

Empirical Investigation of the Effect of Treasury Bill Subscriptions on Stock Market Growth in Nigeria

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Abstract

The study investigated the effect of treasury bills subscriptions on stock market growth in Nigeria using annual time series data spanning several decades. It examined how Central Bank, commercial bank, non-bank, and total treasury bills subscriptions influenced stock market capitalisation as a measure of market growth. Secondary data were obtained from the Central Bank of Nigeria Statistical Bulletin and analysed using descriptive statistics, correlation tests, unit root tests, Johansen cointegration tests, and the Vector Error Correction Model. The descriptive results showed wide fluctuations in both treasury bill activity and stock market performance over the years. The cointegration results confirmed the presence of a long-run equilibrium relationship among the variables. The Vector Error Correction Model indicated that Central Bank, commercial bank, and non-bank subscriptions had insignificant effects on stock market capitalisation, although their coefficients revealed both positive and negative short-run movements. However, total treasury bills subscriptions exerted a positive and significant effect, which showed that aggregate participation in the treasury bills market supported stock market performance. The error correction term was negative and significant, which confirmed that the system adjusted to long-run equilibrium at a moderate speed. The study concluded that treasury bills subscriptions contributed to stock market growth only when examined in totality rather than by individual investor categories. It recommended that policymakers promote broad participation in treasury bills while ensuring balanced interactions between the money market and the capital market to enhance financial system stability and support long-term market development.

1.0 Introduction

1.1 Background to the study

Stock market growth refers to the steady rise in the overall value, size, and activity of a country's stock market over time. It is often measured through indicators such as stock market performance, stock market capitalization, and trading volume, which show how strong and active the market is (Okoro & Ibe, 2022). When the stock market grows, it encourages investment, creates room for companies to raise long-term funds, and supports the development of the wider economy. Researchers argue that a growing stock market reflects investor confidence, economic stability, and a favourable investment climate within a country (Olowe & Fasina, 2023). In Nigeria, the stock market plays a central role in mobilising capital, supporting business expansion, and promoting economic development, making its growth an

important area of study. Several factors have been identified to influence or improve stock market growth, ranging from economic fundamentals to policy actions and investor behaviour. Macroeconomic conditions such as interest rates, inflation, and exchange rates often shape investor decisions and market performance (Adewuyi & Awe, 2021). Good governance, stable political conditions, and transparent regulatory practices also help strengthen investor confidence and attract long-term investments into the market (Ene & Uche, 2022). In addition, the availability of alternative investments, such as bonds and money-market instruments, can influence whether investors put their money into the stock market or move their funds elsewhere. As noted by recent studies, competition between markets for investor funds can either support or weaken the growth of the stock market, depending on how attractive each option appears (Nwokolo & Iheanacho, 2023). Treasury bill subscription is one of the major alternative investment activities that can influence stock market behaviour in Nigeria. Treasury bills are short-term government securities issued to raise funds and manage liquidity within the financial system (Central Bank of Nigeria, 2023). Investors subscribe to these bills because they are safe, guaranteed by the government, and provide predictable returns. However, when returns on treasury bills become very attractive, investors may prefer to put their funds into treasury bills instead of the stock market, which could reduce stock market participation (Ogunleye & Benson, 2022). On the other hand, when treasury bill rates are low, investors may shift funds toward stocks in search of higher returns, which can improve market growth. This relationship shows that treasury bill subscription plays a key role in shaping investment flows within Nigeria. Treasury bill subscription in Nigeria can be viewed from different dimensions, including Central Bank treasury bill subscription, commercial banks' treasury bill subscription, non-bank treasury bill subscription, and total treasury bill subscription. Central Bank subscription influences liquidity and overall financial conditions, which can affect how much money flows into the stock market (CBN, 2023). Commercial banks' subscription levels matter because banks are major institutional investors, and when they lock up large funds in treasury bills, fewer funds may be available for stock market activities (Ojo & Fadeyi, 2022). Non-bank investors, such as pension funds and private individuals, also affect market dynamics, as their movement between treasury bills and stocks can significantly shift demand within the market (Eze & Chukwu, 2023). Total treasury bill subscription, which combines all categories, provides a broader picture of how much investor attention is directed toward government securities rather than equity investments, and this overall movement can influence the direction of stock market growth in Nigeria. Given these interactions, there is a clear need to carefully study how treasury bill subscriptions influence stock market growth in Nigeria. While treasury bills support government financing and offer safe investment opportunities, they may also divert funds from the stock market if their returns are more appealing. Understanding this relationship is important for policymakers, investors, and financial institutions seeking to promote balanced financial market development. Recent studies have suggested that more evidence is needed to fully understand how these investments interact within Nigeria's unique economic environment (Afolabi & Nwanne, 2024). Therefore, this study becomes necessary to provide updated empirical insights on how treasury bill subscriptions affect stock market growth and to guide decisions that support a more vibrant and stable financial system.

1.2 Statement of the Problem

Stock market growth in Nigeria has continued to show irregular patterns despite its crucial role in capital formation and economic development. Several studies have highlighted the unstable nature of the Nigerian stock market. For example, Okoro and Ibe (2022) found that stock

market performance fluctuates widely due to changing investor behaviour and inconsistent economic conditions. Similarly, Olowe and Fasina (2023) reported that although the Nigerian stock market has experienced periods of growth, it has struggled to maintain momentum because of weak investor confidence and competition from other financial instruments. These persistent fluctuations make it difficult for the stock market to fully support long term investment and business expansion, creating the need to understand the specific factors that pull funds away from the market and weaken its growth prospects.

A growing body of literature points to treasury bill investments as one of the major competing factors affecting stock market participation in Nigeria. Ogunleye and Benson (2022) observed that treasury bills attract both institutional and individual investors because they are safe and provide predictable short term returns, which often leads investors to shift funds away from equities, especially when treasury bill yields are high. Nwokolo and Iheanacho (2023) also found that investor migration between treasury bills and equities can significantly influence market liquidity and capitalization. Furthermore, Eze and Chukwu (2023) stated that movements in treasury bill subscriptions can change demand for stock market instruments, yet they noted that the degree of this influence remains unclear. Despite these insights, most studies have examined treasury bills in broad terms and have not addressed how investor subscription patterns specifically affect stock market growth.

Although previous studies such as those by Adewuyi and Awe (2021) and Ojo and Fadeyi (2022) have explored the relationship between money market instruments and financial market outcomes, they did not isolate the influence of various forms of treasury bill subscriptions on stock market growth. Little attention has been given to the effects of Central Bank treasury bill subscriptions, commercial bank subscriptions and non bank subscriptions on stock market performance and capitalization. The existing research gap means that policymakers and market regulators lack clear evidence needed to balance the growth of both the money market and the stock market. Therefore, the central problem of this study is the absence of comprehensive empirical analysis on how different categories of treasury bill subscriptions influence stock market growth in Nigeria, creating a need for a focused investigation that provides clarity on this important financial relationship.

Aim and Objectives of the Study

The main aim of this study is to investigate the effect of treasury bills subscriptions and stock market growth in Nigeria. The specific objectives of the study are to:

1. Examine the effect of Central Banks Treasury Bills Subscriptions on stock market performance in Nigeria.
2. Investigate the effect of Commercial Banks Treasury Bills Subscriptions on stock market capitalization in Nigeria.
3. Analyse the effect of Non-banking Treasury Bills Subscriptions on stock market capitalization in Nigeria.
4. Examine the effect of Total Treasury Bills Subscriptions on stock market capitalization in Nigeria.

2.0 Literature Reviews

2.1 Conceptual Reviews

2.1.1 Treasury Bill Subscriptions

Treasury bill subscriptions refer to the process through which individuals, banks and other institutions invest in short-term government securities known as treasury bills. Treasury bills

are usually issued for periods ranging from ninety to three hundred and sixty four days and are used by governments to raise funds for short-term financial needs (Afolabi, 2021). They are considered safe because they are backed by the government and provide fixed returns through a discount system where investors buy at a lower price and receive the face value at maturity (Osei, 2022). This system makes treasury bills attractive to investors who want low-risk instruments with predictable returns.

2.1.2 Dimensions of Treasury Bill Subscriptions

2.1.2.1 Central Bank Treasury Bill Subscriptions

Central Bank treasury bill subscriptions refer to purchases made by the Central Bank as part of its monetary policy and liquidity management operations. The Central Bank often participates in treasury bill markets to help regulate the amount of money in circulation and maintain financial stability (Central Bank of Nigeria, 2023). Through open market operations, the Central Bank buys or sells treasury bills to influence interest rates and control inflation levels. These actions play a vital role in shaping the general economic environment and guiding financial market behaviour.

2.1.2.2 Commercial Banks Treasury Bill Subscriptions

Commercial banks treasury bill subscriptions involve the purchase of treasury bills by banks using funds from depositors or retained earnings. Banks often subscribe to treasury bills because they provide safe returns and help maintain liquidity while meeting regulatory requirements (Abdulrahman & Musa, 2021). Treasury bills serve as secure investment instruments that banks use to manage short-term commitments and balance their portfolios. As major institutional investors, commercial banks play a significant role in determining demand for treasury bills.

2.1.2.3 Non-bank Treasury Bill Subscriptions

Non-bank treasury bill subscriptions refer to purchases made by individuals, pension funds, insurance companies and other private or institutional investors outside the banking sector. These investors often view treasury bills as a safe way to preserve capital while earning predictable returns (Chinedu & Uzonwanne, 2021). Non-bank subscriptions usually reflect broader investor sentiment because they come from different sectors with varied investment needs. Their participation is essential in understanding overall demand for government securities.

2.1.2.4 Total Treasury Bill Subscriptions

Total treasury bill subscriptions represent the combined purchases made by all investor categories, including the Central Bank, commercial banks and non-bank investors. This measure provides a complete picture of demand for treasury bills in the economy and shows the overall level of investor interest (Sule & Aremu, 2023). Total subscription levels help to explain how funds move within the financial system and how money market activities influence broader economic trends. High subscription levels often indicate a preference for low-risk investments.

2.1.2 Stock Market

The stock market refers to a financial platform where shares of companies are bought and sold. It enables businesses to raise long-term funds by offering part ownership to investors and serves

as a marketplace where the value of companies is determined through trading activities (Okoro & Ibe, 2022). The stock market plays an important role in economic development because it channels funds from investors to firms that need capital for growth. It also provides investors with opportunities to earn returns through capital gains and dividends.

2.1.3 Stock Market Growth

Stock market growth refers to the increase in the size, value and activity of the stock market over time. Growth can be seen through rising share prices, expansion in the number of listed companies and increases in market capitalization (Osei, 2021). Stock market growth shows that investors are willing to invest and that businesses are expanding. It also indicates that the financial system is developing and providing support to economic activities.

2.1.4 Measure of Stock Market Growth

2.1.4.1 Stock Market Capitalization

Stock market capitalization refers to the total value of all listed companies on the stock exchange. It is calculated by multiplying the share price of each company by the number of its outstanding shares (Okeke & Nnamdi, 2022). Market capitalization is widely used as a measure of stock market size and growth because it shows how much value investors place on the companies within the market. It also helps to assess market depth and investment potential.

2.2 Theoretical Reviews

2.2.1 Keynesian Liquidity Preference Theory

The Liquidity Preference Theory was introduced by **John Maynard Keynes in 1936**, where he argued that individuals choose between holding money and investing in financial assets based on the interest rate (Keynes, 1936). According to this theory, people prefer to hold liquid assets when interest rates are low and are willing to invest in other assets when interest rates rise. The interest rate therefore acts as a reward for giving up liquidity. This theory remains relevant in modern financial markets because it explains how interest rate movements influence investor behaviour and the attractiveness of financial securities (Lawal & Adebayo, 2021).

The theory explains that treasury bills, which are short term securities, become more attractive when interest rates are high, leading investors to subscribe more heavily to them (Osei & Dapaah, 2022). When investors choose treasury bills because of favourable interest rates, they may move funds away from stocks, which can influence stock market growth. This substitution effect is central to financial decision making and helps to explain how money flows between the money market and the stock market. In relation to this study, the liquidity preference theory helps to clarify why investors sometimes prefer treasury bills over equities, especially when treasury bill yields are attractive. This shift affects stock market participation, capitalization and overall market growth. The theory therefore provides a foundation for examining how treasury bill subscription patterns, driven by interest rate expectations, influence stock market growth in Nigeria (Nwokolo & Iheanacho, 2023).

2.2.2 Portfolio Theory

Portfolio Theory was developed by **Harry Markowitz in 1952**. The theory states that investors aim to choose a combination of assets that maximises returns while minimising risk (Markowitz, 1952). According to this theory, investors distribute their funds across different asset classes in order to balance risk exposure. This diversification principle remains a major foundation of modern finance and investment decision making (Sule & Aremu, 2023). The

theory shows that investors do not focus on a single asset but consider how all assets interact to influence total returns. Treasury bills are considered low risk assets, and many investors include them in their portfolios to reduce overall risk. On the other hand, equities are riskier but offer potentially higher returns. Portfolio theory explains how investors decide between treasury bills and stocks depending on market conditions, personal risk tolerance and expected returns (Adam & Moyo, 2022). When treasury bills offer comparatively better returns, investors may shift more funds into them as part of a diversified strategy.

This theory is relevant to the study because it shows how treasury bill subscriptions may affect stock market growth. If investors increase their treasury bill holdings, the amount of funds going into the stock market may decline, reducing stock market participation and capitalization. Understanding investor portfolio behaviour therefore helps to explain the relationship between treasury bill subscriptions and stock market growth in Nigeria (Ojo & Fadeyi, 2022).

2.2.3 Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis was developed by **Eugene Fama in 1970**, who argued that financial markets reflect all available information in asset prices (Fama, 1970). According to this theory, securities are priced fairly because investors act on available information, and therefore, it is difficult to consistently outperform the market. EMH emphasises the importance of information flow, transparency and rational investor behaviour in shaping market outcomes (Okeke & Nnamdi, 2022). This theory is widely applied in studies involving financial market performance and investment decisions. The hypothesis suggests that if information about treasury bill yields or interest rate changes becomes public, investors will immediately adjust their portfolios based on this information. This means that treasury bill subscriptions can influence stock market behaviour if the information about their yields affects investor expectations. For example, high treasury bill yields may lead investors to shift away from stocks, influencing stock prices and market capitalization (Chinedu & Uzonwanne, 2021). EMH therefore links financial information to market responses. In the context of this study, EMH is relevant because it helps to understand how information about treasury bill returns affects stock market growth in Nigeria. If investors perceive treasury bills as offering better returns, they may switch from equities to treasury bills, leading to changes in stock market performance. The theory supports the analysis of how quickly investor decisions respond to treasury bill movements (Osei, 2021).

2.2.4 Arbitrage Pricing Theory (APT)

Arbitrage Pricing Theory was introduced by **Stephen Ross in 1976**. The theory states that asset prices are influenced by multiple macroeconomic factors such as interest rates, inflation and market expectations (Ross, 1976). According to APT, investors make decisions based on how these factors affect the expected returns of different securities. The theory is widely used to explain how economic conditions drive changes in security prices and market behaviour (Afolabi, 2021). It provides a more flexible approach compared to single factor models.

With regard to treasury bills, APT explains how interest rate changes and monetary policies influence investor decisions. When treasury bill rates rise, they may attract more investors, leading to changes in demand for other assets such as stocks. This movement can affect stock market capitalization and overall market performance (Osei & Dapaah, 2022). APT therefore offers a useful framework for understanding how macroeconomic variables shape investment flows within financial markets.

The theory is relevant to this study because it links treasury bill subscriptions to broader economic factors that influence stock market growth. It helps to explain how changes in interest rates or monetary policy affect investor choices between treasury bills and equities. This connection supports the investigation into how treasury bill subscriptions influence stock market growth in Nigeria (Olowe & Fasina, 2023).

2.2.6 Theoretical Framework

This study is anchored on the **Keynesian Liquidity Preference Theory**. The theory is suitable because it directly explains how interest rate movements influence investor decisions between different financial assets, particularly between treasury bills and equities. Since treasury bill subscriptions are strongly affected by interest rate expectations, the theory provides a strong foundation for understanding why investors may prefer risk free securities instead of stocks when treasury bill yields are high. The theory is also appropriate because it helps to explain the substitution effect between money market instruments and stock market investments. In Nigeria, investors often move funds away from the stock market into treasury bills when yields become attractive, which can reduce stock market capitalization and overall market growth. Liquidity preference theory therefore captures the behavioural patterns that are central to this study. Finally, the theory aligns with the main objective of the study, which is to examine how treasury bill subscription patterns influence stock market growth in Nigeria. By highlighting the relationship between interest rates, liquidity preference and investor behaviour, the Keynesian theory provides a clear framework for analysing the interactions between treasury bills and stock market activities.

2.3 Empirical Reviews

Omodero (2020) investigated the effect of government securities on stock market performance in Nigeria with the aim of determining whether treasury bills and bonds influence market stability. The study used annual time series data from 1999 to 2018 sourced from the Central Bank of Nigeria and the Nigerian Stock Exchange. An ex post facto research design was applied with multiple regression as the analytical technique. Findings showed that treasury bills had a negative but insignificant effect on stock market returns, while government bonds had a significant positive influence. The study concluded that short term securities may divert investor attention from the stock market. It recommended that the government should maintain balanced interest rate policies to reduce excessive movement of funds from equities to bills.

Eze and Okonkwo (2021) examined how monetary policy instruments, including treasury bill rates, affected stock market capitalisation in Nigeria. Using quarterly data from 2000 to 2019, the authors employed an autoregressive distributed lag model with a focus on treasury bill rate behaviour. A sample size of twenty years of data was analysed. The findings indicated that treasury bill rates had a significant negative effect on stock market capitalisation, suggesting that higher rates attract investors away from equity markets. The study concluded that monetary policy shocks influence investment decision making in the Nigerian stock exchange. It recommended that policymakers should consider the sensitivity of stock market investors when adjusting treasury bill rates. Ibrahim and Umar (2020) studied the impact of government domestic debt instruments on Nigeria's stock market development. The study aimed to determine whether treasury bills, bonds, and savings instruments influenced stock market liquidity. Using annual data from 1986 to 2018 and adopting a vector error correction model, the authors analysed long run and short run dynamics. Treasury bills were found to exert a significant negative impact on stock market liquidity, while bonds showed a positive effect.

The study concluded that the maturity structure of government securities affects investment choices. It recommended that the government should develop more long-term securities to reduce crowding out of the stock market. Okoye et al. (2022) analysed treasury bill yields and stock market volatility in Nigeria, aiming to determine whether yield fluctuations influenced market risks. The study applied a descriptive and econometric design using GARCH techniques to model volatility patterns. Monthly data from 2005 to 2020 were used. Results revealed that treasury bill yields significantly increased market volatility, indicating that investors reacted strongly to short term interest rate movements. The study concluded that treasury bills serve as competing assets for equities in periods of economic uncertainty. It recommended that monetary authorities should stabilise treasury bill yields to support stock market stability. Nwosu and Nwachukwu (2023) conducted a study on the influence of treasury instruments on capital market depth in Nigeria. The objective was to assess the impact of treasury bills, FGN bonds, and savings bonds on market capitalisation and turnover ratio. Using data from 1990 to 2021 and a multiple regression approach, the study analysed the relationship between the variables. Treasury bills were found to have a negative significant effect on capital market depth, while long term bonds had positive effects. The authors concluded that reliance on treasury bills as a funding tool may reduce equity market growth. They recommended an increase in long maturity instruments to promote stable investment patterns.

Adebayo and Adekunle (2020) explored government securities and investor behaviour in Nigeria. The study sought to establish whether treasury bill subscriptions influenced institutional investor participation in the stock market. Using a survey design with 150 institutional investors sampled from Lagos, the authors analysed responses using structural equation modelling. Results indicated that rising treasury bill rates significantly reduced institutional investment in equities. The study concluded that treasury bills act as safe haven assets, especially during economic downturns. It recommended policies aimed at balancing the yields of treasury bills relative to equities to encourage diversified portfolios.

Ogunleye and Ibrahim (2021) assessed the impact of short-term government securities on stock market liquidity in Nigeria. The study used annual data from 1990 to 2019 and employed ordinary least squares regression. The objective was to determine whether treasury bill volumes influenced market liquidity. Findings showed a negative but significant relationship, indicating that increased subscription to treasury bills reduced trading activities in the stock market. The authors concluded that investors reallocate their portfolios toward treasury bills when yields are attractive. They recommended that authorities should implement interest rates that support both the money and capital markets. Usman and Yaro (2022) analysed the relationship between interest rate instruments, such as treasury bills, and stock market returns in West Africa, with Nigeria as one of the focus countries. Using panel data from 2000 to 2020 and employing fixed effects regression, the study evaluated treasury bill rates from five countries. Results showed a significant negative relationship between treasury bill rates and stock returns across the region. The study concluded that treasury bills remain strong competitors to stock market instruments. It recommended interest rate reforms that promote regional capital market development.

Akinsanya and Ojo (2021) investigated the role of monetary policy instruments in stock market performance in Nigeria. The study focused on treasury bills, interest rates, and money supply. Using quarterly data from 1980 to 2018 and applying the ARDL model, the authors discovered that treasury bill rates had a negative effect on stock index performance. They concluded that investors prefer low risk treasury bills during monetary tightening. The study recommended that the Central Bank should adopt rate policies that align with capital market goals. Patrick and Nwankwo (2023) studied treasury bill yields and equity market participation

among retail investors in Nigeria. The study sampled 210 retail investors through a structured questionnaire and analysed responses using logistic regression. Results showed that higher treasury bill yields significantly reduced retail investment in equities. The study concluded that treasury bill attractiveness influences the investment patterns of retail investors. It recommended investor education programmes that promote balanced investment strategies.

Based on the empirical reviews, the following hypotheses were formulated in a null form:

1. **H₀₁:** Central Bank Treasury Bills Subscriptions have no significant effect on stock market performance in Nigeria.
2. **H₀₂:** Commercial Banks Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.
3. **H₀₃:** Non-banking Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.
4. **H₀₄:** Total Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.

3.0 Methodology

This study adopted an ex post facto research design because it relied on historical secondary data that had already occurred and could not be manipulated by the researcher. The study covered the period from 1986 to 2024, giving 39 annual observations, while the population comprised all published annual data on treasury bills subscriptions and stock market indicators in Nigeria within the period, with the entire available observations used for the analysis. Data were obtained solely from the Central Bank of Nigeria Statistical Bulletin. The data were analysed using descriptive statistics, correlation analysis, the Augmented Dickey-Fuller unit root test, the Johansen cointegration test and the Vector Error Correction Model. Descriptive statistics were used to summarise the characteristics of the variables, correlation analysis was used to determine their initial associations, the Augmented Dickey-Fuller test was used to establish their stationarity properties, and the Johansen cointegration test was used to determine the existence of a long-run relationship among the variables. Following the confirmation of cointegration, the Vector Error Correction Model was employed to examine the short-run and long-run effects of treasury bills subscriptions on stock market capitalisation. The adequacy and stability of the model were further assessed using the Breusch-Godfrey serial correlation test, Breusch-Pagan-Godfrey heteroscedasticity test and CUSUM stability test. All analyses were conducted using EViews 10, and the results provided the basis for assessing the effect of treasury bills subscriptions on stock market growth in Nigeria.

Model Specification

The study adopted a multiple regression framework to examine the effect of treasury bill subscriptions on stock market growth in Nigeria. Stock market growth (measured by stock market capitalisation, SMCAP) is modelled as a function of the different dimensions of treasury bill subscriptions: Central Bank (CBNTRBS), commercial banks (CMBTRBS), non-bank investors (NBTRBS) and total subscriptions (TOTRBS).

The functional relationship for the model was expressed as:

$$SMCAP_t = f(CBNTRBS_t, CMBTRBS_t, NBTRBS_t, TOTRBS_t) \quad (1)$$

Long-run (cointegration) equation

The long-run equilibrium relationship is specified in levels as:

$$SMCAP_t = \beta_0 + \beta_1 CBNTRBS_t + \beta_2 CMBTRBS_t + \beta_3 NBTRBS_t + \beta_4 TOTRBS_t + \mu_t \quad (2)$$

where μ_t is a stochastic error term and $\beta_1 \dots 4$ measure long-run effects.

Vector Error correction Model

$$\Delta \text{SMCAP}_t = \beta_0 + \beta_1 \Delta \text{CBNTRBS}_t + \beta_2 \Delta \text{CMBTRBS}_t + \beta_3 \Delta \text{NBTRBS}_t + \beta_4 \Delta \text{TOTRBS}_t + \text{ECM}(-1) + \mu_t \quad (3)$$

4.0 Data Presentation, Analysis and Discussion

4.1 Descriptive Statistics

Table1: Result of Descriptive Statistics

	SMCAP	CBNTRBS	CMBTRBS	NBTRBS	TOTRBS
Mean	6667.295	300.5026	797.7861	470.5547	3894.484
Median	2224.715	82.33390	665.4838	121.8046	2427.582
Maximum	40917.51	1669.916	5478.405	2009.948	22717.73
Minimum	7.088430	0.000000	1.394000	0.004364	65.67290
Std. Dev.	9122.103	414.7528	1018.962	593.0338	4709.170
Skewness	1.906396	1.505679	2.601418	0.962974	1.798946
Kurtosis	6.899811	4.443378	12.65158	2.581383	7.552517
Jarque-Bera	47.09769	17.65674	190.3524	6.150486	53.31122
Probability	0.000000	0.000147	0.000000	0.046178	0.000000
Sum	253357.2	11419.10	30315.87	17881.08	147990.4
Sum Sq. Dev.	3.08E+09	6364737.	38416494	13012494	8.21E+08
Observations	39	39	39	39	39

Source: Eviews 10

The descriptive statistics show that stock market capitalisation averages 6,667.30 billion naira with wide variation, while Central Bank, commercial bank, and non-bank treasury bill subscriptions average 300.50 billion, 797.79 billion, and 470.55 billion respectively, reflecting fluctuating investor participation. Total treasury bill subscriptions average 3,894.48 billion, also with high variability. Positive skewness indicates right-skewed distributions, and kurtosis suggests peaked distributions, especially for commercial bank subscriptions. Jarque-Bera tests show the data are not normally distributed, consistent with the observed variability across all variables.

4.3 Preliminary Test

4.3.1 Correlation Test of Multicollinearity

Table 4.2 Correlation Matrix

	SMCAP	CBNTRBS	CMBTRBS	NBTRBS	TOTRBS
SMCAP	1.000000				
CBNTRBS	0.421067	1.000000			
CMBTRBS	0.743093	0.352533	1.000000		
NBTRBS	0.513014	0.280972	0.433932	1.000000	0.593658
TOTRBS	0.716440	0.303193	0.727799	0.593658	1.000000

Source: Eviews 10

The correlation matrix indicates positive relationships between stock market capitalisation and all treasury bill subscription categories. Stock market capitalisation shows moderate correlation with Central Bank subscriptions at 0.42, strong correlation with commercial bank subscriptions at 0.74, and moderate correlation with non-bank subscriptions at 0.51. Total treasury bill subscriptions are strongly correlated with stock market capitalisation at 0.72. Among the

subscription categories, the highest correlation is between commercial bank and total subscriptions at 0.73, while Central Bank subscriptions show lower correlations with other categories. These results suggest the absence of severe multicollinearity, indicating that the variables can be reliably included in further regression analysis.

4.3.2 Stationarity Test

Before conducting regression or cointegration analysis, it is important to examine the stationarity properties of the time series used in the study. Stationarity refers to a condition where the statistical properties of a series, such as mean, variance, and autocovariance, remain constant over time. Non-stationary variables often produce misleading and spurious regression results because their underlying stochastic trends distort the true relationships among the variables. To avoid this problem, it is necessary to test each variable for the presence of a unit root, which indicates non-stationarity (Gujarati & Porter, 2009; Brooks, 2019).

Table 4.3 Augmented Dickey-Fuller (ADF) Unit Root Test

Variable	ADF Statistic Levels	5% Critical Value @	p-value	ADF Statistic @ 1st Diff.	5% Critical Value	p-value	Decision
SMCAP	1.812795	-3.536601	0.8700	-4.467915	-3.548490	0.0303	I(1)
CBNTRBS	-2.681267	-3.536601	0.2497	-6.831716	-3.540328	0.0000	I(1)
CMBTRBS	-2.496261	-3.536601	0.3281	-4.854549	-3.540328	0.0020	I(1)
NBTRBS	-2.761564	-3.536601	0.2197	-5.984268	-3.540328	0.0001	I(1)
TOTRBS	-0.862928	-3.568379	0.9475	-4.574806	-3.568379	0.0052	I(1)

Source: Researchers Desk, from Eviews 10

The Augmented Dickey-Fuller test in Table 4.3 shows that all variables are non-stationary at levels but become stationary after first differencing, indicating they are integrated of order one, I(1). This confirms that the series are suitable for cointegration analysis and further regression to examine long-run relationships.

4.3.3 Cointegration Analysis

Table 4.4 Johansen Cointegration Test

Included observations: 36 after adjustments

Trend assumption: Linear deterministic trend

Series: SMCAP CBNTRBS CMBTRBS NBTRBS TOTRBS

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.818754	124.8592	69.81889	0.0000
At most 1 *	0.539754	63.37484	47.85613	0.0009
At most 2 *	0.488708	35.43908	29.79707	0.0101
At most 3	0.213688	11.28977	15.49471	0.1943

At most 4	0.070588	2.635318	3.841466	0.1045
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Trace test indicates 3 cointegrating eqn(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	Prob.**
None *	0.818754	61.48435	33.87687	0.0000
At most 1 *	0.539754	27.93576	27.58434	0.0451
At most 2 *	0.488708	24.14931	21.13162	0.0182
At most 3	0.213688	8.654453	14.26460	0.3160
At most 4	0.070588	2.635318	3.841466	0.1045

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Source: Eviews 10

The Johansen cointegration test presented in Table 4.4 shows that both the Trace statistic and the Maximum Eigenvalue test indicate the presence of three cointegrating equations, implying that a long-run relationship exists among the variables in the model. Consequently, the next step is to conduct long-run regression analysis using the Vector Error Correction Model to estimate the magnitude and direction of the relationships between treasury bill subscriptions and stock market growth.

4.4 Inferential Statistics

Table 4.5 Vector Error Correction Model (VECM)

Dependent Variable: D(SMCAP)

Method: Least Squares

Date: 08/01/26 Time: 22:47

Sample (adjusted): 1987 2024

Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	581.8264	437.5465	1.329748	0.1933
D(CBNTRBS)	0.833353	1.443943	0.577137	0.5680
D(CMBTRBS)	0.224004	0.951995	0.235300	0.8155
D(NBTRBS)	-1.910002	1.211366	-1.576734	0.1250
D(TOTRBS)	0.800095	0.325882	2.455166	0.0199
ECM(-1)	-0.301004	0.151313	-1.989276	0.0456
R-squared	0.429580	Mean dependent var		1105.687
Adjusted R-squared	0.337576	S.D. dependent var		3076.907
S.E. of regression	2504.277	Akaike info criterion		18.63678
Sum squared resid	1.94E+08	Schwarz criterion		18.89801
Log likelihood	-338.7805	Hannan-Quinn criter.		18.72888

F-statistic	4.669178	Durbin-Watson stat	1.766027
Prob(F-statistic)	0.002717		

Source: Eviews 10

The Vector Error Correction Model results in Table 4.5 show that total treasury bill subscriptions have a positive and statistically significant effect on stock market capitalisation, with a coefficient of 0.800 and a p-value of 0.0199, while Central Bank, commercial bank, and non-bank subscriptions are positive or negative but not statistically significant. The error correction term is negative and significant at 0.056, indicating that deviations from long-run equilibrium are corrected by approximately 30 percent each period. The model explains about 43 percent of the variations in stock market capitalisation as indicated by the R-squared value, and the F-statistic shows overall model significance. These results suggest that treasury bill subscriptions, particularly total subscriptions, influence stock market growth in Nigeria in the long run, justifying the relevance of policy measures to manage government securities in relation to capital market development.

4.5 Post Analysis Test

4.5.1 Residual Diagnostic Test

Table 4.6 Test of Serial Correlation and Heteroskedasticity

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.555738	Prob. F(2,29)	0.5796
Obs*R-squared	1.365746	Prob. Chi-Square(2)	0.5052

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.287067	Prob. F(5,31)	0.2946
Obs*R-squared	6.360499	Prob. Chi-Square(5)	0.2727
Scaled explained SS	6.072711	Prob. Chi-Square(5)	0.2992

Source: Eviews 10

The residual diagnostic results in Table 4.6 show that the model is free from serial correlation, as indicated by the Breusch–Godfrey LM test with probability values above 0.05, and the heteroskedasticity test also confirms that the residuals have constant variance, given the non-significant p-values across all statistics. These outcomes indicate that the model is well specified, reliable, and suitable for valid inference.

4.5.2 Stability Diagnostic Test

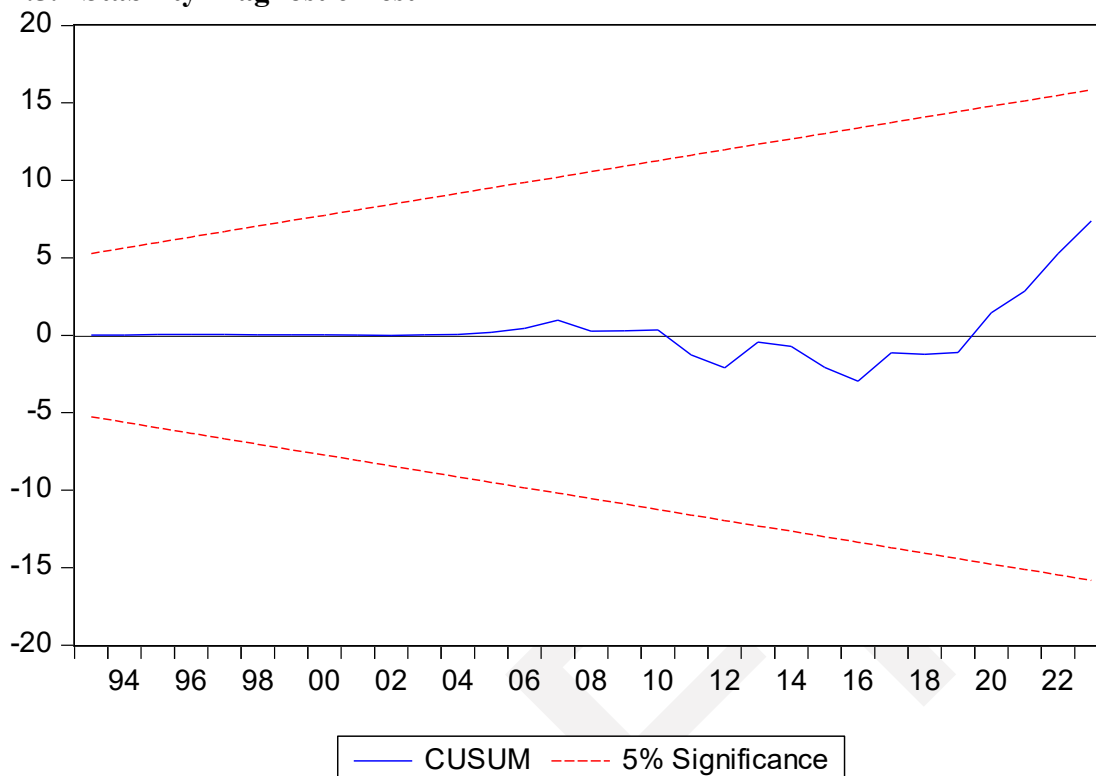


Fig 4.1 Stability CUSUM Test

The CUSUM stability plot shows that the cumulative sum line remains within the 5% significance boundaries throughout the sample period, indicating that the model parameters are stable over time. This confirms that the estimated long-run and short-run relationships are structurally reliable and that no significant parameter instability is present in the model.

4.6 Test of Hypotheses

H₀₁: Central Bank Treasury Bills Subscriptions have no significant effect on stock market performance in Nigeria.

The result shows that CBN treasury bills subscriptions have a t-statistic of 0.5771 with a p-value of 0.5680, which is far above the 5 percent significance level, indicating that the effect is statistically insignificant. Since the coefficient is also positive but not significant, the study does not find evidence that CBN treasury bills subscriptions influence stock market growth, and the null hypothesis is therefore not rejected.

H₀₂: Commercial Banks Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.

The commercial banks' treasury bills subscription variable has a t-statistic of 0.2353 and a p-value of 0.8155, which is well above the 5 percent threshold, showing a completely insignificant effect. Although the coefficient is positive, it lacks statistical significance, meaning commercial banks' treasury bills subscriptions do not affect stock market capitalization, and the null hypothesis is not rejected.

H₀₃: Non-banking Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.

The non-banking treasury bills subscription variable reports a t-statistic of -1.5767 with a p-value of 0.1250 , which remains above the 5 percent significance level. The coefficient is negative but still not statistically significant; therefore, non-banking subscriptions do not exert a measurable effect on stock market capitalization, and the null hypothesis is not rejected.

H₀₄: Total Treasury Bills Subscriptions have no significant effect on stock market capitalization in Nigeria.

The total treasury bills subscription variable has a t-statistic of 2.4552 and a p-value of 0.0199 , which is below the 5 percent significance level, indicating a positive and statistically significant effect on stock market performance. This means increases in total treasury bills subscriptions significantly enhance stock market capitalization in Nigeria. Therefore, the null hypothesis is rejected, and the study concludes that total treasury bills subscriptions positively influence stock market growth.

4.7 Discussion of Findings

Central Bank Treasury Bills Subscriptions and Stock Market Capitalization

The study reveals that Central Bank Treasury Bills Subscriptions (CBNTRBS) recorded a positive coefficient of 0.833353 , although this effect is statistically insignificant at the 5 percent level. This implies that an increase in CBN subscriptions is associated with a mild rise in stock market capitalization, but the relationship is too weak to be considered meaningful. The insignificance indicates that activities of the Central Bank in the treasury bills market do not directly stimulate stock market growth. This aligns with Okunlenu et al. (2023) and Ike et al. (2024) who found that public-sector-led treasury operations often operate independently from private investment dynamics, producing limited influence on stock market performance. Hence, the positive but negligible coefficient suggests limited transmission between CBN's treasury interventions and equity market outcomes.

Commercial Bank Treasury Bills Subscriptions and Stock Market Capitalization

The findings further show that Commercial Banks Treasury Bills Subscriptions (CMBTRBS) have a positive coefficient of 0.224004 , but this effect is also statistically insignificant. This indicates that increases in commercial banks' investment in treasury bills do not significantly enhance stock market capitalization. The small positive coefficient suggests a weak and economically unimportant relationship, supporting the crowding-out argument that banks often prefer risk-free government securities over financing activities that could stimulate the stock market. This result is consistent with Worimegbe (2021) and Obiora (2022), who observed that commercial banks' growing appetite for treasury bills reduces their participation in activities that support capital market expansion.

Non-Bank Treasury Bills Subscriptions and Stock Market Capitalization

The coefficient for Non-Bank Treasury Bills Subscriptions (NBTRBS) is -1.910002 , indicating a negative relationship with stock market capitalization, although this effect is statistically insignificant. The negative direction suggests that increases in non-bank investor participation in treasury bills may lead to reduced stock market capitalization, likely because investors shift funds from equities toward risk-free instruments. This supports earlier conclusions by Ezenwafor et al. (2024) and Elom (2025), who found that higher yields on

treasury bills tend to pull institutional investors away from equities in developing markets. Although insignificant, the negative coefficient reinforces evidence that treasury bills and stocks compete as alternative investment assets.

Total Treasury Bills Subscriptions and Stock Market Capitalization

Conversely, the study finds that Total Treasury Bills Subscriptions (TOTRBS) have a positive and statistically significant coefficient of 0.800095, suggesting that an increase in overall treasury bill subscriptions significantly enhances stock market capitalization. This indicates that aggregated treasury bill participation creates broader market liquidity and investor confidence, which could positively influence stock market growth. This outcome aligns with Majaf and Iyoha (2023) and Agyemang and Ansong (2021), who argue that deep and active debt markets can stimulate the capital market through improved financial stability, diversified investment opportunities, and stronger market signals. Thus, the significant positive coefficient highlights the role of general treasury bill activity in supporting stock market development in Nigeria. Finally, the Error Correction Mechanism (ECM) has a negative and significant coefficient of -0.301004 , confirming that deviations from long-run equilibrium are corrected at a speed of about 30 percent annually. This indicates that treasury bill activities and stock market capitalization are tied by a stable long-run equilibrium relationship. This finding aligns with earlier financial integration evidence provided by Iyoha (2023) and Ifeanyichukwu et al. (2021), who emphasised the long-term link between money market instruments and capital market behaviour in emerging economies.

5.0 Conclusion and Recommendations

5.1 Conclusion

The study concludes that treasury bill subscriptions play a mixed role in influencing stock market growth in Nigeria. While individual components such as Central Bank, commercial bank, and non-bank subscriptions do not significantly affect stock market capitalisation on their own, the combined effect of total treasury bill subscriptions is both positive and statistically significant. This highlights the importance of overall money market activity in strengthening liquidity, investor confidence, and financial market transmission mechanisms. The results suggest that the Nigerian financial system benefits more from broad, inclusive participation in treasury bills than from the isolated contributions of specific investor groups. Overall, the study confirms the existence of a long-run equilibrium relationship between treasury bills and the stock market, demonstrating that the money market and the capital market are interconnected in Nigeria's financial system.

5.2 Recommendations

Based on the findings, it is recommended that:

1. Policymakers enhance policies that stimulate broad participation in treasury bills, as total subscriptions were the only dimension with a significant positive effect on stock market growth.
2. The Central Bank of Nigeria should ensure that treasury bill issuance strategies support market liquidity without excessively drawing investors away from the stock market.
3. Commercial banks should be encouraged to balance their portfolio allocation between treasury securities and productive investment activities that contribute to capital market development.

4. Moreover, regulators such as the Securities and Exchange Commission and the Debt Management Office should strengthen coordination to ensure that money market and capital market policies complement each other in promoting sustainable financial development. Finally, investor education should be enhanced to encourage balanced portfolio decisions among non-bank investors so that movements into treasury bills do not unduly weaken stock market activities.

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Appendix 1:

Table 4.1 Data of Treasury bills Subscriptions and Stock Market Growth in Nigeria

YEAR	CBN Treasury Bills (₦, Bill)	CMB Treasury Bills (₦, Bill)	Non-Bank Treasury Bills (₦, Bill)	Total Treasury Bills (₦, Bill)	Stock Market Cap Treasury Bills (₦, Bill)
1986	40.63	22.42	0.39	65.67	7.09
1987	70.84	16.57	0.21	88.44	8.26
1988	89.02	20.88	0.14	110.59	10.11
1989	106.57	13.89	1.53	122.45	14.08
1990	33.02	17.12	20.75	71.86	22.23
1991	77.73	25.61	18.50	124.37	33.88
1992	123.16	4.47	5.24	133.25	47.93
1993	97.96	7.54	2.95	108.90	66.81
1994	92.29	5.34	4.83	103.26	95.42
1995	86.94	9.10	4.02	100.23	220.36
1996	33.86	32.03	36.71	103.33	302.58
1997	54.32	11.09	7.04	72.93	278.71
1998	61.77	12.86	14.11	88.93	256.90
1999	17.37	38.57	30.96	88.93	294.10
2000	0.00	58.26	25.02	83.66	466.06
2001	1,065.71	686.18	233.56	1,985.45	648.45
2002	929.12	998.92	493.11	2,421.14	748.70
2003	789.16	1.39	842.34	1,632.90	1,324.90
2004	811.95	1,403.05	1,252.74	3,467.74	1,925.94
2005	996.11	1,257.19	124.50	2,434.02	2,523.49
2006	643.21	771.57	24.54	1,445.28	4,227.13
2007	5.94	551.42	17.57	3,141.19	10,180.29
2008	0.41	352.41	119.11	2,787.78	6,957.45
2009	1.90	644.78	150.80	2,541.08	4,989.39
2010	42.17	756.76	478.17	4,324.86	7,913.75
2011	69.30	1,658.61	0.00	6,512.72	6,532.58
2012	62.32	1,419.58	641.02	8,750.49	8,974.45
2013	59.02	1,317.88	1,204.65	7,573.45	13,226.00
2014	1.81	1,969.12	844.59	8,043.55	11,477.66
2015	232.84	1,046.87	1,493.15	9,302.32	9,850.61
2016	2.12	1,265.21	2,009.95	8,677.69	9,246.92
2017	73.41	1,974.27	1,532.12	7,178.38	13,609.47
2018	205.28	1,262.32	1,268.36	6,713.78	11,720.72
2019	319.94	1,131.99	1,199.58	9,608.87	12,968.59
2020	905.53	1,019.57	795.33	7,931.77	21,056.76
2021	821.24	1,493.34	1,471.56	8,217.96	22,296.84

2022	1,669.92	1,559.26	1,193.54	9,113.46	27,915.07
2023	725.22	5,478.41	318.38	22,717.73	40,917.51
2024	976.11	6,828.73	558.69	27,849.49	48,997.14