The Impact of Fiscal Policy on the Performance of the Manufacturing Sector in Nigeria

Arikpo Oka Felix 1*, Ogar Anthony 2 and Cornelius M. Ojong 3

1. Department of Banking and Finance, Faculty of Management Sciences, University of Calabar, Calabar, Nigeria.
2. Department of Banking and Finance, Faculty of Management Sciences, University of Calabar, Calabar, Nigeria.
3. Department of Banking and Finance, Faculty of Management Sciences, University of Calabar, Calabar, Nigeria.

This study examined the impact of fiscal policy on the performance of the manufacturing sector in Nigeria. The study was specifically meant to assess the extent to which government revenue and expenditure impact on the manufacturing output in Nigeria. To achieve these objectives, relevant literatures were reviewed. An ex-post facto research design was adopted for the study. Time series data were collected from the CBN statistical Bulletin using the desk survey method from 1982 to 2014. The data were analyzed using the ordinary least square multiple regression statistical technique. Result from the analyses revealed that increases in government revenue reduce manufacturing sector output in Nigeria. Finally, Government should increase it expenditure on infrastructural development and community services as this will have a multiplier effect on manufacturing activities and enhance economic growth in Nigeria.

Keywords: Fiscal Policy; Taxation; Expenditure; Manufacturing Sector; Government Revenue; Manufacturing Output

INTRODUCTION

The need to achieve improved balance of payments position, balanced industrial development, high employment level, increased productivity, equitable income distribution, high revenue sources, price stability and economic growth has necessitated the development of various macroeconomic policies. Macroeconomic policies suggest the combination of government fiscal and monetary policies. It incorporates all policy frameworks geared at achieving a sound, stable and vibrant economy. Fiscal policy as a tool for macroeconomic management has been defined as a purposeful use of government revenue (majorly from taxes) and expenditure to manipulate the level of economic activities in a country (Akpapan, 1994). It can also

*Corresponding author: Arikpo, Oka Felix,
Department of Banking and Finance, Faculty of Management Sciences, University of Calabar, Calabar, Nigeria.
E-Mail: arikpookafelix@yahoo.com
be conceived as part of government policy relating to rising of revenue through taxation and other means and choosing on the level and pattern of expenditure for the purpose of manipulating economic activities or achieving some needed macroeconomic goals.

The implementation of fiscal policy is essentially routed through government's budget. Budget as a fiscal policy tool could be conceived as a structure that balances the changes in government revenue against expenditure over a period of time. It is a comprehensive financial plan, setting forth the expected route for achieving the financial and operational goals of a country (Meigs & Meigs, 2004).

The intent of fiscal policy is to stimulate economic and social development by pursuing a policy stance that ensures a sense of balance between taxation, expenditure and borrowing that is consistent with sustainable growth. Macroeconomic policies (fiscal and monetary) are indispensable tools that can be used to lessen short-run fluctuations in output and employment (Oke, 2013). They have been recognized in policy debates by both developed and developing economies as potent apparatus in the hands of policy makers for handling macroeconomic issues like high unemployment, inadequate national savings, excessive budget deficits, and large public debt burdens.

The role of fiscal policy on the output and capacity utilization of the industry sector cannot be overemphasized. Fiscal policy drives the market for the manufacturing sector through the purposeful manipulation of government revenue and expenditure. When government is pursuing an expansionary policy, it reduces taxation and increases expenditure and the purchasing power of the economic units which in turns expands the market for manufactured products. This in turn sends a signal to the manufacturers to increase their productive capacity to take opportunity of the increase market demand. The reverse holds when a contractionary policy is being pursued. Fiscal policy also provides the legal, social and economic framework required for a profitable operation.

The Manufacturing sector could be conceived as any economic unit that processes or creates new commodities through the transformation of raw materials or semi finished goods (Eze & Ogiji, 2013). Adebayo (2010) conceived manufacturing sector as those industries which are involved in the manufacturing and processing of items and which indulge or give free rein in either the creation of new commodities or in value addition. Manufacturing plays a vigorous role in the economic transformation of any nation, whether developed or developing. In Nigeria, Loto, (2012) refers to manufacturing sector as an avenue for increasing productivity in relation to import replacement and export expansion, creating foreign exchange earning capacity, raising employment and per capita income which causes unrepeatable consumption pattern. It occupies a leading position in promoting productivity, investment, import substitution, export expansion, employment and per capita income at a faster rate than any other sector (Shebeb, 2002). It provides wider and more efficient linkage among different sectors.

In spite of these numerous roles played by the manufacturing sector, scholars believe that the high interest rate on lending, poor...
theoretical framework, section three handles the research methodology. Section four shall present the empirical data for analyses and testing and finally, in section five the entire findings in the research process shall be summarized, conclusions drawn which will then lead us to making appropriate recommendations.

THEORETICAL FRAMEWORK

This study is specifically meant to assess the impact of government revenue and government expenditure on manufacturing output. To provide structural backing to the empirical investigation, the study reviews the savers-spenders theory and the managerial theory of the firm. However, the study is anchored on the managerial theory of the firm.

Managerial Theory of the Firm

Managerial theory of the firm was propounded by Bumole (1967) as cited in Eze & Ogiji, (2013) in his research paper titled Business Behaviour, value and growth. The theory believes that for any economy to grow faster through industrialization, the country needs to increase its public expenditure so as to facilitate the developmental processes of the economy. It emphasizes that a firm’s decisions whether to grow or not depends on the level of fiscal policy because the firm grows through government expenditure on industrialization. In other words, government expenditure triggers industrial productivity. Furthermore, the theory states that the reason why managers are hired is for revenue maximization and not for profit maximization. This is the theory on which this study is based.

The Savers-Spenders Theory

Savers-Spenders theory of fiscal policy was propounded by Mankiw (2000). It has three propositions that cover government revenue, expenditure and debt. The first proposition states that temporary tax changes have large effects on the demand for goods and services, meaning that alterations in tax rate charged on tax payers reduces or increases their income and consumption. In other words, higher tax rates reduce spenders’ take-home pay (income) while lower tax rate or refunds increases spenders’ incomes. This in effect implies that the purchasing power of spenders is affected by the rate of tax imposed on their income at any particular point in time (Eze & Ogiji, 2013).

The second proposition believes that government expenditure crowds out capital in the long-run. By this, the theory implies that extra consumption reduces investment, which in turn raises marginal product of capital and as well decrease the level of employment and output. It is also of the opinion that higher interest rate margin, induces savers to save more. The implication of this proposition is that extra consumption and higher interest rate margin reduce investment which in turn reduces the level of output and employment (Eze & Ogiji, 2013).

The third proposition states that government debt increases steady-state inequality. This means that a higher level of debt means a higher level of taxation to pay interest on debt. The tax will fall on both the savers and the spenders but the interest will only fall on savers (Eze & Ogiji, 2013). The implication of this is that a higher level of debt raises the income and consumption of the savers and lowers the abet income and consumption of the spenders.

Empirical Review

Several empirical works have been conducted on fiscal policy and its interrelationship with the real sector performance. This study therefore reviews some of this works.

Ajayi (2008) in a study of the collapse of Nigeria’s manufacturing sector on economic growth, used cross-sectional research design and found out that the main cause of collapse in the Nigerian manufacturing sector is low implementation of Nigerian budgets especially in the area of infrastructure. This means that low implementation of fiscal policy affects the level of growth in Nigerian manufacturing sector.

Charles (2012) investigated the performance of monetary policy on manufacturing sector in Nigeria, using econometrics test procedures. The result indicates that money supply positively affect manufacturing index performance while company lending rate, income tax rate, inflation rate and exchange rate negatively affect the performance of manufacturing sector.
This means that monetary policy is vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth. The gap in this study is that the authors did not identify those factors that measure manufacturing sector performance like capacity utilization (output) and manufacturing share in GDP (input).

Dickson (2007) critically examined the recent trends and patterns in Nigeria’s industrial development using descriptive study. The study indicates that the bulk of manufacturing industry in Nigeria is concentrated in the southern part of the country and that the spatial pattern could change if industrialists adopt the strategy of industrial linkage. This finding did not support any school of thought as it suggests that the policy on privatisation of industries in Nigeria should be enhanced.

Loto (2012) examined the relationship between global economic meltdown and the manufacturing sector performance in the Nigerian economy using descriptive analysis and pooled data. The result indicates that the global economic meltdown has insignificant effect on the manufacturing sector of the Nigerian economy. These empirical findings support previous literature on economic growth but it failed to use t-test or statistics in testing pre and post global economic meltdown which is research gap.

Ogbole, Sonny and Isaac (2011) focused on the comparative analysis of the impact of fiscal policy on economic activities in Nigeria during regulation and deregulation, using the econometric methods of co-integration and error correction model. The study indicates that there is a difference in the effectiveness of fiscal policy in stimulating economic growth during and after regulation period. They recommend that government fiscal policy should refocus and redirect government expenditure towards production of goods and services so as to enhance GDP growth. This study fails to determine the contribution of fiscal policy on the economy during and after regulation.

Omitogun and Ayinla (2007) attempt to establish whether there is a link between fiscal policy and economic growth in Nigeria using the Solow growth model estimated with the use of ordinary least square (OLS) method. It was found that fiscal policy has not been effective in the area of promoting sustainable economic growth in Nigeria. This finding did not agree with the Keynesian theory which is anchored on the need for an active policy to sustain economic growth. This is a research gap on the factors capable of hampering the effectiveness of fiscal policy.

Peter and Simeon (2011) adopted vector auto regression (VAR) and error correction mechanism techniques to ascertain impact of fiscal policy variables on Nigerian economic growth between 1970 and 2009. The study revealed that there is a long-run relationship between fiscal policy variables and economic growth in Nigeria. Nevertheless, the research fails to consider other variables, such as interest rate, exchange rate, in defining fiscal policy and its influence on economic growth.

Rasheed (2010) investigated the productivity in the Nigerian manufacturing subsector using co-integration and an error correction model. The study indicates the presence of a long-run equilibrium relationship index for manufacturing production, determinants of productivity, economic growth, interest rate spread, bank credit to the manufacturing subsector, inflation rates, foreign direct investment, exchange rate and quantity of graduate employment. This finding has research gap on the area of factors that affect manufacturing sector in Nigeria.

Rina, Tony and Lukytawati (2010) examined the impact of fiscal and monetary policy on industry and growth of economy in Indonesian using the computable general equilibrium (CGE) model. It was found that fiscal and monetary policy have a positive impact on Indonesian macroeconomic performance in terms of change in GDP, investment, consumption and capital rate of return. This finding has research gap on the model used. This is because computable general equilibrium model is not a good model for correlation.

Sangosanya (2011) used panel regression analysis model and gibrat’s law of proportionate effect in investigating firm’s growth dynamics in Nigerian manufacturing industry. The study observed that the manufacturing firms finance mix, utilization of assets to generate more sales, abundance of funds reserve and government policies are significant determinants of manufacturing industry growth in Nigeria. The gap in this study is that the authors did not
identify those environmental factors that affect the manufacturing sector and the implementation of fiscal policy.

Sikiru and Umaru (2011) studied the causal link between fiscal policy and economic growth in Nigeria, using Engle-Granger approach and error correction models which was estimated to take care of short-run dynamic. The result indicates that productive expenditure positively impacted on economic growth during the period covered. They also fail to confirm the other element in the link whereby fiscal policy should be more strongly associated with output and input measures in the economy.

Tomola, Adebisi and Olawale (2012) employed co-integration and vector error correction model (VECM) techniques to determine the link between bank lending, economic growth and manufacturing sector in Nigeria. The finding of the study revealed that manufacturing capacity utilization and bank lending rates significantly affect manufacturing output in Nigeria. This means that the growth of manufacturing output has not been enough to generate sizeable growth in the economy. The study has research gap in terms of not identifying relationship between manufacturing sector performance and economic growth in Nigeria.

**Conceptual Review**

Peter and Simeon (2011) define fiscal policy as the process of government management of the economy through the manipulation of its income and expenditure and to achieve certain desired macroeconomic objectives. Central Bank of Nigeria (2011) defined fiscal policy as the use of government expenditure and revenue collection through tax and amount of government spending to influence the economy. Samuelson and Nordhaus (2002) defined fiscal policy as a government’s program with respect to the purchase of goods and services and spending on the transfer of payments, as well the amount and type of taxes.

In finance, fiscal policy is the use of government revenue collection (taxation) and expenditure (spending) to influence the economy. The two main instruments of fiscal policy are government taxation and expenditure. Changes in the level and composition of taxation and government spending can affect aggregate demand and the level of economic activity; the pattern of resource allocation; and the distribution of income (David, 2005; Mark and Asmaa, 2009; Chirag, 2010). This implies that Fiscal policy refers to use of the government budget to influence economic activities.

Geoff (2012) contended that fiscal policy involves the use of government spending, taxation and borrowing to affect the level and growth of aggregate demand, output and jobs creation. It is the government spending policies that influence macroeconomic conditions. These policies affect tax rates, interest rates and government spending, in an effort to control the economy. Fiscal policy is the means by which a government adjusts its levels of spending in order to monitor and influence a nation’s economy.

Various researchers have submitted that fiscal policy goals include the following: increasing employment opportunities; attaining full employment; stabilization of domestic prices; promoting economic growth and development through industrialization; achieving equity in income redistribution; achieving stable exchange rate; and increasing the rate of investment in the country (Anyanwu, 2004, Omitogun and Ayinla, 2007, Abeng 2009, CBN, 2010 and Ogbole, Sonny and Isaac (2011). Again, Afam, 2012) maintained that fiscal policy is the aspect of government policy dealing with the raising of revenue through taxation and other sources and deciding on the level and pattern of expenditure for the aim of influencing economic activities. Judging from the above definitions, fiscal policy can be seen as the government policy used to achieve full employment, stability of price level, sustainable economic growth and external balance and its instrument is the main instrument used in achieving macroeconomic targets.

Nigeria for the past decades has maintained large fiscal policy measures in other to influence economic growth and activities. But the pertinent question is: has fiscal policy instrument stabilized the growth rate of manufacturing sector through its contribution to GDP? The general aim of the study is to investigate how fiscal policy affects the manufacturing sector and to further examine how this policy relate to manufacturing sector output and performance. Also, the effects of fiscal policy on capacity utilization are discussed.
Types of Fiscal Policy

The government has control over both taxes and government spending. When the government uses fiscal policy to increase the amount of money available to the populace, this is called expansionary fiscal policy. Expansionary fiscal policy is generally used to contract the negative economic effects of a recession or cyclical downturn in the economy (a decline in Real Gross Domestic Product (RGDP) and rising unemployment. The purpose of the policy is to stimulate the economy by increasing aggregate demand. Three policy options are used, they include: an increase in government spending, tax reduction (which increases consumer spending); or a combination of an increase in government spending and tax reduction. Walstad and Bingham (1996) opined that these policy actions will create a budget deficit if the budget was in balance before the policy actions were taken.

When the government uses fiscal policy to decrease the amount of money available to the populace, this is called contractionary fiscal policy. Contractionary policy is a restrictive form of fiscal policy that is generally used to control demand-pull inflation. The purpose of this policy is to reduce aggregate demand pressures that increase the price level. Three policy options are used: a decrease in government spending increase taxes which reduces consumer spending, or a combination of a reduction in government spending and a tax increase. Walstad and Bingham (1996) observed that if the government budget is balanced before the policy actions are taken, it will create a budget surplus.

There is another way to interpret the terms expansionary and contractionary when discussing fiscal policy. If we look at the effects of fiscal policy on the economy as a whole rather than on the individual, we see that expansionary fiscal policy increases the output or National income while contractionary fiscal policy decreases output or national income.

RESEARCH METHODOLOGY

Research Design

The study combined the exploratory design and the ex-post facto design to collect and analyze the data for this study. The exploratory design was used to access the relevant theories and literature as well as some empirical bases that provided the structure on which the study lied. The ex-post facto design on the other hand, was applied to collect the data on the study’s variables, analyze and test them.

The data in this study consist mainly of secondary time series data for the period 1982 to 2014; sourced from the Central Bank of Nigeria (CBN) Statistical Bulletins, Journals, the internet and other related publications.

Techniques of Data Analysis

The analytical and interpretational tools employed comprise simple statistical as well as comparative analyses using tables (charts) representative and arithmetic percentages where necessary. The ordinary least square multiple regression analytical technique and its interpretation was employed. The adoption of this technique is justified by its feature as the best linear unbiased estimate. For the purpose of this study, the functional and econometric models will be specified as follows:

\[ \text{MANO} = f (\text{GREV, GEXP}) \]

Which leads to an ordinary least square model formulation thus;

\[ \text{MANO} = a_0 + b_1 \text{GREV} + b_2 \text{GEXP} + e_t \]

Where:

- \( a_0 \) = Regression Constant.
- \( b_1 \) & \( b_2 \) = Regression Parameters
- \( e_t \) = Stochastic Error Term.

RESULTS

Data Presentation

The data collected on government revenue, expenditure and manufacturing sector output is presented in table 1 below:

TABLE 1 HERE
Analysis of Data and Test of Hypotheses

The above data were keyed into E-views 9 and computed with the ordinary least squared technique. The result is presented in table 4.2 below:

**TABLE 2 HERE**

From table 2, when government revenue and expenditure are held constant, manufacturing sector output was N 2.44 billion. In other words, when government fiscal policy was held constant, manufacturers only produced N 2.45 billion worth of goods. Also, table 2 showed an inverse relationship between government revenue and the output of the manufacturing sector. This is as theoretically expected, a one per cent increase in government (tax) revenue led to a 0.11 per cent increase in the output of the manufacturing sector. Furthermore, table 2 showed a positive relationship between government expenditure and the output of the manufacturing sector in Nigeria. This is also in line with economic theories, a one per cent rise in government expenditure results in an expansion of manufacturing sector output by 0.63 per cent.

The goodness of fit of model as indicated by their adjusted $R^2$ and adjusted $R^2$ values of 0.9377 or 93.77 per cent and 0.9336 or 93.36 per cent indicates that the model fits the data well. Specifically, the $R^2$ adjusted value of 93.36 per cent indicates that the total variation in the observed behaviour of manufacturing sector output in Nigeria is jointly explained by the variations in government revenue and government expenditure up to 93.36 per cent, the remaining 6.64 per cent is accounted for by the stochastic error term. The overall significance of the model was also tested using the ANOVA or f-statistics. Here the high significance of the $f$-statistics value of 225.9981 confirmed that the high explanatory power of the model did not occur by chance, it actually confirmed that the model fitted the data well.

The individual statistical significance of the parameters of the respective, independent variables was also tested. The result obtained showed that the government revenue was not statistically significant, since the calculated $t$-statistics value of 0.6126 was found to be less than the table $t$-statistics value of 2.040 at 5 per cent significant level. The result also showed that government expenditure is statistically significant. This is due to the fact that the $t$-calculate value of 3.015 is greater than the $t$-tabulated value of 2.040 at 5 per cent level.

To test for auto correlation in the residuals of the model we compared the reported DW statistics value with the table DW-statistics value. From the result obtained the D-W value of 1.04 fell within the negative autocorrelation region of the DW table. It therefore means that the model is not free from serial correlation problem. In effect, caution must be taken in the application of the findings of this study for policy formulation.

**Test of Hypotheses**

**Hypothesis one**

$H_0$: There is no significant relationship between government revenue and manufacturing sector output in Nigeria.

$H_1$: There is a significant relationship between government revenue and manufacturing sector output in Nigeria.

**Decision Rule**

Accept $H_0$: if calculated $t$-statistics value < table $t$-statistics value.

Reject $H_0$: if calculated $t$-statistics value > table $t$-statistics value.

From the regression result,

Calculated $t$-statistics value = 0.6126

Table $t$-statistics value = 2.040

Since the calculated $t$-statistics value of 0.6126 is less than the table $t$-statistics value of 2.040 at 5 per cent significant level, we reject the alternative hypothesis and accept the null hypothesis. It therefore means that there is no significant relationship between government revenue and manufacturing sector output in Nigeria.

**Hypothesis 2**

$H_0$: There is no significant relationship between government expenditure and manufacturing sector output in Nigeria.

$H_1$: There is a significant relationship between government expenditure and manufacturing sector output in Nigeria.

**Decision Rule**
Accept $H_0$: if calculated t-statistics value < table t-statistics value.
Reject $H_0$: if calculated t-statistics value > table t-statistics value.

From the regression result,
Calculated t-statistics value = 3.015
Table t-statistics value = 2.040

Since the calculated t-statistics value of 3.015 is greater than the table t-statistics value of 2.040 at 5 per cent level of significance, we reject the null hypothesis and accept the alternative hypothesis. It therefore means that there is a significant relationship between government expenditure and manufacturing sector output in Nigeria.

**DISCUSSION OF FINDINGS**

This study examined the impact of government revenue and expenditure on the performance of the manufacturing sector in Nigeria. According to the findings of the above analysis, government revenue had an inverse and insignificant relationship with the manufacturing sector output. This finding is in agreement with economic theory. An increase in government tax revenue reduces the disposable income and purchasing power of the people which affect the demand for the products of the manufacturing firms, their income and productivity. Additionally, increase tax charge on manufacturing profits reduces their ability to increase productivity. This finding has been supported by Mankiw (2000) who held that temporary tax changes have large effects on the demand for goods and services, implying that higher tax rates reduce spenders’ take-home pay (income) while lower tax rate or refunds increases spenders’ incomes.

The study also revealed that government expenditure had a positive and significant relationship with manufacturing sector output in Nigeria. By this finding, government expenditure puts funds in the hands of the people and businesses alike to increase their demand for goods and services and productive capacity. Furthermore, when government spends on infrastructure and social amenities, it opens up the environment for effective product distributions, hence enhancing the rate of turnover of businesses. This finding is in agreement with the managerial theory of the firm suggested by Bumole (1967). The theory believes that expansion in government expenditure triggers industrialization. Also supporting this finding is Ayinla (2007) who examined the link between fiscal policy and economic growth and concluded that government expenditure among other fiscal policy instruments is the most vibrant variable in explaining economic activities.

**Summary of Findings**

This study examined the impact of fiscal policy on manufacturing performance in Nigeria. The study adopted the Ordinary Least Square (OLS) multiple regression technique to assess the impact of government revenue and expenditure on the manufacturing sector output in Nigeria. The following major findings were made

(i) There is an inverse and insignificant relationship between government revenue and manufacturing sector output in Nigeria.

(ii) There is a positive and significant relationship between government expenditure and the output of the manufacturing sector in Nigeria.

**CONCLUSION**

This study examined the impact of fiscal policy on the performance of the manufacturing sector in Nigeria. From the analysis, it was discovered that increases in government revenue reduces insignificantly manufacturing sector output in Nigeria. Again, increases in government expenditure increases significantly manufacturing sector output in Nigeria. Relying on these findings, the study concluded that the growth of the manufacturing sector in Nigeria is strongly linked to fiscal policy performance of government. In other words, fiscal policy is the most essential variable that drives the growth of the manufacturing sector in Nigeria. Hence the following recommendations were made:

(i) Government should reduce enhance its revenue base by diversifying its revenue sources, this will provide sufficient revenue to run government activities and enhance manufacturing performance in the long run.
(ii) Manufacturing operators should always be encouraged through the granting of tax holidays and rebates, subsidizing of manufacturing inputs and the formulation of policies to promote manufacturing activities in Nigeria.

(iii) Government should increase its expenditure on infrastructural development and community services as this will have a multiplier effect on manufacturing activities and enhance economic growth in Nigeria.

REFERENCES


OKE, M. O. (2013). Budget implementation and economic growth in Nigeria. Developing *Country Studies*, 3(13), 1-7


### APPENDIX

**TABLE 1**

Data used for the study
<table>
<thead>
<tr>
<th>YEAR</th>
<th>M5O</th>
<th>GREV</th>
<th>GEXP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>36.73</td>
<td>11.43</td>
<td>11.92</td>
</tr>
<tr>
<td>1983</td>
<td>42.31</td>
<td>10.51</td>
<td>9.64</td>
</tr>
<tr>
<td>1984</td>
<td>38.4</td>
<td>11.25</td>
<td>9.93</td>
</tr>
<tr>
<td>1985</td>
<td>47.18</td>
<td>15.05</td>
<td>13.04</td>
</tr>
<tr>
<td>1986</td>
<td>32.03</td>
<td>12.6</td>
<td>16.22</td>
</tr>
<tr>
<td>1987</td>
<td>46.43</td>
<td>25.38</td>
<td>22.02</td>
</tr>
<tr>
<td>1988</td>
<td>61.2</td>
<td>27.6</td>
<td>27.8</td>
</tr>
<tr>
<td>1989</td>
<td>77.2</td>
<td>53.9</td>
<td>41</td>
</tr>
<tr>
<td>1990</td>
<td>40.8</td>
<td>98.1</td>
<td>60.3</td>
</tr>
<tr>
<td>1991</td>
<td>98.6</td>
<td>101</td>
<td>66.6</td>
</tr>
<tr>
<td>1992</td>
<td>144.4</td>
<td>190.5</td>
<td>92.8</td>
</tr>
<tr>
<td>1993</td>
<td>165.9</td>
<td>192.8</td>
<td>191.2</td>
</tr>
<tr>
<td>1994</td>
<td>219.9</td>
<td>201.9</td>
<td>160.9</td>
</tr>
<tr>
<td>1995</td>
<td>295.8</td>
<td>460</td>
<td>248.8</td>
</tr>
<tr>
<td>1996</td>
<td>350.6</td>
<td>523.6</td>
<td>337.2</td>
</tr>
<tr>
<td>1997</td>
<td>382.6</td>
<td>582.8</td>
<td>428.2</td>
</tr>
<tr>
<td>1998</td>
<td>395.8</td>
<td>463.6</td>
<td>487.1</td>
</tr>
<tr>
<td>1999</td>
<td>426.2</td>
<td>949.2</td>
<td>947.7</td>
</tr>
<tr>
<td>2000</td>
<td>468</td>
<td>1906.2</td>
<td>701.1</td>
</tr>
<tr>
<td>2001</td>
<td>535.8</td>
<td>2231.6</td>
<td>1018</td>
</tr>
<tr>
<td>2002</td>
<td>507.8</td>
<td>1731.8</td>
<td>1018.2</td>
</tr>
<tr>
<td>2003</td>
<td>465.8</td>
<td>2575.1</td>
<td>1226</td>
</tr>
<tr>
<td>2004</td>
<td>349.3</td>
<td>3920.5</td>
<td>1426.2</td>
</tr>
<tr>
<td>2005</td>
<td>408.4</td>
<td>5547.5</td>
<td>1822.1</td>
</tr>
<tr>
<td>2006</td>
<td>478.5</td>
<td>5965.1</td>
<td>1938</td>
</tr>
<tr>
<td>2007</td>
<td>520.9</td>
<td>5715.6</td>
<td>2450.9</td>
</tr>
<tr>
<td>2008</td>
<td>585.6</td>
<td>7866.6</td>
<td>3240.8</td>
</tr>
<tr>
<td>2009</td>
<td>612.3</td>
<td>4844.6</td>
<td>3453</td>
</tr>
<tr>
<td>2010</td>
<td>643.1</td>
<td>7303.7</td>
<td>4194.6</td>
</tr>
<tr>
<td>2011</td>
<td>694.8</td>
<td>11116.8</td>
<td>4712.1</td>
</tr>
<tr>
<td>2012</td>
<td>761.5</td>
<td>10654.7</td>
<td>4605.4</td>
</tr>
<tr>
<td>2013</td>
<td>823.9</td>
<td>9759.8</td>
<td>5185.3</td>
</tr>
<tr>
<td>2014</td>
<td>868.5</td>
<td>10068.85</td>
<td>4578.06</td>
</tr>
</tbody>
</table>


**TABLE 2**

Regression result

**Dependent variable: LMSO**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
</table>

21
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.449369</td>
<td>0.155229</td>
<td>15.77905</td>
<td>0.0000</td>
</tr>
<tr>
<td>LGREV</td>
<td>-0.113329</td>
<td>0.185008</td>
<td>-0.612559</td>
<td>0.5448</td>
</tr>
<tr>
<td>LGEXP</td>
<td>0.632959</td>
<td>0.209931</td>
<td>3.015074</td>
<td>0.0052</td>
</tr>
</tbody>
</table>

R-squared: 0.937759  
Adjusted R-squared: 0.933609  
F-statistic: 225.998  
Durbin-Watson stat: 1.041996  
Prob(F-statistic): 0.000000

Source: E-views 9 computation, 2016.

**Table 3: Regression Result**

Dependent Variable: LMSO  
Method: Least Squares  
Date: 10/13/16  Time: 21:03  
Sample: 1982 2014  
Included observations: 33