.42426]	[3.92721]	[1.56469]	[0.33726]	[-0.15954]	[0.72756]	[1.54658]	[0.70417]	[1.15138]
INFMISTAG(-1)	6.677399	-0.012946	-0.000424	221.3892	0.066527	32.88733	-0.061106	0.237701	-0.024918
	(15.8764)	(0.03408)	(0.00192)	(155.837)	(0.28583)	(14.5249)	(0.21971)	(0.19785)	(0.04348)
	[0.42059]	[-0.37985]	[-0.22092]	[1.42064]	[0.23275]	[2.26420]	[-0.27812]	[1.20144]	[-0.57308]
ROA(-1)	-57.26010	1.047156	0.029087	-1170.230	2.372225	-22.30282	1.039690	0.596976	-0.641845
	(91.9435)	(0.19737)	(0.01112)	(902.487)	(1.65531)	(84.1168)	(1.27239)	(1.14577)	(0.25181)
	[-0.62277]	[5.30554]	[2.61459]	[-1.29667]	[1.43310]	[-0.26514]	[0.81712]	[0.52103]	[-2.54889]
C	1557.671	1.139292	-0.078667	16697.34	7.754763	1074.582	6.539055	-17.54523	6.447599
	(872.802)	(1.87360)	(0.10561)	(8567.14)	(15.7136)	(798.505)	(12.0785)	(10.8766)	(2.39042)
	[1.78468]	[0.60808]	[-0.74491]	[1.94900]	[0.49351]	[1.34574]	[0.54138]	[-1.61312]	[2.69727]
R-squared	0.966802	0.970503	0.881324	0.840474	0.894060	0.976243	0.642987	0.509790	0.707428
Adj. R-squared	0.936924	0.943956	0.774515	0.696901	0.798714	0.954862	0.321676	0.068602	0.444114
Sum sq. resids	6287908.	28.97527	0.092055	6.06E+08	2038.094	5262952.	1204.208	976.4690	47.16522
S.E. equation	792.9633	1.702212	0.095945	7783.469	14.27618	725.4621	10.97364	9.881645	2.171755
F-statistic	32.35829	36.55800	8.251444	5.853971	9.376991	45.65955	2.001133	1.155493	2.686631
Log likelihood	-154.9628	-32.08587	25.43228	-200.6424	-74.61915	-153.1835	-69.35722	-67.26088	-36.95801
Akaike AIC	16.49628	4.208587	-1.543228	21.06424	8.461915	16.31835	7.935722	7.726088	4.695801
Schwarz SC	16.99415	4.706454	-1.045362	21.56211	8.959781	16.81621	8.433588	8.223954	5.193668
Mean dependent	2622.860	18.76500	0.194000	21087.94	80.02100	4084.700	6.486500	2.670000	2.049000
S.D. dependent	3157.341	7.190365	0.202053	14137.76	31.82035	3414.648	13.32392	10.23909	2.912850

Determinant resid covariance (dof adj.)	1.39E+21
Determinant resid covariance	2.71E+18
Log likelihood	-679.8425
Akaike information criterion	76.98425
Schwarz criterion	81.46505

Table 3.2. VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria
Endogenous variables: RGDP M2GDP DEBTGDP SP EXRATE NFA MSERROR INFMISTAG ROA
Exogenous variables: C
Date: 03/10/17   Time: 08:26
Sample: 1994 2014
Included observations: 20

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-893.0754	NA	1.22e+28	90.20754	90.65562	90.29501
1	-679.8425	213.2329*	5.33e+22*	76.98425*	81.46505*	77.85895*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 3.3. Ordinary Least Square methods

Dependent Variable: RGDP
Method: Least Squares

Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2GDP(-1)	-275.0628	65.36807	-4.207908	0.0015
DEBTGDP(-1)	7010.382	3333.390	2.103079	0.0593
SP(-1)	-0.028306	0.034929	-0.810385	0.4349
EXRATE (-1)	-12.19666	18.22983	-0.669050	0.5173
NFA(-1)	1.524952	0.242720	6.282752	0.0001
MSERROR (-1)	-71.60489	21.88247	-3.272250	0.0074
INFMISTAG(-1)	-0.828966	20.59270	-0.040255	0.9686
ROA(-1)	-116.1944	117.9740	-0.984916	0.3458
C	2746.955	1021.048	2.690327	0.0210

R-squared	0.936995	Mean dependent var		2622.860
Adjusted R-squared	0.891173	S.D. dependent var		3157.341
S.E. of regression	1041.572	Akaike info criterion		17.03701
Sum squared resid	11933602	Schwarz criterion		17.48509
Log likelihood	-161.3701	Hannan-Quinn criter.		17.12448
F-statistic	20.44867	Durbin-Watson stat		1.865804
Prob (F-statistic)	0.000015			

Table 3.4 Variance Decomposition of RGDP

Variance Decomposition of RGDP:

Period	S.E.	RGDP	DEBTGDP	EXRATE	INFMISTAG	M2GDP	MSERROR	NFA	ROA	SP
1	792.9633	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	1037.084	58.71369	8.178937	2.109847	6.712944	1.289763	3.080449	12.71677	1.435159	5.762435
3	1441.822	48.08521	5.499322	1.891968	7.745363	0.877777	2.915659	14.94076	2.953693	15.09025
4	1796.013	47.64209	4.736530	2.122976	7.900572	0.580312	2.261833	14.10439	2.702808	17.94849
5	1956.319	48.55886	4.166236	1.808693	7.430000	0.491918	1.908072	13.94770	2.500437	19.18808
6	2042.335	49.00260	3.926316	2.075858	6.901011	0.724391	1.752184	14.52810	2.329081	18.76046
7	2159.368	48.84788	3.566566	4.002674	6.189367	1.554758	1.575051	14.94344	2.127001	17.19327
8	2338.382	49.35877	3.214695	6.896777	5.320673	2.249759	1.383884	14.62466	1.889859	15.06092
9	2534.103	50.18582	3.005119	10.22855	4.575840	2.353428	1.184556	13.45417	1.670284	13.34223
10	2685.792	49.65505	3.025853	14.02932	4.127548	2.184265	1.084415	12.16999	1.492305	12.23126

financial stability variables are negatively impacting on the growth of the economy suggesting that they are more or less destabilizing rather than stabilizing. However, these relationships may not portray much meanings to the policy makers except when they are expressed in Granger Causality, impulse response and variance decomposition to show the contribution a shock or innovation each of the variables make

to changes in other variables. To this effect, the reserchers present the Impulse Response Analysis in Fig 3.2 and 3.3 while the rest of the graphs will be presented in the appendix. Fig 3.2. shows that one standard deviation shock on Real GDP leads itself to maintain a downward movement which attains zero at one and a half year and remains negative over the rest of the period. The response of real Gross Domestic Product

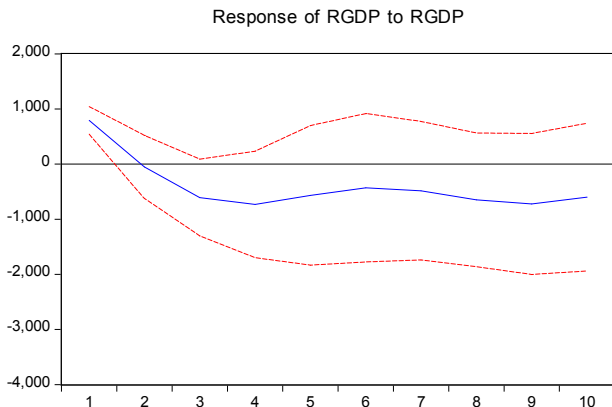(RGDP) to Broad Money Velocity (M2/GDP) is shown in Fig. 3.1 as follows.

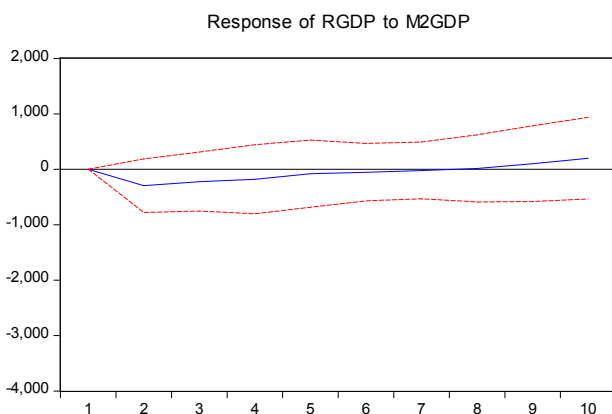**Fig.3.1 Response of RGDP to RGDP**
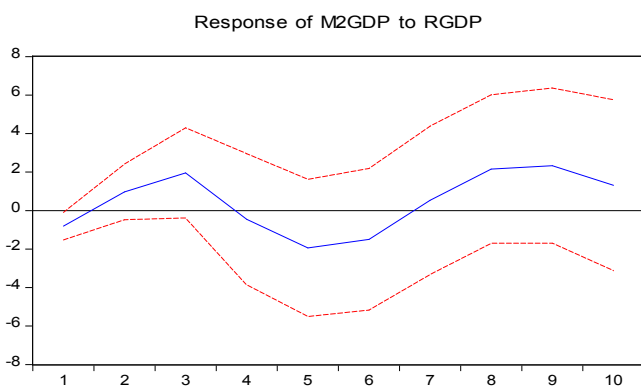

Fig.3.2 Response of RGDP to M2GDP

Fig.3.3 Response of M2GDP to RGDP

In Fig.3.3, response of RGDP to a one standard deviation shock on stock money velocity (M2/GDP) shows that the RGDP initiated a negative trend from the threshold line of zero and remained negative up to the 7th year from where it started positive movement for the rest of the remaining two years shown. This implies that the level of money stock velocity has made negative significant impact and less positive impact on real GDP.

Conversely, the response of broad money velocity to a one standard deviation shock on RGDP shows that M2/GDP started at negative level within the first year to trend upwards to reach a positive peak in the two and half years from where it descended and maintained a negative level from three and have years to six and half years before trending upwards. M2/GDP peaked at a positive level in the eight and half years from

where it started to indicate downward trend for the rest of the years. This suggests a feedback effect between financial development and the growth of the economy (see Fig. 3.3). To examine the response of real GDP to CBN money supply error (mis-targeting), we present the response of RGDP to Money supply error in Fig. 3.4 as follows.
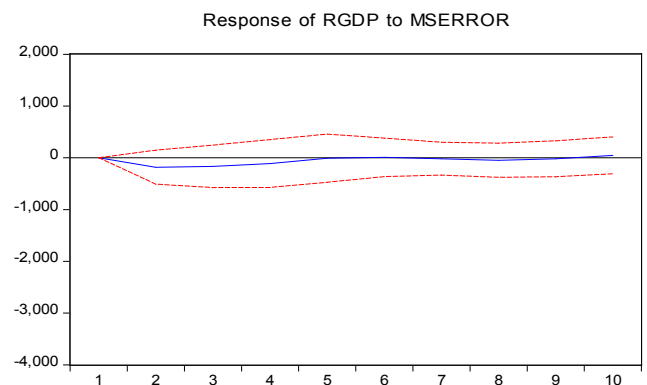

Fig 3.4 Response of RGDP to MSERROR

Fig. 3.4 above, shows the response of RGDP to one standard deviation shock in CBN mis-targeted money supply with two standard error bands. The result revealed that RGDP responds negatively to a shock in CBN money supply mismatch.

Thus, all indications emanating from our findings reveal that instability in the Nigerian financial sector impacts negatively on economic growth. In other words, financial instability deteriorates the growth of the economy. This finding is well established in economic and financial literature. The instability factor with serious impediment to economic growth in Nigeria emanates from money supply errors. To make our analysis more concrete, we investigated further the short run dynamic properties among the RGDP and financial instability indicators by decomposing their variance for the period of ten years. By definition, the variance decomposition shows the proportion of forecast error variance for each variable that is attributable to its own innovation and to innovation in the other endogenous variables. It further provides information on the importance of various structural shocks explaining the forecast error variability of real GDP and its explanatory variables. Thus, the method is meant to provide complementary information on the dynamic behavior of the variables in the system. The variance decomposition is shown in Table 3.4 as follows. The table shows that RGDP explains about 58.7 percent of its variations in the second period and diminishes to 49.7 percent in the tenth period. In other words, "the own shock" started from 100 percent and decreased to 49.7 percent. Debt sustainability is responsible for explaining about 8.18 percent of the variation in RGDP in the second period but reduces to 3.03 percent it the tent period. Exchange rate, Inflation mis- targeting, broad money velocity, money supply mis-targeting, net foreign assets, return on asset and stock market prices explain about 2.1, 6.7, 1.29, 3.1, 12.7, 1.4, and 5.76 in the second period respectively. Apart from exchange rate which recorded a much more percentage increase (14.03 percent) in the tenth period in the explanation of variation and M2/GDP that increased from 1.29 in the second period to 2.18 percent in the tenth period, other variables' percentage contributions in explaining variations in RGDP decreased in value. In all, own shock, inflation mis-targeting, net foreign assets and shock in stock market prices explain larger variation than others.

However, by further elimination, the salient feature of the variance decomposition results is that the predominant sources of RGDP fluctuations are due largely to own shock and net foreign assets.

Conclusion and Recommendation

Broad money velocity and money supply mis-targeting or error are the major financial instability factors that significantly impede the growth of the Nigerian economy. This finding is substantiated by the response of RGDP to a one standard deviation shock on stock money velocity which revealed that the RGDP initiated a negative trend from the threshold line of zero and remained negative up to the 7th year and also ascertained that the RGDP responds negatively to a shock in CBN money supply mis-targeting.

Thus, the Central bank of Nigeria should not only adopt an appropriate broad money velocity for the country, but should also narrow its money supply mistargeting if financial instability in Nigeria should be reduced to the barest minimum. In other words, the CBN should as a matter of fact narrow the gap between money supply target and the actual money supply if future economic forecasting and predictions involving money supply should be expected to come true.

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