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RESEARCH ARTICLE

IMPACT OF GLOBAL FINANCIAL CRISIS ON THE NIGERIAN STOCK MARKET PERFORMANCE (2008-2016)

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ABSTRACT

The study examined impact of global financial crisis on the Nigerian stock market performance from 2008 to 2016. The study used three independent variables (foreign exchange rate, foreign direct investment on the Nigerian stock market and foreign reserves) and one dependent variable (stock market capitalization). Test carried out include unit root test and ordinary least square. The study revealed that: foreign exchange rate has no significant impact on the Nigerian stock market performance; foreign direct investments on stocks have positive but insignificant impact on the Nigerian stock market performance and foreign reserves have negative but insignificant impact on the Nigerian stock market performance. Based on the findings, the study recommends that, government and regulatory authorities should implement policies to improve the declining market capitalization by encouraging more foreign investors to participate and invest in the market. This is because capital inflow and market capitalization are positively related.

INTRODUCTION

Since after the great depression of the last century, the world economy has been facing financial crisis, the recent one started in the United State of America. In July 2007, global credit market came to a standstill due to the crisis in the United State of America's mortgage industry which manifested itself better in the year 2008. United State of America with an estimated GDP of \$14 trillion contributes about 25% of world output and has the largest industrial complex, if it contracts by 1% this implies a direct output loss of approximately \$14 billion which is equivalent to the GDP of Pakistan, the 47th largest economy in the world (Abdul, 2009). Sanda (2009) explains that the factor behind the global financial crisis was the slump in the United States mortgage industry. In August 2007 when the United State of America housing market began to show signs of distress, many house owners in America had been unable to service their mortgage loans, causing a wave of repossessions by mortgage institutions from the loan beneficiaries that defaulted on loan repayments. Another effect was the credit crunch, as many mortgage and financial institutions became unwilling to extend credit. Thus, the slump in the United State housing market and the concomitant credit crunch sent shock waves to the rest of the American economy and through the contagion, to the rest of the world. This is not to suggest that the current global financial crisis was caused exclusively by the strains in the housing market in the United State of America and the growing imbalances.

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There are also many different views on the causes of the crisis, complex financial innovations that made concerted efforts to conceal default risks, weak oversight and regulatory functions and possibly sheer greed manifested blind pursuit of profit and utter disregard for the underlying risks. Some analysts have traced the cause of the global financial crisis to the regime of easy credit in the United State which started during the period of Alan Greenspan; he was vehemently opposed to any regulation of financial instruments known as derivative. This action allowed huge amounts of easy credit backed money to be injected into the financial system and help create sustainable economic boom. However, as long as capital flows and credit expansion grew unchecked, lending expectedly spilt over from financing safe and productive investments to risky and speculative assets, reckless financial innovation leverage, short selling, unsecured credit systems and swaps. At first, it was argued that it has no effect in Nigeria's capital market. But that initial response was, to put it mildly naive. The country's dependence on the export sector is very significant: 99% of foreign earnings and 85% of local revenues are directly derived from activities related to export of a single commodity, which is at the center of the current financial crisis: oil. It is estimated that 58.4% of Nigeria's export are United States' bound and up to 25% is of Europe zone. 67% of our non-oil exports go to Western Europe, 20% to Asia while ECOWAS accounted for only 11% in 2007. The stock of our foreign earning reserves is kept in European capitals markets where financial markets have tumbled and banks distressed. How can anyone think we are insulated or spared? International financial crises which affect trade and investment flows are

bound to impact on the domestic economy (Abdul, 2009). Stock markets are sensitive to national and international events and react immediately. The Nigerian stock exchange (NSE) witnessed unprecedented growth in total market capitalization and value of shares traded between 2004 up to the second quarter of 2008. Immediately the crisis was pronounced in July 2008 in USA, the Nigerian stock market started experiencing serious downturn activities. It was also observed that investors were pulling out their resources which made the stock price to generally go down. Both developed and developing economies faced negative repercussions of the financial crisis and experienced adverse impact on their economies via the channel of finance and trade. Net capital inflows shrunk drastically from the beginning of the crisis. This crisis badly affected foreign direct investment, portfolio investment and exports of developing nations (Igbal, 2010). The ripple effects of the global financial crisis seem to have had a dramatic negative effect on the Nigerian stock exchange. Market capitalization has been reduced from over N10.18 trillion to N5.2 trillion and a market index from 5799 points to 22000 points by October 2009 and a flight of foreign portfolio investment; stock and shares were no longer collateralizable (Osaze, 2009). The initial response of the policy makers in Nigeria was meek. Either they did not understand the crises or underestimated its magnitude. In general, they thought the crisis as only a 'storm in a tea cup', an aberration, and a 'hiccup'. They insisted that the 'fundamentals of the financial system look impressively strong' even when the capital market has been bleeding uncontrollably. The Minister of Planning stated, 'there is no problem in the Nation's capital market. What we have presently is just corrections and adjustments, shareholders are getting dividends and bonuses and they are happy. This was at the time when market capitalization had dropped from N12 trillion to less than N9 trillion.

The Nigerian stock market is in shambles. It earned the unenviable accolade as one of the world's worst performing stock market in 2008, after losing N5.4trn in market capitalization and 54 percent in the all share index, just a year after it had emerged as the world's best performing stock market in 2007 with a return of 74.9 percent. Investors have lost confidence in the Nigerian capital market. There are some individuals and institutions that are wary and worried of losing even more than they have already lost. Many individuals are swearing to never have anything to do with the stock market again once they are able to comfortably bail out. It has become difficult for companies to raise fresh fund through the capital market. It is believed that the supervisory body: "stock exchange commission" (SEC) is not performing its oversight function effectively. However, there have been reports that some of the causes of the collapse of the capital market were as a result of the nefarious act perpetrated by the market regulatory body as well as the market players, ranging from unprofessional conducts of participants, such as: price-fixing and overvaluation of shares, and manipulation of initial public offers. These corrupt practices of the market actors contributed heavily and impacted negatively on the market. Therefore, the question of whether the global financial crisis caused an unprecedented downturn on the Nigerian stock market still remains' unanswered.

Review of Related Literatures

Financial Crisis

A financial crisis is a sudden wide-scale drop in the value of financial assets, or in the financial institutions managing those

assets (and often in both). A financial crisis may be triggered by a variety of factors, but the situation is typically aggravated by negative investment sentiment, fear or panic. A financial crisis often sparks a vicious circle where an initial decline sparks fear by investors that other investors will pull their money out leading to redemptions and increasing declines. Financial crisis is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value, (Adamu, 2010). Sanusi (2010) is of the opinion that it is a moment when financial networks and markets suddenly become unable or strained to the point where it may collapse. The term financial crisis is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value. In the 19th and early 20th centuries, many financial crises were associated with banking panics, and many recessions coincided with these panics. Other situations that are often called financial crises include stock market crashes and the bursting of other financial bubbles, currency crises, and sovereign defaults (Kindleberger and Aliber, 2005, Laeven and Valencia, 2008).

Some economic theories that explained financial crises includes the World systems theory which explained the dangers and perils, which leading industrial nations will be facing (and are now facing) at the end of the long economic cycle, which began after the oil crisis of 1973. While Coordination games, a mathematical approach to modelling financial crises have emphasized that there is often positive feedback between market participants' decisions (Krugman, 2008). Positive feedback implies that there may be dramatic changes in asset values in response to small changes in economic fundamentals, Minsky's theorized that financial fragility is a typical feature of any capitalist economy and financial fragility levels move together with the business cycle, but the Herding and Learning models explained that asset purchases by a few agents encourage others to buy too, not because the true value of the asset increases when many buy (which is called "strategic complementarity"), but because investors come to believe the true asset value is high when they observe others buying (Avery and Zemsky, 1998, Chari and Kehoe, 2004, Cipriani and Guarino, 2008). This study rests on the theoretical linkage between financial development and integration which is appropriate from global financial crisis and stock market operations, as it was rightly established by: Schumpeter, 1961, Minsky's financial instabilities hypothesis, the theory of business cycle and Marxist theory of trade.

Joseph Schumpeter(1961) developed a model with a boom-bust cycle which can also lead to a financial crisis. Starting from an equilibrium situation some entrepreneurs start with an innovation (a new technology, a new product, a new organization, etc.). A stock of inventions is always available. It is the entrepreneur which selects some of them and triggers economic development. Entrepreneurship, which is very close to the Keynesian category of "animal spirits" (Keynes 1936: 161), plays the key role during an expansion process. According to Schumpeter, capitalist development cannot take place without credit. Credit is created adhoc (out of nothing) by the banking system and gives the entrepreneur the financial power to get the physical inputs to implement the innovation. The essential function of credit in our sense consists in enabling the entrepreneur to withdraw the producers' goods which he needs from their previous employment, by exercising a demand for them, and thereby to force the economic system

into new channels.” (Schumpeter, 1911). Schumpeter then assumes a kind of herding behavior of firms following the innovative entrepreneurs. The “followers” imitate the innovation to get some of the extra profits which can be earned in the new market. They are also forced to do so by competition. If they do not follow they will sooner or later be eliminated by the market. Driven by high investment and credit expansion a boom phase develops which at a certain point comes to end and gives way for a contraction. This expansion phase, where firms invest into the new innovation or take credit to reorganize and get more productive is accompanied by a second, often bigger and more visible phenomenon. Prosperity is accompanied by speculation. Companies speculate on the further expansion and increase orders and inventory. Speculation in the narrow sense may occur and lead to a bull market. Private households may take consumption loans, etc. The general expansion also leads companies to increase capacities (without increasing productivity) in anticipation of continuing high demand. Schumpeter divides credit into productive and unproductive credit, where the former increases productivity, while the latter does not. For Schumpeter the start of the expansion and its end depend on history and cannot be explained mechanically.

However, he notes that as a precondition for a renewed expansion due to further innovations the occurred instability due to the previous innovation needs to settle. Additionally, during the introduction of the innovation, there is an increase in the price level. As soon as the innovative process comes to an end, the new equilibrium will be characterized by a lower price level. So the expansion is characterized by inflation, while the recession is characterized by deflation. What is important: during the crisis phase when demand and output shrink not all firms will survive. Firms which were not innovative enough will go bankrupt. In particular unproductive loans lead to problems. Economic crises and to a certain extent financial crises as well are part of the normal process of capitalist development and its capacity to increase productivity and innovate. Schumpeter (1942) speaks about a process of creative destruction which is very close to Karl Marx’s (1867) idea of relative surplus value creation which is stimulated by the chance of extra profits innovative firms can earn. In Schumpeter’s theoretical model the economy falls back into an equilibrium constellation, however with a higher level of productivity and new products. A new expansion can start when entrepreneurial spirits are high again and finance is available.

However, Schumpeter (1961: 158) also argued the crises can get out of control. In such a case not only less innovative firms are eliminated, also good firms break down. Such a development is dysfunctional and harmful for economic development. Hyman Minsky made many important contributions to financial theory, but he was best known for the financial instability hypothesis, or what was sometimes called the “Minsky moment” during the recent subprime mortgage crisis. His main contribution was to link financial market fragility with speculative investment finance. The main idea of the theory is that the internal dynamics of capitalist economies leads, over a period dominated by the successful operation of a capitalist economy, to the emergence of financial structures which are conducive to debt deflations, the collapse of asset values and deep depressions (Minsky, 1992). Two price systems coexist in the capitalist economy according to Minsky: one based on the value of capital assets, which is determined

by the present value of expected profits, and the other on the level of current output. Capitalist economies that accumulate capital and knowledge also should have a complex, sophisticated financial system that evolves in real calendar time. Instability underlies the appearance of stability of the financial markets. During periods of stability, when stock prices are rising higher than the interest rate, investors are lured into taking more risk, which leads them to borrow more and to overpay for assets. Minsky (1980) identified three types of financial postures that contribute to the accumulation of insolvent debt:

- Hedge finance, in which borrowers can meet all debt payments (interest and principle) from their cash flows from investment
- Speculative finance, in which borrowers can meet their interest payments from investment, but must roll over their debt over to pay back the original loan
- Ponzi finance, when borrowers can neither repay the interest nor the original debt from the original investment, nor rely entirely on rising asset prices to allow them continually to refinance their debt.

The mix of financial postures determines the overall robustness or fragility of an economy’s financial structure, ranging from hedge finance providing more robustness and Ponzi finance providing more fragility. The longer the period of economic stability lasts; Ponzi finance tends to become increasingly more prevalent, often resulting in the collapse of some financial institutions. If the use of ponzi finance is general enough in the financial system, as might have been the case in the 2008 subprime mortgage crisis, then the collapse of ponzi finance can also bring down even hedge borrowers, who are unable to find loans despite the apparent soundness of the underlying investments. Financial institutions often devise ways of getting around regulations and norms to be able to take on greater risk during periods of stable growth. These observations lead Minsky (2002) to define two theorems of the financial stability hypothesis:

- the economy has financing regimes under which it is stable, and financing regimes in which it is unstable”, and
- Over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that makes for an unstable system.

Shifts stability and instability generate endogenous business cycles. Minsky (1992) maintained “that the financial system swings between robustness and fragility and these swings are an integral part of the process that generates business cycles.” These business cycles are endogenous to the economic system, and generated, as Minsky (1993) points out, through “the internal dynamics of capitalist economies, and the system of interventions and regulations that are designed to keep the economy operating within reasonable bounds. The weight of speculative and Ponzi finance will have a certain bearing on the extent of the recession. Business cycle theory opined that the economy is often buffeted by unexpected shocks. Shocks to aggregate demand are typically unanticipated changes in monetary or fiscal policy. Shocks to aggregate supply are typically changes in productivity that may result, for example, from transient changes to technology, prices of raw materials, or the organization of production. Ideally firms will choose to

produce more and pay workers more when the economy is hit by favorable shocks and less when hit by unfavorable shocks (Alan, 2010). Marxist Theory of Trade Cycle based on market capitalism is intrinsically prone to crisis. In Marx's view, profit is the major engine of the market economy, but business (capacity) profitability has the tendency to fall, that recurrently creates crisis in which mass unemployment occurs, business fail, the remaining capital is centralized and concentrated, profitability is recovered. In the long run, these crises tend to be more severe and the system eventually fails. Thus Marx viewed capitalism as a system that cannot be put under societal condition. The Chamberlain Oligopoly Model proposed a stable duopoly solution recognizing mutual dependence between the two sellers or nations. He asserts that each seller act so as to render his profit a maximum. In order to do this, he will take account of his total influence upon the price, indirectly as well as directly. When a seller remains passive to changes in price or output of his rival, it is a direct influence. On the other hand, when a seller reacts to the price or output changes of his rivals and changes his own price or output, the influence is indirect.

According to Chamberlain, when interdependence is recognized between sellers, both direct and indirect influences of a change in the price or output of a seller leads to a stable industry equilibrium with monopoly price and output. Most recent studies globally and within the national boundaries on the edge of the studied topic have mixed empirical findings on the impact variable. The following are just few among many others: Chitigaeta, (2009), used a dynamic computable general equilibrium model based on the PEP standard model to evaluate the impacts of the international crisis on the South African economy. Their findings suggest that the huge drop in firms' savings has a dire impact on total investment, while the huge negative impact on government accounts for protracted slow global growth, implying tight public budgets for some time to come. According to them, some gains made by the government prior to the crisis may have been reversed by the economic crisis. Their results therefore suggest that the impact of the crisis will drag into the long run with the situation still below what it would have been in the absence of a crisis until 2015. Alper and Yilmaz (2004) investigated this relationship for Istanbul and other prominent stock markets with particular reference to financial crisis that began in Turkey in 1994, Asian financial crisis 1997 and Latin America crisis during 1998-2001. The study confirms that international contagion prevails among stock markets.

Lim, Brooks and Kim (2008) examined the efficiency of the eight Asian stock markets in order to find the impact of Asian financial crisis of 1997 with divisions of period from pre to post financial crisis and found that during financial crisis 1997, efficiency of the Asian stock markets deteriorated of which Hong Kong stock market was the major victim of the crisis. Ravichandran and Maloain (2010) found that during recent financial crisis, stock markets of six Gulf countries faced negative pressure but these markets become strengthened during post crisis period. Rafaqet and Muhammad (2012) consider the 2007/2008 Global financial crisis that started from United States, the world's largest crisis after 1930s recession. Considering the above, few studies have also assessed the impact of this crisis on the Nigerian stock market. Olaniyi and Olabisi (2011) investigate the causes and implications of the global financial crisis on the performance of Nigerian banks.

They used secondary data from the data base of four banks found in Ilorin metropolis. The study employed Ordinary Least Square method of Multiple Regression Analysis to manipulate the time series data into Econometric model of inflation. The study's findings suggest that global financial crisis has a negative impact on the performance of Nigerian banks despite the high liquidity possessed by these banks immediately after the consolidation exercise of 2005. It was recommended that banks should desist from financing other banks' investment in securities to avoid multiplier effect syndrome while the Nigerian government should find alternative ways to fund their budget deficit. Olowe (2009) studied the response of stock return and its volatility on Nigerian stock market and found that stock returns and its volatility in Nigeria are free from the severity of this crisis because of the low exposure the Nigeria stock market to international community. In contrast to this, Adamu (2010) takes same objective for Nigerian stock market with conventional statistical analysis i.e. standard deviation and variance analysis and divided the data into pre and post crisis period and found that during the financial crisis period, volatility in Nigerian stock market increased.

Jenrola and Daisi (2012) in another investigation on the response of Nigerian stock market to the global financial crisis, using time series data from 2000-2008 and Employing a simple regression analysis. The study found that, the Nigerian stock exchange downturn is not attributed to global financial crisis, but instability of macroeconomic variables in Nigeria like: unfavorable exchange rate, inflationary pressure, problem of insecurity, inadequate infrastructural facilities. Onuoha and Nwaiwu (2016) investigated the impact of global financial crisis on Nigerian stock market. Their study found a negative significant impact on the Nigerian stock market by the global financial crisis. Using the survey method of research design and the ordinary least square (OLS) technique in their data analysis Abdul (2009) examined the effect of global financial crisis on Nigerian economy. The study discovered that the financial crisis caused fall in commodity prices and declined export, lower portfolios and FDI inflows and fall in equity market Yakubu and Akerele (2012) investigated the impact of global financial crisis on the Nigerian stock exchange that span the range of 2008-2011 using market capitalization to proxy the Nigerian stock exchange and capital inflow and foreign exchange rate to as global financial crisis.

The study found an insignificant impact of the global financial crisis on the Nigerian stock exchange. Therefore, recommends, regulatory institutions to stem the system Ajao and Festus (2011) studied an appraisal of the effect of the global financial meltdown on the Nigerian money market. The study employed the ordinary least square (OLS) regression technique for data analysis. M_2/GDP was used to proxy global financial meltdown and money market indicators to proxy the independent variables. Such as: Cps, Tbs, Bas, CdsBlr and Inf. The study found that economic activities were adversely affected by the global financial meltdown. Ujunwa, Salami and Umar (2011) determined global financial crisis: Realities and implications for Nigerian capital market. The study argued that capital market regulators must undertake swift reforms to restore public confidence and protect investors. And that further neglect of the capital market has the implication of stiffing long term financial system. Ande, Harleys and Williams (2014) carried out an investigation on the impact of global financial crisis on economic growth on a developing

economy: (An instrumental variable regression approach) that span between a period of 1981-2011 using the Zivot Andrew test to check strong point of structural break and the instrumental variable and OLS to test the dummy effects of significance of the crisis. The study found that 2009 was the structural break point and that global financial crisis has a significant effect on consumption and gross domestic product. Arinze and Matthew (2014) examined global financial crisis and Nigeria economy. The ordinary least square (OLS) technique was adopted and dummies were used to capture quantitative variables. The study found that global financial crisis has a strong impact on oil price and bonny light and also on all share index (ASI) Olawale (2014) also examined the effect of global financial crisis on the Nigeria economy, in using Fisher's statistics and established evidence that there is a significant relationship between global financial crisis and capital market in Nigeria. According to Abdul (2009), Nigeria relies on several foreign grants and funding from developed countries to complement public spending on education, health care delivery, and transportation, amongst others. The crisis may cause a squeeze on grants to Nigeria as some of the countries Nigeria rely on for funding are the worst hit by the crisis. Similarly grants from donor agencies such as the IMF, World Bank and USAID could also be affected as they in turn rely heavily on the contributions of the G7 states, which would reduce as the credit crunch persists.

According to Mobolaji (2008), while the Nigerian banking industry enjoys a low exposure to world financial markets, many banks with off-shore credit lines began to experience a reduction or outright cancellation of credit lines as many of the foreign banks are suffering from the crisis already. This has resulted in the weakening of the bank credit portfolios. A good number of Nigerian banks are involved in Joint Venture financing with foreign banks for mega projects in the Oil, Aviation and Communication sectors. These projects could be threatened by the crisis. Thus, in view of the above empirical different findings from previous researchers on the studied topic, it is imperative to re-examine the impact of global financial crisis on the Nigerian stock market. Almost all the studies considered globally and within the national boundaries on the studied topic to the best of our knowledge did not consider foreign reserve as an impact variable to measure the dependent variable (Nigerian stock market). Thus, it is important to also examine the dependent variable with the inclusion of foreign reserves as an impact variable. This is because foreign reserves serve in meeting the international financial obligations including sovereign and commercial debt and financing of imports. It also helps in boosting the confidence of the stock market in the ability of the country to meet its external obligations. In addition, the sample coverage of this study is different from previous related studies which cover's from: 2008-2016 respectively. This is to enable us assess and captured the real impact of the global financial crisis on the Nigerian stock market on current basis, This study is therefore aimed at bridging these obvious gaps in literature.

MATERIALS AND METHODS

Research Design

The crux of this study is an impact study. This is because the study seeks to ascertain the effect of the global financial crisis on the Nigerian stock market performances.

Consequently, we shall be imitating finance literature by adopting the ex post facto research design and empirical analytical methods to estimate the functional relationship between the triggering factors of the global financial crisis and the Nigerian stock market. Ex post facto research design is a quasi-experimental design used in examining how an independent variable affects a dependent variable. This design is adopted because the researcher has no control over the variables of the study as a result of the fact that the conditions for the study has already been in existence before the study is been conducted. In addition, the design gives the researcher the needed freedom to purposively choose the components of the study.

Model Specification

To enable us achieve the objectives of this study, we shall build a model in this study. The model is designed to fill the gap identified in the literature. In imitating finance literature, the model will be built similarly like the Engle-Granger representative theorem of Error Correction used by Onuoha and Nwaiwu (2016). We adopted the Engle-Granger approach because the method propose the use of ordinary least square estimators in estimating the functional relationship among variable and test of stationarity of time series data employed. Thus, the annual market capitalization values as proxy of the Nigerian stock market will be regressed using OLS estimators on foreign exchange rate, direct foreign investment on the stock market alongside foreign reserve as variables to proxy global financial crisis. These variables for the model are motivated by the fact that there is little consensus on their influence in generality of the global financial crisis on the Nigerian stock market performance. This is adopted from the works of Onuoha and Nwaiwu (2016), Emerenini and Ndukwe (2015), and peter Njiforti (2015).

The functional relationship of the model is expressed as follows;

$$MKTPZ = F (FXGR, FDISMKT, FRVS) \quad (1)$$

The econometric specification of the functional relationship of the multiple regression model is given as follows;

$$\ln MKTPZ_t = b_0 + a_1 \ln FXGR_t + a_2 \ln FDISMKT_t + a_3 \ln FRVS + e_t \quad (2)$$

Where:

b_0 = intercept

$a_1 \dots a_4$ = Coefficients of the explanatory variables to be estimated. Gujarati (2006) and Osuala (2010) call it partial regression or partial slope coefficients.

They measure the effect of a unit change in the global financial crisis on the Nigerian stock market performance.

t = Time series for dataset

ln = Natural log. This is used to check the effect of co-movement in the

Explanatory variables.

$MKTPZ$ = Stock market capitalization

$FXGR$ = Foreign exchange rate.

FDISMKT = Foreign direct investment on the Nigerian stock market.

FRVS = Foreign reserves.

e = The disturbances term, Sweeney and Anderson (2006) states that the error term capture changes in the dependent variable that cannot be explained by the linear effect of all the independent variables in the model.

A priori Expectation: $a_1 > 0$, $a_2 > 0$, $a_3 > 0$, $a_4 > 0$

Justification of variables

Market capitalization: Market capitalization refers to the total market value of a company's outstanding shares; commonly referred as "market cap" It is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to determine a company's size as opposed to using sales or total asset figures. Using market capitalization to show the size of a company is important because company size is basic determinant of various characteristics in which investors are interested including risks. It is also easy to calculate. For instance, a company with 20 million shares selling at #100 per share would have a market capitalization of #2 billion

Foreign Exchange Rate: An exchange rate is price of a nation's currency in terms of another currency. Thus, an exchange rate has two components, the domestic currency and a foreign currency and can be quoted either directly or indirectly. In a direct quotation, the price of a unit foreign currency is expressed in terms of the domestic currency while in an indirect quotation, the price of a unit domestic currency is expressed in terms of the foreign currency. Exchange rates are quoted in values against the US dollar. However, exchange rate can also be quoted another nations currency are known as a cross currency or cross rate.

Foreign Direct Investment on Stocks or Equity: Foreign direct investment (FDI) is an investment made by a company or individual in one country in business interest in another country, in the form of either establishing business operations or acquiring business assets in the other country, such as ownership or controlling interest in a foreign company. Foreign direct investments are distinguished from portfolio investments in which an investor merely purchase equities of foreign based companies. The key factor of foreign direct investment is that it is an investment made that establishes either effective control of or at least substantial influence over the decision making of a foreign business.

Foreign Reserves: This is also called forex reserves. They are foreign currency deposits held by national central banks and monetary authorities. These foreign currency deposits are financial assets of the central banks and monetary authorities that are held in different reserve currencies (e.g. US dollar, the euro, the Japanese yen and pound sterling) and they are used to back reserves deposited with the central bank by the government or financial institutions.

Population of the Study: The population of this study comprises of all the factors involved in the global financial crisis that inhibits the optimum performance of the Nigerian stock market. Specifically, the population of the global financial intermediaries involved in global financial crisis includes commercial banks, the stock exchange, insurance

firms, microfinance banks, development banks, pension funds, mutual funds and others.

Sample of the Study: The sample of the impact element, (the global financial crisis) for this study is all contagious factors of global financial intermediaries. The choice of the global financial intermediaries is motivated on the premise that an optimum performance of the Nigerian stock market can only be achieved when there is a free in and outflow of capital in the system so as to attract more potential investments to thrive.

Sampling Technique: The sampling technique used is called purposive sampling technique (also known as judgmental sampling). Purposive sampling is a type of non-probability sampling that allows the researcher to choose the sample of the study based on a reasonable purpose or reason (Orjih, 2009). Thus, the researcher adopted this technique because it gave her the freedom needed to pick data to suite the studied population.

Method of Data Collection: The method of data collection adopted in this study is called the survey of existing documents. This is otherwise known as secondary source of data collection. This method enables the researcher to collect data for all the variables of the study from the Central Bank of Nigeria statistical bulletin and the Nigerian stock exchange fact files 2017. The type of data collected from the bulletin and the fact files are called time series data. The time series data gave us the needed information about the numerical values of the individual variables of the study from the period of 2008 to 2016 for the estimation of the model.

Methods of Data Analysis: The following econometric techniques shall be employed for the analysis of the data-set and the estimation of the model; The augmented dickey-fuller (ADF) test, test of stability of the model and the ordinary least square regression (OLS) method shall be employed in the study.

Augmented Dickey-Fuller (ADF) Test: Generally, most macroeconomic data display non-stationary characteristics over time. Thus, in order for us to apply least square regression method to time series data, we must first of all subject such data to the test of stationarity or unit root. This is because, if variables with unit roots are regressed on each other, spurious results are obtained. Suffice to say therefore, that non-stationary time series data or time series data with unit root leads to spurious or nonsense regression. (That is, the results cannot be used to make meaningful decision or forecast). Thus, the augmented dickey-fuller (ADF) test is adopted in this study to enable us determine whether the data series are stationary or not. Therefore, the essence of this test is to ensure that the parameters are estimated based on stationarity.

The Test of Stability of Model: The test of stability of model enables us to ascertain whether variables employed to build the model is viable or not, which is shown graphically between truncated lines of blue and red colours.

Ordinary Least Square Regression: The Ordinary Least Square (OLS) technique enabled us to estimate the individual variables coefficients, coefficient of determination (R^2), t-statistic, f-statistic (and their respective probabilities), and the Durbin Watson statistic, which enables us to make inferences and evaluate the significance of the estimated parameters of the regression model, and also test the hypotheses formulated in the study.

Decision Rule: Inference about the hypotheses is made by looking at t-statistics in absolute values and the critical values (probabilities) associated with individual variables. The t-test is as follows: T-distribution with N-1 degrees of freedom corresponding between column difference and N-K degree of freedom corresponding to within the column difference. In this study the decision rule is to reject the null hypothesis (H_0) and accept the alternate hypothesis (H_1) if the calculated t* is greater than the table value at 5% level of significance, but where the calculated value of t* is less than the table value at 5% critical region, the study accepts the null hypothesis (H_0) and reject the alternate hypothesis (H_1)

Presentation and Analysis of Data

Presentation and analysis of Data

Table 1.1 Unit root test results for MKTPZ

Null Hypothesis: D(MKTPZ) has a unit root		
Exogenous: None		
Lag Length: 0 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.957467	0.0097
Test critical values:	1% level	-2.937216
	5% level	-2.006292
	10% level	-1.598068

Source: E-view 9 output

Interpretation: Order of integration at 5% = 1(1)

Table 1.2 Unit root test results for FXGR

Null Hypothesis: D(FXGR) has a unit root		
Exogenous: None		
Lag Length: 0 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.564641	0.0433
Test critical values:	1% level	-2.937216
	5% level	-2.006292
	10% level	-1.598068

Source: E-view 9 output

Interpretation: Order of integration at 5% = 1(1)

Table 1.3 Unit root test results for FDISMKT

Null Hypothesis: D(FDISMKT) has a unit root		
Exogenous: None		
Lag Length: 0 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.137189	0.0000
Test critical values:	1% level	-2.937216
	5% level	-2.006292
	10% level	-1.598068

Source: E-view 9 output

Table 1.4 Unit root test results for FRVS

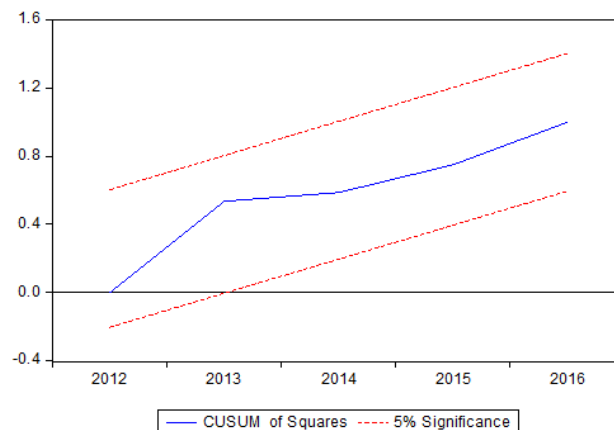
Null Hypothesis: D(FRVS) has a unit root		
Exogenous: None		
Lag Length: 1 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.154074	0.0020
Test critical values:	1% level	-3.007406
	5% level	-2.021193
	10% level	-1.597291

Source: E-view 9 output

Interpretation: Order of integration at 5% = 1(1)

Table 1.1 to 1.4 shows the unit root test of the variables used for the study. The results show that all the variables used in the model are all integrated at first difference, symbolized by I(1), all at 5 percent significance level. However, as expected, all the variables (MKTPZ, FXGR, FDISMKT, and FRVS) are not stationary at their levels. Note, a variable is stationary (has no unit root problem) if the test statistics is greater than the critical value in absolute terms. Thus, this shows that data employed can be used for meaningful decision making and forecasting.

TEST OF STABILITY OF THE DEPENDENT VARIABLE (MKTPZ)



Source: Author's computation: E-view 9 output

Graph 1.1 Test of Stability of Model

Graph 1.1 of test of stability of the model shows that all variable employed in the model is viable. This is because the blue line fluctuates within the two given red lines. Therefore, we can run the regression estimate on them.

Test of Hypotheses

H₀₁: Foreign exchange rate has no significant impact on the Nigerian stock market performance. Table 1.5 above reveals that foreign exchange rate (FXGR) has a t-statistic of 0.332610 with a probability value of 0.7529 which is above the 0.05 level of significance. This means that foreign exchange rate does not have a significant impact on the Nigerian stock market, proxy as market capitalization (MKTPZ) for the period under study. Therefore the null hypothesis is accepted and we conclude that foreign exchange rate has no significant impact on the Nigerian stock market performance for the period under study.

H₀₂: Direct foreign investments on stocks have no significant impact on the Nigerian stock market performance. Table 1.5 above also shows that foreign direct investment on stocks (FDISMKT) has a t-statistic of 0.363155 with a probability value of 0.7313 which is above the 0.05 level of significance. This means that foreign direct investment on stocks does not have a significant impact on the Nigerian stock market performance, proxy as market capitalization (MKTPZ) for the period under study. Therefore the null hypothesis is accepted and we conclude that foreign direct investments on stocks have no significant impact on the Nigerian stock market performance for the period under study.

H₀₃: Foreign reserves have no significant impact on the Nigerian stock market performance. Table 1.5 above shows

Table 1.5 Result of the Regression Estimate

Dependent Variable: MKTPZ				
Method: Least Squares				
Date: 12/07/17 Time: 10:42				
Sample: 2008 2016				
Included observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6945.286	10757.69	1.945611	0.3470
FXGR	9.449074	28.40885	0.332610	0.7529
FDISMKT	1.517336	4.178206	0.363155	0.7313
FRVS	-0.009109	0.173820	-0.052404	0.9602
R-squared	0.745430	Mean dependent var		8796.535
Adjusted R-squared	-0.484112	S.D. dependent var		2547.929
S.E. of regression	3103.992	Akaike info criterion		19.21987
Sum squared resid	48173842	Schwarz criterion		19.30752
Log likelihood	-82.48941	Hannan-Quinn criter.		19.03071
F-statistic	0.938073	Durbin-Watson stat		1.228950
Prob(F-statistic)	0.000143			

Source: Author's computation: E-view 9 output

also that foreign reserve (FRVS) have a t-statistic of -0.052404 with a probability value of 0.9602 which is above the 0.05 level of significance. This means that foreign reserves do not have a significant impact on the Nigerian stock market performance, proxy as market capitalization (MKTPZ) for the period under study. Therefore the null hypothesis is accepted and we conclude that foreign reserves have no significant impact on the Nigerian stock market performance for the period under study.

DISCUSSION OF RESULTS

Table 1.5 shows the relationship between the global financial crisis and the Nigerian stock market for the period under study. Using the a priori criteria of evaluating the parameters, except the constant term, all other variables met no a priori expectations hence not fulfilling the economic criterion of the model. The results show that FXGR is linear (positive) and statistically insignificant to MKTPZ while, FDISMKT also have a linear (positive) and statistically insignificant relationship with MKTPZ. However, in contrary FRVS is non-linear (negative) and also statistically insignificant to MKTPZ. Furthermore, the results of the test of the overall significance of the model using F-statistics shows that the entire model is statistically significant. We arrive at this conclusion because the F-statistics of 0.938073 is greater than the F-probability which is statistically near zero as: 0.000143. The coefficient of multiple determinations (R^2) indicates that approximately 75% of total variation in the dependent variable (MKTPZ) is explained by the independent variables in the model. This means that the model is a good fit. Finally, the Durbin-Watson statistics, a rule of thumb for the measure of autocorrelation is greater than the R^2 ($1.228950 > 0.745430$), thus indicating the absence of first order autocorrelation.

From the t-statistics and its associated probabilities test shows that the parameters which are foreign exchange rate (FXGR), foreign direct investments on stocks (FDISMKT) and foreign reserves (FRVS) respectively as proxy of global financial crisis except the constant term are not statistically significant at 5% level. Thus, we therefore, accept the null hypotheses and conclude that the global financial crisis has no significant impact on the Nigerian stock market performance. Based on existing economic theory that, if the foreign exchange rate is devalued it will increase foreign direct investment or mobilizes

capital inflow and invariably increase market capitalization. Thus, this motive of regulating foreign exchange rate to attract foreign investment and to increase foreign reserves to strengthen the local currency is overturned in this model. Analyst and market insiders have given various reasons for the persistence fall in the prices of stock in the market ranging from budget delay, exit by foreign investors to other profit making ventures and price manipulation by insiders, but this result and the continued bearish trend have falsified the postulation. Now we can say that policies of regulators must have played a negative role in deepening the recession or the financial crisis, as many of the policies acted out of line with the realities on ground in the Nigerian stock market. These include the withdrawal of the margin facility by the apex bank, the uniform end of the year financial statement by banks, over subscription, greed and ignorance, domestic monetary and financial policies, etc. Only the intercept has significant impact on the Nigerian stock market performance for the period under study. This confirms that other variables not capture in the model affected the market capitalization as the aftermath of the global financial crisis.

Summary of Findings

The study findings are summarized as follows:

- Foreign exchange rate has no significant impact on the Nigerian stock market performance for the period under study.
- Foreign direct investments on stocks have positive but insignificant impact on the Nigerian stock market performance for the period under study.
- Foreign reserves have no significant impact on the Nigerian stock market performance for the period under study.
- The study also found that 25% of other factors not accounted for in the study tend to be causal factors of shocks for Nigerian stock market in response to the global financial crisis.

Conclusion

The crux of this project examined the impact of global financial crisis on the Nigerian stock market performance; with particular interest to proxy the impact variable (global financial crisis) as foreign exchange rate, foreign direct investment on

stocks and foreign reserves and market capitalization as stock market performance proxy. The study carried out a thorough comprehensive related literature review and found that there was no consensus among the researchers on the studied topic, some agree with significant implications while others submitted entire negative and insignificant implications. The ordinary least square regression model was employed to test the parameters and the t-test was used to test the three hypotheses outlined in the study to give clarity of purpose. The outcome of the test shows that the global financial crisis has no significant impact on the Nigerian stock market performance for the period under study. Thus, this is notwithstanding that, the global financial crisis has cause an unprecedented process of shocks on the Nigerian stock market operations, resulting to enormous capital flight that shakes its operations in the system. Our conclusion therefore, is that, there should be a proactive and effective regulatory system redesigned for the successful operation of the Nigerian stock Market and as well as to allow privatization policy to thrive. This will motivate domestic and allied investors not to relent in their investment and developmental strives in the Nigerian stock market as to better the economy at large.

Recommendations

From the empirical analysis and results obtained from the T-test, we are constrained to recommend as follows:

- Government and regulatory authorities should put in place workable and effective policies to check the vast range of foreign exchange rate disparity in order to attract capital inflow.
- Improve the declining market capitalization by encouraging more foreign investors to participate and invest in the market. This is because capital inflow and market capitalization are positively related.
- Restore confidence to the market by regulatory authorities through ensuring transparency and fair trading transactions and dealings in the stock exchange.
- Ensure peace and stability in the socio-economy and the political system of the nation by stopping religion and ethnic crisis. This will also encourage more foreign investors into the system.
- We also recommend: Impact of information difference on the Nigerian stock market performance as an area to re-examine.

Contribution to Knowledge

Knowledge is considered as an awareness or familiarity gained by experience of fact. Therefore, this project contributes to knowledge by considering foreign reserves as an impact variable to also determine the Nigerian stock market performance for the period under study, and identifying it as a variable which does not significantly impact on the Nigerian stock market performance in response to the global financial crisis.

REFERENCES

- Abdul, A. 2009. The effects of global financial crisis on Nigerian economy. Retrieved on 12 November, 2017 from <http://www.papers.ssrn.com>
- Agbonifoh, B. and Evbayiro, E. 2011. The global financial crisis and the Nigerian stock market crisis: shareholders response. *Nigerian Academy of Management Journal*, 5(1) 73-84.
- Ajakaiye, B. and Fakiyesi, A. 2009. The impact of global financial crisis on Sub-Sahara Africa. *International Development Working Paper No. 15*. Retrieved on 12 November, 2017 from <http://www.intelpapers.ssrn.com>
- Arestis, P. and Luintel, K. 2001. Financial development and economic growth: Role of stock markets. *Journal of money, credit and banking*, 33(i)16-41
- Avery, C. and Zemsky, P. 1998. Multidimensional uncertainty and herd behavior in financial markets. *Journal of an American economic review*, 8(8) 724-748.
- Avgouleas, E. 2008. Financial regulation, behavior and financial credit crisis in search of a new regulatory model. Retrieved on 20 September, 2017 from <http://www.papers.ssrn.com>
- Baker, D. 2008. The housing bubble and the financial crisis. *Center for economic and policy research journal*, 7(32) 54-61.
- Chari, V. and Kehoe, P. 2004. Financial crises as herds: Overturning the critiques. *Journal of Economic Theory* 1(19) 128-150.
- Chossudovsky, M. 2009. Global financial meltdown: The African perspective. Retrieved on 20 August, 2017 from <http://www.globalresearch.ca>.
- Cipriani, M., and Guarino, A. (2008). Herd Behavior and contagion in financial markets. *The B.E. Journal of Theoretical Economics* 8(1) 1-54.
- Cohan, S. 1973. The determinants of supply and demand for certificates of deposit, *Journal of money, credit and banking*, Vol. 5(1) 35-48.
- Commission for Social Development. 2009. The current global financial crisis and its Impact on social development. Forty-seventh session, 4th-13th February.
- Crotty, J. 2008. Structural causes of the global financial crisis: A critical assessment of the new financial architecture. *Political economy research Institute (PERI) University of Massachusetts Amherst* Working paper no. 180 September.
- Dornbush, R., Park, C. and Claessens, C. 2000. How it spreads and how it can be stopped. *World Bank Research Observer*, 15(2) 177-197.
- Fama, R. 1970. Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 22(7) 2-9.
- Igbal, B. 2010. Global financial crisis: causes, emerging trends and strategy. *Journal of Business studies*, 5(2) 35-50.
- Jack, B. 2009. The impact of the financial crisis on emerging market economies: The transmission mechanism, policy response and lessons. Mumbai, India (June, 23)
- Jenrola, A. and Daisi, R. 2012. The implication of global financial crisis on the Nigerian capital market performance: *European Journal of Humanities and Social Sciences*, 16(1) 803-819.
- Levine, R. 2002. Bank-based or market-based financial systems: what is better? *International Journal of finance*, 11(94) 398-428.
- Lim, K., Brooks, R. D. and Kim, J. H. 2008. Financial crisis and stock market efficiency: empirical evidence from Asian countries. *Int. Rev. Finance Analysis*, 17: 571-591
- Minsky, H. 1992. *The Financial Instability Hypothesis: Handbook of radical political economy*, working paper. No 74.
- Nanna, O., and Dogo, M. 1998. Structural reform, monetary policy and financial deepening: The Nigerian experience. *Economic and financial review*, 36(2) 1-29

Ndekwe, E. 1998. The financial systems role in resources mobilization and investment: An analysis of financial deepening in Nigeria’s financial sector.

Nida, I., and Ullah, K. 2009. The impact of recent global financial crisis on the financial institutions in the developing countries: Global perspectives. *International review of business research Paper*, 5(5) 85-95.

Nzotta, S., and Okereke, E. 2009. Financial deepening and economic development of Nigeria: An empirical investigation; *African Journal of accounting, economics, finance, and banking research*, 5(5) 52-54

Oluseyi, B. 2008. Averting financial crisis in Nigeria. *An article of Daily Punch Newspaper* of 13th November.

Osaze, E. (2009). Quo vadis Nigeria in the global financial meltdown. *Being a paper presented to the University of Ibadan Alumni Association, Edo State Branch at the University of Benin on 5th December.*

Rafaget, A. and Muhammad, A. 2012. Impact of global financial crises on stock markets. Evidence from Pakistan and India. *E3 Journal of Business Management and Economics*, 3(7), 275-282

Schumpeter, J. 1912. *The theory of economic development. An inquiry into profits, capital, interest, and the business cycle.* Cambridge, MA: Harvard University Press.

Shaw, E. 1973. *Financial deepening in economic development.* London and New York: Oxford University Press.

Soludo, C. 2009. *Global financial and economic crisis: how vulnerable is Nigeria.* Retrieved on 18June 2017 from <http://www.cenbank.com>.

Tella, S. 2009. The global economic crisis and Nigerian stock market: issues on contagion. *Nigerian Journal of Securities and Finance*, 14(1) 101-116.

Udeme, E. and Onuba, I. 2009. Global financial crisis: keeping the Nigerian stock market viable. *Daily Punch Newspaper* of 5th January.

Ujunwa, A., Salami O. and Umar, H. 2011. The global financial crisis: Realities and implication for the Nigerian capital market. *American Journal of Social and Management Sciences*, 2(3) 341-347.

World Bank. 2008. Global financial crisis and implication for developing countries: *A communiqué drawn at G-20 finance ministers’ meeting at Sao Paulo, Brazil.*

Yakubu, Z. and Akerele, A. 2012. An analysis of the impact of global financial crisis on the Nigeria stock exchange. *Current Research Journal of Social Sciences*, 4(6) 369-399.

Appendix

Set of Data Used for Analysis

		MKTPZ EQTY	FRVS	FXGR	FDISMKT
2008		6957.45	53,000.4	126.476	173.73
2009		4989.39	42,382.5	149.693	184.21
2010		7913.75	32,339.3	150.48	340.64
2011		6532.58	32,639.8	158.207	357.34
2012		8974.45	43,830.4	157.324	812.33
2013		13226	42,847.3	157.274	113.95
2014		11477.7	34,241.5	169.68	767.83
2015		9850.61	28,284.8	196.99	120.98
2016		9246.92	26,990.6	305.224	344.57

Source: Central bank of Nigeria annual statistical bulletin 2016

Result of the Regression Estimate

Dependent Variable: MKTPZ
 Method: Least Squares
 Date: 12/07/17 Time: 10:42
 Sample: 2008 2016
 Included observations: 9

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6945.286	10757.69	1.945611	0.3470
FXGR	9.449074	28.40885	0.332610	0.7529
FDISMKT	1.517336	4.178206	0.363155	0.7313
FRVS	-0.009109	0.173820	-0.052404	0.9602
R-squared	0.745430	Mean dependent var		8796.535
Adjusted R-squared	-0.484112	S.D. dependent var		2547.929
S.E. of regression	3103.992	Akaike info criterion		19.21987
Sum squared resid	48173842	Schwarz criterion		19.30752
Log likelihood	-82.48941	Hannan-Quinn criter.		19.03071
F-statistic	0.938073	Durbin-Watson stat		1.228950

Prob(F-statistic) 0.000143

Unit root test for all variables employed

Null Hypothesis: MKTPZ has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.056590	0.6338
Test critical values:		
1% level	-2.886101	
5% level	-1.995865	
10% level	-1.599088	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(MKTPZ)
 Method: Least Squares
 Date: 12/07/17 Time: 12:05
 Sample (adjusted): 2009 2016
 Included observations: 8 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTPZ(-1)	-0.005537	0.097844	-0.056590	0.9565
R-squared	-0.014500	Mean dependent var		286.1833
Adjusted R-squared	-0.014500	S.D. dependent var		2500.984
S.E. of regression	2519.051	Akaike info criterion		18.61762
Sum squared resid	44419321	Schwarz criterion		18.62755
Log likelihood	-73.47048	Hannan-Quinn criter.		18.55065
Durbin-Watson stat	2.180745			

Null Hypothesis: D(MKTPZ) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.957467	0.0097
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 7

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(MKTPZ,2)
 Method: Least Squares
 Date: 12/07/17 Time: 12:02
 Sample (adjusted): 2010 2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTPZ(-1))	-1.145015	0.387161	-2.957467	0.0254
R-squared	0.592013	Mean dependent var		194.9105
Adjusted R-squared	0.592013	S.D. dependent var		4024.069
S.E. of regression	2570.327	Akaike info criterion		18.67302
Sum squared resid	39639494	Schwarz criterion		18.66529
Log likelihood	-64.35556	Hannan-Quinn criter.		18.57751
Durbin-Watson stat	1.597264			

Null Hypothesis: D(FXGR) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.564641	0.0533
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 7

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(FXGR,2)
 Method: Least Squares
 Date: 12/07/17 Time: 12:17
 Sample (adjusted): 2010 2016
 Included observations: 7 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FXGR(-1))	-1.207918	0.772010	1.564641	0.1687
R-squared	0.177297	Mean dependent var		12.14524
Adjusted R-squared	0.177297	S.D. dependent var		32.96329
S.E. of regression	29.89868	Akaike info criterion		9.765069
Sum squared resid	5363.587	Schwarz criterion		9.757342
Log likelihood	-33.17774	Hannan-Quinn criter.		9.669564
Durbin-Watson stat	1.255081			

Null Hypothesis: FDISMKT has a unit root
 Exogenous: None
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.320189	0.5329
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 7

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(FDISMKT)
 Method: Least Squares
 Date: 12/07/17 Time: 12:22
 Sample (adjusted): 2010 2016
 Included observations: 7 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDISMKT(-1)	-0.091253	0.284997	-0.320189	0.7618
D(FDISMKT(-1))	-0.804449	0.284007	-2.832500	0.0366
R-squared	0.704933	Mean dependent var		22.90857
Adjusted R-squared	0.645920	S.D. dependent var		518.2973
S.E. of regression	308.4110	Akaike info criterion		14.53570
Sum squared resid	475586.8	Schwarz criterion		14.52025
Log likelihood	-48.87495	Hannan-Quinn criter.		14.34469
Durbin-Watson stat	1.876723			

Null Hypothesis: D(FDISMKT) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.137189	0.0000
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 7

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(FDISMKT,2)
 Method: Least Squares
 Date: 12/07/17 Time: 12:20
 Sample (adjusted): 2010 2016
 Included observations: 7 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDISMKT(-1))	-1.849622	0.227305	-8.137189	0.0002
R-squared	0.916821	Mean dependent var		30.44429
Adjusted R-squared	0.916821	S.D. dependent var		986.1431
S.E. of regression	284.4112	Akaike info criterion		14.27028
Sum squared resid	485338.3	Schwarz criterion		14.26256
Log likelihood	-48.94599	Hannan-Quinn criter.		14.17478
Durbin-Watson stat	1.914287			

Null Hypothesis: FRVS has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.671991	0.0881
Test critical values:		
1% level	-2.886101	
5% level	-1.995865	
10% level	-1.599088	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FRVS)

Method: Least Squares

Date: 12/07/17 Time: 12:25

Sample (adjusted): 2009 2016

Included observations: 8 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FRVS(-1)	-0.101706	0.060829	-1.671991	0.1384
R-squared	0.120526	Mean dependent var		-3251.225
Adjusted R-squared	0.120526	S.D. dependent var		7236.271
S.E. of regression	6786.194	Akaike info criterion		20.59964
Sum squared resid	3.22E+08	Schwarz criterion		20.60957
Log likelihood	-81.39855	Hannan-Quinn criter.		20.53266
Durbin-Watson stat	1.263922			

Null Hypothesis: D(FRVS) has a unit root

Exogenous: None

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.154074	0.0020
Test critical values:		
1% level	-3.007406	
5% level	-2.021193	
10% level	-1.597291	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 6

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FRVS,2)

Method: Least Squares

Date: 12/07/17 Time: 12:26

Sample (adjusted): 2011 2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FRVS(-1))	-1.179489	0.283935	-4.154074	0.0142
D(FRVS(-1),2)	0.647590	0.248592	2.605033	0.0597
R-squared	0.811279	Mean dependent var		1458.167
Adjusted R-squared	0.764098	S.D. dependent var		9464.566
S.E. of regression	4596.913	Akaike info criterion		19.96536
Sum squared resid	84526434	Schwarz criterion		19.89595
Log likelihood	-57.89608	Hannan-Quinn criter.		19.68749
Durbin-Watson stat	2.181253			

Included observations: 6 after adjustments

TEST OF STABILITY OF THE DEPENDENT VARIABLE (MKTPZ)

