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Financial Market Frictions and Stock Market Risks (Volatility) in Nigeria

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Abstract. This research examines the influence of financial market frictions on the volatility of the Nigerian stock market over the period from 1990 to 2023, utilizing returns from the All Share Index (ASI) within a GARCH modeling framework to measure market risk. The study employs the Autoregressive Distributed Lag (ARDL) bounds testing approach to estimate both short- and long-term dynamics, incorporating key indicators of market frictions such as transaction costs, bid-ask spread, trading volume, and a regulatory quality index, alongside macroeconomic variables including interest rates, inflation, and exchange rates. The empirical analysis reveals that both the bid-ask spread and exchange rate fluctuations significantly drive stock market volatility in the short and long run. Transaction costs exhibit time-varying impacts, particularly prominent in the short term. Additionally, interest rates are shown to have a positive and significant influence on short-run volatility, whereas trading volume and regulatory quality appear to exert minimal long-term effects. The presence of a statistically significant error correction term supports the existence of a stable long-run equilibrium relationship among the variables studied. In light of these findings, the study advocates for targeted policy interventions aimed at reducing market frictions through enhancements in trading infrastructure, the implementation of more effective regulatory frameworks, and the stabilization of key macroeconomic indicators especially interest and exchange rates as mechanisms to mitigate volatility and strengthen the resilience of Nigeria's capital market.

Keywords: Financial Market Frictions, Transaction Costs, Bid-Ask Spread, Regulatory Quality, Stock Market Risks.

1. Introduction

The stock market plays a crucial role within the broader financial system by enabling capital mobilization, enhancing market liquidity, and promoting sustainable long-term investment strategies. As emphasized by Fox, Glosten, and Rauterberg (2015), it functions not simply as a venue for trading securities, but as an organized institutional framework that facilitates price discovery, ensures transparency, and provides essential financing mechanisms for corporate entities. Such optimal performances are, nonetheless, interrupted by macroeconomic shocks and institutional weaknesses in the emerging markets, expanding internal vulnerabilities and distorting market coordination (Sornette, 2017). Liu et al. (2022) further observe that stock markets in less-developed economies are particularly susceptible to external contagion and spillovers of volatility, especially in the midst of global economic instability. These collectively erode investor confidence, mislead capital flows, and alter the trend of market outcomes, reinforcing the inseparability of stock market stability and institutional quality (Gupta & Mishra, 2024).

Within this framework, stock market risk especially in the form of volatility emerges as a central issue in understanding market dynamics. According to Dhingra et al. (2024), volatility reflects market participants' responses to new information and uncertainty, often revealing latent structural weaknesses. Kussy (2017) contends that volatility is not simply a statistical artefact but an expression of risk tied to behavioural shifts, liquidity constraints, and policy unpredictability. These risk expressions are amplified when markets operate under incomplete information or poor regulatory oversight (Mittnik, Robinzonov & Spindler, 2015). Gupta and Mishra (2024) assert that in markets where depth and resilience are limited, price fluctuations tend to be

more abrupt and persistent, often leading to volatility clustering. In such environments, volatility becomes both a symptom and a driver of market inefficiency, particularly when frictions prevent rational price convergence (Szylar, 2013; Dong et al., 2023). As a result, market risk is not isolated from the structural and operational conditions within the broader financial ecosystem.

Financial markets, while expected to operate as efficient channels for capital allocation and risk diversification, often fall short of these expectations due to embedded institutional and structural imperfections. Hasan et al. (2023) emphasize that although financial markets are central to economic development, they are frequently constrained by various inefficiencies that undermine their capacity to function optimally. These inefficiencies, widely recognized as financial market frictions, manifest through liquidity shortages, information asymmetries, regulatory opacity, and transaction inefficiencies (Kaboski, 2023). According to Akinci (2021), such frictions hinder market transparency and increase the cost of capital, thereby discouraging participation and weakening price signals. Uhunamure and Uhunmwangho (2022) add that in emerging economies, the prevalence of low financial literacy, underdeveloped institutional frameworks, and inconsistent regulatory enforcement further intensifies these inefficiencies. Hence, financial market frictions not only distort market operations but also act as catalysts for instability and heightened risk exposure, particularly in contexts of limited institutional depth (Aparicio & Kim, 2023; Ezzahid & Elouaourti, 2022).

These friction distorting effects are found in several measurable forms each uniquely contributing to market inefficiency and volatility. Transaction costs, for instance, act as trading disincentives and reduce the net investors' returns (Ozekhome & Braimah, 2023). Glosten and Harris (1988) contend that the bid–ask spread, an eminent proxy for asymmetric information and market-maker compensation, is the explicit trading cost in conditions of imperfect information. Illiquidity, according to Amihud, Mendelson, and Pedersen (2012), imposes a price penalty on assets, thereby discouraging trading as well as enhancing return volatility, especially in thin markets. Regulatory inefficiencies, particularly irregular tax regimes, capital controls, and disclosure requirements, contribute to the deficiency in investor choice-making and market depth (Uhunmwangho, 2022; Mafiejor, 2023). Low trading volumes and inadequate market participation lower liquidity and enhance the price impact of even minimal trades, as reported by Tran, Tam, and Hong (2024). Oshadare, Idolor, and Adelowotan (2022) support that these frictions together impinge on the way financial markets process information to influence asset prices and risk perception. In total, the different types of frictions not only increase transaction costs and decrease liquidity but also offset one another to raise volatility, especially in structurally weak markets.

Despite the growing body of research, most of the existing work has been concerned with how financial market frictions impact stock market performance, asset prices, or investment decisions, with comparatively little attention to their effect on stock market risk (volatility). For instance, research by Ogbeifun (2024), Igbinedion and Abudu (2023), and Omoruyi and Isibor (2023) assessed the effect of frictions on shaping trade dynamics and market performance, instead of analyzing their impact on return volatility directly. Onyesonmazun (2020) and Oshadare et al. (2022) focused on performance metrics without volatility estimation as a dependent variable. While Uhunmwangho (2022) did account for volatility, only the regulatory effect under a GMM framework was accounted for, and estimation did not break down some frictional indicators such as transaction costs or asymmetric information. Likewise, Iwuagwu (2016) utilized GARCH to estimate overall patterns of volatility without taking into consideration frictional determinants. Moreover, earlier studies applied static econometric techniques such as OLS (Ogbeifun, 2024) or panel estimations (Igbinedion & Abudu, 2023), which lack strength to estimate dynamic and lagged relations. In response to the identified research gap, this study adopts the Autoregressive Distributed Lag (ARDL) framework to investigate both the short-term and long-term implications of financial market frictions on market volatility. Furthermore, the research integrates a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model to estimate stock return volatility, operationalized as the percentage change in the All Share Index (ASI) over time. This approach offers a more nuanced and robust assessment of stock market risk, particularly within the context of Nigeria’s financial markets.

The remainder of this paper is organized as follows: Section 2 presents a review of relevant literature; Section 3 outlines the research methodology; Section 4 provides the empirical analysis and interpretation of findings; and Section 5 concludes the study with key insights and policy recommendations.

2. Literature Review

2.1 Conceptual Clarification

Stock Market

The stock market constitutes a formally organized platform for the trading of financial instruments, including equities, bonds, and derivatives. It serves a pivotal role within the broader financial infrastructure by enabling the mobilization of capital, ensuring liquidity, and facilitating price discovery mechanisms. As noted by Fox, Glosten, and Rauterberg (2015), the stock market should not be viewed merely as a transactional space for securities but rather as an intricate institutional mechanism that supports corporate financing and provides investors access to corporate earnings. This understanding is consistent with Sornette's (2017) depiction of the stock market as a complex and adaptive system, where investor behavior and exogenous shocks can provoke sudden, often catastrophic, market events—highlighting the system's vulnerability to internal disruptions. Liu et al. (2022) argue that stock exchanges act as conduits for global economic disturbances, particularly during crises, when financial contagion becomes more pronounced. Nonetheless, Dávila and Hébert (2023) caution that market distortions, such as information asymmetries and corporate tax burdens, frequently compromise the market's reflective efficiency. Such frictions diminish the reliability of price signals, thereby eroding the market's capacity for optimal resource allocation. Consequently, while the theoretical function of the stock market is to direct capital efficiently (Amihud, Mendelson, & Pedersen, 2012), its actual performance is often impaired by systemic and behavioral inefficiencies, including speculative behavior and illiquid trading conditions issues particularly prevalent in developing markets (Umoru & Isibor, 2025).

Stock Market Risk (Volatility)

Stock market risk, often operationalized through the concept of volatility, denotes the extent of unpredictability or variation in the returns of traded financial assets, driven largely by fluctuations in market prices. According to Szylar (2013), market risk encompasses the potential for financial losses stemming from shifts in market variables such as stock prices, interest rates, or currency exchange rates; within this context, volatility serves as a quantitative expression of such uncertainties. It functions not only as a measure of the amplitude of price changes but also reflects the inherent randomness and variability in return distributions. Gupta and Mishra (2024) underscore that volatility is influenced by a combination of investor psychology, macroeconomic developments, and structural characteristics intrinsic to financial markets. Additionally, Liu et al. (2022) highlight the role of volatility in the transmission of shocks between markets, illustrating how heightened volatility environments can signal systemic instability. Sornette (2017) contributes further by associating volatility with critical transitions in financial systems emphasizing that minor disruptions can precipitate abrupt, nonlinear corrections. Thus, volatility transcends its statistical definition, emerging as an indicator of systemic fragility, behavioral dynamics, and the latent instability of the financial ecosystem.

A widely accepted approach to quantifying stock market risk is through tracking the volatility of equity returns, such as comparing recent All Share Index (ASI) values to historical figures. This method, frequently applied in emerging markets, offers a tangible and immediate representation of investor sentiment and ongoing market trends (Gupta & Mishra, 2024). However, this approach is not without limitations. It is often critiqued for its reliance on historical price movements, rendering it susceptible to short-lived anomalies and statistical noise (Kussy, 2017). To address these shortcomings, more sophisticated econometric models such as the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model have been developed. These models allow for the explicit modeling of time-varying volatility and the recognition of volatility clustering, thereby enhancing the accuracy of risk assessments in financial return series.

Financial Market Friction

Financial market friction is a general term to express a wide range of imperfections or variations that inhibit the most efficient allocation of financial funds in capital markets. The frictions, grounded largely in institutional shortcomings, informational asymmetry, transactional costs, and regulatory inefficiencies, all prevent financial markets from being perfectly competitively and efficiently (Hasan et al., 2023). As such, they result in deviations from the theory of the ideal one where capital flows freely to where it is most valuable. They can be in the forms of borrowing constraints, price stickiness, illiquidity of markets, asset mispricing, etc. (Kaboski, 2023). Essentially, frictions in financial markets are structural or cycle barriers that modify the activities of financial intermediaries, investors, and firms in a way that degrades the depth, breadth, and stability of financial markets.

Bid-Ask Spread

The bid-ask spread is one of the most observable indicators of financial market frictions, representing the trading cost arising from asymmetric information, inventory risks, and liquidity provision. Essentially, the bid-ask spread refers to the difference between the highest price a buyer is prepared to pay (the bid) and the lowest price a seller is willing to accept (the ask). In efficient markets, the spread will be narrow (He et al., 2025). However, in the majority of developing and illiquid markets, spreads are wide due to low trading volumes, high volatility, and weak competition among market makers (Amihud and Mendelson, 1986; Glosten and Harris, 1988). Empirical studies such as Mupondo (2022) on the Zimbabwe stock market and Nurhayati (2018) on the Indonesian Exchange confirmed that bid-ask spreads increase substantially during periods of market uncertainty and stress, reconfirming the role of liquidity risk in emerging market settings. Furthermore, Su and Tokmakcioglu (2021) illustrate that bid-ask spreads reflect not only inefficiencies that are transactional in nature but also deeper information asymmetries in price mechanisms. Wide bid-ask spreads are typical in the Nigerian Stock Exchange due to infrastructural shortcomings, low investor sophistication, and high concentration of institutional investors (Ozekhome & Braimah, 2023; Uhunmwangho, 2022). As elaborated by He et al. (2025), strategic bid-ask spread dynamics also indicate the mid-price effect, which demonstrates inefficiencies in pricing systems and contributes to price volatility and poor portfolio performance. Chronic bid-ask spreads raise the cost of capital, deter market participation, and undermine price discovery.

Transaction Costs

Transaction costs are another primary source of financial friction. They consist of brokerage commissions, fees, taxes, price impacts, and search or delay costs that hinder the free movement of capital (Amihud et al., 2012). Bodie, Kane, and Marcus (2018) point out that while transaction costs affect even developed markets, their effect is more severe in emerging financial systems where high costs deter investor entry and lower liquidity. Empirical evidence by Uhunamure and Uhunmwangho (2022), and Omoruyi and Isibor (2023), shows that high transaction costs in Nigeria significantly discourage investor participation and asset turnover. Additionally, inconsistencies in monetary policy, infrastructure, and regulatory inefficiencies amplify the effect of such costs. Briere et al. (2019) determined that even small transaction costs can erode returns, especially in strategies dependent on short-term trading and rebalancing. Transaction costs also result in the misallocation of capital in emerging markets, where investors select lower-quality but more liquid assets to minimize trading friction (Madhavan, 2000; Mafiejor, 2023).

Regulatory Quality

Regulatory quality is instrumental in determining the extent and consequences of financial market frictions. High-quality regulation ensures market transparency, enforces contract compliance, protects investors, and facilitates market efficiency. Conversely, poorly designed or irregularly enforced regulations create friction by increasing uncertainty, deterring participation, and misdirecting capital (Yadav, 2021). In emerging markets, where institutions are relatively weak, regulatory uncertainty perpetuates volatility and deters investor confidence (Abaidoo & Agyapong, 2023; Liu et al., 2022). Weakly consistent or transparent regulatory regimes can also be fertile breeding ground for rent-seeking and speculative behavior, as Morelli (2023) and Omehe and Idolor (2023) suggest. Al-Shebli and Alhajri (2024) argue that well-governed regulatory institutions decrease risk premiums, increase capital flows, and render markets more resilient. Therefore, improving regulatory quality is central to reducing systemic frictions, bolstering market efficiency, and building long-term investor confidence.

Trading Volume

Trading volume is a widely employed proxy for market liquidity and a primary indicator of financial market depth. High trading volume signals active participation, good liquidity, and efficient price discovery, whereas low trading volume indicates market thinness, illiquidity, and greater susceptibility to price manipulation (Alan et al., 2015). Ngene and Mungai (2022) emphasize that in African stock markets, trading activity is directly related to macroeconomic performance and investors' expectations. Yahaya et al. (2023) affirm a bidirectional relationship between trading volume and market volatility in Nigeria, and it implies that volume not only mirrors but also determines market confidence. Ogbeifun (2024) declares that low trading volumes in the Nigerian Exchange discourage effective resource allocation and increase the cost of capital. Onyesonmazun (2020) and Kaboski (2023) note that emerging market trading volume is likely to be affected by investor concentration, financial illiteracy, and poor market access infrastructure. More specifically, Tran, Tam, and Hong (2024) found a high correlation between trading volume and GDP growth

in ASEAN economies and pointed to the role of active capital markets in driving economic growth. Therefore, improving trading volume requires alterations that enhance retail and institutional participation, reduce frictions, and broaden the foundation of tradable securities.

2.2 Theoretical Review

This study anchors its theoretical framework on the Efficient Market Hypothesis (Fama, 1970), the Market Microstructure Theory (O'Hara, 1995), and the Financial Accelerator Theory (Bernanke, Gertler & Gilchrist, 1999), all of which provide interrelated perspectives on the mechanisms through which financial market frictions influence stock market risk (volatility).

The Efficient Market Hypothesis (EMH) posits that asset prices fully reflect all available information, rendering it impossible to consistently achieve returns in excess of average market returns through arbitrage or market timing (Fama, 1970). In its strong form, EMH implies that markets are immune to frictions such as transaction costs, illiquidity, or information asymmetries. However, real-world deviations from the assumptions of EMH, particularly in emerging markets, expose its theoretical limitations. As shown by Akerlof (1970) and later emphasized by Stiglitz and Weiss (1981), information asymmetries between buyers and sellers distort price efficiency, leading to adverse selection and moral hazard. This inefficiency is amplified by frictions such as bid–ask spreads, taxes, or regulatory distortions (Aharon, 2023). These frictions reduce informational transparency and liquidity, thus causing deviations from equilibrium prices and increasing market volatility (Gupta & Mishra, 2024). In the Nigerian context, Umoru and Isibor (2025) demonstrate that capital gains tax and company income tax increase investor uncertainty and reduce participation, thereby impairing price discovery. Consequently, financial market frictions weaken the informational efficiency of stock prices, leading to greater return volatility, inconsistent with EMH's theoretical expectations. Moreover, empirical failures of EMH during periods of systemic crisis, such as the COVID-19 pandemic, further illustrate its vulnerability to real-world imperfections (Liu et al., 2022). Therefore, while EMH provides a baseline theoretical framework, its assumptions break down under frictional market conditions, necessitating alternative models.

The Market Microstructure Theory, developed by O'Hara (1995), shifts the analytical focus from equilibrium pricing to the institutional and transactional realities of financial markets, particularly how trading mechanisms, information dissemination, and order flows influence asset prices. It emphasizes that liquidity, transaction costs, and asymmetric information are integral in shaping price volatility and return dynamics. Glosten and Harris (1988) provided an analytical formulation of bid–ask spreads as a function of order processing costs and asymmetric information:

Bid-Ask Spread=c+θ·Order Size

where ccc represents fixed costs and θ\thetaθ captures the price impact due to information asymmetry. This formulation underlines how micro-level frictions transmit into broader volatility. In line with this, Amihud, Mendelson, and Pedersen (2012) argue that illiquidity commands a premium, thus distorting asset pricing and increasing volatility, especially in thin markets. Dong et al. (2023) affirm that trading frictions influence risk pricing, as investors demand higher returns to compensate for greater execution costs and information opacity. These distortions are more pronounced in emerging markets, where liquidity is often scarce, and regulatory inefficiencies prevail (Ogbeifun, 2024). Yahaya et al. (2023) observed that increased transaction costs and reduced liquidity on the Nigerian Exchange Limited directly amplify price fluctuations, especially during macroeconomic instability. Similarly, Madhavan (2000) identifies that the presence of market makers and the structure of order flows directly contribute to volatility clustering, challenging the idea that prices reflect only fundamental values. Therefore, from a microstructural lens, financial market frictions are not anomalies but central to understanding volatility, as they directly impair trading efficiency, delay price convergence, and exacerbate short-term noise. This reinforces that market volatility is not only a reflection of macroeconomic shocks but also a consequence of endogenous trading mechanisms and structural inefficiencies (Mittnik, Robinzonov & Spindler, 2015).

Complementing these perspectives, the Financial Accelerator Theory developed by Bernanke, Gertler, and Gilchrist (1999), provides a macro-financial linkage by explaining how small shocks to credit markets can be amplified through feedback loops involving firm balance sheets, asset prices, and investor confidence. At its core, the theory posits that financial frictions exacerbate economic fluctuations by affecting the external finance premium—that is, the difference between the cost of internal and external financing. When asset prices fall or transaction costs rise, firms' net worth declines, raising the cost of external finance, leading to reduced investment and heightened volatility. Dávila and Hébert (2023)

expand this view by incorporating taxation and regulatory distortions into the accelerator mechanism, arguing that capital market imperfections significantly weaken firms' ability to smooth consumption or investment, thereby increasing return variability. Ezzahid and Elouaourti (2022) confirm that financial market exclusion and borrowing constraints in African economies distort capital allocation and induce asset price instability. Applied to the Nigerian stock market, Umoru and Isibor (2025) find that transaction costs significantly affect long-run market performance, with frictions acting as an implicit risk factor that amplifies return volatility. Khan et al. (2025) also provide a frictional asset pricing model in which stocks with higher trading constraints exhibit systematically higher volatility and lower returns, indicating that frictions serve not only as transmission channels but also as pricing factors. Moreover, Kaboski (2023) asserts that in low-depth financial markets, shocks such as inflation or policy uncertainty are transmitted more aggressively due to weak intermediation, reinforcing the amplifying effect of frictions on volatility. Hence, the Financial Accelerator Theory provides a robust macro-level explanation of how financial frictions, including liquidity constraints, taxation, and information asymmetry, can trigger nonlinear increases in stock market volatility, especially in underdeveloped or structurally weak capital markets.

2.3 Empirical Evidence

Evidence from Nigeria

The Nigerian financial market has been of interest to scholars in examining how frictions affect its efficiency and performance. A work by Uhunamure and Uhunmwangho (2022), with Nigeria as a case study, covers the period from 2010 to 2021. Adopting the Generalized Method of Moments (GMM) technique, the study assesses the effect of regulatory frictions, asymmetric information, and transaction costs on stock market returns. It finds that regulatory instruments such as the cash reserve ratio have beneficial impacts on returns, but lending rate has an adverse impact. Asymmetric information and transaction costs exert deep influences on returns via channels such as market illiquidity, traded volume, and exchange rate volatility. Similarly, Ozekhome and Braimah (2023), using 1988–2022 data from the Nigerian Exchange, apply robust GMM estimation and validate that information asymmetry and illiquidity negatively affect asset prices, while transaction cost has a positive unexpected relationship, suggesting that investors anticipate higher returns as compensation for higher costs.

In another recent empirical investigation, Ogbeifun (2024) uses multivariate regression on time series data for the period 1992-2021 in an attempt to evaluate the presence and impact of financial frictions on Nigeria's capital market. Findings indicate that asymmetric information and transaction cost matter in weakening the performance of the capital market, but taxes and regulation exert positive yet statistically weak effects. These results are complementary to earlier observations by Mafiejor (2023) and Oshadare et al. (2022), whose research explores various dimensions of frictions like asset indivisibility, agency costs, and non-traded assets using a time-series dataset spanning 1981 to 2018. Using co-integration and regression tests, the two studies find strong correlations between financial frictions and stock market volatility. Similarly, Onyesonmazun (2020) employs OLS regression for a period of 25 years (1992–2017) and ascertains that gross capital formation is positively linked to market capitalization, but the impact of foreign direct investment remains statistically insignificant, showing the complicated nature of frictions and capital inflow mechanisms in Nigeria.

Empirical studies have also focused on the portfolio decision implications of financial market frictions. Igbinedion and Abudu (2023) employ panel least squares and two-stage least squares estimates, covering firm-level and macroeconomic data for 5 and 11 years respectively. They investigate the manner in which frictions influence investor behavior in Nigeria. Their finding is that changing financial frictions particularly exchange rate volatility and transaction costs significantly influence portfolio allocation decisions. In line with this, Uhunmwangho (2022) uses DGMM approach to examine the impact of regulations on the volatility of the market in 13 Nigerian banks listed on the NGX between 2010 and 2020. The research finds that while liquidity ratio and monetary policy rate heighten market risk, the prescribed cash reserve ratio reduces volatility, indicating an inverse relationship between some regulatory instruments and financial market instability. Omoruyi and Isibor (2023) apply the ARDL bound test approach to 1981–2019 data and show that dividend tax reduces trading activities significantly, while capital gains tax has a stimulating effect. What is being inferred here is that tax-induced frictions, rather than explicit transaction costs, are the principal drivers of investor behavior in the Nigerian Exchange Limited.

There is another strand of Nigerian research that shows sectoral and behavioural implications of financial frictions. Iwuagwu (2016) uses ARCH-GARCH models and variance decomposition

approach in empirically assessing stock return volatility in an informationally efficient capital market using data from the Central Bank of Nigeria bulletin (2014). The study confirms that volatility is increasingly information-driven, confirming the asymmetry in the market's response to shocks. Besides, Omehe and Idolor (2023) point out in their article that economic growth in Nigeria is negatively affected by frictions, especially in capital accumulation and investor confidence. The findings are echoed in Olawale (2024) and Thomas et al. (2023), who use macroeconomic data in exploring how domestic frictions and external capital flows jointly determine the sensitivity of the Nigerian stock market. Cumulatively, these studies offer strong empirical validation that financial frictions in the form of information asymmetries, regulatory bottlenecks, and transactional barriers continue to significantly impede market efficiency and investors' performance in the capital markets of Nigeria.

2.4 Evidence from Other Contexts

In other developing and emerging worlds, several empirical studies underscore the destabilizing implications of financial market frictions on macroeconomic performance and asset prices. Hasan et al. (2023), in cross-country perspective, enumerate the determinants and implications of financial frictions and recommend worthy policy regimes for emerging nations. They point out that information asymmetry, regulation failure, and credit market imperfections primarily lead to financial frictions. In another related study, Ezzahid and Elouaourti (2022) use Principal Component Analysis and panel regression of 33 African nations over the period 2004-2019 to build the African Financial Inclusion Index (AFIndex). Based on their work, they determine that higher financial inclusion erases financial frictions, hence spurring investment and economic growth. The study reveals significant heterogeneity in access to finance across African countries, reflecting that the distributional nature of frictions has a crucial role in explaining macro-financial outcomes. Moreover, Kaboski (2023), using macroeconometric and firm-level data, illustrates the mechanisms through which underdeveloped monetary systems amplify the aggregate and distributional effects of monetary frictions, particularly in the Global South.

Frictions also play a key role in explaining stock market performance and risk pricing worldwide. Khan et al. (2025) apply a new "least minus more frictional factor" to asset pricing using China, India, Pakistan, Bangladesh, and Sri Lanka monthly data for 735 listed manufacturing companies (2009–2024). In panel data regression, the paper concludes that financial frictions always reduce stock returns, with varying emergences across countries: macroeconomic frictions are robust in Pakistan, while market-level and firm-level frictions are large in India and China, respectively. In another application, Akinci (2021) considers a dynamic stochastic general equilibrium model with a variant of the Bernanke-Gertler-Gilchrist financial accelerator. The model can account for the emerging economies' countercyclical pattern of the country risk premium and concludes that firm-level productivity shocks and time-varying risk premia explain much of the trade balance and financial market volatility.

The researchers have found to document capital frictions due to geopolitical tensions and cross-border capital controls as well. Chengying et al. (2022) empirically investigate the 2018–2020 US–China trade war in an event-study setting and conclude that sectoral contagion effects dominate the Chinese stock market response, particularly for announcements of tariff imposition. Similarly, Ye et al. (2022) use an autoregressive distributed lag (ARDL) model to investigate the impact of trade friction on China's textile industry and state that downstream and midstream enterprises were impacted more than upstream ones, which proves the structural transmission of external frictions. In an analysis of a U.S. sample, Aparicio and Kim (2023) use the TED spread as an outside proxy for capital market frictions and find evidence that tax avoidance is more acute under binding financing conditions, especially for firms with high-quality corporate governance. Implications of the findings are that frictions may indirectly affect firm value by means of behaviourally adjusted fiscal strategies.

Evidence from African and Middle Eastern stock exchanges also confirms these findings. Mupondo (2022), using GMM estimation within a five-equation structural model, examines liquidity and volatility in Zimbabwe’s stock market from 2009 to 2021 and finds that inflation-induced frictions distort asset pricing mechanisms. In contrast, Nurhayati (2018), focusing on the Indonesian Stock Exchange, uncovers that trading friction—measured as implicit transaction costs—is inversely correlated with stock price and market capitalization but uncorrelated with transaction volume. These findings underline the importance of discriminating between observable and unobservable dimensions of frictions. In addition, Debata and Mahakud (2018) use Granger causality and impulse response analysis to assess the relationship between economic policy uncertainty and market liquidity in India. The conclusions reveal that, while policy uncertainty has no effect on liquidity under normal

circumstances, it is very relevant in times of crises, portraying the temporal and cyclical nature of frictions.

Other compelling studies point to institutional and structural origins of frictions. Liu et al. (2022) study panel data for 113 nations (1990–2013) and show that financial structures and political risks are complementarily interrelated in driving economic growth. Market-based systems perform better under low-risk environments, and bank-based systems dominate politically unstable nations, implying that institutions influence the relative efficiency of financial systems under frictional constraint. Similarly, Tran, Tam, and Hong (2024), based on a sample of six ASEAN countries, perform Granger causality tests and identify a one-way causality such that economic growth affects stock market liquidity but not vice versa. These findings suggest that frictions in emerging markets are not necessarily in line with the classical theoretical model, particularly under evolving regulation and macroeconomic environments.

Lastly, advanced economies have provided useful insights on how frictions affect asset prices and market efficiency. Briere et al. (2019) use a comprehensive dataset of U.S. institutional investors to examine Fama-French and Carhart anomalies' trading expenses. They show that although the strategies of large-sized portfolios have heavy trading expenses, anomalies remain profitable for medium-sized investors. Furthermore, Hossain (2021) re-convestigates trading anomalies in the U.S. market and discovers that size and short-run reversal strategies return statistically significant abnormal returns after risk adjustment, thus refuting the Efficient Market Hypothesis. All these studies exhibit the global relevance of financial frictions and highlight their central role in asset valuation, investor behaviour, and economic growth.

3. Research Methodology

This research adopts an ex-post facto design, which is appropriate for studies utilizing historical data where there is no manipulation of variables by the researcher (Remler & Van Ryzin, 2021). Within this methodological approach, the study investigates key financial market frictions—specifically bid–ask spreads, transaction costs, regulatory quality, and trading volume—and their effects on stock market risk, particularly the volatility of stock returns, spanning the period from 1991 to 2023. Relevant data will be obtained from the Annual Statistical Bulletin published by the Central Bank of Nigeria and the Nigeria Exchange Limited's Annual Fact Book.

3.1 Model Specification

The Autoregressive Distributed Lag (ARDL) model is employed in this study due to its suitability for time series data in which the explanatory variables exhibit different orders of integration, specifically I(0) and I(1), but not I(2). This approach facilitates the estimation of both short-term and long-term relationships concurrently (Narayan, 2005). Here, stock market risk is represented by the volatility of stock returns, which is calculated as the percentage change in the All Share Index (ASI) relative to its preceding value. Furthermore, to account for the time-varying nature of volatility, a GARCH(1,1) model will be applied to estimate the conditional variance of stock returns.

Based on this, the empirical model is structured in two stages. First, annual stock returns are computed using the All Share Index (ASI) values, and second, a GARCH model is specified to estimate return volatility, which serves as the dependent variable in the ARDL framework.

Computation of Stock Returns

Annual stock returns are calculated using the formula:

$$R_t = \left(\frac{ASI_t - ASI_{t-1}}{ASI_{t-1}}\right) \times 100 = \left(\frac{ASI_t}{ASI_{t-1}} - 1\right) \times 100$$

Where:

R_t = annual stock return in year t (percentage)

ASI_t = All Share Index at the end of year t

ASI_{t-1} = All Share Index at the end of year $_{t-1}$

This return series is used to estimate conditional volatility using the GARCH (1,1) model.

GARCH (1,1) Model for Stock Return Volatility

The GARCH (1,1) model, suitable for capturing volatility clustering in financial time series, is specified as follows:

$$R_t = \mu + \varepsilon_t, \quad \varepsilon_t|\Omega_{t-1} \sim N(0, h_t)$$

$$h_t = \omega + \alpha\varepsilon_{t-1}^2 + \beta h_{t-1}$$

Where:
R_t = stock return at time t
ε_t = error term (innovation)
h_t = conditional variance (volatility) of returns
$\omega>0, \alpha\geq 0, \beta\geq 0$ are parameters
$\Omega t-1$\Omega_{t-1}$\Omega t-1$ = information set available at time t−1t-1t−1
The estimated conditional variance h_t becomes the proxy for stock market risk, and is subsequently used as the dependent variable in the ARDL model to investigate the impact of financial market frictions.
ARDL Model Specification
The ARDL(p, q_1, q_2, ..., q_k) model is expressed as:

$$\Delta \ln(SMV_t) = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta \ln(SMV_{t-i}) + \sum_{j=0}^{q_1} \gamma_j \Delta \ln(BAS_{t-j}) + \sum_{k=0}^{q_2} \delta_k \Delta \ln(TC_{t-k}) + \sum_{l=0}^{q_3} \theta_l \Delta RQI_{t-l} + \sum_{m=0}^{q_4} \phi_m \Delta \ln(TV_{t-m})$$

$$+ \sum_{n=0}^{q_5} \psi_n \Delta \ln(INF_{t-n}) + \sum_{o=0}^{q_6} \omega_o \Delta \ln(INTR_{t-o}) + \sum_{r=0}^{q_7} \rho_r \Delta \ln(EXR_{t-r}) + \lambda ECM_{t-1} + \varepsilon_t$$

Where:
SMV_t: GARCH-based estimate of stock market volatility at time t
BAS: Bid–ask spread
TC: Transaction cost
RQI: Regulatory quality index
TV: Trading volume
INF,INTR,EXR: Inflation, interest rate, and exchange rate (control variables)
Δ: First difference operator
ln: Natural logarithm
ECM_{t-1}: Error correction term
ε_t: White noise error term
The optimal lag structure will be determined using the Akaike Information Criterion (AIC).
A Priori Expectations
$\beta_1 < 0$ for bid–ask spread (BAS): Higher spreads imply liquidity constraints and greater volatility.
$\beta_2 < 0$ for transaction cost (TC): Elevated costs discourage trading and destabilize markets.
$\beta_3 > 0$ for regulatory quality (RQI): Stronger institutions mitigate market risk.
$\beta_4 > 0$ for trading volume (TV): Higher volumes reflect depth and improve stability.
$\beta_5 = \pm$ for inflation (INF): The sign depends on inflation levels and expectations.
$\beta_6 < 0$ for interest rate (INTR): Higher rates shift investor preference away from equities.
$\beta_7 = \pm$ for exchange rate (EXR): Appreciation may stabilise volatility; depreciation may increase it.

3.2 Data Description

The study covers the period 1991 to 2023, capturing key financial reforms, capital market liberalization, and periods of macroeconomic instability in Nigeria. The data are annual and sourced from reputable institutions. Specifically, data for market volatility, proxied by ASI-based returns, are obtained from the Nigerian Exchange (NGX)/Central Bank Annual Bulletin. Bid–ask spread and transaction cost data are sourced from NGX and Bloomberg. Regulatory quality scores are drawn from the Worldwide Governance Indicators (WGI) of the World Bank, while trading volume data are extracted from NGX annual reports and trading records. Macroeconomic control variables such as inflation, interest rate, and exchange rate are retrieved from the Central Bank of Nigeria (CBN) and the World Bank's World Development Indicators.

Variable Definition and Measurement

Variable	Description	Measurement Source
Stock Market Volatility (SMV)	GARCH-based volatility of ASI returns	Calculated from ASI (NGX)
Bid–Ask Spread (BAS)	Indicator of market liquidity	Average % spread between bid and ask prices (NGX, Bloomberg)
Transaction Cost (TC)	Cost incurred in executing trades	% of transaction value (NGX, Bloomberg)

Regulatory Quality (RQI)	Institutional and policy effectiveness	–2.5 to +2.5 scale (World Bank WGI)
Trading Volume (TV)	Proxy for market depth	Annual total volume of shares traded (NGX)
Inflation (INF)	General price level changes	Annual CPI % change (World Bank)
Interest Rate (INTR)	Monetary policy rate	Lending rate in % (CBN, IMF)
Exchange Rate (EXR)	Value of Naira against USD	Annual average naira/USD (CBN, IMF)

Source: *Author's Compilation (2025)*

3.3 Estimation Technique

This research adopts a combined ARDL-GARCH estimation framework to investigate both the immediate and long-term impacts of financial market frictions on stock market volatility. Initially, the Autoregressive Distributed Lag (ARDL) bounds testing procedure will be applied to assess the presence of cointegrating relationships among the variables, a method well-suited for datasets comprising a mixture of I(0) and I(1) series (Shahid et al., 2025). The stationarity properties of the time series will be verified through the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. Once a long-run equilibrium relationship is confirmed, the associated Error Correction Model (ECM) will be employed to examine short-run dynamics and the speed of adjustment toward equilibrium.
Concurrently, to account for time-varying volatility in stock returns, a GARCH(1,1) model will be estimated. This technique, widely used in empirical finance literature (Gupta & Mishra, 2024; Mittnik, Robinzonov & Spindler, 2015), captures volatility clustering and conditional heteroskedasticity, phenomena typically overlooked by linear models such as OLS. Model adequacy and specification will be evaluated through several diagnostic tests, including the Breusch-Godfrey LM test for autocorrelation, the Breusch-Pagan-Godfrey test for heteroskedasticity, and the Ramsey RESET test to detect functional form misspecification. By integrating these methodologies, the study aims to provide robust and policy-relevant insights into how financial market frictions shape stock market volatility in the Nigerian context.

4. Empirical Results

The empirical results are presented in this section using descriptive, correlation, several diagnostics test and Autoregressive Distributive Lag (ARDL).

Table 1: Descriptive statistics

	SMV	BAS	TC	RQI	TV	INF	INTR	EXR
Mean	27.03748	1.454545	0.587273	-0.785725	141593.3	18.60727	17.86147	186.1948
Maximum	48.29049	2.440000	0.990000	0.630000	295724.0	72.84000	29.80000	899.8930
Minimum	1.002503	0.570000	0.200000	-1.292820	12992.00	5.400000	11.48313	9.754500
Std. Dev.	10.60765	0.598175	0.239495	0.410574	85814.39	16.03659	3.534727	172.1478
Skewness	-0.419391	0.195781	-0.223542	2.025680	0.250303	2.140572	0.999471	2.406871
Kurtosis	3.339369	1.713323	1.710924	7.081412	1.968579	6.656040	5.632101	10.09429
Jarque-Bera	1.125749	2.487181	2.559703	45.47324	1.807350	43.58038	15.02012	101.0639
Probability	0.569569	0.288347	0.278079	0.000000	0.405078	0.000000	0.000548	0.000000

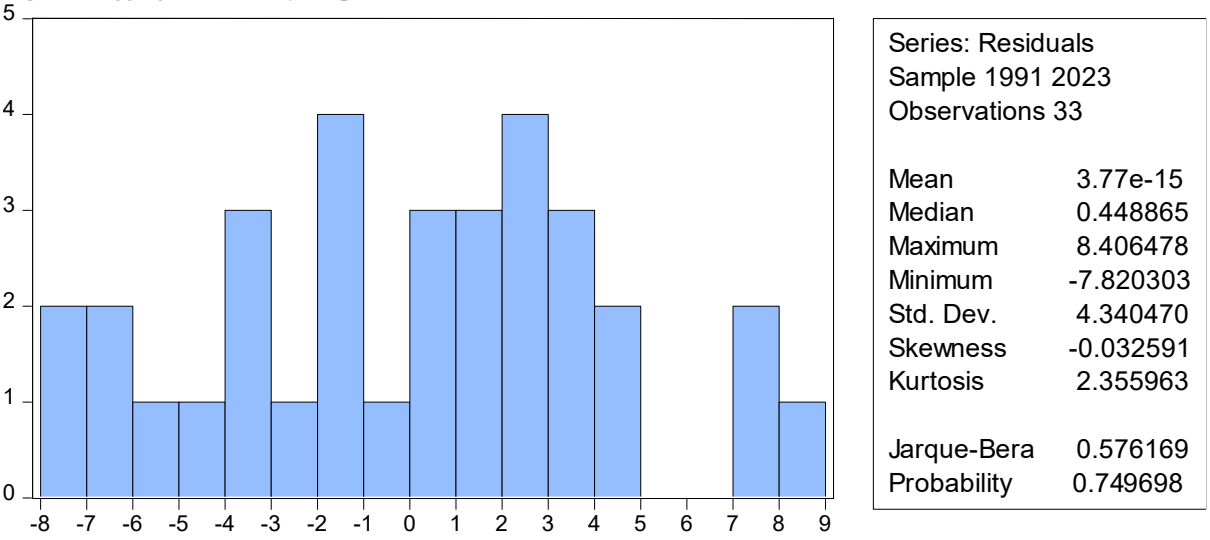
SMV = Stock Market Risks (Measured using GARCH for volatility of stock market returns [ASI]); BAS = Bid Ask Spread; TC = Transaction Costs; RQI = Regulatory Quality Index; TV = Trading Volume; INTR = Interest Rate; INF = Inflation Rate; EXR = Exchange Rate (Dollar/Naira)

Source: *Researcher's compilation (2025)*

Table 1 summarizes the descriptive statistics of the key variables used to examine the impact of financial market frictions on stock market risk, with stock market volatility (SMV) estimated via the GARCH model of ASI returns. The average SMV is 27.04 (SD = 10.61), reflecting moderate risk fluctuations over the study period. Among the main friction indicators, the bid-ask spread (BAS) has a mean of 1.45 with moderate dispersion, while transaction costs (TC) average 0.59, indicating relatively low trading barriers. The regulatory quality index (RQI) shows a negative mean (-0.79), high skewness (2.03), and leptokurtosis (7.08), suggesting a weak and uneven regulatory framework with occasional improvements. Trading volume (TV) is highly variable, indicating fluctuating market activity. For macroeconomic controls, inflation (INF) and interest rate (INTR) exhibit significant skewness and kurtosis, highlighting the presence of extreme macroeconomic shocks. The exchange rate (EXR) is notably volatile (SD = 172.15), with pronounced non-normality (skewness = 2.41; kurtosis = 10.09) and a wide range (9.75 to nearly 900),

underscoring chronic currency instability in Nigeria. The Jarque-Bera test confirms that RQI, INF, INTR, and EXR significantly deviate from normal distribution ($p < 0.01$), indicating potential structural breaks or nonlinear patterns.

Figure 2 Aggregate Normality Graph



Source: Eviews 10

From Figure 2, the p.value of 0.7497 is greater than 0.05, thus it is inferred that on aggregate the variables of the study are normally distributed.

Table 2 Unit Root Tests

	LEVEL			FIRST DIFFERENCE			Order of Integration
Variable	ADF Test Statistic (Level)	95% Critical ADF Value	Remark	ADF Test Statistic (1st Diff.)	95% Critical ADF Value	Remark	
SMV	-2.373887	-3.557759	Not Stationary	-6.175419	-3.562882	Stationary	I(1)
BAS	-2.776646	-2.960411	Not Stationary	-11.52031	-2.960411	Stationary	I(1)
TC	-4.532565	-2.957110	Stationary	-6.661355	-2.960411	Stationary	I(0)
RQI	-5.519201	-3.587527	Stationary	-9.761205	-3.562882	Stationary	I(0)
TV	-6.139493	-2.957110	Stationary	-7.652759	-2.967767	Stationary	I(0)
INF	-2.379878	-3.557759	Not Stationary	-5.772905	-3.587527	Stationary	I(1)
INTR	-5.245879	-3.557759	Stationary	-6.091482	-3.568379	Stationary	I(0)
EXR	-1.306117	-3.603202	Not Stationary	-3.811001	-3.622033	Stationary	I(1)

Source: *Author's Computation (2025)*

Table 2 presents the outcomes of the Augmented Dickey-Fuller (ADF) unit root tests for all variables, assessed at both levels and first differences. The results reveal that SMV (stock market volatility), BAS (bid-ask spread), INF (inflation rate), and EXR (exchange rate) are non-stationary at levels but attain stationarity after first differencing, indicating they are integrated of order one, I(1). Conversely, TC (transaction costs), RQI (regulatory quality index), TV (trading volume), and INTR (interest rate) are stationary at levels, thus classified as I(0). The combination of I(0) and I(1) variables, with no evidence of I(2) integration, supports the application of the Autoregressive Distributed Lag (ARDL) model, which is suitable for analyzing long-run relationships in such mixed-integration contexts (Pesaran, Shin, & Smith, 2001).

Table 3 Correlation Matrix and Test for Multicollinearity (Variance Inflation Factor {VIF})

	SMV	BAS	TC	RQI	TV	INF	INTR	EXR	VIF
SMV	1.000000								

BAS	0.173683	1.000000							1.151438
TC	0.181682	0.010647	1.000000						1.526166
RQI	0.611358*	0.071492	0.352134**	1.000000					3.368120
TV	0.266602	0.072705	0.101003	0.095870	1.000000				1.204359
INF	0.436563**	-0.139581	-0.041944	0.677089*	0.193462	1.000000			2.750261
INTR	0.574701*	0.004894	0.308204	0.570448*	-0.073080	0.345145**	1.000000		2.062869
EXR	-0.800830*	0.056270	-0.133967	-0.366027**	-0.124963	-0.158370	-0.553934*	1.000000	1.628460

* Sig @ 1%; * * Sig @ 5%

Source: *Researcher's compilation (2025)*

Table 3 displays the correlation matrix of the variables alongside the Variance Inflation Factor (VIF) values, used to detect multicollinearity within the regression framework. The Regulatory Quality Index (RQI), serving as a proxy for institutional effectiveness, shows a strong positive correlation with stock market volatility (SMV) at the 1% significance level (r = 0.611), indicating that enhanced regulatory quality may coincide with heightened market volatility—likely reflecting transitional effects from structural reforms. Among the control variables, both interest rate (INTR) and inflation (INF) are significantly and positively correlated with SMV (r = 0.575 and r = 0.437, respectively), consistent with literature linking macroeconomic instability to increased financial risk. In contrast, exchange rate (EXR) is strongly and negatively correlated with SMV (r = -0.801), suggesting that currency depreciation is typically associated with elevated market volatility, particularly in emerging markets. All VIF values fall between 1.15 and 3.37, well below the accepted threshold of 10, confirming that multicollinearity is not a concern.

Table 4: Johansen Multivariate Cointegration Tests Results

Trace Test				*Maximum Eigenvalue Test*			
Hypothesized No. of CE(s)	Test Statistic	Critical Value	Prob.	Hypothesized No. of CE(s)	Test Statistic	Critical Value	Prob.
None *	313.0646	159.5297	0.0000	None *	99.98364	52.36261	0.0000
At most 1 *	213.0809	125.6154	0.0000	At most 1 *	78.18195	46.23142	0.0000
At most 2 *	134.8990	95.75366	0.0000	At most 2 *	57.70281	40.07757	0.0002
At most 3 *	77.19616	69.81889	0.0114	At most 3	29.43719	33.87687	0.1547
At most 4	47.75897	47.85613	0.0511	At most 4	17.86568	27.58434	0.5063
At most 5 *	29.89329	29.79707	0.0487	At most 5	14.51489	21.13162	0.3243
At most 6	15.37840	15.49471	0.0521	At most 6	10.36381	14.26460	0.1891
At most 7 *	5.014596	3.841466	0.0251	At most 7 *	5.014596	3.841466	0.0251

Source: *Author's Compilation (2025)*

Table 4 reports the Johansen cointegration test results using both Trace and Maximum Eigenvalue statistics to evaluate long-run equilibrium relationships among the model variables. Both tests reject the null hypothesis of no cointegration at several ranks. The Trace test identifies up to seven cointegrating vectors at the 5% significance level, with most test statistics exceeding critical values, though results at ranks 4 and 6 are borderline. The Maximum Eigenvalue test confirms at least three cointegrating relationships at the 1% level. These outcomes suggest a stable long-term association among stock market volatility (SMV), market frictions (BAS, TC, RQI), and macroeconomic variables (INF, INTR, EXR). The cointegration among I(0) and I(1) variables justifies applying the ARDL bounds testing method, suitable for models with mixed integration and confirmed long-run linkages (Pesaran, Shin & Smith, 2001).

Table 5 Diagnostics Test: Serial, Heteroskedasticity, and Specification Tests

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.321400	Prob. F(2,23)	0.7283
Obs*R-squared	0.897204	Prob. Chi-Square(2)	0.6385
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.955205	Prob. F(7,25)	0.4838
Obs*R-squared	6.963619	Prob. Chi-Square(7)	0.4327
Ramsey RESET Test: Specification: SMV BAS TC RQI TV INF INTR EXR C			
t-statistic	0.798309	24	0.4325
F-statistic	0.637298	(1, 24)	0.4325
Likelihood ratio	0.864852	1	0.3524

Source: *Researcher's compilation (2025)*

Table 5 presents post-estimation diagnostics assessing serial correlation, heteroskedasticity, and model specification. The Breusch-Godfrey LM test reports an F-statistic of 0.3214 (p = 0.7283), indicating no residual autocorrelation. The Breusch-Pagan-Godfrey test yields an F-statistic of 0.9552 (p = 0.4838), suggesting homoskedastic error variance. The Ramsey RESET test returns an F-statistic of 0.6373 (p = 0.4325), confirming correct model specification. These outcomes collectively validate the classical linear regression assumptions.

Table 6: ARDL Bounds Test Result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.211465	10%	1.92	2.89
k	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9

Source: Author's Computation (2025) ***Using E-views 10***

Table 6 presents the bounds test result, where the computed F-statistic (3.211) lies exactly at the 5% upper bound (I(1) = 3.21), indicating the existence of a statistically significant long-run relationship among stock market volatility, financial market frictions, and control variables.

Table 7: ARDL Error Correction Regression- Short Run Estimates

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMV(-1))	-0.422337	0.101793	-4.148978	0.0032
D(BAS)	-0.166377	0.878822	-0.189319	0.8546
D(BAS(-1))	2.523258	0.825994	3.054814	0.0157
D(TC)	-9.647622	2.632137	-3.665318	0.0064
D(TC(-1))	10.11443	2.258514	4.478358	0.0021
D(RQI)	4.360786	2.991390	1.457779	0.1830
D(TV)	3.38E-05	6.56E-06	5.146272	0.0009
D(TV(-1))	-2.24E-05	6.34E-06	-3.533422	0.0077
D(INF)	0.037417	0.083851	0.446233	0.6673
D(INF(-1))	-0.388716	0.086680	-4.484487	0.0020
D(INTR)	2.544600	0.380322	6.690646	0.0002
D(INTR(-1))	-0.824534	0.206014	-4.002325	0.0039
D(EXR)	0.009119	0.006982	1.306183	0.2278
D(EXR(-1))	-0.078867	0.021881	-3.604425	0.0069
CointEq(-1)*	-0.489280	0.064353	-7.603050	0.0001
R-squared	0.916115			

Adjusted R-squared	0.842715
Durbin-Watson stat	2.563182

* p-value incompatible with t-Bounds distribution.

Source: *Author's Computation (2025) Using E-views 10*

The short-run results from the ARDL error correction model in Table 7 reveal dynamic and statistically significant effects of financial market frictions and macroeconomic control variables on stock market volatility (SMV) in Nigeria. Notably, transaction costs (TC) exert a nonlinear impact, with a negative contemporaneous effect and a positive lagged effect—suggesting that higher costs initially dampen volatility but eventually contribute to increased risk, possibly as market participants adjust expectations, aligning with the counterintuitive findings of Ozekhome and Braimah (2023). The significant and positive lag of bid-ask spread (BAS) also indicates delayed market reaction to liquidity constraints, consistent with Ogbeifun (2024) who highlighted the role of information asymmetry and illiquidity in destabilizing the market. Trading volume (TV) has both positive and negative lagged effects, confirming the dual role of volume as both a risk amplifier and absorber, confirming Iwuagwu (2016) who found that volatility in Nigeria is increasingly driven by informational dynamics. Among control variables, interest rate (INTR) exerts a strong contemporaneous and lagged impact, reinforcing the findings of Uhunmwangho (2022) that monetary policy tools significantly influence volatility, while exchange rate (EXR) shows a significant negative lag, corroborating the strong correlation between currency depreciation and market instability found by Chengying et al. (2022) and Mupondo (2022). The error correction term (CointEq(-1)) is negative and highly significant (-0.489; $p < 0.01$), confirming a strong speed of adjustment to long-run equilibrium after short-run shocks. This provides robust empirical support for the existence of a long-run cointegrating relationship, thus validating the earlier Johansen test and reinforcing the suitability of the ARDL framework, as used by Ye et al. (2022) and Omoruyi and Isibor (2023), to model the impact of financial market frictions on stock market risk in both the Nigerian and broader emerging market contexts.

Table 8: ARDL Long Run Form

Dependent Variable: D(SMV)
Selected Model: ARDL(2, 2, 2, 1, 2, 2, 2, 2)

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.277504	26.65081	-0.348113	0.7367
SMV(-1)*	-0.489280	0.543126	-0.900860	0.3940
BAS(-1)	-4.113957	4.182201	-0.983682	0.3541
TC(-1)	-31.38117	10.83543	-2.896162	0.0200
RQI(-1)	25.60875	9.098385	2.814648	0.0227
TV(-1)	8.60E-05	3.69E-05	2.329065	0.0482
INF(-1)	-0.501668	0.168440	-2.978316	0.0176
INTR(-1)	3.453199	1.005428	3.434557	0.0089
EXR(-1)	0.020408	0.037060	0.550672	0.5969
D(SMV(-1))	-0.422337	0.453477	-0.931332	0.3789
D(BAS)	-0.166377	2.768409	-0.060098	0.9536
D(BAS(-1))	2.523258	1.492833	1.690247	0.1294
D(TC)	-9.647622	6.695216	-1.440972	0.1876
D(TC(-1))	10.11443	4.120158	2.454866	0.0396
D(RQI)	4.360786	7.476708	0.583249	0.5758
D(TV)	3.38E-05	1.62E-05	2.079806	0.0711
D(TV(-1))	-2.24E-05	1.58E-05	-1.420747	0.1932
D(INF)	0.037417	0.205375	0.182189	0.8600
D(INF(-1))	-0.388716	0.161063	-2.413442	0.0423
D(INTR)	2.544600	1.035454	2.457473	0.0395
D(INTR(-1))	-0.824534	0.458754	-1.797335	0.1100
D(EXR)	0.009119	0.015859	0.575018	0.5811

D(EXR(-1))	-0.078867	0.064396	-1.224719	0.2555

Long Run Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BAS	-8.408186	17.17053	-5.489687	0.0000
TC	-64.13744	82.06716	-0.781524	0.4570
RQI	52.33967	55.70896	0.939520	0.3750
TV	0.000176	0.000202	0.870109	0.4096
INF	-1.025319	1.268268	-0.808441	0.4422
INTR	7.057714	8.993825	0.784729	0.4552
EXR	0.041711	0.118714	3.351354	0.0344
C	-18.96154	72.91820	-0.260039	0.8014

EC = SMV - (-8.4082*BAS -64.1374*TC + 52.3397*RQI + 0.0002*TV -1.0253 *INF + 7.0577*INTR + 0.0417*EXR -18.9615)

Source: *Author's Computation (2025) Using E-views 10*

The ARDL long-run estimation results presented in Table 8 reveal important insights into the persistent effects of financial market frictions and macroeconomic control variables on stock market volatility (SMV) in Nigeria. In the long run, bid-ask spread (BAS) has a negative and statistically significant impact on SMV (coefficient = -8.41, $p < 0.01$), suggesting that higher spreads indicative of lower market liquidity and higher trading costs suppress volatility, possibly due to reduced trading activity, which aligns with the findings of Nurhayati (2018) on implicit transaction costs. Interestingly, exchange rate (EXR) also shows a positive and significant effect (coefficient = 0.0417, $p = 0.034$), reinforcing evidence from Mupondo (2022) and Chengying et al. (2022) that exchange rate fluctuations are a key driver of volatility in emerging markets. However, other variables such as transaction costs (TC), regulatory quality (RQI), trading volume (TV), inflation (INF), and interest rate (INTR), while signed in theoretically expected directions, are statistically insignificant, implying that their effects are either short-run in nature or mediated through more complex channels, as also observed in Ogbeifun (2024) and Thomas et al. (2023). These findings emphasize the structural persistence of currency-induced frictions over other forms, and the economic relevance of liquidity measures like BAS, supporting policy recommendations that target exchange rate stability and market depth. Overall, the long-run estimates validate the ARDL framework's strength in capturing both immediate and enduring effects of financial frictions on market volatility, in line with its successful applications in prior studies such as Ye et al. (2022) and Omoruyi and Isibor (2023).

4. Conclusion and Recommendation

This study examined the effect of financial market frictions on stock market risks in Nigeria over the period 1991 to 2023, using annual time series data and the ARDL bounds testing approach. Stock market volatility, computed via a GARCH model of returns on the All Share Index (ASI), served as the dependent variable. Key indicators of financial market frictions namely, bid-ask spread (BAS), transaction costs (TC), trading volume (TV), and regulatory quality index (RQI) were included alongside macroeconomic control variables such as interest rate (INTR), inflation rate (INF), and exchange rate (EXR). The results from both the short- and long-run ARDL estimations provide strong evidence that bid-ask spreads and exchange rate fluctuations significantly influence stock market volatility. While BAS has a statistically significant dampening effect in the long run, exchange rate instability intensifies volatility. Transaction costs, though significant in the short run, display dynamic effects, suggesting delayed investor response. Interest rates also contribute to short-run volatility, while regulatory quality and trading volume, though theoretically relevant, exhibit weak statistical significance in the long run. The error correction term is highly significant and appropriately signed, indicating the existence of a stable long-run relationship and efficient adjustment to shocks.

In light of these findings, policymakers should adopt a multi-pronged strategy to mitigate stock market risk arising from financial market frictions. First, reducing bid-ask spreads and transaction costs through the promotion of market liquidity, competitive brokerage systems, and improved trading infrastructure is

essential. Strengthening electronic trading platforms, enhancing market-maker incentives, and improving price discovery mechanisms would lower trading frictions and volatility. Second, given the destabilizing role of exchange rate fluctuations, macroeconomic policy should aim at ensuring exchange rate stability through credible monetary policy, prudent reserve management, and transparent FX market operations. Third, enhancing the regulatory environment remains imperative. Regulatory agencies should focus on improving rule enforcement, reducing information asymmetries, and encouraging transparency and investor protection, which will foster resilience and reduce risk premiums in the market.

Lastly, the coordination of monetary and capital market policies is vital. Interest rate settings must consider not only inflation targeting but also the implications for capital market volatility. A stable macro-financial framework that promotes predictability, regulatory consistency, and market confidence will be crucial in mitigating the adverse effects of financial frictions and enhancing the efficiency and stability of Nigeria's stock market.

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