

Monetary Policy and the Manufacturing Sector in Nigeria

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Abstract

This study examines the impact of monetary policy variables on manufacturing in Nigeria from 1981 – 2012. The theoretical relationship between monetary policy variables and manufacturing sector (that is, the real sector) was critically examined and established in this study. Hence, the researcher specified four explanatory variables for this study based on theoretical underpinnings. The Johansen cointegration test was employed in order to establish long run equilibrium relationship between the explained and the explanatory variables. The error correction model (ECM) was employed to estimate the model. The study revealed that money supply and credit to private sector exert tremendous influence on manufacturing in Nigeria.

Keywords: Monetary policy, money supply, manufacturing and cointegration.

1.0 Introduction

Over the years, the use of both fiscal and monetary policies has been inextricable in the pursuit for achieving macroeconomic stability and economic growth in Nigeria. Although, monetary policy have appeared to be more flexible in terms of formulation and implementation; it is relatively easy to alter and apply its policy tools. Hence it has become fashionable tool (after the introduction of structural adjustment programme in 1986) for correcting short term macroeconomic maladjustments in Nigeria.

The central Bank of Nigeria (CBN) was established in 1959 with the main objective to regulate the money stock in Nigeria. This regulatory role of the CBN is anchored on the use of monetary policy. The major objective of monetary policy in Nigeria is to ensure price and monetary stability. This is mainly achieved by causing savers to avail investors of surplus funds for investment through appropriate interest rate structures; stemming wide fluctuations in the exchange rate of the naira; proper supervision of banks and related institutions to ensure financial sector soundness; maintenance of efficient payments system; applying deliberate policies to expand the scope of the financial system so that interior economies which are largely informal, are financially

included. Financial inclusion is particularly important in the sense that the larger it is, the larger is the interest rate sensitivity of production and aggregated demand and so the more effective monetary policy could be.

Before the introduction of the Structural Adjustment Programme (SAP) in 1986, monetary management in Nigeria relied heavily on the use of direct monetary instruments such as credit ceilings, selective credit controls, administered interest and exchange rate, cash reserve requirements and special deposits. The use of market-based instruments was not feasible because of the undeveloped nature of the financial markets and the deliberate restraint on interest rates.

Since the introduction of SAP, the monetary policy focus up till recent times have been aimed at fast tracking economic reforms with the objective of providing enabling financial system infrastructure and environment to support sustainable economic growth and price stability. Monetary policy instruments commonly used in recent times include the issuances of credit rationing guidelines, which primarily set the rates of change for the components and aggregate commercial bank loans and advances to the private sector. The sectoral allocation of bank credit in CBN guidelines was to stimulate the productive sectors and thereby stem inflationary pressures. The fixing of interest rates at relatively low levels was done mainly to promote investment and growth. Occasionally, special deposits were imposed to reduce the amount of free reserves and credit-creating capacity of the banks.

Monetary policy generally refers to the deliberate efforts of the government to use changes in money supply, cost of credit, size of credit and direction of credit to influence the level of economic activities to achieve desired macroeconomic stability in an economy (Chigbu and Okonkwo 2014[1]). According to Folawewo and Osinubi (2006[2]), monetary policy objectives for most economies include price stability, maintenance of balance of payment equilibrium, promotion of employment and output growth, and sustainable development.

With the achievement of price stability, the conditions in the financial market and institutions would create a high degree of confidence, such that the financial infrastructure of the economy is able to

meet the requirements of market participants. This is because it is only in a period of price stability that investors and consumers can interpret market signals correctly. In periods of high inflation, the investors' horizon is very short, and resources are diverted from long-term investments to those with immediate returns and inflation hedges, including real estate and currency speculation.

1.1 Objective of the study

The general objective of this study is to examine the effectiveness of monetary policy on manufacturing sector in Nigeria. However, the specific objectives include.

- (i) To determine the effect of monetary policy on manufacturing sector in Nigeria.
- (ii) To ascertain the long-run relationship between monetary policy and manufacturing sector in Nigeria.

1.2 Research Hypothesis

Ho: Monetary policy does not have significant impact on manufacturing sector in Nigeria.

2.1 Conceptual Framework

2.1.1 Monetary Policy

Monetary policy is the process by which the central bank or monetary authority controls money supply, availability of money and the cost of money or rate of interest. Monetary policy is used to attain set of objectives geared towards the growth and stability of the economy. These goals usually involve stable price and low unemployment. Monetary theory provides insight into how to craft optional monetary policy.

Monetary policy is a major economic stabilization weapon which involves measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy to achieve some specified macroeconomic policy objectives. That is, it is a deliberate effort by the monetary authority to control the money supply and credit conditions for the purpose of achieving certain broad economic objectives.

Johnson defines monetary policy "as a policy employing central bank's control of the supply of money as an instrument for achieving the objectives of general economic policy." Shaw (1977[3]) defines it as any conscious action undertaken by the monetary authorities to change the quantity, availability or cost of money. "In Nigeria, monetary policy is designed to attain price stability, balance of payment equilibrium and high rate of economic growth. The central Bank of Nigeria (CBN) ensures that the nation attains price stability and balance of payment equilibrium. Slavin (1991[4]) defines

monetary policy as the use of open market operations, changes in discount rate, change in reserve requirement and other measures available to the monetary authorities to control the rate of growth of money supply. He further notes that the goals of monetary policy are price stability, relatively full employment and satisfactory rate of economic growth.

Akpakpan (1994[5]) sees monetary policy measures as a deliberate action adopted by the government to regulate and control the supply of money so as to promote the achievement of national objectives. According to Umole (1985[6]) monetary policy is the control of supply of money as an instrument in achieving the objectives of general economic policy. He goes further to state that it is a policy which deals with the discretionary control of money supply by monetary authorities in order to achieve stated or desired economic goals. He points out that monetary policy involves measures which the government adopts using specific instruments to stimulate the economy so as to attain the desired objective which may include increased output in the industry, agriculture or other sector of the economy, employment generation, control of inflation, balance of payment and mobilization of savings.

Anyanwu (1993[7]) monetary policy is a government policy about money. It is a deliberate manipulation of cost, availability of money and credit by one government as a means of achieving the desired level of prices, employment, output and other economic objectives.

2.1.2 Objectives of Monetary Policy

The objectives of monetary policy refer to the ultimate macroeconomic goals which can change from time to time, depending on the economic fortunes of a particular country. In Nigeria, the federal government has regulated the volume, flow of price and direction of money towards the attainment of a number of objectives such objectives includes,

1. Maintenance of relative stability in domestic prices.
2. Attainment of a high rate of or full employment.
3. Achievement of a high, rapid and sustainable economic growth.
4. Maintenance of balance of payment equilibrium.
5. Exchange rate stability.
6. Expansion and diversification of the export base in order to restore a healthy balance of payment position.

2.1.3 Instruments of Monetary Policy

Monetary policy instruments can be broadly be classified into quantitative and qualitative instrument. The qualitative instruments are also known as selective tools of monetary policy. These tools are not directed towards the quality or use of credit, rather they are used for discriminating

between different uses of credit. Qualitative monetary policy instrument include. Special deposit, aggregate credit ceiling, deposit ceilings, exchange controls, restriction on the placement of public deposit and stabilization securities. On the other hand, quantitative instruments also known as indirect tools or general tools of monetary policy are related to the volume of money supply and are tools for credit control. These tools are indirect in nature are employed for influencing the quantity of credit in the economy. These indirect tools include: open market operations (OMO); cash reserve requirements, liquidity ratio, minimum rediscount rate and selective credit policy.

Open Market Operation (OMO): The major instrument of indirect monetary control in Nigeria is the OMO. The OMO was introduced at the end of June 1993 and is conducted wholly on Nigerian treasury bills (NTBS) including repurchase agreements. These operations involve the sale or purchase of government securities in the open market depending on whether the economy is inflationary or deflationary respectively. The effect is that when the monetary authorities sell securities to the market banks' reserves decline and when they buy banks' reserves increase. In this way open market operations reduce or enhance the banking system's ability to create credit and hence monetary control in an economy with well-developed money and capital markets.

Reserve Requirement (Reserve Ratio): The reserve requirement otherwise known as the reserve ratio can be manipulated by monetary authorities to reduce the ability of commercial banks to make loans to the public simply by increasing the ratio and enhancing their leading position by reducing the rate. In this connection reserve requirement is both an instrument for liquidity management and prudential regulation. The reserve requirements are cash reserve ratio while the former is computed as a proportion of the total deposit liabilities. The cash reserve requirement is a very important instrument and has been progressively increased from 6% in 1995 to 8% in 1997 and then to 12.5% in 2001. Reserve requirement is one of the most powerful instruments of monetary control, if it changes; the required reserve ratio changes the ratio by which the banking system can expand deposits through the multiplier effect. If the required reserve ratio increases it thereby reduces the liquidity position of the banking system. Cash reserve requirement was first used to reduce excess cash holding by commercial banks. The commercial banks were required to maintain a minimum cash deposit with the central bank ranging from 5% to 12% of their total demand deposit and time deposit on which they are paid interest rate below 2.5 percent.

Discount Rate: The discount rate is the rate of interest the monetary authorities or the central bank charge the commercial banks on loans extended to them. If the central bank wishes to increase liquidity and investment it reduces the discount rate. This

in turn, reduces the interest rate charged by commercial banks thus resulting in attractive borrowing or low cost of borrowing and hence expansion in liquidity and investment and vice versa.

Selective Credit Controls:

Selective credit controls or guidelines involve administrative order whereby the central bank, using guidelines, instructs banks on the cost and volume of credit to specified sectors. This selective credit control is an example of the use of monetary policy to influence directly the allocation of resources, indicating a lack of faith in the working of the free markets.

Moral Suasion: This involves the use of persuasive instructions to the commercial banks requesting them to cooperate in a particular direction for the realization of specified government objective(s). For example, the central bank or the government may appeal to the banks to exercise restraint in credit expansion by explaining to them how excessive expansion of credit might involve serious consequences for both the banking system and the economy as a whole.

2.1.4

IMPACT OF MONETARY POLICY ON THE ECONOMY

The sluggish recoveries from the past recessions suggest that monetary policy might have limited impact on economic activity. Ogwuma (1994[8]) accepts the idea that the most relevant criterion for assessing the impact on monetary policy on the Nigerian economy is the achievement of the ultimate target of economic policy. He concludes that the ultimate goals of macroeconomic stability and sustainable growth as so far remained elusive. Turning to the impact of monetary policy on the intermediate target variables, he notes that the relevant monetary aggregates have grown above the target set for them, the market interest rate remained high and that the naira exchange rate has depreciated almost persistently since the mid 1980s to date.

2.1.5 Factors Militating Against the Effectiveness of Monetary Policy in Nigeria

Fiscal dominance: The growing fiscal expansions with corresponding large fiscal deficits have militated against the efficacy of monetary policy in Nigeria. Government fiscal operations, especially the inflationary financing of large budgetary deficits and the monetization of deficits, have continued to pose serious challenges to monetary management.

Poor data quality: The poor data quality is a major constraint in the formulation of monetary policy in Nigeria. The lack of high frequency and reliable data renders econometric analysis difficult. Similarly, fiscal shocks give rise to parameter uncertainty which also undermines the setting of accurate targets.

Inefficient payments system: The instrument of payment in Nigeria is still predominantly cash based. The dominant use to cash for transactions increase the monetary base (high powered money), which renders monetary control difficult. Cash based payment system distorts the transmission mechanism of monetary policies.

Poor Banking Habits: Majority of Nigeria still prefer handling cash outside banks due to daily frequent challenges with the banks. These very poor banking habits make it difficult for the Central Bank of Nigeria to control such money outside the banking system.

2.2 Theoretical Review

In order to appreciate the role of money and monetary policy in the economy, it became necessary to review the varied changing views on monetary influence. These roles are achieved directly as well as indirectly through feedback for the economy. Generally, when the quantities of money supply changes in relative to money demand, there are changes in relative prices and wealth.

In Fisher's quantity theory of money, he stated that "the quantity of money is the main determinant of the price level, of the value of Money". Any change in the quantity of money produces an exactly proportionate change in the price level, that is, "as the quantity of money in circulation increases, the price level also increase in direct proportion and the value of money decreases and vice versa.

Living fisher further assumed that the rise in commodity prices would precede the increase in interest rate which was regarded as the main channel of firms operating costs. Also, the rise in commodity price would lead to an increase in the firm's profits followed by increase in investment, and then demand deposit. Increase in loan demand and money stock which lead to a greater increase in community prices, investment and profits. Since interest rate is regarded as part of the operating cost of production, excess reserve for lending would run-out and even faster than commodity prices thereby leading to a rise in the cost of production. This would in turn lead to a decline in investment and profit. In his equation of exchange, Fisher specified that:

$$MV=PT \dots\dots\dots (1)$$

Where:

M= actual money stock

V= the transaction velocity of circulation of money.

P= the average price level

T= the number of transaction made per the period. Fisher now imposes the assumption that the equilibrium values of V, (the velocity of money) and

T (the volume of transaction) will be fairly constant in the short-run and invariant with respect to changes in the quality of money.

Given this assumption, the equation (1) can now be re-written as:

$$\bar{M}\bar{V} = \bar{P}\bar{T} \dots\dots\dots (2)$$

Where bars (-) signify that V and T are constant. Given that m is exogenous, there must be proportional relationship in equilibrium between money supply (m) and the general piece level.

According to the Keynesian monetary transmission mechanism, given the assumption that the economy is at less than full employment equilibrium, the built-in-policy transmission mechanism works through the financial system to the real sector via interest rate thus, de-emphasizing the role of money direct impact on the real sector. If the economy is at an initially equilibrium and there is an open market purchase of government securities by the CBN, the open market operation will increase the commercial banks reserves (k) and raises the banks reserves earning asset ratio. The banks then operate to restores their equilibrium by extending new loans such new loans create new demand deposit, thus, increasing the money supply (M). Given the public liquidity preferences, a raising money supply causes the general level of interest rate (r) to decline. The falling interest rate will in turn, stimulate investment and expected profits expressed as the marginal efficiency of investment (MEI).

On the other hand, monetarists' opined that output is relatively fixed at the long run and price level is determined by the changes in the money stock. Friedman (1968[9]), asserted that inflation is always every-where a monetary phenomenon. Thus, price tends to rise when the rate of money stock is greater than the rate of real output of goods and services.

Monetary opined that people react by getting rid of the excess cash balances for transaction needs of different sectors within the economy and increase the purchase of goods and services for speculative purposes. Transactions in interest yielding assets affect the relative prices and interest rates. A fall in interest rate encourages investment spending. Therefore, the monetarist viewed money supply as a variable affecting income directly and also monetary policy is effective in regulating inflation by restricting money stock.

Post Keynesian stated that the cost of capital is the main process by which changes in money supply influence the real sector of the economy. The non-monetarists argued therefore, that monetary policy is not as effective as fiscal policy in determining total money spent in the economy. While the monetarists hold the strong view that:

- 1) Movement in the quality of money is the most reliable measures of monetary policy.
- 2) Monetary authorities can influence the movement in the business cycle and also in the money stock.
- 3) Emphasizing economic stabilization programmes, the change in the money supply are the main primary determinants of changes in total spending.
- 4) Monetary policy is transmitted to the real sector through relative prices which affect real sector and financial assets.

The above views had formed the basis for monetary policy formulation and implementation in the Nigeria economy in recent time.

2.3 Empirical review

Chigbu and Okonkwo (2014[1]) in their work “monetary policy and Nigeria’s quest for import substitution industrialization” using the error correction mechanism came to the conclusion that money supply exact tremendous pressure on industrial output in Nigeria, thus, collaborating the monetarists proposition which suggest that money supply is directly proportionate to real output.

Gertler and Gilchrist (1994[10]) examined movements in sales inventories, and short-term debt for small and large manufacturing firms, confirmed that the effects of monetary policy changes on small-firm variables are greater when the sector as a whole is growing more slowly.

Olorunfemi and Dotun (2008[11]) examined the impact of monetary policy on the economic performance of Nigeria using simple regression. The study found out that there was a negative relationship between interest rate and GDP on the one hand and inflation and GDP on the other. The study did not disaggregate the impact of monetary policy on the various sectors of the economy like the industrial sector.

Ahuja (2011[12]) explained that monetary policy is valid only for a highly monetized economy. Thus, if the economy is not highly monetized, the efficacy of monetary policy is restricted, for instance, in an undeveloped economy where a large proportion of output is produced in a subsistence sector would be independent of money supply. Hence, monetary policy therefore, would not be a better tool to manage a developing economy like Nigeria.

Olanipekun and Akeju (2013[13]), 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[2]) 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[14]) 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.

3.0 Methodology

3.1 Data sources

This study employed secondary data collected from the following sources; Central bank of Nigeria’s statistical bulletin (various issues including 1999, 2006 and 2012 editions); National bureau of statistics’ statistical fact sheets; CBN’s annual reports (various editions); www.economywatch.com; www.knoema.com; and indexmundi.com. The data series sourced therefrom and used in this study include: Industry contributions to GDP (IGDP), Broad Money Supply (MS), Inflation (INF), Interest rate (INT) and total credit to private sector (CPS).

3.2 Model Specification

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 propositions, manufacturing sector is proxied by industrial GDP (IGDP), expressed as a function of money supply (MS), interest rate (INT), inflation rate (INF) and credit to private sector (CPS). Thus, $IGDP = f(MS, INT, INF, CPS)$

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

Where IGDP = Industry contribution to nation income (GDP)

INT = Interest rate

INF = Inflation

CP = Credit to private sector
MS = Broad Money supply
 μ = Error term
t = Time trend

The a priori expectations for the coefficients are:
 $\beta_1 > 0$; $\beta_2 < 0$; $\beta_3 < 0$; $\beta_4 > 0$.

4.0 Results and Discussion of Findings

4.1 Stationarity Test

In testing the time series properties of the data for this study, the Augmented Dickey-Fuller test statistic was used to test for stationarity of the data. The ADF test statistic revealed that all-time series data are stationary at first difference at 5 percent level of significance. See table 4.1 in the appendix .

4.2 Cointegration Test

Having confirmed that the variables are not stationary at levels, it became imperative that the data series are tested for to determine whether there exist long-run equilibrium relationships among the variables under stud. In this study, the Johansen cointegration test is employed. The trace statistic tests the null hypothesis that there is at most r cointegrating equations. 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 cointegrating equations.

From the result of the trace test displayed in the table 4.2 in the appendix, the trace statistic of 144.8036 and 70.18927 exceed the critical values of 69.81889 and 47.85613 respectively at 5 percent confidence interval, hence we do not accept the null hypothesis and conclude that there are two cointegrating equations and therefore, a long run relationship exist among the variables.

The eigenvalue test statistic also supported this claim of long-run relationship among the explained and explanatory variables. In panel two in the table 4.2, the maximum eigenvalue statistic of 74.61430, 40.95688 and 21.21738 are greater than the critical values of 33.87687, 27.58434 and 21.13162 respectively at 5 percent confidence interval, thus, indicating three cointegrating equations.

4.3. Error Correction Model

The parsimonious error correction mechanism in the table 4.3 in the appendix, revealed that money supply both at current and lagged values significantly influence manufacturing in Nigeria at 1 percent critical value, thus supporting the result of OLS as shown in table 4.4. Also total credit to private sector at lag 2 and 3 (CPS (-2) and CPS (-3))significantly

influence manufacturing in Nigeria at 1 percent critical value, while interest rate and inflation do not influence manufacturing in Nigeria.

The parsimonious error correction model also revealed a very high coefficient of multiple determination, adjusted R² of 91 percent indicating that the model is of good-fit and as such desirable with no indication of autocorrelation as suggested by Durbin Watson statistic of 1.92. The joint test as indicated by the F-statistic revealed that all explanatory variables included in the model jointly influence manufacturing in Nigeria at 1 percent critical value.

5. Conclusion

This study examines the impact of monetary policy on manufacturing in Nigeria. Findings in the study revealed that money supply (MS) and credit to private sector (CPS) exert tremendous pressure on manufacturing, thus collaborating Chigbu and Okonkwo (2014[1]) and further collaborating the new quantity theory of money's preposition that money supply is directly proportionate to real output. Thus, monetary policy variables as examined in this study exert immense impact on industrialization in Nigeria.

5.1 Recommendations

Based on the tremendous influence of money supply on availability of credit and on aggregate demand in the economy it becomes expedient that the CBN should pay more attention on the money stock in order to manipulate it for desirable outcomes.

The monetary authority should avoid policy inconsistencies to enable long term business planning and investment by manufacturers in Nigeria.

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Appendix

Table 4.1: Augmented Dickey-Fuller test statistic

	t- statistic	Critical value 1%	Critical value 5%	Critical value 10%	Prob.	Decision
IGDP	-6.582914	-3.670170	-2.963972	-2.621007	0.0000	I(1)
MS	7.269341	-3.711457	-2.981038	-2.629906	1.0000	I(1)
INT	-8.675398	-3.670170	-2.963972	-2.621007	0.0000	I(1)
INF	-5.649064	-3.679322	-2.967767	-2.622989	0.0001	I(1)
CPS	3.430901	-3.699871	-2.976263	-2.627420	1.0000	I(1)

Table 4.2: Johansen Cointegration Test

Sample (adjusted): 1983 2012				
Included observations: 30 after adjustments				
Trend assumption: Linear deterministic trend				
Series: IGDP MS INF INT CPS				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
<hr/>				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
<hr/>				
None *	0.916853	144.8036	69.81889	0.0000
At most 1 *	0.744678	70.18927	47.85613	0.0001
At most 2	0.507000	29.23239	29.79707	0.0580
At most 3	0.219149	8.015008	15.49471	0.4638
At most 4	0.019601	0.593865	3.841466	0.4409
<hr/>				
Trace test indicates 2 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)				
<hr/>				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
<hr/>				
None *	0.916853	74.61430	33.87687	0.0000
At most 1 *	0.744678	40.95688	27.58434	0.0006

At most 2 *	0.507000	21.21738	21.13162	0.0486
At most 3	0.219149	7.421144	14.26460	0.4406
At most 4	0.019601	0.593865	3.841466	0.4409

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Table 4.3: Error Correction Model

Dependent Variable: D(IGDP)				
Method: Least Squares				
Date: 12/11/14 Time: 00:12				
Sample (adjusted): 1985 2012				
Included observations: 28 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	256514.0	127497.7	2.011911	0.0586
D(INT(-2))	-20591.35	25773.87	-0.798923	0.4342
D(INT(-3))	-28806.85	25645.36	-1.123277	0.2753
D(INF(-2))	4358.971	5945.988	0.733095	0.4724
D(MS)	1.613257	0.248505	6.491859	0.0000
D(MS(-1))	-2.661699	0.301586	-8.825669	0.0000
D(CPS(-2))	3.829735	0.442680	8.651254	0.0000
D(CPS(-3))	-2.137404	0.362226	-5.900755	0.0000
ECM(-1)	-0.068232	0.132821	-0.513718	0.6134
R-squared	0.909774	Mean dependent var	562226.6	
Adjusted R-squared	0.871784	S.D. dependent var	1491585.	
S.E. of regression	534095.8	Akaike info criterion	29.46963	
Sum squared resid	5.42E+12	Schwarz criterion	29.89784	
Log likelihood	-403.5748	Hannan-Quinn criter.	29.60054	
F-statistic	23.94775	Durbin-Watson stat	1.922808	
Prob(F-statistic)	0.000000			

Table 4.3.1: OLS RESULT

Dependent Variable: IGDP				
Method: Least Squares				
Date: 12/10/14 Time: 23:17				
Sample: 1981 2012				
Included observations: 32				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	296565.6	907482.4	0.326800	0.7463
MS	1.575671	0.390844	4.031454	0.0004
INF	-10643.81	15017.47	-0.708762	0.4845
INT	38257.36	51740.29	0.739411	0.4660
CPS	-0.544125	0.425539	-1.278673	0.2119
R-squared	0.930918	Mean dependent var	3675897.	
Adjusted R-squared	R-0.920684	S.D. dependent var	4810328.	

squared			
S.E. of regression	1354740.	Akaike info criterion	31.21872
Sum squared resid	4.96E+13	Schwarz criterion	31.44774
Log likelihood	-494.4995	Hannan-Quinn criter.	31.29463
F-statistic	90.95999	Durbin-Watson stat	1.361632
Prob(F-statistic)	0.000000		