Monetary Policy and Nigeria'S Quest for Import-Substitution Industrialization

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Abstract
This study examines the impact of monetary policy variables on industrialization via import substitution strategy in Nigeria from 1981 – 2012. The deregulation of the foreign exchange market in Nigeria was with the aim of stimulating export and industrialization through import substitution. However, it turned out that Nigeria had become more import dependent than ever. We specified four explanatory variables for this study based on theoretical underpinnings. We sought to establish a relationship between the explanatory variables and industrial output. The Johansen trace test revealed that there was one cointegrating equation. The estimated error correction mechanism (ECM) revealed that 53 per cent of disequilibrium in industrial-GDP is corrected for in the long run.
Keywords: Monetary policy, exchange rate, industrialization, imports substitution industrialization.

1. Introduction

On independence in 1960, most of the third world nations especially the Latin American countries seem to be celebrating substantial economic growth rate resulting from the adoption of import substitution industrialization (ISI) framework, and Nigerian enthusiastic leaders at time, eager to fast track the development of the nation's economy embraced the ISI strategy as the way to go. Like a bandwagon effect, many other independent less developed nations of African and elsewhere took to ISI for trade as well as political season. The ISI was fundamentally driven by the state, who through careful planning promotes industrialization in key sectors of the economy with the aim of replacing imports with domestic production, thereby fostering and expanding the internal market and subsequently reducing its foreign dependency through the local production of formally imported goods.

Import substitution industrialization strategy gathered more impetus in Nigeria after the civil war in 1970 with the 1972 indigenization decree. It was only from this point that there was deliberate and careful plan in government spending to foster ISI strategy in Nigeria. The government attention was focused on key industries perceived could be the driving force to sustainable development of the Nigerian economy. Some of these industries include; the three petrol chemical plants in Nigeria, Ajaokuta steel, Delta steel, Itakpe iron ore plants, metal and tools in Oshogbo among others, while state government where involved in all manner of cottage industries.

During this period like a bug got up with the private sector and so, industry was flourishing in all fronts (then before the introduction of SAP in 1986) Nigerian could boast of viable industrial sectors like textile, breweries, with agriculture not left out. The commodity broads where taking the initiative in providing the necessary expertise for quality products and foreign markets for these commodities. Before the introduction of the Structural Adjustment Programme (SAP) in 1986, there was evidence that Nigeria was at the right path to economic prosperity notwithstanding its challenges. This was strongly supported by statistics CBN (1995) in 1975 industrial capacity utilization was 76.6%, by 1981 it was 73.3%, 1983 it dropped to 49.7%.

The demand for imported goods and raw materials became arguable inelastic over time. The rise in importation continued until the country became almost import dependent both in production and in consumption. The immediate consequence was depletion of the country's foreign reserves, as the government had to draw from the reserves to settle import bills. According to Akpakpan (1994) "successive governments responded in different ways to cut demand on foreign goods as follows: The Mohammed/Obasanjo governments (1975-1978) sought to discourage importation by developing in the citizens the spirit of self-reliance in production and a culture of low profile in consumption. The government of Shehu Shagari (1979-1983) designed and implemented a package of measures including the austerity measures of 1982, aimed at reducing the demand for foreign goods and services. The government of General Buhari (1984-1988) tried counter trade, an international barter arrangement".

The economic environment that guided monetary policy in Nigeria before the introduction of SAP in 1986 was characterized by the expanding role of the public sector in the economy and over-dependence on importation for both production and consumption. In order to maintain price stability and a healthy balance of payments position, the central bank depended on the use of direct monetary instruments such as credit ceiling, selective credit controls, administered interest rate, fixed exchange rate policy (which had been in use between independence in 1960 and the introduction of SAP in 1986) and the prescription of cash reserve requirements

and special deposits. The use of markets based instruments was not feasible because of the constraints imposed by the fixed exchange rate policy, and the underdeveloped nature of the financial markets in Nigeria and also the deliberate restraint on interest rates.

Monetary policy generally refers to the deliberates effort of the government to use changes in money supply, cost of credit, size to credit and direction of credit to influence the level of economic activities to achieve desired macroeconomic stability in an economy. For Okwu et al (2011); Adesoye et al (2012); Baghebo and Ebibai (2014) monetary policy could be summarized as a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity. The objectives of monetary policy primarily include; prices stability, balance of payment equilibrium, growth in output, employment and sustainable development (Folawewo and Osinubi, 2006).

In September 1986, the international monetary fund (IMF) successfully pressured the then government of Babangida into introducing SAP. The main features of SAP for monetary policy management were the devaluation of the Naira, deregulation of activities in the foreign exchange market and the removal of administrative controls. This brought about the establishment of the second- tier foreign exchange market (SFEM) which was one of the major components of SAP. Among the arguments for the introduction of SAP was to increase the non-oil export in order to increase the supply of foreign exchange to the economy and consequently reduce the rate of dependency on foreign goods. Measures adopted in pursuing this important objective according to CBN (1993) include:

> "Measures meant to increase the supply of foreign exchange to the economy have been directed mainly at the non-oil exports sector. Licensing requirement for non-oil exports was abolished in 1986 to encourage more people to go into the export business and thereby enhance non-oil receipts. Commodity boards were also abolished in 1986 to make non-oil export business move competitive. In addition, the foreign currency domiciliary account scheme became operational, under the scheme exporters could retain 100 percent of their export proceeds in foreign currency accounts domiciled in Nigeria. The CBN and the government have also actively promoted and supported various schemes designed to increase foreign exchange receipts from non-oil exports"

Unfortunately, SAP was a huge failure in all fronts to its introduction in Nigeria, especially with regards to the objective of reducing dependency on foreign goods. Rather Nigeria was importing more over time. This is usually measured by relating the value of imports to the value of the gross domestic product (GDP) over time. The table below summarizes the information for the period 1984 to 1993.

Table 1: imports as a percentage of GDP 198-1993

Year	GDP at current factor Cost (1)	Import (2)	(2) as % of (1)
1984	63006.2	4484.5	7.1
1985	71368.1	5536.9	7.8
1986	72128.2	5974.7	8.3
1987	106883.2	15695.4	14.7
1988	142678.3	19757.8	13.8
1989	222457.6	30860.2	13.9
1990	257873.0	45717.9	17.7
1991	320247.3	89488.2	27.9
1992	544330.7	143151.2	26.3
1993	691608.4	165629.4	24.0

Source: CBN, Statistical Bulletin, Vol.5, No. 2

Consequent upon the deregulation of the foreign exchange market with the adoption of the free floating exchange rate policy, the naira began a 'free fall' with destabilizing effect on domestic prices, and through the effects on prices, the policy destabilized the economy as a whole leading to severe hardship in the country. For this reason, the free floating exchange rate policy was abandoned for a modified fixed exchange rate policy in 1993. This brought back some stability in the Nigerian economy, however, the managed floating exchange rate system was introduced in 2002 and had remained so till date.

1.1. Objective of the study

The monetary policy instruments management had over the years varied since the introduction of SAP in Nigeria in 1986, however, the focal point of this study is not to determine the extent of variability of the use of monetary instruments but rather the general impact of monetary policy variables on industrialization in Nigeria.

2. Literature Review
2.1. Monetary policy in Nigeria
The CNB Act of 1958 which was subsequently amended by CBN Decree no. 74 of 1991 invested her the authority of the management of money and credit in Nigeria. The Central Bank's main monetary policy objectives, according to the law establishing it are to promoting price stability, reducing pressure on the external sector, stabilizing the Naira exchange rate and stimulating economic growth. In pursuance to these objectives, the central bank of Nigeria has being adopting direct and in direct monetary policy instrument over the years. The direct instruments include special deposits, aggregate credits ceilings, deposit cutting, exchange rate controls, restriction on the placement of public deposit and stabilization securities. While the indirect instrument include open markets operations, cash reserve requirements, liquidity ratio, minimum rediscount rate and selective credit policies.

2.2. Theoretical framework
2.2.1 Classical monetary theory
The classical monetary framework attempts to explain the determination of general price level in an economy. They were of the view that the quantity of money in the economy is the prime mover of the price level, as the quantity of money increases in the economy, level of prices will increase proportionally and vice versa. The classical economists believed that the economy automatically tends to full employment of all resources, as a result total outputs of goods and services remain unchanged even with increase in money supply. This theory was effectively put forward by living Fisher's equation of exchange. According to the classical economist, there are several factors that determine the general price level in an economy which include the volume of transaction, the stock of money and the velocity of circulation of money. The volume of transaction is considered constant on the assumption that the economy automatically tends to full employment of all output resulting to a constant volume of transaction. The money stock is autonomously determined.

The velocity of circulation of money is assumed constant for the reason that method of factor payments such as frequency of wage payments to workers and the spending of their money income is a matter of habit. Thus, Fisher's equation of exchange in the transaction form could be stated as:

$$PT = MV$$
$$P = \frac{MV}{T}$$

Where: P = general price level T = total amount of transaction, M = money stock, and V = transaction velocity of money in circulation.

The fisher equation provides the framework for explaining the changes in price level (inflation) if the money supply changes. From the given assumptions the price level (p) depends on the changes in money supply (M), the greater the money supply, the higher the general price level.

The fisher's equation of exchange was later modified to reflect total transaction of final total output (national income) with the same underlined assumptions. In this version, the concept of income velocity of money was used for transaction velocity of circulation of money. The income velocity of money measures the average number of times a unit of money is used in making payment involving final goods and services. The income version of the quantity theory of money is written as:

$$PY = MV$$
$$P = \frac{MV}{Y}$$

Where M = money stock, V = income velocity of money, P = General Price level, and Y = Real National Income. Therefore, given that income velocity (v) and National product (y) are constant, general price level (P) is determined by the quantity of money (M).

2.2.2. Keynesian Monetary Theory
The Keynesian monetary theory in explaining the influence of money supply on the general price level believed that contrary to the classical economists that money supply has direct relationship with price level; there is no such direct and proportionate relationship between the money supply and price level. Rather changes in money supply affects the price level indirectly through its effect on interest rate. An increase in money supply leads to fall in the rate of interest depending upon on the degree of sensitivity of money demand to the rate of interest. A change in the rate of interest affects investment which through multiplier process affects aggregate demand. It is then the magnitude of aggregate demand relative to aggregate supply of output that causes price level to change. Thus, relationship between money and the price level far from direct and proportionate is only indirect (Ahuja, 2011: p 428). Thus, Keynesian money supply transmission mechanism can be represented as:

Ms↑→ R↓→ I↑→AD↑→Y↑→P↑

Where Ms + money supply, R = rate of interest I = Investment, AD = aggregate demand, Y = National Income, P = Price level.

2.2.3. Monetarist theory of money

The Friedman's monetarist framework tends to explain the relationship between changes in money supply and the fluctuations in price level adopting the Cambridge quantity theory framework. Thus, rewriting the Cambridge equation as the equation for money equilibrium,

Ms = KPY

Ms1/k = PY

If K (as velocity) and Y (national output) are constant than it follows that price is directly proportional to money supply, reinforcing the views of the classical (quantity) theory of money. Milton Friedman assumes k to be constant so that the effect of expansion in money supply will be distributed between the increase in real income (y) and increase in price level (p) in the short-run. Friedman explained that if the economy is operating below the full employment level of output in the short-run, the increase in money supply will activate idle resources thereby causing more increase in output than increase in price level. However, in the long-run with the economy at full employment level of output, with Y and k remaining constant, any increase in money supply will cause the price level to rise proportionately, as money moves faster to chase the same amount of output causing inflation in the economy.

2.3. Empirical framework

Kuijs (1998) in his work 'determinants of inflation, exchange rate, and output in Nigeria' using the VAR technique, the dynamic model was estimated in which the disequilibria in the markets for broad money, foreign exchange and the non-oil goods were allowed to influence the price level, the real exchange rate and output. The results were in consonance with the classical preposition concerning the real and monetary sectors of the economy. Prices, real exchange rate and non-oil output were attracted to long-run equilibrium that mainstream economic theory suggests.

Olanipekun and Akeju (2013) examining the relationship between money supply, inflation and capital accumulation in Nigeria ran two models using the error correction techniques, one model was ran using Narrow money supply (M1) and the other broad money supply (M2). For both models, changes in money supply have negative and non-significant relationship to inflation in Nigeria.

Folawewo and Osinubi (2006) using the GARCH model to investigate how monetary policy objectives of controlling inflation and intervention in the financing of fiscal deficits affects the variability of inflation and real exchange rate revealed that monetary policy affects both the rate of inflation and real exchange rate and as such causing volatility in these rates in Nigeria.

Mengesha and Holmes (2013) in examining the monetary policy and transmission mechanisms in Eritrea, came to the conclusion that monetary policy is less effective, while official foreign exchange market in Eritrea is inactive, suggesting that there is an effective black market exchange rate channel in Eritrea.

3. Methodology

Reinforcing the position of classical economists, Melton Friedman demonstrated that inflation is directly proportional to changes in money supply, with real national income (GDP) remaining constant in the long-run, any increase in aggregate demand stimulated by increase in money supply will cause price level to increase (inflation).

While Keynes clearly demonstrated that money supply only influence price level indirectly through its effects on interest rate which affects investment in a negative relationship resulting to change in output and then price level. On the strength of these theoretical prepositions, industrialization proxied by industrial GDP (IGDP), is expressed as a function of money supply (MS), interest rate (INT), inflation rate (INF) and exchange rate (EXR).

Thus, IGDP = f (MS, INT, INF, EXR)

Therefore $IGDP_t = \beta_0 + \beta_1 MS_t + \beta_2 INT_t + \beta_3 INF_t + \beta_4 EXR_t + \mu_t$

Where IGDP = Industry contribution to nation income (GDP)

> INT = Interest rate
> INF = Inflation
> EXR = Exchange rate
> MS = Broad Money supply
> μ = Error term
> t = Time trend

The a priori expectations for the coefficients are:

$\beta_1 > 0$; $\beta_2 < 0$; $\beta_3 < 0$; $\beta_4 > 0$.

This study employed secondary data collected from various sources including the Central Bank of Nigeria Statistical bulletin, 1996, 2012; CBN Annual report and statement of account (various issues); and the National Bureau of Statistics.

3.1. Testing for Stationarity

In order to avoid spurious results and conclusion draw thereto, it became imperative to ensure that the parameters are estimated using stationary time series data. In so doing, the Augmented Dikky-Fuller (ADF) test was used. The ADF test statistic outcome of the time series data for the period 1981-2012 shows that all-time series data are stationary at first difference at I percent level of significance as show in the table below.

Table 2: Augmented Dickey-Fuller test statistic

	t – statistic	Critical value 1%	Critical value 5%	Critical value 10%	Prob.
D(IGDP)	-6.582914	-3.670170	-2.621007	-2.621007	0.0000
D(MS)	7.269341	-3.711457	-2.981038	-2.629906	1.0000
D(INF)	-5.649064	-3.679322	-2.967767	-2.622989	0.0001
D(INT)	-8.675398	-3.670170	-2.963972	-2.621007	0.0000
D(EXR)	-5.225340	-3.670170	-2.963972	-2.621007	0.0002

3.2. Testing for Cointegration

We further seek to determine whether there exist long-run relationships among the variables of study. This study employed the Johansen co-integration test, this test identifies the number of long-run relationships that exist among the sets of integrated variables if any. The trace statistic tests the null hypotheses that there is at most r co-integrated equation. Therefore, non-acceptance of the null hypothesis means that there is at least r co-integration equation.

From the result of the trace test displayed in the table below, the trace test does not accept the null hypothesis if the trace statistic exceeds the critical values, otherwise, it accepts the null hypothesis that there is no co-integration equations. The trace test showed that the trace statistic of 104.7028 exceeds the critical value of 69.81889 at 5 percent confidence internal, hence we do not accept the null hypothesis and conclude that there is one co-integrating equation and therefore, a long-run relationship exists among the variables.

The eigenvalue test statistic also supported this claim of long-run relationship among the explained and the explanatory variables. In panel two in the table below, the maximum eigenvalue statistic of 61.66493 is greater than the critical value of 33.87687 at 5 percent confidence level, thus, indicating at least one co-integrating equation.

Table 3: Johansen Cointegration Test

Sample (adjusted): 1983 2012
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: IGDP MS EXR INF INT
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.871971	104.7028	69.81889	0.0000
At most 1	0.551869	43.03783	47.85613	0.1317
At most 2	0.348493	18.95776	29.79707	0.4959
At most 3	0.180352	6.103770	15.49471	0.6832
At most 4	0.004568	0.137352	3.841466	0.7109

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.871971	61.66493	33.87687	0.0000
At most 1	0.551869	24.08006	27.58434	0.1320
At most 2	0.348493	12.85399	21.13162	0.4657
At most 3	0.180352	5.966418	14.26460	0.6175
At most 4	0.004568	0.137352	3.841466	0.7109

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

3.3. Error Correction Model

The parsimonious error correction mechanism in the table below revealed that money supply both at current and lagged values significantly influence industrialization in Nigeria, while one year lag of interest rate and exchange rate respectively significantly influence industrialization in Nigeria at 5% critical level. The result also revealed that money supply (MS), interest rate (INT) inflation rate (INF) and exchange rate (EXR) explain 91 percent changes in industrialization in Nigeria as indicated by the coefficient of multiple determination adjusted R^2, with no indication of serial auto correction as suggests by DW of 1.62. The error correction coefficient was rightly signed and significant at 5 percent with 53 percent speed of adjustment to long-run equilibrium. See table below.

Table 4: Error Correction Model

Dependent Variable: D(IGDP)
Method: Least Squares
Sample (adjusted): 1985 2012
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	222804.4	133921.2	1.663698	0.1184
D(MS)	1.116163	0.251114	4.444853	0.0006
D(MS(-1))	-2.227599	0.280284	-7.947659	0.0000
D(MS(-2))	2.102598	0.562987	3.734716	0.0022
D(MS(-3))	-0.299229	0.368303	-0.812453	0.4301
D(INT)	-4318.061	21802.24	-0.198056	0.8458
D(INT(-2))	-62501.39	26115.64	-2.393255	0.0313
D(INT(-3))	-41247.88	24363.46	-1.693022	0.1126
D(INF)	-4316.606	5578.445	-0.773801	0.4519
D(INF(-3))	9605.133	6827.651	1.406799	0.1813
D(EXR)	5433.938	8307.480	0.654102	0.5236
D(EXR(-1))	17634.50	7937.555	2.221653	0.0433
D(EXR(-3))	-11187.44	6806.171	-1.643720	0.1225
ECM(-1)	-0.528059	0.221586	-2.383093	0.0319

R-squared	0.951517	Mean dependent var		562226.6
Adjusted R-squared	0.906496	S.D. dependent var		1491585.
S.E. of regression	456102.6	Akaike info criterion		29.20568
Sum squared resid	2.91E+12	Schwarz criterion		29.87178
Log likelihood	-394.8795	Hannan-Quinn criter.		29.40931
F-statistic	21.13525	Durbin-Watson stat		1.615425
Prob(F-statistic)	0.000001			

4. Conclusion

This study examines the impact of monetary policy on industrialization in Nigeria via import-substitution industrialization framework, findings in the study revealed that money supply exact tremendous pressure on industrial output (IGDP) in Nigeria and thereby does not collaborate Olanipekun and Akeju (2013). However, the results of this study strongly collaborates the new quantity theory of money (lead by Melton Friedman) preposition which suggests that money supply is directly proportionate to real national income. Thus, monetary policy variables as examined in this study exact immense impact on industrialization in Nigeria.

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