Gender diversity in the governance of the Nigerian securities market

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Abstract

Purpose – *The purpose of the paper is to identify the key determinants of stock market performance in Nigeria. More specifically, it is an attempt to determine the effect of gender diversity in leadership roles on the performance of the stock market in Nigeria.*

Design/methodology/approach – *The paper uses annual data from 1980 through 2011 to model the development and performance of the Nigerian stock market through a modified Calderon-Rossell approach. Specifically, the leadership role of women in the governance of the stock market is investigated. Robust regression approach is used to avoid complications associated with the violations of the assumptions underlying the application of ordinary least squares regression.*

Findings – *The empirical analysis shows that level of income, real exchange rate, liquidity, banking sector development, institutional quality, macroeconomic stability and gender are important determinants of stock market performance in the Nigerian stock market. Further, the results indicate that at worst, gender diversity does not play into stock market performance in Nigeria, and at its best, the appointment of women in the management of the Nigerian Stock Exchange is associated with better performance.*

Originality/value – *The paper contributes to the empirical literature on the role of gender diversity and financial performance. The contribution of this paper is the inclusion of gender as an institutional factor among the determinants of stock market performance in Nigeria.*

Keywords *Nigeria, Corporate governance, Financial performance, Gender diversity*

Paper type *Research paper*

Introduction

African stock markets are relatively small and illiquid, suffer infrastructural bottlenecks and exhibit problems that make financial integration difficult. Yartey (2010) and Ojo (2010) observe that African stock markets have not lived up to their expectations in terms of promoting economic development. Thus, it is important to explore the factors that inhibit the performance of stock markets in Africa. Calderon-Rossell (1991) develops a behavioral structural model of stock market performance. The model identifies the key determinants of stock market performance as economic growth and stock market liquidity. Yartey (2010) modified the model following the work of Garcia and Liu (1999) by dichotomizing the determinants into two categories. The macro-economic category includes variables such as the gross domestic product (GDP), credit to the private sector, gross domestic investment, stock market trading activity, private capital flows, foreign direct investment, gross domestic savings, inflation and real interest rate. The second category included institutional quality variables such as political risk, corruption, law and order and democratic institution.

The Nigerian Stock Exchange (NSE) witnessed some major crisis in the past few years. According to Aliyu (2012), the crisis, which began at the advent of the world financial meltdown, rattled the NSE and caused the market index to crash. The market capitalization which stood at 10.18 trillion naira in 2007 dropped to 6.96 trillion naira in 2008 and declined

further to 4.99 trillion naira in 2009. It took the intervention of the Central Bank of Nigeria (CBN) and the Bank of Industry to stabilize the financial market. Etuk (2012), Oluwasegun and Anofi (2012) and Ojo and Ayadi (2014) report several abuses which bordered on recklessness and fraud that were perpetrated by market operators as well as NSE management which led to the abysmal performance of the stock market during the period in question. During this period, the CEOs of the NSE as well as the Nigerian Securities and Exchange Commission (SEC) were both female. There was a lot of accusing fingers pointed at the fact that the leaders of these two organizations were women, suggesting a negative effect of gender diversity in governance on the performance of the stock market in Nigeria. (Sobowale, 2012).

As a member of the United Nations, Nigeria is a signatory to several international agreements on the elimination of gender discrimination (Lincoln and Adedoyin, 2012). In 2009, the National Gender Policy was established to "build a just society devoid of discrimination and harness the full potential of all social groups regardless of sex or circumstance". According to UNECA (2009) and the British Council (2012), Nigeria does not have gender parity because the Nigerian society is highly patriarchal because men dominate all spheres of women's lives. In 2012, Nigeria was ranked 79 of 86 in the Social Institutions and Gender Index. This ranking shows that women are not at parity with men in Nigeria. Lincoln and Adedoyin (2012) note that many countries around the world are introducing measures through legislation and other policy strategies to increase the number of women in executive positions and board roles. For example, Norway introduced a new rule which ensures at least 40 per cent of the membership of corporate boards are women to underscore the significant contribution of women to corporate governance. Okpara (2004) and Omotola (2007) report results which indicate that women are relegated to the background. The attitude toward women is described as that of the traditional African form in which access to equal opportunities is hampered by socio-cultural and religious constraints (Olujide, 2008).

The CBN has advocated for women representation in corporate boards in Nigeria (All Africa, 2012). The CBN statistics show that in 2012, women occupied 27 per cent of senior management positions in Nigerian banks and 15 per cent of board seats. The CBN was trying to influence gender parity through its Banker's Committee. The justification is that incidence of women in executive positions is far below expectations. The fact that the CEOs of both the NSE and the SEC were women was considered a positive development. However, there was another cloud of doubt on the hiring of women to manage both NSE and SEC. There was the perception that women are appointed to executive positions as a part of affirmative action initiatives rather than on their skills and qualifications (Cummings, 2004). Therefore, it is very critical to investigate the contribution of women to corporate governance; otherwise, the old stereotype about the traditional role of women will continue to be propagated.

This paper focuses on determinants of the Nigerian stock market performance and the role that gender diversity in leadership roles plays in the performance of the stock market in Nigeria. The paper uses annual data from 1980 through 2011 to model the development and performance of the Nigerian stock market through a modified Calderon-Rossell approach. It should be noted that none of the existing studies in Nigeria used the Calderon-Rossell model. As a matter of record, all the existing studies on Nigeria focus on the inclusion of women in corporate boards. Specifically, the role of female CEOs in the governance of the stock market is investigated in this study. The contribution of this paper is the inclusion of gender as an institutional factor in the determinants of stock market performance. This is the first attempt to incorporate gender as an institutional factor within the modified Calderon-Rossell model. Diversity in corporate boardrooms is associated with improved knowledge base, skill sets, reputation and a way to combat the "group thinking problem" as espoused by Bohdanowicz (2012) and Trautman (2014).

The Nigerian stock market and its performance

The NSE was established in 1960 as Lagos Stock Exchange, a limited liability company. It was renamed NSE in 1977, with trading floors in Lagos, Port Harcourt and Kaduna. Additional trading floors were created later, and the exchange saw the creation of a second-tier securities market for trading securities issued by medium-sized and wholly owned Nigerian enterprises (Ayadi *et al.*, 1997). The evolution of the market had led to a three-tier market comprising about 200 listed securities on the NSE representing the first tier, 15 securities on the second tier and the third-tier market listing the securities of small and medium-scale enterprises. The NSE is an automated market with electronic listing and trading facilities. It functions through the Central Securities Clearing System, a subsidiary company of the NSE which also offers clearing, settlement, delivery and custodian services (SEC, 2009).

The NSE enjoyed a period of high activity prior to 2008. According to SEC (2009), between 2002 and 2007, the market value of traded stocks grew at an average annual compound rate of 176 per cent. The growth was due to market deregulation and financial sector reform, including the banking consolidation of 2004 through 2007. Other factors include globalization, economic and political stability, public awareness efforts and foreign portfolio investment. The SEC (2009) report highlights the challenges facing the NSE, which include a limited number of trading platforms, arbitrary amendments of rules which undermine confidence in the market, non-availability of timely corporate reports, high transaction costs and weak regulatory oversight.

Another revelation from the SEC (2009) report is lack of coordination among the capital market regulators in Nigeria, which had resulted in frequent inconsistent policy initiatives. Moreover, there is a widespread perception in the capital market that the NSE as a self-regulating organization is independent of the SEC and therefore not subject to SEC rules and regulation despite a federal law to the contrary. The governance of the NSE raises questions about transparency and accountability. According to SEC (2009), the trading rules, processes and practices of the NSE are seen to give management considerable power to change rules at will. The powers acquired by NSE management are regarded inappropriate to the extent that top management actions impede the smooth functioning of the stock exchange. For example, many listed firms fail to comply with NSE rules on timely reporting of information, including Transcorp, a corporation whose board chairperson is the chief executive of the NSE.

Ojo (2010) notes that Nigeria and other African countries had not made any successful economic impact when compared with other African countries without stock markets. Ojo identified several unwholesome activities of stock market participants which stymied the growth of the Nigerian stock market. For instance, in 2005, Nigerian banks were mandated to recapitalize, and the bulk of the funds raised by banks were obtained by starving industrial and/or productive activities in the economy. Dee (1986) reports various market manipulative practices of insider deals which distorted market pricing and thus vitiates a major expected function of an efficient securities market. In January 2007, the Nigerian Investment and Securities Tribunal was reported to have recovered 40 billion naira (about $260 million) from fraudulent capital market participants in less than three years (Ojo, 2010). Other shady deals on the NSE included naked short sales, and employment of large amount of bank margin loans for spurious stock deals to manipulate stock prices.

Previous studies have identified the determinants of stock market performance. Most recently, in Nigeria, Maku and Atanda (2010) examined macroeconomic determinants of stock market performance in Nigeria with data from 1984-2007. Using the augmented Engle-Granger cointegration test, they found that exchange rate, inflation, money supply and economic growth are significant determinants of stock market performance in the long run in Nigeria. Osisanwo and Atanda (2012), using data from 1984-2010, used ordinary least squares (OLS) regression to analyze the determinants of stock market performance in

Nigeria. Their findings indicate that interest rate, previous stock returns levels, money supply and exchange rate are the main determinants of stock market returns in Nigeria. This paper contributes to the literature by modeling the development and performance of the Nigerian stock market using robust regression through the modified Calderon-Rossell approach. The modified Calderon-Rossell model captures both macroeconomic as well as institutional factors as determinants of stock market performance. The two earlier studies in Nigeria did not capture institutional factors in their models. Previous research (Yartey, 2008) demonstrates that institutional factors are important determinants of stock market development because they enhance the viability of external finance.

Gender diversity and corporate governance

One of the nexus of the corporate civil rights debate revolves around the issue of equitable access to leadership positions by women. The under-representation of women in corporate governance is ascribed to an institutionalized environment which Nelson and Levesque (2007) described as "discrimination without intentionality". Yet Simpson *et al.* (2010) argue that the inclusion of women on boards of corporations is seen as a good business decision because they possess unique attributes that tend to contribute positively to performance. Carter *et al.* (2003) report results that suggest a positive relationship between gender and ethnic diversity of corporate boards and corporate performance measured by Tobin's Q. However, Adams and Ferreira (2009), reported a negative effect of gender diversity on corporate performance. This result is premised on the significant impact that female board members have on chief executive officers through excessive monitoring. According to Almazan and Suarez (2003) and Adams and Ferreira (2009), too much board monitoring of corporate executives leads to a decrease in shareholder wealth. A recent study done in Indonesia (Darmadi, 2013) found that the representation of female top executives is negatively related to return on assets or Tobin's Q, suggesting that female representation is not associated with an improved level of performance. However, this study only covered one financial year (1997).

The overall effect of women on corporate governance is a matter of debate. Some studies that use data from one or two periods show that gender diversity on boards is associated with higher stock values and greater profitability (Carter *et al.*, 2010, Catalyst, 2007). Yet other studies using panel data to explore the effect of adding women to boards have shown no effect (Farrell and Hersch, 2005; Rose, 2007) or a negative effect (Adams and Ferreira, 2009). Women face several barriers arising from preconceptions and stereotypes about their competence, leadership skills and assertiveness (McShulskis, 1996; Eagen *et al.*, 2002). Steinpreis *et al.* (1999) report results which indicate that both sexes showed preference for hiring male applicants. Women are said to exist "between a rock and a hard place" because they are impacted both by behavior of superiors as well as subordinates. Catalyst (2005) reports that most people feel that women are not fit for top executive positions. Fagenson and Marcus (1991) find results which suggest that masculine features are associated with successful entrepreneurial achievement.

Oakley (2000) identifies three key reasons to explain the barriers facing women, thereby creating a glass ceiling. The corporate practices of recruitment, retention and promotion seem to overlook women. There is also the existence of behavioral and cultural practices that lead to stereotyping women and their leadership style. The third reason has to do with structural as well as cultural explanations which are buried in feminist theory.

Numerous studies have examined the relationship between gender diversity and financial performance. Many of these studies have typically been conducted in the context of developed countries. A few studies exist for Nigeria. Garba and Abubakar (2014) report findings which support a positive impact of gender diversity on the performance of insurance companies in Nigeria from 2004 through 2009. Oba and Fodio (2013) also report that the presence of female directors on the management boards of Nigerian corporations portends a positive impact on corporate performance. However, Akpan and Amran (2014)

report findings which suggest that the presence of women on the management boards of Nigerian corporations led to a negative corporate performance. All the aforementioned studies on Nigeria investigated firm performance when women serve on the corporate board. This current study focuses on the role of women as corporate chief executives. This study contributes to the literature on gender diversity in governance by examining the effect of leadership gender on stock market performance in Nigeria. Specifically, we include gender as an institutional factor within the modified Calderon-Rossell model.

Methodology

The modified Calderon-Rossell model

The Calderon-Rossell (1990, 1991) model is a behavioral structural model whose focus is the development of a stock market in an economy. Accordingly, the model postulates that stock market performance, defined as stock market capitalization, is driven by the combined effect of economic growth and stock market liquidity. Mathematically, the relationship is presented as:

$$Y = PV = Y(G, T) \quad (1)$$

where, Y is stock market capitalization, P is number of listed firms on a stock market, V is the average price of listed securities, G is per capital gross national product and T is stock market turnover ratio, an index that measures liquidity.

Following the works of Pagano (1993) and Garcia and Liu (1999), Yartey (2007, 2008, 2010) formally modified the Calderon-Rossell model to capture both macroeconomic as well as institutional factors as determinants of stock market performance. Garcia and Liu (1999) define stock market performance as a multidimensional concept, which is measured by stock market size, liquidity, volatility, concentration and integration with world capital markets, as well as the legal rule, which captures both the regulation and supervision of the market.

The modified Calderon-Rossell model is defined mathematically as:

$$Y_{it} = \alpha_i + \beta Y_{it-1} + \gamma M_{it} + \delta Q_{it} + \varepsilon_{it} \quad (2)$$

where, Y is stock market capitalization, M is a matrix of macroeconomic variables and Q is a matrix of institutional quality. The macroeconomic variables include per capita GDP, credit to the private sector, real interest rate, inflation, money supply, real exchange rate, direct foreign investments and stock market liquidity. On the other hand, the institutional quality variables include political risk, law and order, democratic accountability, transparency and bureaucratic quality (Garcia and Liu, 1999; Yartey, 2010). The relevant variables of the modified Calderon-Rossell model are described below.

Shareholder protection. La Porta *et al.* (1997) show that shareholder protection is positively correlated with the breadth of an equity market as well as the measure of a firm's access to external capital. Pagano and Volpin (2005) also report results which suggest that better investor protection spurs a firm to issue more equity and thus leads to a broader stock market.

Macroeconomic stability. Macroeconomic stability is logically linked to stock market performance when investors are motivated to invest in a more stable environment. Garcia and Liu (1999) find no significant relationship between macroeconomic stability and stock market performance in a sample consisting of industrial and developing countries. Yartey's (2008) results are consistent with Garcia and Liu. On the other hand, Boyd *et al.* (2001) and Nacuer *et al.* (2007) report that macroeconomic instability negatively impacts on stock market capitalization. The proxies for macroeconomic (instability) stability are inflation and interest rates.

Stock market liquidity. The measure often used by researchers is the turnover ratio which measures the value of shares traded on an exchange divided by the total value of shares listed. It is an indicator of stock market trading volume relative to its size. According to

Beck and Levine (2004), more liquid stock markets create more incentives to long-run investments because they provide an exit-option for investors. As a consequence, liquid stock markets foster efficient allocation of resources and promote economic growth.

Bank development. Beck and Levine (2004) define bank development as bank claims on the private sector by deposit money banks divided by GDP. It is a measure which isolates loans provided by deposit money banks to the private sector. Garcia and Liu (1999) also use another definition of financial intermediary development in line with Levine and Zervos (1998), who use the ratio of broad money supply to GDP to describe the size of the banking sector in relation to the economy. Garcia and Liu argue that as both the stock market and the banking sector intermediate savings toward investment projects, it is possible to see them as complements or substitutes. They note further that in the short run, the relationship between them can be negative because investors want to arbitrage between interest rate and rate of return from the stock market. In the medium to long term, investors would want to diversify their assets by spreading their savings over assets in the stock market and banking sector. Demirguc-Kunt and Levine (2001) report a positive relationship between stock market and banking sector development.

Income. La Porta *et al.* (1996) report that per-capita income is a variable which captures enforcement of legal rights and quality of accounting standards, which are critical factors in stock market performance. Garcia and Liu (1999), Yartey (2008) and Kemboi and Tarus (2012) report a positive effect of higher real income on stock market performance. There exists a contrary view, as reported by Nacuer *et al.* (2007), that higher income does not directly promote stock market performance.

Savings and investment. Garcia and Liu (1999) argue that the reason Latin American stock markets are smaller than markets in East Asia is the low savings rate in the former. Yartey (2008) also notes the importance of savings and investment in the development of a stock market. More importantly, Vittas (1998) argues that contractual savings in an economy represent a strong impetus for the growth of stock markets. Savings and/or investment are defined as the ratio of gross domestic savings to GDP. They are also defined as the proportion of savings to investment in the economy. Of special importance is direct foreign investment as a good source of external financing in an economy.

Institutional quality and empowerment. Yartey (2008) notes that foreign investors base foreign investment decisions on quality of governance, legal protection and accountability in a potential investment environment. A key institutional variable in this study is defined as an empowerment rights index from the Cingranelli-Richards Human Rights Data Project. The new empowerment index is an additive index calculated to capture freedom of speech, assembly and association, religion, workers' rights, foreign and domestic movement as well as electoral self-determination in a country. This index is highly correlated (0.84 correlation coefficient) with Global Insight's Business Conditions and Risk Indicator. The empowerment index is used because of lack of data for the entire sample period. This measure is consistent with Yartey's (2007) findings that law and order, democratic accountability and bureaucratic quality are important for stock market performance in Africa. Ajide (2014) also reports results which confirm the positive impact of institutional governance quality factors on the performance of Nigerian stock market.

Data

The data documented in Table I are obtained from the World Bank's World Development Indicators, CBN, NSE and Cingranelli-Richards Human Rights Data Project. The time series are annual data from 1980 through 2011. The general approach in this paper is to identify the determinants of stock market performance in Nigeria using the aforementioned data. More specifically, the authors explore the relevance of gender diversity in the management of the NSE. To achieve this two-pronged investigation, the method of robust regression is applied.

Table I Sample description

Variable	*Variable description*
CAP	Stock market capitalization as a percentage of GDP
GDP	Logarithm of per capita GDP
CPS	Banking sector credit to the private sector as a percentage of GDP
VAL	Total value of stock traded as a percentage of GDP; measure of liquidity
CPI	Consumer price index
DFI	Inflow of foreign direct investment as a percentage of GDP
INT	Real interest rate
PCF	Private capital flows as a percentage of GDP
REE	Real effective exchange rate (Base: 2005 = 100)
SAI	Ratio of savings to investment in the economy
SAV	Savings as a percentage of GDP
MON	Money supply as a percentage of GDP
WOM	Dummy variable representing female CEO of Nigerian Stock Exchange
EMP	Cingranelli-Richards new empowerment rights index

Robust regression

The OLS approach is a popular way of using data to estimate the coefficients of a model in an attempt to test the validity of a causal relationship (El-Fallah and El-Sallam, 2011). Schumacker *et al.* (2002) note that an application of OLS in multiple regression analysis is premised on some assumptions. These assumptions include the normality of residual errors, equality of variance at all levels of independent variable (homoskedasticity) and non-correlation between the stochastic errors and independent variable. Ho and Naugher (2000) report that sample estimates are misleading if there are missing data, outliers, non-normal errors and multicollinearity. According to Schumacker *et al.* (2002), an approach for dealing with the violations of the underlying assumptions of OLS is robust regression.

Assume a linear relationship of the form:

$$Y = a + b_1X_1 + b_2X_2 + e \quad (3)$$

where a dependent variable, Y, is defined in terms of an intercept, *a*, and two *b* regression coefficients *times* corresponding *X* independent variables plus a stochastic error term, *e*. The OLS method of estimation produces coefficients that minimize the sum of squared deviations between predicted and actual values of Y defined as e^2. When the underlying assumptions of OLS method are violated, the OLS parameter estimates are no longer valid. Huber (1964, 1973, 1981) developed the most common version of robust regression, which is said to be a generalization of the maximum likelihood estimation, which is referred to as M-estimation (Fox and Weisberg, 2011). According to Schumacker *et al.*, the M-estimators replace the squared residuals in OLS with a function of the residuals given by:

$$Min\sum_{i=1}^{h}\rho(e_i^2) \quad (4)$$

with ρ being a symmetric function whose unique minimum is zero. The ρ-function is defined to satisfy some objective function using a weighting scheme. The M-estimator used in this paper is based on Huber's objective function with Tukey's bisquare (biweight) and a median-centered program (Fox and Weisberg, 2011; Schumacker *et al.*, 2002).

Empirical results

Table II reports the comovement among the variables used in this study. It is striking to note the high correlation coefficient (0.90) between CAP and VAL. This is an indication that market capitalization and liquidity are highly related. The table also reveals a high correlation between CAP and GDP. The negative correlation between money supply (MON) and direct foreign investment (DFI) points to an active monetary policy on the part of the Nigerian Central Bank. The apex institution seems to try to mop up liquidity in the economy by decreasing money supply when new funds enter the economy via direct foreign

Table II Correlation coefficients

Variables	*CAP*	*CPI*	*CPS*	*DFI*	*EMP*	*GDP*	*INT*	*MON*	*PCF*	*REE*	*SAI*	*SAV*	*VAL*
CAP	1.00	−0.34	−0.10	−0.25	−0.04	0.73	0.32	0.33	0.68	−0.17	0.13	0.19	0.90
CPI		1.00	0.50	0.44	−0.13	−0.24	−0.59	−0.34	−0.36	−0.21	−0.29	−0.18	−0.33
CPS			1.00	0.48	−0.51	−0.04	−0.41	−0.33	−0.19	−0.43	0.06	−0.09	−0.17
DFI				1.00	−0.56	−0.05	−0.26	−0.77	−0.49	−0.59	0.04	−0.72	−0.26
EMP					1.00	−0.19	−0.08	0.39	0.03	0.46	−0.12	0.31	0.02
GDP						1.00	0.29	0.18	0.54	−0.44	0.16	0.03	0.68
INT							1.00	0.28	0.40	0.07	0.09	0.17	0.29
MON								1.00	0.79	0.50	−0.21	0.92	0.39
PCF									1.00	0.10	−0.13	0.68	0.75
REE										1.00	−0.17	0.46	−0.16
SAI											1.00	−0.15	0.12
SAV												1.00	0.24
VAL													1.00

investment. There is also a high correlation between money supply and savings in the economy.

Table III presents the results of robust regression of the determinants of stock market performance in Nigeria from 1980 through 2011. Stock market performance is defined as market capitalization as a proportion of GDP as reported in Table I. The robust regression model defined in equation (2) is applied to selected variables identified in Table I to obtain five different model results. Model 1 represents a robust regression estimation without

Table III Robust regression results

Variable	*Model 1 Coef*	*Model 2 Coef*	*Model 3 Coef*	*Model 4 Coef*	*Model 5 Coef*	*Relevant?*
Constant	−0.176 (0.00)	−0.258 (0.00)	−0.251 (0.00)	−0.170 (0.00)	−0.096 (0.00)	Yes Negative
Lagged CAP	−0.254 (0.00)	−1.425 (0.00)	−1.420 (0.00)	−0.216 (0.00)	0.376 (0.00)	Yes Positive
GDP	0.071 (0.00)	0.104 (0.00)	0.0999 (0.00)	0.069 (0.00)	0.041 (0.00)	Yes Positive
CPS	−0.0004 (0.00)	−0.0003 (0.44)	0.0016 (0.31)	0.0002 (0.54)	−0.0003 (0.61)	No
CPS-squared			−0.0002 (0.21)	−0.00006 (0.07)	−0.00001 (0.87)	No
CPI	0.000006 (0.60)	0.00007 (0.11)	−0.00006 (0.14)	0.000002 (0.84)	−0.000007 (0.74)	No
DFI	0.0003 (0.16)	0.001 (0.23)	0.0007 (0.43)	0.0002 (0.36)	−0.00002 (0.96)	No
INT	0.00002 (0.13)	−0.0001 (0.03)	−0.0001 (0.02)	−0.00003 (0.04)	−0.00004 (0.09)	Yes Negative
PCF	0.0002 (0.05)	0.0006 (0.02)	0.0008 (0.01)	0.0002 (0.02)	−0.00013 (0.34)	No
REE	0.00001 (0.00)	0.00001 (0.04)	0.00001 (0.07)	0.00001 (0.00)	0.000006 (0.03)	Yes Positive
SAI	−0.000005 (0.76)	0.0000007 (0.97)	0.000007 (0.71)	−0.000003 (0.53)	−0.00001 (0.14)	No
SAV	0.0001 (0.11)	0.0003 (0.31)	0.0001 (0.78)	0.0002 (0.13)	0.0026^{++} (0.28)	No
MON			−0.000009 (0.98)	−0.00009 (0.38)	−0.00007^{++} (0.73)	No
WOM		−0.005 (0.00)	−0.007 (0.00)		0.0028 (0.00)	Yes Positive
EMP	−0.0003 (0.00)	−0.0007 (0.00)	−0.0005 (0.12)	−0.0003 (0.00)	−0.0003 (0.02)	Yes Negative
VAL			0.0132 (0.00)	0.0045 (0.00)	0.001^{++} (0.06)	Yes Positive
R-squared	0.804	0.688	0.683	0.799	0.804	
Adjusted *R*-squared	0.674	0.449	0.366	0.623	0.608	
R_w-squared	0.996	0.977	0.981	0.998	0.994	
Adjusted R_w-squared	0.996	0.977	0.981	0.998	0.994	
*R*n-squared	3,718.52	550.57	541.15	4,460.55	1,427.89	
Prob (*R*n-sq.)	0.00	0.00	0.00	0.00	0.00	

Notes: $^{++}$Denotes a transformation of independent variables to remove multicollinearity; dependent variable is CAP: M-estimation: bisquare, median-centered

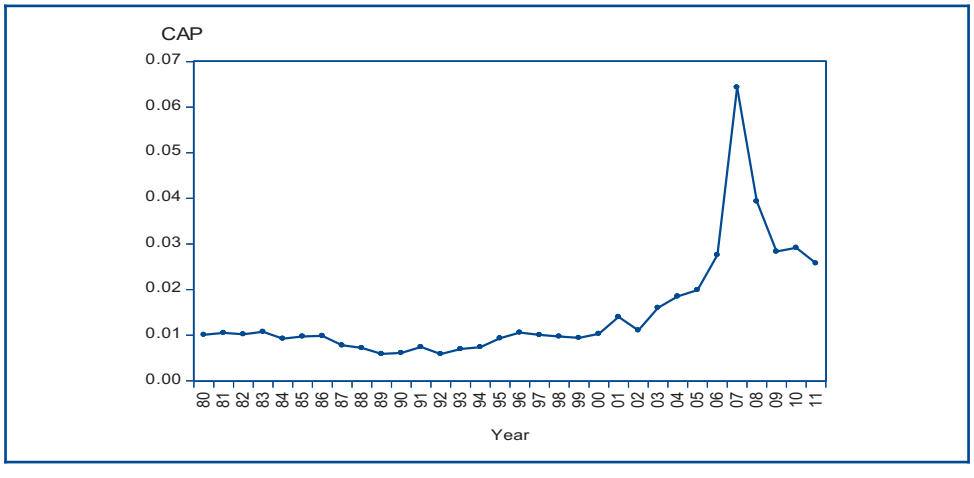
CPS-squared, MON, WOM and VAL. The CPS variable denotes credit to the private sector by the banking system, and this variable is expected to be positively related to stock market capitalization. However, at a higher level of banking sector development, CPS-squared should be negatively related to stock market capitalization.

Model 2 refers to robust regression estimation of stock market capitalization on independent variables excluding CPS-squared, MON and VAL. Model 3 is an estimation approach which includes all independent variables. Model 4 excluded only the dummy variable representing female management of the NSE. Given the presence of high correlation among some of the independent variables, an attempt is made not to interpret the coefficients associated with the independent variables. Instead, the focus is on the goodness-of-fit of the four models. When Models 3 and 4 are compared, an *F* statistic shows no statistical difference between the reported *R*-squared. The same results hold when the *R*-squared values of Models 4 and 5 are compared. We further used Mallows' Cp criterion, which shows no statistical significance in the explanatory power of all models. Renaud and Victoria-Feser (2010) report that R_w-squared is a better measure of model fit than the regular R^2 in a regression model. Model 4, which produced an R_w-squared of 0.998, is considered the best model. Given that Model 4 with R_w-squared of 0.998 has a better fit than Model 3 with R_w-squared of 0.981, it is evident that gender may not be an important determinant of stock market performance in Nigeria during the period studied.

Model 5 represents a robust estimation with transformed data to take care of multicollinearity. In this model, the coefficients of individual independent variables have meaning. At the conventional levels of statistical significance, the results show that stock market capitalization is positively related to lagged capitalization, income (GDP), real exchange rate (REE), stock market liquidity (VAL) and female management (WOM), but negatively related to banking sector development (CPS), macroeconomic instability (INT) and institutional quality (EMP).

In view of the many unwholesome activities in the Nigerian capital market and the abysmal performance of the NSE around 2008, several commentators heaped the blame on the chief executive officer at the time, who happened to be female. Some of the commentators introduced the issue of gender into the debate. Figure 1 shows the stock market capitalization-to-GDP from 1980 to 2011. During this period, the NSE had three CEOs comprising two males and one female. The female CEO managed the NSE from 2000 through 2010. In 2000, when the female CEO came into office, stock market capitalization-to-GDP was about 0.01, and at the time she left office, the ratio was about 0.029. Thus, the average annual growth rate in market capitalization-to-GDP was over 10 per cent during the tenure of the female CEO.

Figure 1 NSE market capitalization-to-GDP ratio 1980-2011



Summary and conclusion

The focus of this study is twofold. The first focus is to identify key determinants of stock market performance measured as the ratio of stock market capitalization to GDP. The second focus is to examine if gender diversity in the management of the NSE plays a role in the performance of the stock market in Nigeria. This study represents the first attempt to explore corporate performance of an institution with a female CEO in Nigeria. The empirical analysis shows that level of income, real exchange rate, liquidity, banking sector development, institutional quality, macroeconomic stability and gender are important determinants of stock market performance of the Nigerian stock market. The results also indicate that at worst, gender diversity does not play into stock market performance in Nigeria, and at its best, the appointment of women in the management of NSE is associated with better performance. This result is in tandem with those reported by Adams and Ferreira (2009), who found no difference in firm's financial performance around the appointment of a woman or a man as the CEO in the USA The puzzle in the results is the negative relationship between empowerment, used as a measure of institutional quality, and stock market capitalization. The puzzle can be viewed in relation with the base of foreign investors' decisions; beyond the quality of governance, legal protection and accountability in a potential investment environment, the authentic base of huge foreign investments is profit eagerness for the sake of increasing power. In the past few years, one has seen countries such as Italy and Spain with well-consolidated democracies, legal protection and accountability being attacked by speculators (foreign investors) through financial markets, making, for example, in Spain, its risk rate to increase to a not returning point for the economy as it happened in Greece.

The results reported in this study do not dispute the significant contribution of women in the boardroom, as a matter of fact they support a continuing involvement of women in corporate governance in Nigeria. It is reported that Nigerian women avoid promotion to executive positions because of the perception that such positions involve working anti-social hours with frequent travels away from home (Lincoln and Adedoyin, 2012). Any effort to encourage women in corporate governance must explore work flexibility options through voluntary strategies on the part of businesses. In addition to this, there should be legal requirements imposed on corporations to mandate them to include women in their management structure. This is consistent with the practice in several European countries such as Norway and France, where Bohdanowicz (2012) notes that gender parity rule is in vogue. April *et al.* (2007) document a similar requirement in South Africa through the South African Employment Equity Act of 1988.

Of utmost importance is the need to entrench accountability and transparency into the Nigerian securities market. These virtues are present when gender diversity is the accepted norm. Lincoln and Adedoyin (2012) document a few atrocities recorded within Cadbury Plc. in Nigeria, and they note that unethical practices are associated with a heavy cost and risk. Along this direction, the National Gender Policy should be vigorously promoted and strengthened in Nigeria. As noted by April *et al.*, changing female positions in the workplace implicitly requires that male positions in the home must change. Both men and women must be prepared to participate in the journey.

In view of some of the revelations coming out of the Nigerian capital market, it is important to find ways to transform the market to perform its envisioned functions. The regulatory framework needs to be reformed to guarantee that policy rules by all regulators are well-coordinated. The trading window should be expanded beyond three hours on a typical business day and the transaction fee structure revamped to promote the liquidity of the market. The Nigerian Government should put in place an environment where institutional investors are encouraged to exist. The activities of institutional investors in a stock market help in no small way to gear up liquidity. The current efforts to collaborate with Nasdaq OMX through a program referenced X-Stream is a step in the right direction because such a collaboration will bring more foreign investors into NSE.

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