Stock Market Development and Economic Growth in Nigeria: An Empirical Assessment

Aigbovo, Omoruyi

Izekor, Andrew Osaretin

Department of Banking and Finance
University of Benin
Nigeria

Abstract

Finance-growth nexus is reinvestigated by time series econometric techniques (unit root test, co-integration, error correction mechanism and granger causality) over the period of 1980-2011 for Nigeria. Economic growth was proxy by Real Gross Domestic Product (RGDP) while stock market development measures considered include; Market Capitalization (MCAP), Turn Over Ratio (TR), Total Value of Share Traded (VLT), and All Share Index (ASI). The study reveals that turnover ratio (TR) positively and significantly influences economic growth both in the short-run and long-run while total value of share traded (VLT) and all share index (ASI) were significant in the short-run. Also, all share indexes was observed to have a negative slope coefficient while value of share traded has a positive slope coefficient. Market capitalization positively and significantly influences economic growth in the long-run. The Granger causality test showed that economic growth promotes stock market development, but there is evidence of causality running from stock market development to economic growth. This result is consistent with theoretical postulation which suggests that stock market development have a key role to play in the economic growth of developing countries. In light of these findings, the study recommends that the government should promote greater regulation, supervision, and security of stock market and also improve the existing infrastructure in order to increase the level of investment in the market.

Keywords: Stock Market Development, Economic Growth, Co integration, Granger Causality, Nigeria

JEL Classification: E40, E44, G1, G11, O16

1. Introduction

The relationship between stock market development and economic growth has been a debatable issue in finance and economics. This debate has produced two schools of thought. The first is the positive linkage school of thought. It is the opinion of this school of thought that a well functioning stock market will enhance economic growth (Alile, 1984; Atje and Jovanovic, 1993; Oyijide, 1994). The other school of thought however says that the alleged positive linkage between stock market development and economic growth is not proven and at best is ambiguous (Dimirguc-Kunt and Levine, 1996; Shleifer and Summer, 1988; Bhide, 1989). Numerous researchers especially in advanced European and Asian countries have contributed to this discourse by empirically providing evidence supporting a significant positive impact of stock market development on economic growth, though there seems to be a few dissenters who have opined that the impact is not significant. However, there exists very little empirical evidence on the relationship between stock market development and economic growth in a developing country like Nigeria. The majority of the empirical literature on growth that explicitly model finance as an explanatory variable in the growth process in Nigeria is limited to financial intermediation by the banking sector and fails to mention the role of the non-banking sector; like the stock markets. More specifically, these studies have used highly aggregated indicators of financial intermediation; for instance, the ratio of broad money supply (M2) or private sector credit to GDP. Hence the importance of this study is justified. The objective of this study is to contribute to the finance-growth nexus debate by focusing on the role of the stock market, using time series econometric techniques (unit root test, co-integration, error correction mechanism and granger causality)Error Correction Mechanism to determine whether stock market development significantly has an impact on the Nigerian economy. After introduction, the rest of the paper is organized as follows.

Section 2 provides a review of the literature. Section 3 deals with the data and methodological issue. Section 4 presents empirical findings, while, section 5 concludes the paper.

2.0 Literature Review

Several attempts have been made by previous researchers to link the growth of stock market with the economy. One of the early studies which examined the role of stock market development in economic growth process was by Atje & Jovanovic (1993). The researchers analysed forty countries from 1980 to 1988 employing OLS regressions on a cross-sectional model. Using the ratio of annual value of all stock market trades to GDP (VALT) as the stock market development measure, Atje & Jovanovic (1993) found large growth enhancing effects of stock markets on economic development. Levine & Zervos (1996), building on Atje & Jovanovic's (1993) work used instrumental variable procedures on pooled cross-country, time series regressions for forty-one countries from 1976 to 1993. Levine & Zervos (1996) found that stock market development (measured by an overall stock market development index) is strongly, positively correlated with economic growth, even after controlling for other growth influencing factors. These studies have however been criticized by other researchers due to flaws in their methodologies. Harris (1997) suggests that Atje & Jovanovic's (1993) findings may be misleading since they used lagged investment as opposed to current investment. According to Harris (1997), this inadequately deals with endogeneity and gives rise to omitted variables bias, thus the coefficient of stock market development is biased upwards. So Harris (1997) includes current investment instead of lagged investment into the model and estimates it using two stage least squares (2 SLS) estimation. Harris (1997) found that the effects of stock market development do not offer much explanation for economic growth. In terms of the early market-based work, Levine & Zervos (1996) themselves cautioned that their results should be taken as suggestive of partial correlations as there are limitations associated with cross-country growth regressions. Levine & Zervos (1996) suggested that a cross-country growth regression suffers from measurement, statistical and conceptual problems. According to Levine & Zervos (1996), measurement issues stemmed from inconsistencies in the way variables are defined, collected, and measured across countries; statistical problems exist since regression analysis assumes that the observations are drawn from the same population however vastly different countries often appear in cross-country regressions, and conceptual issues exist since cross-country regressions do not resolve issues of causality and coefficients are not interpreted with the required caution since cross-country regressions often involve averaging over long periods. Mohtadi & Agarwal (2004) also caution against these three methodological issues in Levine and Zervos (1996 & 1998).

Amongst studies employing more advanced panel and time series methodologies (such as the panel instrumental variables approach and Johansen-Juselius (1990) cointegration to investigate the impact of stock market development on real activity includes Filer, Hanousek & Campos. (1999), Mohtadi and Agarwal (2004), Van Nieuwerburgh, Buelens & Cuyvers (2006), Padham (2007), and Shabhac, Ahmed & Ali (2003). Using the ratio of stock market capitalization to GDP (MCP), turnover velocity and the change in the number of domestic listed shares as stock market development measures, Filer et al. (1999) applied Granger causality tests to an unbalanced panel of sixty-four countries over varying time periods between 1985 and 1997. Filer et al. (1999) found a strong relationship between stock market development and economic growth in twenty one developing countries from 1977 to 1997. The dynamic panel model is estimated using the instrumental variables approach and reveals that stock market development positively influences growth directly when the turnover ratio (TURN) is used, i.e., the ratio of total shares traded value to market capitalization and indirectly when market capitalization (MCP) is used. Chee, Zulkornian, Siong & Venus (2003) examine the relationship between stock market development and economic growth in Malaysia. Their result shows that stock market development has a significant positive impact on economic growth in Malaysia. The authors also reported that stock market development Granger-causes economic growth.

Van Nieuwerburg et al. (2006) analysed the finance – growth nexus in Belgium, from 1832 to 2002 and also during various sub-periods between 1832 and 2002, employing Johansen-Juselius (1990) cointegration and Granger causality tests. The researchers used five stock market development measures and conclude that financial development substantially affected Belgium's economic growth. Specifically, Van Nieuwerburgh et al. (2006) found that stock market development played a smaller role in economic performance prior to 1873 in comparison to the post 1873 period, while the stock market influenced Belgium's economic growth most significantly between 1873 and 1935, and there was a smaller influence of the stock market on economic performance after 1935.

Therefore, the researchers found that the relationship between stock market development and economic performance was time – varying in nature, changing with the institutional changes in Belgium (i.e. liberalization of the stock market in 1867, laws passed pertaining to limited liability companies in 1873 and reforms of the stock market and financial system in 1935). Liu & Hsu (2006) reported a positive impact on economic growth of stock market development in Taiwan, Korea and Japan. Padhan (2007) assessed the Indian finance – growth relationship by applying Johansen-Juselius (1990) cointegration tests and Toda-Yamamota, Dolado & Lutkephol (TYDL model) Granger non-causality tests to monthly data from 1991 to 2005. Padhan's (2007) results show a long-run relationship between finance and growth, with bi-directional Granger causality between stock market development and economic activity. While Shabhaz, et al., (2008) found that in Pakistan, from 1971 to 2006, there was a long-run relationship with bi-directional causality between stock market development (measured by market capitalization - MCP) and economic growth, though short-run causality was uni-directional from finance to growth. Adjasi & Biekpe (2006) studied the effects of stock market development (measured by MCP, VALT, and TURN) on economic growth in a dynamic panel of fourteen African countries over varying periods from 1975 to 2001. Employing the GMM dynamic instrumental variable modeling approach, Adjasi & Biekpe (2006) found that on the whole stock market development (only when using VALT) is important for growth. When countries were divided into income groups then stock markets had significant positive influences on growth only in upper middle income countries (Botswana, Mauritius and South Africa), while classifying countries as to market capitalization groups showed that stock markets were more important in countries with moderately capitalized markets (Mauritius and South Africa). Nowbutsing & Odit (2009) provide support to Adjasi & Biekpe's (2006) findings for Mauritius as they also find that stock market development (i.e., MCP and VALT as measures) positively affects growth in the short-run and long-run from 1989 to 2006. The study by Muhammed, Nadeem & Liaquat (2008) confirm that there is a long-run relationship between stock market development and economic growth in Pakistan.

Enisan & Olufisayo (2009) examined the effects of stock market development, measured by MCP and VALT, on economic growth in seven African countries from 1980 to 2004. The autoregressive distributed lag (ARDL) bounds test and the vector error correction model(VECM) based Granger causality tests were used. Enisan & Olufisayo (2009) only find a long-run relationship between stock market development (irrespective of the indicator) and growth in Egypt and South Africa, with uni-directional Granger causality from finance to growth. VAR based causality tests show bi-directional causality between stock market development (irrespective of the indicator) and growth prevails in the Ivory Coast, Kenya, Morocco and Zimbabwe. While in Nigeria there is weak evidence of growth led finance when MCP is used as the development measure. N'zue (2006), studying the Ivory Coast from 1976 to 2002, provides differing findings to that of Enisan & Olufisayo (2009) for the Ivory Coast. Bivariate Johansen cointegration tests performed by N'zue (2006) revealed no cointegration tests were used and several control variables were included then N'zue (2006) found that a long-run relationship between stock market development and economic growth existed along with uni-directional causality which ran from financial development to growth. Ezeoha (2009) also reached differing conclusions to Enisan & Olufisayo (2009) when examining the impact of stock market development (measured by MCP) on domestic and foreign private investment flows in Nigeria using Johansen (1988) cointegration. Ezeoha (2009) find a positive, significant relationship between stock market development and domestic private investment growth, which in turn positively influences economic growth in Nigeria. Odhiambo (2010) empirically studied the relationship between three stock market development measures (i.e. MCP, VALT, TURN) and economic growth in South Africa from 1971 to 2007. ARDL bounds test results indicate that there is a long-run relationship between financial development and growth irrespective of the indicator used, while causality findings are sensitive to the stock market development measure used. When VALT and TURN are used then stock market development seems to Granger-cause economic growth, whereas when MCP is used then economic growth Granger causes stock market development (Odhiambo, 2010). Therefore, Odhiambo (2010) concludes that overall there is a predominant causal flow from stock market development to economic growth in South Africa.

In Nigeria, Osinubi and Amaghionyeodiwe (2003) employed ordinary least squares regression (OLS) to examine the relationship between Nigeria stock market and economic growth for the period 1980-2000. Empirical result reveals that there is a positive relationship between the stock market and economic growth. Also, Obamiro (2005) examine the impact of the Nigeria stock market on Nigeria's economic growth. The researcher found that stock market significantly and positively impact the Nigeria stock market.

Adamu and Sanni (2005) investigate the relationship between stock market and economic growth in Nigeria using Granger-causality test and regression analysis. The result reveals a one-way causality from GDP growth to market capitalization and a two-way causality between GDP growth and market turnover. They also found a positive and significant relationship between GDP growth and turnover ratio. Abu (2009) investigate the impact of stock market development on economic growth in Nigeria employing Error correction method. The researcher found that stock market development increases economic growth in Nigeria. Adenuga (2010) examined the relationship between stock market development indicators and economic growth in Nigeria using vector error correction model (VECM) technique, for the period 1990 to 2009. He employed three measures of stock market development [total value of shares traded ratio (vr), market capitalization ratio (mcr) and turnover ratio (tr)]. The result shows a positive relationship between the three indicators that represent stock market development and economic growth in Nigeria.

3.0 Methodology

The paper examines the effect of stock market development on the economic growth of Nigeria. The study hypothesized that stock market development does not have a significant effect on Nigeria's economic growth. To test the hypothesis, annual time-series data from 1980 to 2011 was obtained from the Central Bank of Nigeria Statistical bulletin. The model is built on the empirical work of previous researchers and estimated employing the econometric techniques of Augmented Dickey-Fuller (ADF) unit root test, Johansen co-integration test, and Error Correction Mechanism (ECM).

Specification of Empirical Model

The model is based on the modification of the empirical models of Abu (2009) and Adenuga (2010). Real Gross Domestic Product (GDP) measured economic growth which is the dependent variable as a function of Market Capitalization (MCAP), Turnover Ratio (TR), Total Value of Share Traded (VLT), and All Share Index (ASI).The functional relationship of the model becomes;

RGDP= F (MCAP, TR, VLT, ASI)……. (1)

Equation (1) can be express in its econometric form as follows:

$RGDP= a_0 + a_1MCAP + a_2TR + a_3VLT + a_4ASI + U_t$…….. (2)

Where:

RGDP = Real Gross Domestic Product
MCAP= Market Capitalization
TR = Turn Over Ratio
VLT = Total Value of Shares Traded
ASI = All Share Index
U_t= Error term

A Priori Expectation

$a_1, a_2, a_3, a_4 > 0$.

4.0 Empirical Results

Unit Root Test

Before analyzing the econometric model specified, it is imperative to find the properties of the data employed. Thus, the Augmented Dickey Fuller (ADF) unit root test was employed. The results of the stationarity test are shown below.

Table1: Unit Root Test Result

Variable	At level	AtFirst Difference	Order of Integration
ASI	-0.038853	-2.908251***	I(1)
MCAP	-1.815434	-3.418553**	I(1)
RGDP	-1.343342	-3.355316**	I(1)
TR	-0.175897	-2.772163***	I(1)
VLT	-1.595208	-2.990044**	I(1)

Source: Researcher's Computation (2014) using E-views 7.0
*, **, *** significant @ 1%, 5% and 10% level respectively.

The results of the unit root test in table1 reveals that the variables are stationary after their respective first differences and this is regarded as integrated of order one I(1), the data will be taken in this form.

Johansen Co-integration Test

Having established that the variables are characterized by a unit root process and integrated of order one i.e. 1(1), we proceed to carry out the cointegration test using Johansen (1990) and Johnsen & Juselius (1992) cointegration framework. The results of the Johansen co-integration test are shown in the table below.

Table 2: Johansen Cointegration Test Result

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value
None *	0.885911	128.0576	69.81889
At most 1 *	0.634503	65.10508	47.85613
At most 2 *	0.517893	35.91668	29.79707
At most 3	0.373306	14.75862	15.49471
At most 4	0.040767	1.207005	3.841466

Source: Researcher's Computation (2014) using E-views 7.0
Trace test indicates 3 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value
None *	0.885911	62.95250	33.87687
At most 1 *	0.634503	29.18840	27.58434
At most 2 *	0.517893	21.15806	21.13162
At most 3	0.373306	13.55162	14.26460
At most 4	0.040767	1.207005	3.841466

Source: Researcher's Computation (2014) using E-views 7.0
Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

An examination of the co-integration test results in table 2 reveals that both trace and maximum Eigen value statistics indicate 3 cointegrating equation (s)at 5% significance level. This is because both the trace statistic and maximum-Eigen value statistics are at this level greater than the 5% critical value respectively. Thus, the results indicate the existence of cointegration among the variables, and as such, a long run equilibrium relationship exists among them.

Error Correction Model Analysis

In order to ascertain the speed (rate) with which the real gross domestic product (RGDP) will adjust to changes in the explanatory variables, the error correction model was specified. The results obtained are presented below.

Table 3: Error Correction Model (ECM) Result

Dependent Variable: RGDP

Variables	Coefficient	Std-Error	t-ratio	Prob.
C	154273.6	28517.72	5.409745	0.0000
DVLT	36314.70	17905.91	2.028084	0.0538
DTR	39713.25	5610.815	7.077982	0.0000
DMCAP	5089.800	3416.705	1.489681	0.1493
DASI	-7.124030	3.305122	-2.155451	0.0414
ECM(-1)	-0.832498	0.186449	-4.465019	0.0002
R-squared	0.930632			
Adjusted R-squared	0.916180			
F-statistic	64.39595			
Durbin Watson stat.	2.086757			

Source: Researcher's Computation (2014) using E-views 7.0

An examination of the result in table 3 shows that the estimated error-correction has impressive goodness of fit. The R^2value of 0.930632 and its adjusted counterpart of 0.916180, indicates that over 91% of the short run systematic variations in Real Gross Domestic Product (RGDP) is explained by the four explanatory variables during the period of study. The F-value of 64.39 is highly significant at the 1% level. Thus, the hypothesis of a significant linear relationship between the dependent variable is validated. In terms of the contribution of the individual explanatory variables, all the sign of their coefficient (except All Share Index) are correct. The f-value of market capitalization is not significant. This implies that market capitalization value do not influence economic growth in Nigeria in the short-run. The coefficient of value of share traded, turnover ratio and all share index are significant at 5%, 1% and 4%level respectively. Therefore, value of share traded turnover ratio and all share index influence economic growth in Nigeria. This is a clear indication that stock market development has a significant impact on economic growth in Nigeria. The Durbin Watson statistic of 2.086757 (which is approximately 2) shows that the estimated error-correction model is free from serial correlation. The ECM term in the result has the expected negative sign and is significant at two percent level. The error correction term capture the speed of adjustment from short run equilibrium. The coefficient indicates that the contemporaneous adjustment of economic growth is about 83 percent which is very high.

4.3. The Long-Run Analysis

Having analysed the empirical result of the short-run dynamic model, we proceed to analysed the long-run model. The result of the estimated long run model is presented in table 2 below:

Table 3: Regression Result

Dependent Variable: RGDP

Variables	Coefficient	Std-Error	t-ratio	Prob.
C	131562.8	36649.66	3.589741	0.0013
ASI	-6.388430	4.286343	-1.490415	0.1481
MCAP	8730.904	4296.793	2.031958	0.0525
TR	37525.44	7285.979	5.150364	0.0000
VLT	5850.772	21652.22	0.270216	0.7891
R-squared	0.875286			
Adjusted R-squared	0.856099			
F-statistic	45.61923			
Durbin Watson stat.	1.756846			

Source: Researcher's Computation (2014) using E-views 7.0

The estimated results in table 4 show that the explanatory variables account for over 87 percent of the systematic variation in RGDP during the period of analysis. The F-value is significant at the1% level, thus implying that the model has a high goodness of fitness level. The coefficient of all share index (ASI) is not significant in explaining real gross domestic product (RGDP) during the period and has a negative coefficient.

Total value of share traded (VLT) is correctly signed; it is however significant in explaining real gross domestic product (RGDP) during the period. The other two variables (that is, MCAP and TR) are significant and correctly signed. This result is in tandem with the findings of Beck & Levine (2004), Levine & Zervos (1998), Nyong (1997) and Osinubi (2002).The Durbin-Watson statistic of 1.756846 (which is approximately 2) indicates that there is no serial correlation in the regression results.

Granger Causality Test

The paper employed the Granger causality test to examine the direction of causality between the dependent and explanatory variables.

Table 4: Causality Test Result

Pair wise Granger Causality Tests
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
MCAP does not Granger Cause RGDP	29	0.12732	0.88104
RGDP does not Granger Cause MCAP		5.04913	0.01478
TR does not Granger Cause RGDP	29	3.92277	0.03357
RGDP does not Granger Cause TR		0.05631	0.94537
VLT does not Granger Cause RGDP	29	0.66634	0.52283
RGDP does not Granger Cause VLT		4.65817	0.01953
ASI does not Granger Cause RGDP	29	0.67000	0.52102
RGDP does not Granger Cause ASI		3.12993	0.06196

Source: Researcher's Computation (2014) using E-views 7.0

The table above shows a unidirectional relationship from Real Gross Domestic Product (RGDP) to market capitalization (MCAP); turnover ratio (TR) to real gross domestic product (RGDP), real gross domestic product (RGDP) to total value of share traded (VLT) and real gross domestic product (RGDP) to All share index (ASI). Therefore, economic growth granger cause stock market development, but there is evidence of causality from stock market development to economic growth when turnover ratio was used as a measure of stock market development.

Discussion of Findings

Firstly, the dynamic approach to the empirical analysis shows that turnover ratio and market capitalization are strong stock market development proxies which are highly linked to economic growth in Nigeria in the short run. More specifically, positive short-run linkages exist between economic growth and stock market development (in terms of MCAP and TR). In the same vein, it is observable from the empirical results that in the long run, total value of share traded (VLT), all share index and Turnover Ratio (TR) significantly influences and are strongly linked to economic growth in Nigeria. Furthermore, the empirical findings indicate that the coefficient of value of share traded and turnover ratio positively influence economic growth in Nigeria while all share index negatively impact economic growth. Similarly, positive significant long-run linkages between stock market development (measured by MCP and TR) and economic growth were found. Odhiambo (2010) and Adenuga (2010) result also reveals that MCP and TR positively influence economic growth. The empirical results also revealed that all share index (ASI) and value traded (VLT) are not significant indicators of stock market development in the long-run, and are therefore insignificantly linked to economic growth in Nigeria. Lastly, the result from the Granger causality test indicates that stock market development measure by turnover ratio (VLT) is found to cause economic growth in Nigeria, without a feedback effect. It means that it is finance that causes economic growth. This outcome, thus re-affirms the finance-led growth hypothesis. The result is in consonance with the findings in previous studies conducted by Odedokun (1996), Ghirmay (2004), Ghali (1999), Christopoulos and Tsianos (2004), Apergis et. al. (2007). A unidirectional causality was found running from economic growth to stock market development (measure by MCAP, VLT and ASI). This is in tandem with the result of Adamu and Sanni (2005), they found a one way causality running from economic growth to stock market development in Nigeria. These general and particular findings have important policy implications for the domestic economy.

5. Conclusion and Recommendation

In this study, the empirical relationship between stock market development and economic growth was exhaustively examined, specifically to determine the effect of stock market development on economic growth. For this purpose, a multivariate regression model was specified to depict the empirical relation of stock market development and economic growth in Nigeria. Four measures of stock market development; market capitalization, all share index, turnover ratio and total value of share traded were included in the empirical analysis. Using annual time series data covering the period 1980 – 2011, Cointegration test, Error correction model and Granger causality test were employed in estimating the specified model. The overall conclusion of the study is that stock market development has a strong effect on economic growth. Specifically, all the explanatory variables except All Share Index positively and significantly influence economic growth in the short run; All Share Index has a negative influence though significant. In the long run all the explanatory variables positively influence economic growth. However, market capitalization and turnover ratio are significant while All Share Index and total value of shares traded are not significant. The Granger causality test result indicates a unidirectional relationship running from RGDP to MCAP, TR, VLT and ASI. Therefore, economic growth granger cause stock market development, but there is evidence of causality from stock market development to economic growth when turnover ratio was used to measure stock market development.

The following recommendations are made on the basis of the findings of this study:

- The ongoing reforms in the Nigeria financial sector should be continued and pursued to the latter in the capital market. This is because it is apparent that the existence of a well-developed and efficient capital market will contribute to the objective of rapid and sustainable growth. The capital markets are to be restructured as efficient tools of domestic resource mobilization with policies and measures adopted to increase their depth and competitiveness. Other capital market reforms include; Reduction of the costs of intermediation and floating new issues; Adoption of measures and strategies to strengthen and enhance official supervision of trading in the securities market so as to make them attractive assets (Iyoha, 2004).
- Improve financial infrastructure through the development of various financial products and services, which has been a major problem militating against the level of investment in developing country like Nigeria when compared to developed countries.
- Trading systems of stock market should be improved – since this improves stock market operations, allowing stocks to trade more frequently and speeds up the purchase and sale process of stocks, in this way enhancing stock market liquidity and efficiency
- Promote greater regulation, supervision, and security of stock market – since this is a major hindrance to investment activity in Nigeria, where there is low investor confidence in the stock market and its ability to safeguard investments, thus the improvement of security and regulation procedures will likely stimulate information disclosure and reduce misrepresentation and other financial crimes, leading to improved investor confidence. This will enhance market participation, investment and stimulate growth.

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