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Financial Market Frictions in the Nigerian Stock Market

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Abstract

Financial frictions constitute cost to trading and discourages investment on financial assets. It is on this premise; this study examines the effect of financial market frictions on stock market performance in Nigeria. Specifically, the effects of regulatory frictions, transaction costs and asymmetric information were inspected covering the period January 2010 to December 2021. The Generalized Method of Moments was applied on dynamic model to examine the effects. The findings reveal that regulatory frictions, transaction costs and asymmetric information significantly influence stock market returns. Specifically, cash reserve ratio has positive and significant effect on returns, while lending rate negatively and significantly influence market returns. Market illiquidity, and traded volume positively and significantly drive stock market returns, while market volatility, and exchange rate volatility negatively and significantly impacts stock market returns. This study concludes that regulations, asymmetric information and transaction costs constitute financial frictions and significantly impact stock market returns in Nigeria.

Keywords: *Asymmetric Information, Financial Market Frictions, Market illiquidity, Regulations, Stock Market Returns.*

Introduction

Financial market frictions pressures market traders to take unbearable risk because it generates cost capable of influencing trading activities. Adler (2014) viewed frictions as barriers, hindrances or constraints that prevent markets and economies from working efficiently. Frictions include regulations, funding constraints, asymmetric information, transaction cost, to mention but a few. Other variants of financial market frictions identify in literature are funding illiquidity, market illiquidity (Park, 2019) and trading structure.

Market structure is the composition of the market in terms of when it opens and closes, market type, price discovery and order forms. DeGennaro and Robotti (2007) states that financial market frictions, especially transactions costs, depends in part on market structure because market liquidity emanates from the buy and

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sell offers and the illiquidity of the market constitute transaction cost that may result in losses. Indeed, in an illiquid market, transaction cost is high because of the large gap between the bid and offer price. Surely, the presence of frictions in trading procedures is validated by market illiquidity and this occupy an important place in asset pricing (Bekaert, Harvey & Lundblad, 2007). Adler (2014) asserted that though there is no concord on the best measure of stock market liquidity, however, assessing its impact as friction on asset pricing is vital to investors.

Financial regulation is a set of guidelines introduced by the government to control the behavior and conduct of participants in the financial system. The Central Bank of Nigeria (CBN) is responsible for ensuring financial system stability, and it employs various regulatory instruments such as cash reserve ratio, monetary policy rate (benchmark for other interest rate) among other tools to achieve this objective. Bean, Larsen and Nikolov (2002) noted that minimum capital requirement is a potent channel which constraints bank's ability to grant credits. For instance, Central Bank of Nigeria (CBN) in 2019 initiated policy which compelled banks to retain close to 30% of customers' deposit in cash reserve requirement. The implication of this policy is that the reserved amount cannot be used by banks for credits creation and this constraints access to investment funds, thus constituting financial frictions. Therefore, the effect of regulatory frictions on stock market in Nigeria deserve examination.

Information irregularity (asymmetry) constitute risk to investors and prevent them from participating in trading at the exchange. Indeed, asymmetric information may result in adverse selection or moral hazard which affect prices and prevent markets from clearing (DeGennero & Robotti, 2007). According to Daly (2008), asymmetric information is captured through stock market volatility, and volatility erode investors' confidence and reduce the capital flow into equity markets and therefore contain information for investment decisions. Consequently, this needs to be empirically examined in Nigeria.

Monetary policy tools such as interest rate, cash reserve ratio are used by monetary authorities to regulate the banking sector. Restriction on access to funds through regulations prevent investors from including some financial assets in their portfolio, thus the portfolio may under perform. Market illiquidity or low liquidity of an asset discourages investors from transacting on financial asset because of the difficulty in realizing the desired cash or getting a suitable trading partner. Though the link between financial frictions and stock market have been examined (Barclay, Kandel & Marx, 1998; Goel, Tripathi & Agarwal, 2020;

Uhunmwangho & Ogieva, 2021), to the best of the researchers' knowledge, the use of cash reserve ratio, lending rate, market illiquidity/liquidity measures, market volatility and exchange rate volatility as financial friction indicators to address stock market returns in Nigeria is uncommon. It is on this basis, this study engaged these indicators and examined their impact as financial frictions on stock market returns. The general objective of this study therefore, is to examine the effect of financial frictions indicators on stock market returns in Nigeria.

Theoretical Review

This study takes root from the CAPM advanced by Sharpe (1964). CAPM relates expected return on an asset to the risk (Beta) of the asset and the return from the riskless asset. CAPM assumes that the financial market is frictionless. That is, no transaction cost exists, no restrictions on lending and borrowing and investors expectation is based on mean-variance criterion among others. If investors have same risk-return expectations, there should be uniformity of information such that one trader would not outperform the others on the basis of superior information. Indeed, efficient market hypothesis enunciated by Fama (1970) stipulates that in an efficient market, stock prices reflect all available information, therefore, there is no room for abnormal returns by taking advantage of information set. Grossman and Stiglitz (1980) submitted that the informed market traders do better than ill-informed investors, therefore have the motivation to obtain information even at a very high cost. Indeed, in real world, government impose taxes and regulate lending and borrowing. Also, there exist information irregularities and investors incur cost either in form of interest rate on lending, losses resulting from buying and selling of illiquid assets or the volatility of asset returns. These constitute frictions that may affect the returns of financial security, and hence deserved investigation.

Conceptual Review

Financial Market Frictions

Financial market frictions are those things that interferes with trade (DeGennero & Robitti, 2007). Adler (2014) viewed frictions as barriers, hindrances or constraints that prevent markets and economies from working efficiently. Financial specialists develop interest on Market frictions because it predisposes traders to unwanted or unbearable risk. Olbrys and Majewska (2014) sees financial frictions as several disorders in buying and selling processes. For instance, frictions in financial market result in break between the time

news arrive and when it is incorporated in prices, leading to delays in price adjusting to equilibrium (Mech, 1993).

Variants of Financial Market Frictions and Link to the Stock Market

The universe of market frictions is countless, however, this paper focuses on the following components.

Regulatory Frictions and Stock Market

Regulations are laws and rules imposed by government regulatory agencies, and these requirements add to the cost of business or operations (DeGennero & Robitti, 2007). Capital asset pricing model (CAPM) is predicated on the assumption that the capital market is frictionless. However, the global financial crises of 2007 – 2008 have clearly proved otherwise, and this has prompted monetary authorities to consider the appropriate way to design and conduct monetary policies. Monetary policy instruments include the use of interest rate, exchange rate, cash reserve ratio and so on. Changes in interest rate affect virtually every economic activities including trading at the exchange. Interest rate is the cost of obtaining investment capital, and the higher this cost the less credits investors are willing to access and the less trading at the exchange. Also, fluctuations in interest rate impact exchange rate, and changes in exchange rate are absorbed in firm's net earnings, thus affecting the value of firm's equity (Bean, Larsen & Nikolov, 2002), hence constituting frictions.

Viewing friction from the perspective of asymmetric information, Stiglitz and Weiss (1981) submitted that investors possess private information about their projects, though these projects may have the same expected returns but the probability of success differs. Therefore, if such project encounter difficulty, the borrowers will default in their loan repayment and bank will suffer loss. To build an edge against loss due to default, lending institutions will raise lending rate and this make borrowing unattractive, particularly for the risk-averse investors. Therefore, banks will engage in credit rationing and this result in inefficient allocation of investment funds, leading to underinvestment and frictions. Lee, Luetticke and Ravn (2021) demonstrated that bank capital requirement has significant welfare costs across the entire wealth distribution. Additionally, regulation which induces lower returns from savings harms wealth-rich households and discourages savings, this ultimately impact banks' ability to grant credits. Lee, Luetticke and Ravn (2021) further showed that the spread between returns on savings and cost of borrowing is a potent channel through which financial intermediating frictions extend to the economy, thus identifying interest rate or borrowing cost as financial frictions.

Transaction Cost/Illiquidity/Market Structure and Stock Market

Transaction cost is one of the commonly referred market frictions and it arise from the structure of the market, particularly trading procedures. Market illiquidity constitute cost to investors and discourages trading, thus amounting to frictions. Kundlia and Verma (2021) established that illiquidity is an important factor in modelling asset pricing in emerging market. Market structure focuses on the way market participants can benefit from trading process by merely viewing of outcomes of the process, the speed with which price react to news and the magnitude of the impact of private information on prices as against pure noise trading (Oliver, 2010). This implies that market-based information asymmetry is a product of market structure. According to DeGennaro and Robotti (2007:4) "Financial market frictions, especially transactions costs, depend in part on market structure. Market structure, in turn, depends on both the risk of the traded asset and trading volume". Indeed, an exchange in which buyers and sellers trade at a fair price (equilibrium) is considered liquid, and the transaction cost at such market is relatively low. Whereas, in an illiquid market, transaction cost is high because of larger gap between the bid and offer prices. This tends to suggests that trading liquidity risk (market illiquidity) emanates from the features of the market and nature of information therein (Bervas, 2006). Where the market is illiquid, only insignificant trading activities will lead to soaring returns. Unarguably, the impact of liquidity on stock returns is an attestation that stock market is not without frictions, therefore liquidity should be incorporated in modeling required returns (Marozva, 2019). Inability to relinquish position due to illiquidity or the sale of an asset at fire sale price constitute market risk and this may hinder investors from incorporating such security in their portfolio, thus constituting friction.

Stock market liquidity/illiquidity has been proxy in finance literature using different measures. Gupta (1992) used volume or frequency of trading as liquidity indicator. Karim and Chaudhary (2017) employed turnover ratio as proxy for stock market liquidity. Amihud (2002) proxy liquidity using Amihud illiquidity ratio. Kundia and Verma (2021) concluded that CAPM augmented by illiquidity perform better than the traditional asset pricing model. Acharya and Pedersen (2005) in their liquidity adjusted CAPM associated asset return to asset trading cost (illiquidity). Datar, Naik and Radcliffe (1998) captured liquidity using turnover and documented negative link with returns. Akram (2014) surrogate liquidity using bid-ask spread and examine its effect on stock returns in Pakistan. Amihud and Mendelson (1989) used bid-ask spread to represent liquidity.

Asymmetric Information and Stock Market

Irregularity of information constitute risk to investors and prevent them from participating in trading activities at the exchange. Information in financial market may be symmetric or asymmetric. Where information is symmetric, stock price will incorporate all available information and mispricing will not occur. However, when information is asymmetric (irregular), market participants with better information may outperform the others and there will be disparities in value of financial assets. The link between information asymmetry and prices was brought to light by Akerlof (1970). Garleanu and Pederson (2004) discovered that information asymmetries influence desired return through distortions in trading decisions. Easley and O'Hara (2004) demonstrated that stock which incorporate more private information as against public news have higher anticipated excess return. Asymmetric information has been measured using volatility (Bhagat, Marr, & Thompson 1985; Blackwell, Marr & Spivey 1990) and illiquidity (Amihud, 2002). Pan and Misra (2020) asserted that equity market information is perceived through changes in trading volumes and volatility of returns. Volatility constitute risk for risk-averse investors and as such may hinder investment activities, thus creating frictions. Belke and Kronen (2017) proxy financial uncertainty using volatility of market index. Albu, Lupu and Calin (2015) captured asymmetric volatility in stock market using GARCH models. Omokehinde, Abata, Somoye and Migiro (2017) applied asymmetric power autoregressive conditional heteroscedasticity (APARCH) to estimate asymmetric information in stock returns. Volatility model is established on the fact that information arrives the market in a discrete pattern and the probability of this arrival is time-base and different information affects the market in different ways (Bookstaber & Pomerantz, 1989).

Empirical Review

Onoh (2016) examined the effect of price volatility on market returns in Nigeria for the period 2nd January 2001 to 31st December, 2015, using GARCH techniques. The study revealed that volatility significantly impact stock market returns. Kuhe (2018) model volatility persistence and asymmetry in the Nigerian Stock Market using GARCH, EGARCH for the period July 1999 to June 2017. The study found the existence of asymmetry without leverage effect and high persistence of shocks in market returns. Goel, Tripathi and Agarwal (2020) proxy asymmetric information using idiosyncratic volatility and examine its impact on stock returns in India from 1st April 2000 to 31st March 2018. The result revealed positive relationship between information asymmetry and stock market returns. Dhaoui, Goutte and Guesmi (2018) captured asymmetric information through oil price shocks and examine its effect on stock market, using non-linear

autoregressive distributive lag procedures. The result indicates long-run asymmetric relationship between stock market and oil price shocks.

Barclay, Kandel and Marx (1998) investigated the impact of trading cost (friction) on stock price in the New York exchange, and revealed that effect of transaction cost on stock price is not significant. Olbrys and Majewska, (2014) examined the implication of market frictions in eight markets in central and Eastern Europe, applying serial correlation on index from 4th May 2004 to 26th April, 2012 in fisher effect framework, and reported that when coordinated database is utilized one may mistakenly believe that Fisher Effect is absent whereas it exists. Uhunmwangho and Ogieva (2021) investigated the existence of regulatory frictions (monetary policy rate) in the Nigerian Exchange Limited from January 2010 to June 2019. The result exposes the existence of frictions in the market because of autocorrelation in market index. The study further revealed that monetary policy rate positively and significantly impacts market index.

Marozva (2019) proxy stock illiquidity with bid-ask price and examine its effect on stock returns in South Africa, for the period January 2007 to December, 2016 and using regression method. He found that illiquidity is positively and significantly related to returns. Uhunmwangho and Obayagbona (2021) examined the effect of bid-ask spread as trading cost on stock returns in Nigeria from 2nd December to 13th December 2019 covering 12 bank stocks. The fixed effect regression revealed that bid-ask spread positively and significantly drive stock returns. Omodero, Adetula and Adeyemo (2021) considered the impact of monetary policy such as exchange rate and interest rate on the Nigerian Exchange limited from 1998 to 2018, using multiple regression. The result showed that exchange rate has negative but not significant effect on stock market. Nguyen, Do and Nguyen (2016) inspected the effect of money policy on stock market in Vietnam covering 2006 to 2015. The GARCH and Autoregressive distributive lag procedures were used for the analysis. The result indicates that ratio of cash reserve requirement negatively and significantly impact stock market price, while interest rate and exchange rate negatively drive stock market but the impact was only significant at 10% level. Bissoon, Seetanah, Bhattu-Babajee, Gopy-Ramdhany, and Seetah (2016) explored the effect of monetary policy in five countries from 2004 to 2014. The random effect regression result reveals a negative and significant influence of interest rate on stock market returns. Afrin (2015) investigated the impact on monetary policy on Bangladesh stock market, using monthly data ranging from January 2003 to December 2013 and vector autoregressive technique. The study could not find any significant impact of discount rate, exchange rate on stock market price.

Ghosh, Dey and Bhadra (2020) examine the causal link between policy repo rate, reserve repo rate, cash reserve ratio, bank rate and Indian stock market, utilizing daily data covering 3rd December 2019 to 8th July 2020. The result reveal that cash reserve ratio and bank rate Granger cause stock market at 5% significance level. Tawfig and Tahtamouni (2018) studied the relationship between monetary policy, fiscal policy and the Jordanian exchange from 2006 to 2016, applying multiple regression. The study discovered that interest rate has negative but insignificant impact on stock market. Jeyalakshmi and Vasumathi (2020) considered the effect of repo rate and reserve repo rate on stock market in India. The study applied correlation and regression techniques on monthly data for the period January 2008 to December 2018. It discovered a significance effect of repo rate and reserve repo rate on stock market returns.

Methodology

The primary aim of this study was to examine the effect of financial frictions on the Nigerian Exchange Limited between January 2010 to December 2021. This is necessary to ascertain the impact of frictions on stock market returns after the global financial crisis, which bring about various financial reforms to strengthen existing ones. Data for this study was collected from Central Bank of Nigeria Statistical Bulletin and the Nigerian Security and Exchange Commission database. The Generalized Method of Moments (GMM) was applied on the dynamic model to test the effect of regulations, information asymmetry and other frictions on the stock market. The J.statistic enunciated by Hansen (1982) was used to evaluate the existence of over/under constraints in the instrumental variables incorporated. E-view 9.0 econometric application software was engaged for the analysis because of its user-friendly nature.

Model Specification

The constituents of what constitute financial market frictions are endless. However, Degenero and Robotti (2007) recognized regulation, taxes, information problems (asymmetry), transaction cost and indivisibility of assets as frictions in financial markets. Adler (2014) cleared that despite the fact that there is no one generally acceptable way to capture stock market liquidity, assessing its impact as friction on asset pricing is vital to investors. Nevertheless, this study focuses on regulations, information asymmetry and transaction cost as frictions indicators and examine their impact on stock market returns. Thus, the relationship between financial frictions and asset returns is represented as follows:

$$MR = F(MF) \quad \ldots\ldots(1)$$

Where: MR stands for market returns, and MF is the components of financial market frictions in this study. These include interest rate (proxy by prime lending rate), cash reserve ratio (surrogates for regulatory frictions), volatility of the market, exchange rate volatility (proxy for asymmetric information) and market illiquidity (proxy for transaction cost and asymmetric information).

The econometric functional form of equation one is stated thus:

$MR = a + MR_{t\_1} + b_1PLR_t + b_2CRR_t + b_3MIL_t + b_4VMK_t + b_5VRER_t + b_6VUL + E_t$ ……(2)

Where: MR_t = market returns at time t, MR_{t_1} = the previous value of market returns, PLR_t = prime lending rate at time t (proxy for regulation and borrowing cost), CRR_t = cash reserve ratio at time t (another proxy for regulation), MIL_t = market illiquidity at time t (proxy for transaction cost and information asymmetry), VMK_t = Market volatility at time t (surrogate for asymmetric information), $VRER_t$ = Volatility in real exchange rate at time t (standing for asymmetric information), VUL_t = traded volume at time t (another measure of information asymmetry), and U_t = error term at time t. b_1- b_6 are parameters to be estimated.

Common proxies for market liquidity are the bid-ask spread, Volume and the Amihud illiquidity measures. Bid-ask spread measure required high frequency data and this is not readily available at the aggregate level in emerging markets. Again, emerging markets like the Nigerian Exchange Limited have few specialist and close to zero dealers, therefore data on dealers' bid-ask spread is almost none existent. Amihud (2002) illiquidity proxy is volume-based liquidity indicators, and therefore suitable for a study of this nature. Amihud illiquidity take the form:

$$\text{Illiquidity} = \frac{1}{D} \text{ x } \sum_{d=1}^{D} \frac{Rit.d}{Voli.t.d} \quad \text{……(3)}$$

Where: D = trading days in the year of firmi, $R_{i.t.d}$ is the daily stock return for firmi at time t, and $VOL_{i.t.d}$ stands for volume for firmi at time t.

This study investigated aggregate market using aggregate monthly data, therefore, Amihud (2002) illiquidity measures was modified to fit aggregate data thus:

$$\text{Market illiquidity (MIL)} = \frac{1}{Dm} \text{ x } \sum_{t=1}^{Dm} \frac{Rt}{Vult} \quad \text{……(4)}$$

Where: Dm = number of trading days in a month, $R_{t.}$ = market returns at time t, and Vul_t = traded volume of the market at time t

Market return (MR) was estimated as percent change in All Shares Index (ASI) as follows

$$MR = \frac{ASI = ASI\_1}{ASI\_1} \text{x} 100 \quad \text{……(5)}$$

Volatility is best captured using the generalized autoregressive conditional heteroscedasticity (GARCH). Therefore, GARCH procedures were applied on All Share Index (market returns) and exchange rate in this

study, the residuals extracted and added to the other variables in excel work file for further analysis. The mean equation of ARCH model takes the form:

$X_t = E_{t-1}(X_t) + \mu_t$ ..... (6)

Where: X_t = dependent variable (all share index and real exchange rate in this study) at time t,

E_{t-1} = expectation which depends on information available at time t-1, and μ = error term

The variance of the above equation takes the form:

$$б^2t = K_0 + \sum_{i=1}^{q} a_1 E^2 б^2t - 1 + \mu_t \quad \text{..... (7)}$$

The general form of equation 7 with log conditional variance as autoregressive model {GARCH (1,1)} in its summarized form is stated as:

$$log б^2 t = K_0 + K_1 E^2 t_1 + K_2 б^2 t\_1 \quad \text{..... (8)}$$

Where: $log б^2 t$ is the log conditional variance, which take value from $K_1 E^2{}_{t\_1}$, $E^2{}_{t\_1}$ is the past period error variance, $б^2{}_{t\_1}$ is the past conditional variance, and K_0, K_1, K_2 are factors to be estimated.

Data Analysis

This section presents the outcomes of E-view 9.0 econometric application on the data set for the study, starting with the descriptive statistics, correlation and unit root tests (which form the preliminary investigation of the study) and GMM regression respectively.

Descriptive Statistics

To ascertain the characteristics of the data set used in this study, it was necessary to conduct descriptive statistic. The summary statistic of the variables used to examine the effect of financial friction indicators on the performance of the Nigerian Stock exchange is presented on table 1 below. A look at table 1 reveals that the mean of market returns lies below the standard deviation, indicating that the market is volatile. A volatile market poses risk to investors and this market discourage investment, thus constituting frictions, hence the need to asymmetric information in this study. The negative mean returns further validate that the risk element in the market is relatively high.

The table 1 further reveals that market return is negatively skewed, suggesting element of asymmetric information exist in the market, therefore the impact of information asymmetry on market returns desire investigation. The mean of cash reserve ratio (CRR) which far below the maximum value tends to suggest that indicator is higher in some period than others. The mean of prime lending rate (PLR) which stood at

15.93%, indicates that the cost of obtaining investment funds in Nigeria is relatively high. This may dampen investment enthusiasm and discourage trading on financial assets.

Table 1: Descriptive Statistics of Variables

	MR	CRR	PLR	MIL	VMK	VRER	VUL
Mean	-0.069167	17.59028	15.93090	-0.173379	0.008657	2.591714	9.070486
Median	0.055000	22.50000	16.59500	0.023629	0.009185	1.755491	7.485000
Maximum	15.95000	31.00000	19.05000	17.24311	0.168407	25.05036	93.20000
Minimum	-100.0000	1.000000	11.13000	-74.07407	-0.202739	-7.076158	3.680000
Std. Dev.	10.35156	8.786244	1.987418	7.635675	0.063629	4.221167	10.11209
Skewness	-6.216200	-0.605732	-1.317840	-6.279887	-0.150018	1.498354	7.264077
Kurtosis	61.62132	2.150732	3.671410	62.43880	3.749300	8.186777	58.61951
Jarque-Bera	21546.14	13.13342	44.38557	22144.31	3.908828	215.2975	19827.59
Probability	0.000000	0.001406	0.000000	0.000000	0.141647	0.000000	0.000000
Sum	-9.960000	2533.000	2294.050	-24.96664	1.246674	373.2068	1306.150
Sum Sq. Dev.	15323.13	11039.33	564.8256	8337.406	0.578964	2548.009	14622.39
Observations	144	144	144	144	144	144	144

Source: Author's compilation with the aid of E-view 9.0 econometric software

The mean of illiquidity indicator (MIL) with a negative value of -0.1733, suggests that the market is low in liquidity, therefore may of discourage local and foreign investors because of the difficulty of getting trading counterpart. The negative skewness of market illiquidity, implies that this indicator may favour some investors at the expenses of others, thus amounting to friction. The negative skewness of market volatility, tends to indicate that this indicator asymmetric in nature and may pose risk to investors. The mean value of trading volume (VUL) which is very close to its standard deviation, indicates that there is no much variation in trading volume with the period is under investigation. Table 1 also reveals that the Jargue-Berea statistics of all the variables except VMK is significant at 5% level, indicating that the variables are not normally distributed. This suggests that the variables should be subjected to unit root tests to determine their level of stationarity before subjecting them to regression analysis.

Correlation Analysis

Correlation analysis help to ascertain the level of relationship between variables. To this end, the covariance procedure was applied on the variables and the outcome is displayed in table 2 below.

Table 2: Correlation Matrix

Variable	MR	MIL	CRR	PLR	VMR	VRER	VUL
MR	1						
PLR	0.1114	1					
	(0.1837)						
CRR	-0.0771	-0.4805*	1				
	(0.3586)	(0.0000)					
MIL	0.1814*	0.1301	-0.0959	1			
	(0.0000)	(0.1203)	(0.2527)				
VMK	0.0789	-0.1420	0.2231*	0.1682*	1		
	(0.3469)	(0.0895)	(0.0072)	(0.0438)			
VRER	0.1058	0.2073	0.0575	0.1292	0.0909	1	
	(0.2069)	(0.0127)*	(0.4931)	(0.1226)	(0.2785)		
VUL	0.0446	-0.0935	0.0773	0.0159	0.1754*	-0.0489	1
	(0.5954)	(0.2649)	(0.3566)	(0.8491)	(0.0354)	(0.9149)	

* = significance at 5% level (probability reported in parenthesis)

Table 2 shows that market return (MR) is positively related to PLR, MIL, VMk, VRER and VUL but the relationships are weak statistically in most cases. The association between MR and CRR is negative and not significant at 5% level. Market liquidity is positively associated with VRER and negatively related to CRR. The relationship which is significant at 5% level implies that market illiquidity is sensitive to both volatility and cash reserve. The relationship between market volatility (VMK), CRR and PLR is positive and significant at 0.05 level. Other variables are similarly related.

Unit Root Tests

It is usually believed that data set collected over a long period of time are not stationary because of the mean and variance may not stable overtime. When this in the case the regression output obtained from such data set may not be reliable. Therefore, to ascertain whether the variables used in this study are stationary or not, the Augmented Dickey Fuller unit root tests were applied on the variables at levels and the result highlighted in table 3 below. Table 3 indicates that some of the variables are not stationary at levels. Specifically, PLR and CRR demonstrate unit root due to the fact that their critical values at 5% are less than their respective ADF statistics. The implication is that these two variables are not integrated of order zero 1(0). As such, the ADF procedures were repeated on the variables, this time at their first difference. The result indicates that all the variables became stable at their first difference, implying that the variables are integrated of order one 1(1). To this end, this study conclude that the variables do have unit root at first difference. The implication is that the regression conducted using the variables will be reliable. However, the variables were handled according to their level of stationarity.

Table 3: Unit Root Tests on Variable

	At Levels			At First Difference		
Variables	ADF Critical value @ 5%	ADF Statistic	Remark	ADF Critical value @ 5%	ADF Statistic	Remark
MR	-2.8816	-5.5633(0.0000)*	Stationary	-2.8819	-8.7226(0.0000)*	Stationary
PLR	-2.8818	-0.2383(0.9295)	Not stationary	-2.8818	-18.8285(0.000)*	Stationary
CRR	-2.8818	-1.5614(0.4996)	Not Stationary	-2.8818	-11.8296(0.000)*	Stationary
MIL	-2.8816	-7.0178(0.0000)*	Stationary	-2.8819	-10.5793(0.0000)*	Stationary
VASI	-2.8816	-9.1459(0.0000)*	Stationary	-2.8819	-14.6718(0.0000)*	Stationary
VRER	-2.8816	-4.9338(0.0001)*	Stationary	-2.8819	-12.4231(0.0000)*	Stationary
VUL	-2.8816	-11.5127(0.0000)*	Stationary	-2.8827	-11.4885(0.0000)*	Stationary

* = Stationary at 5% significance level (Probability reported in Parenthesis).
Source: Researcher's compilation using E-view software

Regression Analysis

This study examined the link between financial market frictions and the performance of the Nigerian Exchange. The GMM regression technique was used for the analysis and the result displayed in table 4 below. The result in table 4 reveals that there is no over or under restrictions in the instrumental variables incorporated because the J.statistic is not significant at 5% level and is within the recommended range of 0.25 and 0.90. This indicates that the model is appropriately specified. The presence of serial correlation in regression output may suggest that the estimation is not dependable for policy direction. To be sure that the regression result of this study is not spurious, the Durbin-Watson statistic in table 4 was used to check for autocorrelation. The Durbin-Watson statistic which stood at 1.7925 validate the absence of serial correlation in the regression output. The absence of serial correlation in the regression output was further validated by the correlogram residual square test result. The R^2 which measures the goodness of fit of the regression estimation in this stood at 0.9268 on adjustment, indicating that about 92.68% of the systematic variation in the dependent variable is accounted for by the explanatory variables. This is an indication that the regression estimate is reliable. Since the regression meets all the necessary diagnostic conditions, the study conclude that it is appropriate for policy direction. Based on this, the study went ahead to interpret the regression result in table 4 below.

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Table 4: Generalized Method of Moments Regression Results (MR as dependent Variable)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MR(-2)	0.064064	0.027983	2.289380**	0.0236
DCRR	0.049061	0.017609	2.786141**	0.0061
DPLR	-0.039677	0.017411	-2.278856**	0.0243
MIL	1.597620	0.110050	14.51715*	0.0000
VRER	-0.107029	0.047196	-2.267757**	0.0250
VMK	-4.733177	2.251740	-2.102009**	0.0374
VUL	0.025604	0.010818	2.366765**	0.0194

R-squared	0.930042	Mean dependent var	-0.182286
Adjusted R-squared	0.926886	S.D. dependent var	10.43768
S.E. of regression	2.822303	Sum squared resid	1059.397
Durbin-Watson stat	1.792503	J-statistic	6.572642
Instrument rank	17	Prob(J-statistic)	0.765080

*, ** = Significance at 1% and 5% respectively
Source: Researcher compilation using E-view 9.0 computer software

Table 4 above shows that the previous performance of the stock market captured by the lagged value of returns positively drive the current performance. The significance of this indicator at 5% level, suggest that past data can be used to predict future returns. This tends to suggests that the market does not absorb all information in prices, implying that the market is not efficient in the weak-form. When a market is not efficient, there is bound to be frictions which may influence trading activities at the exchange.

The table further reveals that cash reserve ratio (CRR), an indicators of regulatory friction in this study positively influence stock market returns. The coefficient of cash reserve ratio which is significant at 5% level, implies that a unit rise in the indicator will affect activities at the exchange directly. The positive impact on market returns may be occasioned by the high bank capitalization which ensure excess liquidity at the possession, hence the current cash reserve policy have not curtailed their capacity to grant credits. This finding is different from Nguyen, et al (2020) who showed that cash reserve ratio negatively and significantly impacts stock price. However, the prime lending rate (PLR) which capture the borrowing cost for investors negatively and significantly impact stock market returns. Indeed, an increase in lending rate increases the cost of borrowing and discourages investors from obtaining loanable funds, and this limit their ability to trade on financial asset at the exchange, hence the adverse effect. The implication of this result is that increasing lending rate or interest rate constitute cost to trading and discourages investment at the exchange. This finding tends to align with Bissoon, et al (2016) who found negative and significant effect

of interest rate on stock price, and Ghost, et al (2020) that bank rate Granger caused stock market significantly.

Table 4 also indicate that market illiquidity (MIL) proxy for transaction cost and asymmetric information in this study positively influence stock market returns in Nigeria. The significance of this liquidity indicator at 0.05 level portends that market illiquidity is a potent factor affecting stock market returns. Indeed, when market liquidity is low, few volume of transactions will result in high returns. This is particularly true in most emerging markets with relatively low level of market traders, and few investment instruments (stocks) are actively traded. This outcome tends to provide support for Marozva (2019) that illiquidity is positively and significantly related to returns; Uhunmwangho and Obayagbona (2021) bid-ask spread (transaction cost measure) positively and significantly drives returns. However, the outcome of this study is contrary to Barclay, et al (1988) that transaction cost has not significant influence on stock price.

Additionally, the volatility of exchange rate (VRER) used in place of asymmetric information in this study negatively and significantly affect stock market returns. This is expected because changes in exchange rate or its volatility discourages foreign investors from participating in domestic markets because it leads to reduction in the value of their investment. Indeed, as value of local currency decline relative to international currency, foreign investors will begin to offload their investment at local market. Also, currency depreciation increase cost of production for import dependent firms and reduce their earnings, causing low demand for the stock of such firm in the market, hence the negative effect. This outcome is different from Omodero, et al (2021) that exchange rate has negative but not significant effect on stock market, but tends to support Dhaoui et al (2018) macroeconomic shocks (oil price shocks) constitute asymmetric information affecting the stock market. Similarly, stock market volatility (VMK) another proxy for asymmetric information negatively influence stock market returns. The significance of stock market volatility implies that the higher the volatility, the less the returns to investors. Indeed, volatility constitute risk and dampens investors' confidence and discourages investment commitment, thus creating frictions. This finding agree with Onoh (2016) who found that price volatility has significant influence on market returns, but is contrary to Goel, et al (2020) who proxy asymmetric information with idiosyncratic volatility and found that volatility positively influence stock market returns.

Finally, trading volume (measure of market liquidity) has positive and significant impact on stock market returns. The result implies that a rise in trading volume drive stock market returns remarkably. Indeed, it take volume to move the market. The higher the volume of trading activities, the more liquid the market and the more attractive the market to investors, hence the positive effect on returns.

Conclusions and Recommendations

The main concern of this study was to examine the effect of financial frictions on stock market performance in Nigeria. The Generalized Method of Moments (GMM) was applied to the dynamic model to test the effects of cash reserve ratio, prime lending rate (regulatory frictions), market illiquidity (transaction cost), market volatility and exchange rate volatility (information asymmetry) on stock market returns for the period January 2010 to December 2021. The E-view 9.0 econometric computer application was used for the analysis. The findings reveal that regulatory frictions, transaction costs and asymmetric information significantly influence stock market returns. Specifically, cash reserve ratio has positive and significant effect on returns, while lending rate negatively and significantly influence stock market returns. Market illiquidity and traded volume positively and significantly drive stock market returns, while market volatility and exchange rate volatility negatively and significantly impacts stock market returns. This study concludes that regulations, asymmetric information and transaction costs constitute financial frictions in Nigerian Exchange and significantly impact stock market returns, and recommends that investors should pay serious attention to regulatory frictions, transaction costs and asymmetric information because of their effects on investment returns.

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