INVESTIGATING THE PERFORMANCE OF MONETARY POLICY ON MANUFACTURING SECTOR IN NIGERIA:

1980-2009

 $\mathbf{B}\mathbf{v}$

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ABSTRACT

The main focus of monetary policy in relation to the manufacturing sector has always been the stimulation of output, employment and the promotion of domestic and external stability, while that of fiscal policy has been the generation of revere for the government and the protection of domestic infant industries against unfair competition from import and dumping. This paper examined the performance of monetary policy on the manufacturing index performance in Nigeria. The data collected from the CBN 2010 bulletin were subjected to econometric test procedures such as unit root for stationarity of series, diagnostic test and granger causality to investigate the impact of some macroeconomic variables on the Manufacturing index in Nigeria while VEC and OLS estimation were used to study the models for significance, magnitude, direction and relationship. The study revealed that MS positively affect MANDEX by 0.5% while others played negative impact to the performance of the manufacturing sector over the years. It therefore recommended that expansionary policies are vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth,

Keywords: Manufacturing, Model Estimate, Diagnostic test, Monetary Policy, Unit Root

INTRODUTION

Manufacturing motives conversion of raw material into finished consumer's goods of intermediates goods. Manufacturing like other industrial activities, creates average for employment helps to boost agriculture and diversify the economy while helping the Nation to increase its foreign exchange earnings, enabling local labour to acquired skills. The history of manufacturing in Nigeria can be traced to pre-colonial times. In Village bused societies of the Hausa, Benin and the Ibo's among other small manufacturers of goods for trade, social ant other

purpose prevailed. According to Ndiulor (1999), West Africa manufacturing was bases on activities such as metal working ceramics food processing and clothing a variety of other traditional manufacture service well into the colonial era, thogh this era did not provide the necessary production for an industrial revolution in the society. The manufacturing industry in Nigeria is rapid growth, structural change and self-sufficiency. Therefore it represents a major plant government plan to restructure the economy and diversity its productive base (Ukwu 1994). Though the high cost condition in the country occasioned by poor and adequate infrastructural support services and other policy induced cost pose a serious threat not only for out put growth in the manufacturing sector but also for competitiveness. The continued harassment of the companies by some state and local governments over unauthorized multiple levies and changes in spite of the clear position of the law. Is a significant deviation from the characteristics and requirement of a conductive business need to performed it's role as the engine of growth.

LITERATURE REVIEW

According to central Bank of Nigeria (CBN) (1994) on excess supply of money will result in an excess demand for goods and services which in turn raises prices and reduces balance of payment. On the other hand, inadequate supply of money retarding growth and development. Familoni (1989) argues for monetary policy to be efficacious, the economics system must be highly interested and highly moneterized corresponding with regular information network system. He also said that Nigeria lacks of fundamental flexibilities which could have aided a more effective use of monetary policy. Ajayi and Ojo (1981) said that sources of features of monetary policy impacts on assessed on the basis of its impacts on economic growth as well as on the domestics and external stability of the economy.

Asoyu (1996) is of the view that in a typically developing countries like Nigeria where the financial and capital markets are underdeveloped, monetary policy is adopted to accommodate government financial needs for critical and urgent problems of economic growth and development. According to Anyanwu (1995) the preposition of macro national expectations shows that only unanticipated changes in monetary policy positively influence real output, while the anticipated changes do not. It is based on the annual data over the period of 1970 to 1988. in line with common practices, we decomposed our monetary policy (money supply) changes into the systematic (anticipations) and surprise (unanticipated) components.

Unlike the usual practices he examines the impact of these monetary policy changes on disaggregated output namely. Agriculture, industrial and services output. The findings here show that, in the open and closed Nigeria economy both anticipated and unanticipated monetary policy exerts no significant positive impact on industrial output, through in a closed Nigeria economy, the unanticipated components of monetary growth exerts significantly positive impact on services output, through the open economic impact dominates the closed economy impact while the unanticipated component of monetary policy does not have positive impact on the open economy services output. The same in not true for the national expectation hypothesis is dependent on the sector of the economy one is examine.

According to Amaghionyodiwe (2002) monetary policy objectives the specific environment of the 1970's 1980's and 1990's were the maintenance of relative price stability and a healthy balance of payment.

The use of indirect monetary control was formally announced in early 1991 and as the point of the change over from direct control, the open market operation (omo) was introduce in June 30th 1993, as the main instrument of monetary policy, which is complimented by existing reserve requirement and discount rate.

Iyoha (2004) descried open market operation (OMO) as an instrument which involves the sales or purchases of government or other eligible securities in the monetary market with a view to regulating the cost and availability of credit. Onyibo (1991) also said that the effective use of OMO requires the existence of well developed sensitive financial, market where the amount of government securities held by banks companies and individuals are really large. In developed economy, this instrument is regarded as a potential tool of monetary managements. Nnanna (2002) also said that the effective use of OMO requires the existence. Nnanna (2002) is of the view that the targeting of open market operation (OMO) being with the computation of the option level of liquidity in the banking system which implies that level of liquidity rate to the absorptive capacity of the economy. This is followed by the estimation of the total supply of bank reserve. Any excess supply of bank reserve over demanded is sterilized using OMO.

According to CBN (1998) Nigeria has become the most important market based tool using by CBN to control the volume of money in the economy. However, due to the name and underdeveloped financial market compiled with large excess reserve usually maintained by bank and inadequate supply of securities, the successful use of OMO becomes limited.

As stated by Amaghi Onyeadiwe, the monetary authorities can influence the reserve of bank and money supply by manipulating the discount rates. This is the rate at which it leads to the banks as a lender of last resort. Other interest rates tend to change with a charge in discount rate produced an announcement effect on their credit. But for this is to be effective, the banks bank comes forward to borrow from the monetary authorities while the interest rate must be free of controls.

Also investment decision must be influence in large extent by interest rate movement which money not be the case in situation of high return of investments.

The discount rate also known as minimum rediscount rate which peaked at 26:0% in 1993 was reduced to 13.5% in 1994 and remained uncharged with 1992 when it was raised again to 18.0% in, 200, it stood at 15% and was reviewed upward to 16.5% in 2002 (Elumelu 2002).

Anyanwu (1993) rated that the effectiveness at the discount rate policy is a function of the availability of commercial banks to have access to liquid asset and must not keep access reserved, other wise the production and investments depend heavily on imports, like Nigeria tend to encourage trading. This situation combined with a high bank lending rate profile tend to create enabling environment and distribution of finished goods while creating a disabling environment for existing produces and discouraging new investors. Nnanna (2002) concluded that while fixing exchange rate may provide price stability it undermine policy flexibility which can have serious implication for internal and external balance. Flexible and well managed floating exchange rates require is typically situated for Nigeria's unique economic characteristic monetary policy Exchange Rate. Adermit and Abdullahi (1987) said that monetary policy which used to be regarded as mainly concerned with varying supply of money, it has now extended to such issues external relationship that is the relationship between a country's import and export. Usman (2001) recognized the fact exchange rate which is a price of the domestic currency in terms of either currencies, is usually determined in principles by interplay of supply and demand in a free market environment but in practice however, no currency is allow to float freely by monetary authorities and between the fixed and floating system of exchange rate management are other regimes, Okunrounwu (1992) said that fiscal policy is critical for Africa economic development when fiscal policy is appropriate, it help, but when it is out of time it hurts the economic specifically, the economic environment. The instruments used and the execution of the fiscal program are important determination of the effects of fiscal policy. Adermito and

Abdullahi (1987) say that policies are internal parts of general policy: therefore, fiscal policy is more than a simple relationship between government income and expenditure. They view fiscal policy as the care of public finance where public finance deals with resources allocation, economic growth, prices income and employment. Therefore, fiscal policies and development policies are allies. Olofin (2001) with regard to fiscal to fiscal policy measure viatax controls. This is unimportant for all practical purpose in most developing economics. Due to the large proportion of non-wages income earners in the labour force, direct income tax with the expectation of company taxes are often difficult to administer.

The oil boom of the 1970's brought in its take on unprecented expansion in the volume of goods and service imported. This was detrimental to the manufacturing environment (Sector) NISER 1998). The relatively high proportion of consumer goods in total imports suggested that the manufacturing sector was unable to meet the domestics demand for consumer goods especially demand for consumer goods especially non-durable (Ajaikaye 1990).

In 2002 fiscal restraint was exercised and CBN stated that following as the policy thrust.

- 1) Enhance capacity utilization in agriculture, manufacturing and mining industries.
- 2) Provision of appropriate protection to domestic industries against unfair competition from import and dumping.
- 3) Encourage diversification of foreign exchange earning through increased export activities.
- 4) Restriction of operation cost and inflationary pressures and creation of new jobs.

The main instrument of fiscal policy in Nigeria includes government expenditure and enhance in taxations to effect desired changes in income, production, price and employment.

Lipsey and Christal (1991) defines government expenditure as a government payment to factors of productions in return for factors of productions in return for factors services rendered and about half of total government expenditure is on what is called transfer payment. These are payment not made in return for any factors services rendered as part of current production. Ayanwu and Oaikhena (1995) opinion that government expenditure constitute an instrument for opportunities and influencing general price level as well as determined the extent of fiscal deficit or surplus such fiscal years.

According to Lipsey, taxes are of a major importance in the pursuit of many government policies. They provide the funds to finance expenditures and are also used to alter the incentives

to which private maximizing agents react and to after distribution of income. Ayanwu and Oaikhena (1995) stated that taxes are imposed not only to generate revenue but also to provide incentives and discentive on certain specific socio-economic activities in 1988), profit less than N6,000 were tax fees in the area of company income, tax, profit in excess of N6,000 but less than N10,000 were taxed at 45% the following year. The turn over tax was abolished in 1985 and the rate of company income tax was further reduced to 35 with the provision of 20% for small companies. Value added to which was introduce in 1994 following the recommended of a study group set up by government to reform Nigeria tax system attracts a high single tax rate of 5% which covers various categories of goods and services except medical, educational, agricultural and basic food products.

Methodology

In estimating the model, the dependent and independent variables are separately subjected to normality, ARCH, stability and stationary tests using histogram, white heteroskedasticity test, Ramsey reset and unit root tests since the apriori assumptions for the regression model require that the variables normal, heteroscedasticity, in functional form and stationary and that errors have a zero mean and unequal variance. The unit root test is evaluated using the Augmented Dickey-Fuller (ADF) test which can be determined as:

$$\Delta Yt = \alpha + \beta t + \delta Y_{t-1} + \gamma \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon_t$$

Where α represents the drift, t represents deterministic trend and m is a lag length large enough to ensure that $\varepsilon_{\mathbf{r}}$ is a white noise process. If the variables are stationary and integrated of order one I(2), we test for the possibility of a co-integrating relationship using Eagle and Granger (1987) two stage Var Auto-Regression (VAR). The study employs the Var Auto-Regression (VAR) because it is an appropriate estimation technique that captures the relationship among the inflows variables.

Model Specification

To establish the impact of monetary and fiscal policy on the manufacturing sector, the model can be specified as follows:

The specification is expressed as function:

$$LnMI = \beta_0 + \beta_1 LnPLRT + \beta_2 LnCITRT + \beta_3 LnMS + \beta_4 LnINF + \beta_6 LnEXRT + \varepsilon_t - 2$$

Where: MANIDEX: Manufacturing index, PLRT= Company lending rate, CITRT=Company income tax rate, MS=money supply, INFLRT= Inflation rate, EXRT: Exchange rate, Ut= Stochastic variable

 $\Delta LnMI_{t} = \beta_{0} + \beta_{1}\Delta LnPLRT_{t-1} + \beta_{2}Ln\Delta CITRT_{t-1} + \beta_{3}Ln\Delta MS_{t-1} + \beta_{4}LnINF_{t-1} + \beta_{6}Ln\Delta EXRT_{t-1} + \varepsilon_{t}$ 3

$$LnMI = \beta_0 + \beta_1 \sum_{i=1}^{m} LnPLRT_{t-1} + \beta_2 \sum_{i=1}^{m} LnMI_{t-1} + \beta_3 \sum_{i=1}^{m} LnMS_{t-1} + VEC(1) + U_t \quad 4$$

and VEC(1) is VEC term and U_z is Error term.

The short run effects are captured through the individual coefficients of the differenced terms. That is β_i captures the impact while the coefficient of the VEC variable contains information about whether the past values of variables affect the current values of the variables under study. The size and statistical significance of the coefficient of the residual correction term measures the tendency of each variable to return to the equilibrium. A significant coefficient implies that past equilibrium errors play a role in determining the current outcomes ∂_1 captures the long-run impact.

Result Empirical Analysis

Table 1

Dependent Variable: LNMI Method: Least Squares Date: 07/19/12 Time: 00:21

Sample: 1980 2009

Included observations: 30

Variable	Coefficien	Std. Error	t-Statistic	Prob.
	t			
LNPLR	-0.032794	0.082350	-0.398226	0.6940
LNCITR	-0.045129	1.243450	-0.036293	0.9713
LNINFRT	-0.018466	0.366515	-0.050382	0.9602
LNMS	0.005137	0.041520	0.123730	0.9026
LNEXTRT	-0.000337	0.002626	-0.128156	0.8991
C	0.527358	0.788743	0.668606	0.5101
R-squared	0.008647	Mean depe	endent var	0.471864
Adjusted R-squared	-0.197885	S.D. deper	ndent var	0.050978
S.E. of regression	0.055795	Akaike inf	o criterion	-
				2.757415
Sum squared resid	0.074713	Schwarz c	riterion	-
				2.477176
Log likelihood	47.36123	F-statistic		0.041867
Durbin-Watson stat	1.784248	Prob(F-sta	tistic)	0.998869

Estimation Command:

LS LNMI LNPLR LNCITR LNINFRT LNMS LNEXTR C

Estimation Equation:

LNMI = C(1)*LNPLR + C(2)*LNCITR + C(3)*LNINFRT + C(4)*LNMS + C(5)*LNEXTR + C(6)

Substituted Coefficients:

LNMI = -0.03279368859*LNPLR - 0.04512905285*LNCITR - 0.01846558178*LNINFRT + 0.005137238964*LNMS - 0.000336559046*LNEXTRT + 0.5273582031

From the model estimate of analysis result of table 1 above infers that prime leading rate, money supply, company income tax rate, inflation rate and exchange are not statistically significant at 5% level as the probability associated with the p-value is greater than the 5%. In addition, the overall parameters of the entire regression equation reveal non statistical significance.

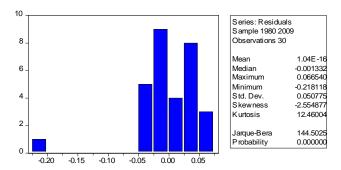
On the average the independent variables can explained approximately 15.1% of the inverse systematic variation of MANDEX however, CITRT, MS, INFLRT and EXRT all failed apriori sign expectation which might show possible explanation that these regression are not impacting on MANDEX while PIRT, and Ms both passed the apriori sign expectation which might also show the PIRT, and Ms are both impacting on MANDEX. The analysis also shows that there is inconclusive evidence regarding the presence or absence of positive first order serial correlation and also no presence of multicolinearity.

Analyzing the estimated model economically, it imply that the INFLRT and EXRT negatively influence MANDEX which means that at every one unit increase in PLR, CITR, INFLRT and EXRT will lead to 3.2%, 4.5%, 1.8% and 0.003% decrease in MANDEX while MS influence MANDEX positively. Which means that at every one unit increase in MS will result in 0.5% in MANDEX. The analysis confirms that monetary policy supports the manufacturing sector in Nigeria.

Table 2 Diagnostic Test Result

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.131605	Probability	0.877343
Obs*R-squared	0.339432	Probability	0.843905



ARCH Test:

F-statistic	0.474947	Probability	0.627415
Obs*R-squared	1.024939	Probability	0.599015

Diagnostic test procedure proves that the series of the time series variables are not serially correlated; it is homogeneous, normally distributed but not in the functional form as the probability values of the various test-statistic are all less than the 5% critical level.

Table 3: Test of stationarity using Augmented Dickey Fuller (ADF)

Variables	ADF Test	5%	Critical
		Value	
LNMI I(1)	-4.4765	-2	9798
LNPLR I(1)	-4.0470	-2	9798
LNINFR T I(1)	-5.2655	-2	9798
LNCITR I(1)	-4.8465	-2	.9798
LNMS I(1)	-5.0970	-2	9798
LNEXTR I(1)	-5.0973	-2	9798

 $[*]significant\ at\ 5\%\ level, ADF\ test > Critical\ Value\ then\ Stationary\ that\ is\ there\ is\ no\ presence\ of\ unit\ root$

Table 4: Vector Error Correction Model Output

Date: 07/19/12 Time: 00:50 Sample(adjusted): 1983 2009

Included observations: 27 after adjusting

endpoints

Standard errors & t-statistics in parentheses

	D(LNMI)	D(LNMS)
D(LNMI(-1))	0.193025	-1.759003
	(0.13936)	(1.26042)
	(1.38511)	(-1.39556)
D(LNMI(-2))	0.094899	1.061495
	(0.09586)	(0.86700)
	(0.98999)	(1.22433)
D(LNMS(-1))	0.033872	-0.189828
	(0.01866)	(0.16874)
	(1.81555)	(-1.12496)
D/LNIMG(0))	0.010512	0.720204
D(LNMS(-2))	0.012513	-0.728394
	(0.01640)	(0.14832)
	(0.76303)	(-4.91082)
С	-0.148607	2.201149
C	(0.46067)	(4.16655)
	(-0.32259)	(0.52829)
	(0.0220)	(0.0202))
LNPLR	0.044782	0.744983
	(0.04442)	(0.40177)
	(1.00812)	(1.85426)
LNCITR	0.130652	-3.580898
	(0.73558)	(6.65298)
	(0.17762)	(-0.53824)
LNINFRT	0.145392	-3.280577
	(0.19380)	(1.75284)
	(0.75022)	(-1.87158)
	(0.73022)	(-1.6/136)
LNEXTR	0.002952	-0.019202
	(0.00128)	(0.01157)
	(2.30674)	(-1.65893)
R-squared	0.337080	0.673975
Adj. R-squared	0.042449	0.529075
Sum sq. resids	0.011637	0.951973
S.E. equation	0.025427	0.229973
F-statistic	1.144077	4.651308
Log likelihood	66.30534	6.846914
Akaike AIC	-4.244840	0.159488
Schwarz SC	-3.812894	0.591433
Mean	-0.001103	-0.019310
dependent		
•		

S.D. dependent	0.025984	0.335120
Determinant Res	idual	1.49E-05
Covariance		
Log Likelihood		73.44078
Akaike Information Criteria		-4.106725
Schwarz Criteria		3.242833

The VEC model revealed that the EXTR and nearly money supply are statistically significant to manufacturing index. However, variables such as INFRT, CITR and PLR are statistically insignificance. In addition, there is no clear evidence of any run relationship among the macroeconomic variables and manufacturing index in the previous or current year as the t-statistic is less than the 2.0 at 5% level of significance.

Table 5: Granger Causality Test

Pairwise Granger Causality Tests Date: 07/19/12 Time: 00:54

Sample: 1980 2009

Lags: 2

	Obs	F-Statistic	Probability
LNPLR does not Granger Cause LNMI	28	1.58391	0.22675
LNMI does not Granger Cause LNPLR		0.08676	0.91720
LNCITR does not Granger Cause LNMI	28	3.57129	0.04460
LNMI does not Granger Cause LNCITR		2.31654	0.12118
LNMS does not Granger Cause LNMI	28	0.02474	0.97559
LNMI does not Granger Cause LNMS		2.44393	0.00904
LNINFRT does not Granger Cause LNMI	28	0.51189	0.60603
LNMI does not Granger Cause LNINFRT		0.00060	0.99940
LNEXTR does not Granger Cause LNMI	28	0.49479	0.61604
LNMI does not Granger Cause LNEXTR		0.24704	0.78315
LNCITR does not Granger Cause LNPLR	28	0.65510	0.52881
LNPLR does not Granger Cause LNCITR		0.91073	0.41625
LNMS does not Granger Cause LNPLR	28	2.38744	0.11425
LNPLR does not Granger Cause LNMS		2.18657	0.13509
LNINFRT does not Granger Cause LNPLR	28	0.05177	0.94966
LNPLR does not Granger Cause LNINFRT		1.23218	0.31020
LNEXTR does not Granger Cause LNPLR	28	0.16866	0.84583
LNPLR does not Granger Cause LNEXTR		1.73631	0.19848
LNMS does not Granger Cause LNCITR	28	1.53983	0.23572
LNCITR does not Granger Cause LNMS		0.72871	0.49334
LNINFRT does not Granger Cause LNCITR	28	2.39870	0.11319

LNCITR does not Granger Cause LNINFRT		1.88674	0.17429
LNEXTR does not Granger Cause LNCITR LNCITR does not Granger Cause LNEXTR	28	1.38418 0.63120	0.27063 0.54092
LNINFRT does not Granger Cause LNMS LNMS does not Granger Cause LNINFRT	28	2.59235 3.03998	0.09654 0.06738
LNEXTR does not Granger Cause LNMS LNMS does not Granger Cause LNEXTR	28	0.57778 1.11298	0.56908 0.34564
LNEXTR does not Granger Cause LNINFRT LNINFRT does not Granger Cause LNEXTR	28	9.57513 0.91390	0.00094 0.41503

Based on the granger causality test result among the macroeconomic variables understudy in relation to manufacturing index in Nigeria it was very obvious that only CITR and MS granger cause MI in unidirectional form indicating short run effect. The analysis also revealed that EXTR Granger causes INFRT independently.

CONCLUSION

. From the mid 1980's it be became increase difficult to achieve the aims of monetary policy. Generally, monetary aggregates, government fiscal deficit, GDP growth rate inflation rate and the balance of payments position marred in undesirable direction the manor source of problem in monetary control frame work, the interest rate regime and the non harmonization of fiscal and monetary policies. Monetary policy positively impact is maximal and partially significant when compared to fiscal policy. This shows that expansionary policies are vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth.

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