Review of the Impact of Bank and Market Based Financial Structure on Economic Growth in Nigeria

Nwanne T. F. I.
Godfrey Okoye University, Enugu,P.M.B. 01014, Enugu, Nigeria

Nwambeke, G. C.
Ebonyi State University, Abakaliki.

Abstract
The study reviewed the impact of bank and market based financial structure on economic growth in Nigeria for the period 1990-2012. The objectives of the study were to determine the impact of bank-based financial structure, market-based financial structure and total financial services on economic growth. The study used “Expost-facto” research design. Ordinary Least Square Regression model was used in data analysis. The study finds that market-based financial structure has negative and insignificant impact on economic growth while bank-based financial structure and total financial services have positive and significant impact on economic growth. The implication of the finding is that the Nigerian financial structure is bank-based and not market-based. It also implies that total financial service is significant to economic growth; hence, financial structure classification is irrelevant. It was recommended that efforts should be intensified to ensure greater provision of total financial services to the domestic economy. Efforts should be geared towards revamping the Nigerian Capital Market activities as a way of encouraging its contribution to economic growth.

Keywords: Market size, Bank activity, AK growth theory, Total financial services

1. Introduction
Over the past three decades, economic literatures have come up with contrasting views on the growth effect of financial structure. These contrasting views can be examined on the basis of bank-based financial structure, market-based financial structure (Gerschenkron, 1962) and financial services structure (Merton and Bodie, 1995; Levine, 1997). The debate centers on which type of financial structure better influences economic growth. Most studies on financial structure and economic growth have been focused on developed economies and as such have classified Japan and Germany as bank-based economies while United Kingdom and United States of America are market-based economies.

Beck (2000) defined financial structure as the mixture of financial instruments, markets and institutions operating in an economy. It implies that financial structure measures the degree to which the financial system of a country is intermediary (bank) based or market based. Therefore, financial structure is expected to change as economies of countries grow. The taxonomy of Gerschenkron (1962) which classified financial structure on the basis of bank-based and market-based financial structure viewed financial structure as having substitution effect and expressed the impact of each financial structure on economic growth as being independent of the other. He argued that banks can finance development and economic growth more effectively than the markets in developing economies. Singh (1997) cited in Michael (2001) states that bank-based financial structure are in a better position to solve the problem of moral hazard, agency problems and information asymmetries. An economy is said to be bank-based when greater proportion of aggregate financial services is provided by the banks. Bank-based financial structure is measured by bank activity (Bank credit to private sector/GDP). This is the most robust measure of intermediation and it reflects the resource allocation that is channeled to investment that will lead to economic growth (Onwumere, Onudugo and Ino, 2013; Padawassou, 2013).

The market-based financial structure argue that big, liquid and well-functioning markets foster growth and profit incentives; enhance corporate governance and facilitate risk management (Levine, 2002; Beck and Levine, 2002 in Augustine, Otaru, Ijeoma and Ahmed, 2012). Boyd and Smith (1998) cited in Augustine et al, (2012) noted that financial structure changes as countries go through different stages of development; hence, countries become more market-based as growth and development proceeds. An economy is said to be market-based when greater proportion of the aggregate financial services has been provided by the market financial structure. Market financial structure is measured by market capitalization/GDP (Market size). Market capitalization is the share price times the number of shares outstanding. This measure reflects the overall market value of the listed equities in the stock exchange (World Bank and OECD National Data file, 2013). The assumption is that market size is positively correlated with the ability to mobilize capital and diversity risk on economy-wide basis.

The financial services view developed by Merton and Bodie (1995) and Levine (1997) de-emphasized the mode of delivery of financial services but emphasized the creation of a better functioning banks and markets.
It means that both banks and market do not compete but co-exist to reduce different cost in transaction and information in the financial system (Demirguc-kunt and Levine, 2001; Levine, 1997). Total financial structure is defined as the ratio of market-based financial structure to bank-based financial structure. In line with other related studies, Onwumere et al., (2013); Augustine et al., (2012); Guha Deb and Mukherjee (2008), Nigeria’s gross domestic product per capita is used as index of economic growth. The GDP per capita captures penetration of goods and services that are produced in the country that directly go into the lives of ordinary Nigerians (Onwumere et al., 2013).

Okagbue and Aliko (2005) observed that the Nigerian financial sectors have passed through series of reform programmes ranging from regulation, deregulation, bank capitalization, bank recapitalization, bank consolidation and bank capitalization through merger and acquisition. A total of $3billion was raised by the banks from domestic capital market while about $625million of foreign direct investment was attracted into the Nigerian Banking System (Anne and Kelvin, 2011). The Market financial structure indicates that the market capitalization grew from N1.36trillion in 2003 to N13.29trillion in 2007 and dropped to as low as N12.40trillion in 2012 (CBN Statistical Bulletin 50th Anniversary Edition). The value of transactions grew to N437billion in 2010 and dropped to N317.33billion in 2012. The Bank financial structure indicates that bank credit to private sector/GDP grew from 13% in 2002 to 38.6% in 2009 and reduced to 21.1% in 2011. Gross Domestic product per capita was US$322(12.8% GDP growth rate) in 1990, US$646(33.7% GDP growth rate) in 2004, US$1,437(7.8% GDP growth rate) in 2010 and increased to US$1,555(6.5% GDP growth rate) in 2012 (World Bank and OECD Data File, 2013). The total financial services structure represents the ratio of market financial structure to bank financial structure (Padawassou, 2013). Total financial services ratio increased from 0.45% in 1988 to 1.13% in 1995 and 2.06% in 2007 before it fell drastically to 0.79% in 2011 (World Bank Data file, 2013). Empirical studies on financial structure and economic growth in developing countries are scanty (David and Caiman, 2013). This study tends to contribute to the ongoing debate by determining the impact of financial structure (banks and stock market) on economic growth in Nigeria.

The wide spread acceptance of the relevance of finance to economic growth have motivated researchers to study different aspects of finance-growth nexus; part of which is the question “Does financial structure influence economic growth? Empirical literature have shown that financial structure changes as countries go through different stages of development; and as such countries financial structure become more market based as growth and development proceeds. The Nigerian financial sector as observed by Okagbue and Aliko (2005) has passed through different stages of financial reforms and development but there are still doubts as to the growth effect of market financial structure on growth. This doubt is heightened by the persistent decline in the market capitalization (market size) which is an index for measuring market financial structure. Market size is expected to have positive relationship with economic growth.

Bank based financial structure holds the view that banks are in a better position to finance development and economic growth more effectively than the markets in developing economies. Banks as financial intermediaries drive growth by issuing bank credit to the non-financial private sector for investment that will lead to economic growth. Unfortunately, the volume of bank credit to the private sector which reflects resource allocation channelled to investment that will lead to economic growth have declined significantly over the years. Total financial services view financial structure classification as irrelevant, meaning that what drives economic growth is the overall financial services provided by both the banks and the markets. Therefore, both banks and markets play complementary role in financial services delivery at reduced information and transaction costs. However, the persistent decrease in the value of total financial services provided by the financial markets and institutions has become a source of worry to many on the growth potentials of total financial services.

The objectives of the study were to determine the impact of deposit money bank credit to private sector/GDP on economic growth in Nigeria, to determine the impact of market capitalization/GDP on economic growth in Nigeria and to determine the impact of total financial services on economic growth in Nigeria.

2. Review of Related Literature

2.1 Theoretical Framework

The theoretical framework for the study is the Endogenous “AK” Growth theory. The Endogenous “Ak” Growth theory offered by Pagano (1993) captures the potential effects of financial development on growth and expresses aggregate output (economic growth) as a linear function of aggregate capital stock (Y = Akt). The theory assumes that financial intermediaries (Bank and Securities Market) could affect growth through three channels namely: Channeling of savings to firms for investment, improving the allocation of capital and rate of saving.

* Savings Channeled to Firms for Investment: This assumption believes that in the process of transforming savings into investment; the financial intermediaries absorb leakages of resources as a reward for services supplied. These resources absorbed go back to banks as spread between lending and borrowing rates, and to securities brokers and dealers as commission and fees (Pagano, 1993). This implies that financial development reduces leakages of resources thereby increasing savings channeled to investment and economic
Improving the Allocation of Capital (Changing Productivity of Capital): This assumption believes that financial intermediaries increases the productivity of capital (A), thereby promoting economic growth in two ways: collecting information to evaluate alternative projects, and inducing individuals to invest in riskier but more productive technologies by providing risk sharing (Pagano, 1993). This implies that financial intermediaries are in a better position to allocate savings more efficiently and higher productivity of capital results in higher growth. Levine (1991) and Greenwood and Jovanovic (1990) state that banks and securities market buffer individual and firms idiosyncratic shocks (liquidity shocks and diversifiable risk arising from the volatility of asset-return) by selling shares on stock market. This implies that stock market raises the productivity of investments and growth rate (g).

Savings Rate: This assumption believes that financial development can affect growth by altering savings rate(s). Financial intermediaries exist to mobilize savings from surplus to deficit units for investment thereby fostering economic growth.

The “AK” growth theory assumes that only one type of good is produced with capital as the only input factor. Mathematically:
\[ Y_t = A_k t \]  
Where; \( Y_t \) = Output in time t produced by Capital Stock (k) in time t,
\( K_t \) = Capital Stock in time t,
\( A \) = Capital Productivity.

This implies that capital stock in time \( t + 1 \) is given as:
\[ K_t = I_t + (1-d) K_{t-1} \]  
Where; \( d \) = Rate of capital depreciation,
\( I \) = Investment.

It means that if a given fixed fraction (s) of output (Y) is saved and there is fixed rate of capital depreciation (d), the rate of aggregate net investment will be:
\[ \frac{dk}{dt} = S(Y) - dk \]  
This implies that the growth rate (g) is driven by savings rate,
\[ g = \frac{1}{l} \frac{dy}{dt} = \frac{1}{l} \frac{dk}{dt} = SA - d \]  
One of the greatest shortfalls of Endogenous “Ak” growth theory is that it assumes away the effect of population growth and technological changes by stating that economic growth rate is driven by capital accumulation only (Pagano, 1993 and Onwumere et al., 2013).

2.2 Empirical Review
Augustine, Otaru, Ijeoma and Ahmed (2012) carried out a study on financial structure and economic growth in Nigeria for the period 1992-2008. Time Series Multiple Linear Regression was used to estimate the net effect of financial structure (Bank-based, market-based, financial services, and legal-based views) on economic growth (Gross Domestic Product per Capita). Government Expenditure/GDP and Gross Capital Formation/GDP were used as control variables. The study finds that Bank-based and legal-based views of financial structure were positive but insignificant in promoting economic growth. The coefficients of market and financial service were negative and insignificant. The implication of the finding is that the overall level and quality of financial services as determined by the legal system promotes efficient allocation of resources and economic growth. Thus any legal system that promotes investors right and ensures compliance to contract enforcements promotes economic growth. The study recommended adequate supervision and regulation of the financial intermediaries to ensure financial stability, increase effective functioning of the financial system and reduce the problem of asymmetric information.

Onwumere, Onudugo and Imo (2013) studied the impact of financial structure on economic growth in Nigeria for the period 1988-2011. The study adopted “Expost-facto” research design and classified financial structure into three namely: the banking sector, market sector and insurance sector. Their findings indicate that bank financial structure exerted more influence on growth than market financial structure while insurance financial structure had no significant impact on economic growth. The implication of the finding is that the confidence level of investors on the ability of the capital market to provide the much needed liquidity has not yet been achieved. They however recommended that government should provide enabling environment that will ensure that financial sector compete favourably.

Padawassou (2013) investigated whether financial structure affects economic growth using evidence from African countries (Cote d’Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Namibia, South Africa, Swaziland, Tunisia, and Zimbabwe). Time series data and method was applied using dynamic Heterogeneous panel due to cross-country heterogeneity in the dynamics of financial structure and growth. The investigation was for the period 1988-2009. The variables used were per capita GDP (Dependent variable), other independent variables were per capita output, per capita stock and financial structure. The study revealed that Cote d’Ivoire,
policies should be put in place to encourage growth of per Capita GDP.

variables on economic growth (Real GDP). Unrestricted Error Correction Model (UECM) and Autoregressive economic growth in some selected ECOWAS countries (Nigeria, Sierra-Leone, Ghana and Gambia) for the period 1976-2008. The study developed macroeconomic variable that incorporated banking and market sector variables on economic growth (Real GDP). Unrestricted Error Correction Model (UECM) and Autoregressive Distributed lag (ARDL) bound test were the techniques of analysis used to investigate the existence of co-integration among variables. The findings indicate that Nigeria and Ghana operate a market-based financial structure while Gambia and Sierra-Leone operate a bank-based financial structure. The implication is that integration among variables was estimated using Johansen and Juselius (1990) maximum likelihood procedure while Vector Error Correction Model (ECM) was used to estimate the short-run relationship. The study finds that financial market structure has negative and significant effect on economic growth. The implication of the finding is that there is low level of development of the country’s financial sector. It was recommended that appropriate policies should be put in place to encourage growth of per Capita GDP.

David and Cainan (2013) carried out a study on market and bank-based financial structure on economic growth in some selected ECOWAS countries (Nigeria, Sierra-Leone, Ghana and Gambia) for the period 1976-2008. The study developed macroeconomic variable that incorporated banking and market sector variables on economic growth (Real GDP). Unrestricted Error Correction Model (UECM) and Autoregressive Distributed lag (ARDL) bound test were the techniques of analysis used to investigate the existence of co-integration among variables. The findings indicate that Nigeria and Ghana operate a market-based financial structure while Gambia and Sierra-Leone operate a bank-based financial structure. The implication is that financial structure matter for long-run economic growth of these countries. It was recommended that improving the provision of stock market and banks boost long-run economic growth.

Augustine and Otaru (2011) examined the impact of legal based financial structure and long-run growth using evidence from Nigeria for the period 1992-2008. Time series General Method of Movement (GMM) regression was used to estimate the models. The growth rate in GDP per capita was used as the dependent variable while the independent variable were the country’s legal codes (Creditors right and enforcement). The control variables were gross capital formation/GDP and government expenditure/GDP. The study finds that the components of legal based financial structure are negative and non-significant in promoting economic growth in Nigeria. The implication is that the legal codes in developing countries are either poorly developed and where they exist; they are not implemented hence impacting negatively on contract execution and enforcement. It was recommended that policy makers should strengthen the legal system in enforcing contracts.

2.3 Knowledge gap in Literature

From available literature reviewed, emphasis had been on impact of financial structure on economic in developed countries and aggregation of developing countries while little attention has been given to individual country studies. More so, where there exist a country specific study, only an aspect of the contrasting views of the effects of financial structure on economic growth will be discussed. This study attempts to close the research gap by reviewing the impact of bank and market financial structure on economic growth using endogenous “AK” growth model.

3. Methodology

The study adopts the “Ex-post Facto” research design because it is based on past event and as such is not susceptible to manipulations (Onwumere, 2005). Data were generated from secondary sources (CBN Statistical Bulletin, OECD and World Bank Data File). The period of study (1990-2012) selected was based on data availability. The choice of our model is based on theoretical perspective of finance-growth relationship which states that financial development influences growth. Furthermore, the model is anchored on endogenous “AK” growth theory which states that economic growth is driven by capital accumulation. It implies that economic growth is a function of aggregate financial structure.

\[ Y_t = f(\text{AFSt}) - - - (5) \]

Where; \( Y_t = \) Economic growth at time t, \( \text{AFSt} = \) Aggregate financial structure at time t. The model was expanded to capture all the indicators of financial structure. Thus:

Where; \( \text{GDP/GR} = \) Gross Domestic Product per Capita (Dependent variable)

\( \text{BSc/GDP} = \) Deposit Money Bank Credit to the private sector as percentage of GDP,

\( \text{MKT/GDP} = \) Market Capitalization as percentage of GDP,

\( \text{TFSR} = \) Total financial structure measured as the ratio of market capitalization/GDP to Banking sector credit/GDP.

Our model estimation captures the fact that financial structure directly accounts for total factor productivity. Unit Root Test evaluated by Augmented Dickey Fuller (ADF) Test was used to determine the stationarity of the research variables. Multiple Regression (Ordinary Least Square Technique) was used to determine the impact of financial structure on economic growth in Nigeria. Decision rule on significance is based on the sign and size of the t-statistics.
4. Discussion of Results

The Unit root test result in Appendix (1) indicates that all the variables are stationary in first differencing and it is said to be integrated of the order I[1]. Hence, the regression is not spurious.

Appendix (2) shows our OLS regression result. The market–based financial structure had negative and insignificant impact on economic growth at 5% confidence level. The value of t-statistics is \(-0.6309\). The implication is that the Nigerian economy is not market-based. It suggests that Nigerian capital market is not developed and perhaps the possibility of maximizing returns on equity investment may be low. The negative and insignificant impact of capital market on economic growth may be as a result of possible fears that a repeat of equity market crash might reoccur.

Bank-based financial structure had significant positive impact on economic growth in Nigeria. The value of t-statistics is 3.1185. The implication is that Nigerian financial structure is bank-based. It suggests that series of banking sector reforms have contributed to economic growth in Nigeria and as well strengthened intermediation functions of banks. It implies that financial market that are more effective in mobilizing savings from several agents can have strong positive effects on economic growth by boosting capital formation and improving economic growth.

Total financial structure with t-value of 1.5130 had significant positive impact on economic growth. The implication is that the mixture of aggregate financial services in the financial market is significant to economic growth. This result suggests that classification of financial structure may be for regulatory reasons since financial structure appear to be irrelevant and complementary in functions.

5. Conclusion and Recommendation

5.1 Conclusion

The study focused on impact of financial structure on economic growth in Nigeria. The paper concludes that what matters for economic growth is the financial services provided by the total financial structure and not the classification of the financial structure. The results have also highlighted that bank-based financial structure impacts more on economic growth than market-based structure. In order words, market and bank-based financial structures play complementary role. Further studies should be concentrated on efficiency of financial structure and economic growth.

5.2 Recommendations

The study recommends as follows:

i. That efforts should be intensified on policies to encourage greater provision of total financial services with emphasis on reduction of transaction cost and information asymmetry in the financial system. It is through reduction of these costs that banks can ease savings mobilization and thereby boost economic growth.

ii. That all obstacles that could undermine the growth of bank credit to the domestic economy should be removed. In essence, policies to free Deposit Money Banks from non-performing loan should be encouraged as a way to enhance their ability to extend credit to the domestic economy.

iii. That endogenous “Ak” growth model should be expanded to capture or explore how population growth and technological innovations affects interaction between financial markets and economic growth.

iv. That policy directives should be geared towards revamping Nigerian capital market activities as a way of encouraging its contribution to economic growth.

References


Method: Least Squares 
Date: 01/25/14   Time: 13:17 
Sample: 1990 2012 
Included observations: 23

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-592.8205</td>
<td>354.0534</td>
<td>-1.674382</td>
<td>0.1104</td>
</tr>
<tr>
<td>MKT_GDP</td>
<td>-13.06827</td>
<td>20.71355</td>
<td>-0.630905</td>
<td>0.5356</td>
</tr>
<tr>
<td>BSC_GDP</td>
<td>53.66442</td>
<td>17.20853</td>
<td>3.118478</td>
<td>0.0057</td>
</tr>
<tr>
<td>TFSR</td>
<td>636.2629</td>
<td>420.5303</td>
<td>1.513001</td>
<td>0.1467</td>
</tr>
</tbody>
</table>

R-squared 0.688006     Mean dependent var 649.0000
Adjusted R-squared 0.638744     S.D. dependent var 475.5293
S.E. of regression 285.8147     Akaike info criterion 14.30534
Sum squared resid 1552111.     Schwarz criterion 14.50281
Log likelihood -160.5114     Hannan-Quinn criter. 14.35500
F-statistic 13.96623     Durbin-Watson stat 0.979296
Prob(F-statistic) 0.000048

Source: E-view 7.0

Null Hypothesis: D(GDP) has a unit root 
Exogenous: Constant 
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

<table>
<thead>
<tr>
<th>Augmented Dickey-Fuller test statistic</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5.868330</td>
<td>0.0001</td>
<td></td>
</tr>
</tbody>
</table>

Test critical values: 1% level -3.788030 5% level -3.012363 10% level -2.646119


Augmented Dickey-Fuller Test Equation 
Dependent Variable: D(GDP,2) 
Method: Least Squares 
Date: 01/25/14   Time: 13:26 
Sample (adjusted): 1992 2012 
Included observations: 21 after adjustments

<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>D(GDP(-1))</td>
<td>-1.274312</td>
<td>0.217151</td>
<td>-5.868330</td>
<td>0.0000</td>
</tr>
<tr>
<td>C</td>
<td>76.09724</td>
<td>30.77993</td>
<td>2.472301</td>
<td>0.0230</td>
</tr>
</tbody>
</table>

R-squared 0.644443     Mean dependent var 4.857143
Adjusted R-squared 0.625730     S.D. dependent var 211.8703
S.E. of regression 129.6173     Akaike info criterion 12.65744
Sum squared resid 3192111.     Schwarz criterion 12.75692
Log likelihood -130.2931     Hannan-Quinn criter. 12.67903
F-statistic 34.43729     Durbin-Watson stat 1.902446
Prob(F-statistic) 0.000012
Null Hypothesis: D(BSC_GDP) has a unit root  
Exogenous: Constant  
Lag Length: 2 (Automatic - based on SIC, maxlag=4)

<table>
<thead>
<tr>
<th>Test</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
<td>-4.919064</td>
<td>0.0010</td>
</tr>
</tbody>
</table>

Test critical values:  
1% level  -3.831511  
5% level  -3.029970  
10% level  -2.655194

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation  
Dependent Variable: D(BSC_GDP,2)  
Method: Least Squares  
Date: 01/25/14   Time: 13:28  
Sample (adjusted): 1994 2012  
Included observations: 19 after adjustments

<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>D(BSC_GDP(-1))</td>
<td>-1.878666</td>
<td>0.381915</td>
<td>-4.919064</td>
<td>0.0002</td>
</tr>
<tr>
<td>D(BSC_GDP(-1),2)</td>
<td>0.983161</td>
<td>0.311148</td>
<td>3.159791</td>
<td>0.0065</td>
</tr>
<tr>
<td>D(BSC_GDP(-2),2)</td>
<td>0.881921</td>
<td>0.272119</td>
<td>3.240937</td>
<td>0.0055</td>
</tr>
<tr>
<td>C</td>
<td>1.970022</td>
<td>1.043676</td>
<td>1.887580</td>
<td>0.0786</td>
</tr>
</tbody>
</table>

R-squared 0.654010  Mean dependent var 0.103158  
Adjusted R-squared 0.584812  S.D. dependent var 6.367135  
S.E. of regression 4.102671  Akaike info criterion 5.845817  
Sum squared resid 252.4786  Schwarz criterion 6.044646  
Log likelihood -51.53526  Hannan-Quinn criter. 5.879467  
F-statistic 9.451272  Durbin-Watson stat 1.796586  
Prob(F-statistic) 0.000943
Null Hypothesis: D(MKT_GDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

<table>
<thead>
<tr>
<th></th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
<td>-6.347917</td>
<td>0.0000</td>
</tr>
<tr>
<td>Test critical values:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1% level</td>
<td>-3.788030</td>
<td></td>
</tr>
<tr>
<td>5% level</td>
<td>-3.012363</td>
<td></td>
</tr>
<tr>
<td>10% level</td>
<td>-2.646119</td>
<td></td>
</tr>
</tbody>
</table>


Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKT_GDP,2)
Method: Least Squares
Date: 01/25/14   Time: 13:30
Sample (adjusted): 1992 2012
Included observations: 21 after adjustments

<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>D(MKT_GDP(-1))</td>
<td>-1.358849</td>
<td>0.214062</td>
<td>-6.347917</td>
<td>0.0000</td>
</tr>
<tr>
<td>C</td>
<td>0.744703</td>
<td>2.062835</td>
<td>0.361010</td>
<td>0.7221</td>
</tr>
</tbody>
</table>

R-squared 0.679574 Mean dependent var -0.021429
Adjusted R-squared 0.662709 S.D. dependent var 16.24903
S.E. of regression 9.436906 Akaike info criterion 7.417526
Sum squared resid 1692.049 Schwarz criterion 7.517005
Log likelihood 75.88403 Hannan-Quinn criter. 7.439116
F-statistic 40.29605 Durbin-Watson stat 2.246954
Prob(F-statistic) 0.000004
Null Hypothesis: \( D(TFSR) \) has a unit root  
Exogenous: Constant  
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

<table>
<thead>
<tr>
<th>Augmented Dickey-Fuller test statistic</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5.054081</td>
<td>0.0006</td>
<td></td>
</tr>
</tbody>
</table>

Test critical values:  
1% level -3.788030  
5% level -3.012363  
10% level -2.646119


Dependent Variable: \( D(TFSR,2) \)  
Method: Least Squares  
Date: 01/25/14   Time: 13:33  
Sample (adjusted): 1992 2012  
Included observations: 21 after adjustments

<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>( D(TFSR(-1)) )</td>
<td>-1.141567</td>
<td>0.225870</td>
<td>-5.054081</td>
<td>0.0001</td>
</tr>
<tr>
<td>( C )</td>
<td>0.011672</td>
<td>0.091181</td>
<td>0.128014</td>
<td>0.8995</td>
</tr>
</tbody>
</table>

R-squared 0.573453  
Adjusted R-squared 0.551003  
S.E. of regression 0.417226  
Log likelihood -10.39016  
F-statistic 25.54374  
Prob(F-statistic) 0.000070

Source: E-view 7.0
<table>
<thead>
<tr>
<th>YR</th>
<th>GDP(US$)</th>
<th>MKT/GDP</th>
<th>BSC/GDP</th>
<th>TFSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>322</td>
<td>4.81</td>
<td>9.4</td>
<td>0.51</td>
</tr>
<tr>
<td>1991</td>
<td>279</td>
<td>6.88</td>
<td>9.4</td>
<td>0.73</td>
</tr>
<tr>
<td>1992</td>
<td>291</td>
<td>3.73</td>
<td>12</td>
<td>0.31</td>
</tr>
<tr>
<td>1993</td>
<td>153</td>
<td>4.82</td>
<td>9.1</td>
<td>0.53</td>
</tr>
<tr>
<td>1994</td>
<td>171</td>
<td>11.45</td>
<td>11.5</td>
<td>0.99</td>
</tr>
<tr>
<td>1995</td>
<td>263</td>
<td>7.23</td>
<td>10.2</td>
<td>0.71</td>
</tr>
<tr>
<td>1996</td>
<td>315</td>
<td>10.09</td>
<td>8.9</td>
<td>1.13</td>
</tr>
<tr>
<td>1997</td>
<td>314</td>
<td>10.06</td>
<td>10.6</td>
<td>0.95</td>
</tr>
<tr>
<td>1998</td>
<td>274</td>
<td>8.98</td>
<td>12.9</td>
<td>0.7</td>
</tr>
<tr>
<td>1999</td>
<td>299</td>
<td>8.45</td>
<td>13.9</td>
<td>0.61</td>
</tr>
<tr>
<td>2000</td>
<td>378</td>
<td>9.21</td>
<td>12.5</td>
<td>0.74</td>
</tr>
<tr>
<td>2001</td>
<td>350</td>
<td>11.26</td>
<td>15.2</td>
<td>0.74</td>
</tr>
<tr>
<td>2002</td>
<td>457</td>
<td>9.71</td>
<td>13</td>
<td>0.75</td>
</tr>
<tr>
<td>2003</td>
<td>510</td>
<td>14.03</td>
<td>13.8</td>
<td>1.02</td>
</tr>
<tr>
<td>2004</td>
<td>646</td>
<td>16.47</td>
<td>13.1</td>
<td>1.26</td>
</tr>
<tr>
<td>2005</td>
<td>804</td>
<td>17.24</td>
<td>13.2</td>
<td>1.31</td>
</tr>
<tr>
<td>2006</td>
<td>1015</td>
<td>22.35</td>
<td>13.2</td>
<td>1.69</td>
</tr>
<tr>
<td>2007</td>
<td>1131</td>
<td>52.04</td>
<td>25.3</td>
<td>2.06</td>
</tr>
<tr>
<td>2008</td>
<td>1376</td>
<td>24.05</td>
<td>33.9</td>
<td>0.71</td>
</tr>
<tr>
<td>2009</td>
<td>1091</td>
<td>19.77</td>
<td>38.6</td>
<td>0.51</td>
</tr>
<tr>
<td>2010</td>
<td>1437</td>
<td>25.85</td>
<td>24.9</td>
<td>1.04</td>
</tr>
<tr>
<td>2011</td>
<td>1496</td>
<td>16.65</td>
<td>21.1</td>
<td>0.97</td>
</tr>
<tr>
<td>2012</td>
<td>1555</td>
<td>18.27</td>
<td>20.16</td>
<td>0.91</td>
</tr>
</tbody>
</table>

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage: http://www.iiste.org

**CALL FOR JOURNAL PAPERS**

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: [http://www.iiste.org/journals/](http://www.iiste.org/journals/) All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

**MORE RESOURCES**


**IISTE Knowledge Sharing Partners**

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar