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Interest Rates and Stock Returns of Nigerian Quoted Insurance Firms

Mustapha Olanrewaju Aliyu, PhD[1], Amina Muhammad Liman, PhD [2] Shukurat Moronke Bello, PhD[3], Aisha Aminu, PhD[4]

[1]Department of Industrial Relations and Personnel Management, Faculty of Management Sciences, University of Ilorin, Ilorin, Nigeria
aliyu.om@unilorin.edu.ng

[2,3&4] Department of Business Administration and Entrepreneurship, Bayero University, Kano, Nigeria

ABSTRACT

The study used the Autoregressive Distributed Lag (ARDL) estimation model to establish the short-run and long-run relationship between interest rates and the return on the stock of insurance firms listed in Nigeria. The study adopted ex-post facto research design because it used secondary sources to extract data regarding the exchange rate of the Nigerian naira to the United States dollar, inflation rate and interest rate. The population of interest comprised all Nigerian insurance businesses, publicly traded on the stock exchange between January 2019 and December 2020. As of December 2020, there were 25 insurance firms listed on the Nigerian Stock Exchange, representing the target population for the research. After applying a filter, twelve (12) specified insurance firms were included in the sample size. For data testing, the research used parametric techniques. Using Eviews version 9 software, the model is estimated using Autoregressive Distributed Lag (ARDL) methods. The findings of the long-run and short-run coefficients showed that interest rates affect the return on the stock of insurance firms listed in Nigeria. The exchange rate positively and significantly impacted stock returns over the long and short run. Conversely, inflation and interest rates negatively and significantly ***long-short-run*** *affect the insurance industry's portfolio returns. As such, Investors should diversify their investment in developing and emerging markets domestically and abroad to reduce the risk associated with the interplay of interest rates.*

Keywords: Interest rates; Stock Return; Insurance firms; Nigeria

1. Introduction

As economy grows, the importance of the stock market cannot be overstated. Companies raise money for development or growth by selling shares to the public, who are prepared to put their money into a lucrative venture via the stock market. Investors can own a stake in businesses and partake in the financial rewards of collaboration via market (Green, 2015; Alam & Uddin, 2019). This implies that stock market acts as a financial mobiliser by connecting businesses and investors in a way that benefits both parties. Both private and public capital may be accessed via the stock market, thus, stimulating economic development (Allsopp & Vines, 2020). A stock index for the whole market or a specific market sector includes information on stock market performance, which serves

as a metric for adjusting the stock market (Benigno, 2020).

Internal and external reasons cause stock price fluctuations and volatility. Earnings reports, mergers and acquisitions, dividend suspension and new innovative products are just a few examples of in-house aspects. Share prices rise when a business's profits are favourable, for example, owing to increasing demand from investors willing to invest in a well-established company (Dabo et al. 2019). Consequently, the interest rate positively or negatively affects stock market activities and assesses stock return patterns (Utami et al., 2016). In this regard, this study aims to assess the long-term and short-term effects of interest rates and stock returns of insured companies in Nigeria to help investors and insurance players understand and appreciate the interplay between interest rates and stock market performance in Nigeria, with particular reference to insurance induced.

To demonstrate the interplay between the interest rates and stock returns, Quayes and Jamal (2018) claimed that the interest rate is the persistent rise in the overall price level of goods and services and affects stock returns. Okoro (2017) argued that an increase in the interest rate may trigger a rise in the nominal interest rate, and as a result, there may be a rise in demand for bonds and a decline in demand for a stock. In this regard, Quayes and Jamal 2018 believed that stocks and bonds compete in portfolio allocation. The consequence of this circumstance is a decline in a company or industry's stock returns. An increase in inflation could erode investors' purchasing power and, by extension, affect companies' stock returns on the stock exchange market. For example, a Central Bank of Nigeria survey showed that Nigeria's inflation rate increased from 8.60 per cent to 14.4 per cent between January 2018 and January 2020. Thus, the Nigerian Stock Market was also adversely affected by this change.

This implied that interest rates affect the insurance industry's share of pricing changes. Because of the growth in total expenses and a lack of cost adjustment, the consumer price index may negatively impact insurance firms' profitability (Sharan, 2022). Additionally, a rise in short-term discount rates, such as the Treasury Bill Rate, may lead investors to prefer holding liquidity in form of short-term investments over long-term investments, such as stocks. As such, insurance company stocks in Nigeria tend to drop.

It is observed that previous studies left gaps which the present research seeks to fill in order to understand better how stock returns are linked to interest rates. For instance,

macroeconomic factors such as interest rate and inflation rate considerably affect stock returns in studies such as Erdogan and Ozlale (2005), Akonnor (2016), Mugambi and Okech (2016), Dabo et al. (2019), Pourrahnama and Daei-Karimzadeh (2020) and Aliyu (2022). Conversely, the findings of Morosan and Zubas, (2015), Rabia and Khakan, (2015), Nisha, (2015), Okoro (2017), Ali (2020), Ali and Jamil, (2021), and Nisha et al., 2022; revealed that the interest rates are not relevant in understanding stock-return movement. At the same time, other previous studies concentrated more on the returns of the stock market as a whole rather than taking into cognisance the peculiarity and heterogeneity of each industry within the stock exchange market. Some of these studies include: Uwubamwen and Eghosa (2015), Morosan and Zubas (2015), Safitri and Kumar (2020), Pourrahnama and Daei-karimzadeh, (2020) and Alam and Haseebullah (2021).

This clearly showed an inconsistency in the previous prompt the researcher to confirm earlier studies' conclusions. In addition, a review of related literature suggestd that systematic research on the role of interest rates on stock returns in insurance firms is lacking (Quadir, 2022). The majority of previous studies concentrated on deposit money institutions. Hence, insurance firms were taken into account in the current investigation. This is because, aside from shielding people and businesses from a wide range of possible hazards, insurance firms make a substantial contribution to the nation's economic expansion by ensuring the smooth operation of enterprises and producing long-term financial resources for industrial projects. Hence, this study decides to fill the gap by focusing on the stock returns of listed insurance firms in Nigeria. Consequently, this study uses the Autoregressive Distributed Lag (ARDL) proposed by Pesaran et al. (2001) to address the shortcomings of conventional models. Unlike other methods for estimating co-integration relationships, the ARDL model does not require lag-length symmetry; each variable can have different lag-length terms.

The Study's Objectives

The aim of this study is to explore the influence of interest rates on insurance firms' stock returns in Nigeria. The objectives are:

i) to examine the long-term effect of interest rate volatility on the share price of listed insurance firms in Nigeria, and

ii) to assess the short-term impact of interest rate volatility on the share price of listed insurance firms in Nigeria.

2. Literature Review and Hypotheses Development

The Stock Return Concept

According to Bolten (2020), stock returns are a claim that an investor has, in the form of distribution, generally in the form of cash dividends on any future benefits transmitted from a firm to the investor. Investing is a two-way street with firms competing for investors' limited cash while investors seek investments with a high probability of attractive returns. Further, Bolten (2020) claimed that stock values often fluctuate, resulting in market quotes rising and falling regularly. Investing in equities in an efficient market, according to Vena (2020), yields a profit for investors. Depending on the company's nature, income or dividend may be paid out in response to these investments. As defined by Uwubanmwen and Eghosa (2015), stock return is the sum of a company's dividend and an increase in its stock price. According to Mugambi (2016), stock return is the increase or decrease of a share's value over a particular time, expressed most commonly in percentages. Invested money's total income includes both profits and losses.

It can be synthesised from the initial concept of stock returns by various scholars that stock returns are appreciation or depreciation of an organisation's share prices. It also means the dividend an investor earns on a company's share. However, Uwubanmwen and Eghosa's definition of stock returns is more relevant to this study because it recognised the volatility or appreciation of the share price as meaning returns, which means the firm's ability to make efficient use of investors' investments.

The Interest Rates Concept

The cost associated with using the owner's money or material possessions is known as the interest rate. According to Alam and Uddin (2019), interest rates are the costs associated with using money or other assets that a debtor has borrowed from a creditor. In other words, money can be deposited and generate interest for a particular time (Nshom, 2017; Okechukwu, 2017). According to the parties' agreement, interest payments are typically paid yearly. Prudent investors usually look forward to investing in a competitive market where fewer individuals may produce more significant than average profits (Allsopp & Vines, 2020; Nshom, 2017). This means that investors would be enticed to move their cash away from the stock market and toward banks or bonds if interest rates on deposits or bonds are raised. Morosan and Zubas (2015) claimed the shift often results in a decline in share demand and a corresponding decline in share price, and vice versa. Nevertheless, when lending

interest rates rise in response to rising deposit interest rates given by banks to depositors, investments in an economy tend to decline (Alam & Uddin, 2009). The fee a borrower of tangible commodities pays the owner as compensation for using the assets is also referred to as the interest rate (Sharan, 2022).

Interest Rate and Stock Return

The monetary policy relies heavily on the interest rate; the central bank's primary tool for short-term control (Allsopp & Vines, 2020). The interest rate channel is expected to influence monetary policy and the stock market, which influence private sector decision-making (Benigno, 2020). In contrast, Ali (2019) asserted that interest rates might have a short-term impact on a company's intention to raise capital by issuing stock securities or bonds. Borrowing expenses seem lower when interest rates are low since the borrower pays less interest. The low-interest rate encourages economic investment and growth, which also leads to a higher stock price. (Alam & Haseebullah, 2021).

As Fama (1981) argued in Alam and Haseebullah (2021), predictable inflation has a negative relationship with predicted economic activity, which in turn has a positive relationship with stock market returns. Stock market gains might thus, be adversely connected with projected inflation, typically used as an indicator of the short-term rate. Fama (1981) said that the discount rate is directly influenced by the long-term interest rate, which the current value model influences. Variations in interest rates impact family spending and savings, as well as corporate and individual investment choices. Based on these, the following hypotheses are formulated:

Ho_1 interest rate has no significant long-term effect on the share price of the insurance companies listed in Nigeria, and

Ho_2 interest rate has no significant short-term impact on the share price of the insurance companies listed in Nigeria.

Theoretical Reviews

Arbitrage Pricing Theory (APT)

In 1976, Stephen Ross advocated the Arbitrage Pricing Theory. The theory explained how financial assets are priced by considering the risk linked to the assets. The theory believed that stock prices represent the interplay between interest rates and stock returns. To put it another way, interest rates play a crucial role in share price volatility. The APT claimed that any expected onset of new information concerning macroeconomic variables such as exchange rate, inflation rate, interest rate, industrial production, gross domestic product and many other

variables influence the share prices, which ultimately affect the stock expected returns. The theory explained how changes in interest rates as of the variables of macroeconomic factors instigate fluctuation in share prices. The overall idea behind APT is that interest rates are influential and financial assets are sensitive to macroeconomic factors.

The APT may be expressed in the formula below:

$E(r_j) = r_f + b_{j1}RP_1 + b_{j2}RP_2 + b_{j3}RP_3 + b_{j4}RP_4 + ... + b_{jn}RP_n$

Where:

$E(r_j)$ = depicts asset's expected rate of return

r_f =depicts risk-free rate

b_j = shows the sensitivity of the asset's return to the particular factor

RP = is the risk premium associated with the particular factor

APT is an innovative model because it allows the user to adapt the model to the evaluated security and helps the user determine whether a security is overvalued or undervalued. It is also crucial for building a portfolio, as it gives managers room to test their portfolio's exposure to specific factors.

Review Empirical Studies

Okonnor (2016) examined the impact of macroeconomic conditions on stock values. The research used the Arbitrage Pricing Theory (APT) to examine how interest rates affect stock prices in Ghana. The independent variables were the inflation rate, the yield on Treasury Bills, cocoa prices, crude oil prices, gold prices, the balance of payments, GDP and the exchange rate. From 2006 to 2020, the data was gathered from a secondary source and analysed using OLS. The issue of multicollinearity was discovered and solved using step-by-step backward regression after the Global Validation for Linear Model Assumptions revealed the existence of the multicollinearity research test. Inflation and cocoa prices in Ghana have a strong correlation with stock prices according to the research. In Ghana, thus, GDP and the exchange rate have a negative relationship with stock price movement.

To demonstrate the impact of interest rates on the stock returns of listed commercial banks in Kenya, Mugambi and Okech (2016) utilised the exchange rate, interest rate, inflation rate, and GDP as independent variables and the share price as a dependent variable. Using secondary data from the Kenyan Statistics Bureau and Bloomberg databases, the analysis covered from 2015 to 2020. The regression coefficient was calculated using an OLS model with a fixed effect. According to the research findings, inflation, currency, and interest rates have a negative and substantial link with the stock returns of Kenya's listed commercial banks.

However, GDP is of little significance in understanding the link between stock returns and GDP. This study assumed that Mugambi and Okech's (2016) findings would have been enhanced with a more robust model.

Furthermore, data from Bombay Stock Market discovered a link between macroeconomic factors and stock performance. Time series data from January 2010 to December 2015 was analysed monthly. The Vector Autoregression model (VAR) was used to decrease the independent variables (industrial production index, consumer price index, money supply, interest rate, exchange rate and gold price) against the dependent variable (share price). The study additionally employed an Improved Dickey-Fuller test to ensure that the results are not influenced by random chance. One variable alone, the interest rate, was shown to have a substantial positive relationship with Bombay Stock Exchange Market returns, according to the findings of this research.

Okoro (2017) investigated the relationship between inflation rates and stock market performance in Nigeria. The research examined time series data from 1986 to 2015 and used GDP, money supply, inflation and interest rates, exchange rates and stock market performance as dependent variables. The research used OLS method to analyse the data. According to this research, interest rates cannot be used to explain price changes in Nigerian stocks. Thus, the study recommended that subsequent empirical research should concentrate on other macroeconomic factors that might favour Nigerian stock market values. Using other macroeconomic factors and a more robust model might have substantially impacted Okoro's (2017) findings.

Study's Model

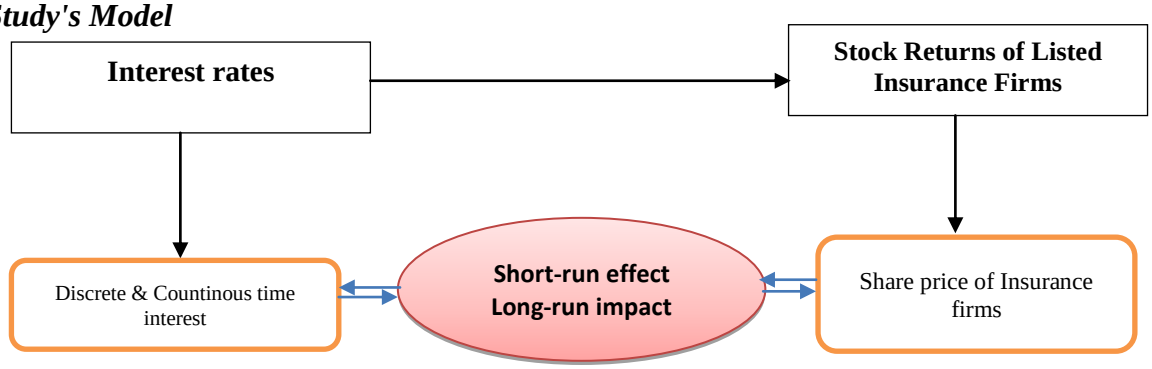

Figure 1: Author's Conceptualisation, 2022

3. Methodology

This study used an ex-post facto research design to test hypotheses concerning the relationship between dependent and independent variables. This is because the data was extracted from a pre-existing

source rather than an actual experiment. The population of interest comprised all Nigerian insurance businesses publicly traded on the stock exchange between January 2019 and December 2020. As of December 2020, there were 25 insurance firms listed on the Nigerian Stock Exchange, representing the target population for the research.

On the Nigerian Stock Exchange Market, all listed insurance firms with comprehensive financial statements before January 1, 2021, are included in the study's sample size. According to the following table, the sample size was reduced to twelve (12) insurance businesses listed on the Nigeria Stock Exchange Market. The sampled insurance firms are marked "yes" in the table's sample column to show that they were included in the study's sample size. In contrast, those marked "no" were omitted from the sample because their financial statements were incomplete.

Table 1: Listed Insurance Firms in Nigeria

S/N	Insurance firms	Date Listed	Data	Sample
1	African Alliance Insurance	17-9-2019	Incomplete	No
2	Aiico Insurance	1990	Complete	Yes
3	Axamansard Insurance	19-11-2019	Incomplete	No
4	Consolidated Hallmark Insurance	22-2-2018	Incomplete	No
5	Continental Reinsurance	30-5-2017	Complete	Yes
6	Cornerstone Insurance	13-8-1997	Complete	Yes
7	Equity Assurance	18-7-2017	Incomplete	No
8	GoldLink Insurance	12-2-2018	Incomplete	No
9	Great Nigerian Insurance	11-10-2005	Incomplete	No
10	Guinea Insurance	1-1-1990	Incomplete	No
11	International Energy Insurance	13-7-2017	Incomplete	No
12	Lasaco Assurance	1991	Complete	Yes
13	Law Union and Rock Insurance	9-7-1990	Complete	Yes
14	Linkage Assurance	18-11-2003	Complete	Yes
15	Mutual Benefits Assurance	28-5-2002	Complete	Yes
16	Nem Insurance	5-9-1990	Complete	Yes
17	Niger Insurance	1-9-1990	Complete	Yes
18	Prestige Assurance	3-12-1990	Complete	Yes
19	Regency Assurance	27-5-2018	Incomplete	No
20	Sovereign Trust Insurance	29-11-2006	Incomplete	No
21	Staco Insurance	25-6-2017	Complete	Yes
22	Standard Alliance Insurance	19-12-2003	Incomplete	No
23	Universal Insurance	11-2-2018	Incomplete	No
24	Veritas Kapital Assurance	17-12-2019	Incomplete	No
25	Wapic Insurance	1-9-1990	Complete	Yes

Source: NSE, 2021

From 2011M1 to 2020M12, the data was extracted from the secondary source every month during the analysis to ensure that a sufficient number of observations produce a better result. Data were collected from the Statistical Bulletin of the Central Bank of

Nigeria (CBN) regarding the exchange rate of the Nigerian naira to the United States dollar, inflation rate and interest rate. In contrast, data on the returns of the listed insurance firms in Nigeria were obtained from the Nigerian stock exchange market historical database for the period covered by the study. The analysis employed data processing using parametric methods. The model is estimated using Eviews version 9 software based on the Autoregressive Distributed Lag (ARDL) techniques. Pre-test analysis based on descriptive and Augmented Dickey-Fuller (ADF) tests was used to obtain a sense of the variables' characteristics and to ensure that none of the variables was stationary at the second I(2) discrepancy. One of the ARDL model's assumptions is that none of the study's variables should be stationary at I(2).

4. Result and Discussion

Post-estimation Diagnostic Test

To determine the robustness of the model, some diagnostic tests (normality, serial correlation and heteroscedasticity) were conducted and the results are presented in Table 2. The rule of thumb for all the tests is that if the P-value > 0.05, the study accepts the null hypothesis and rejects the alternative hypothesis. The hypothesis for the normality test is set as follows:

$H_{0:}$ Sample is normally distributed. $H_{1:}$ Sample is not normally distributed.

The hypothesis for the serial correlation test:

$H_{0:}$ No serial correlation. $H_{1:}$ Serially correlated.

The hypothesis for heteroskedasticity test:

$H_{0:}$ Homoscedastic. $H_{1:}$ Heteroskedasticity.

From Table 2, the P-value for the entire test is more significant than 0.05. This means that the null hypotheses of samples are normally distributed, no serial correlation, and homoscedastic fail to be rejected. The alternative hypothesis of samples is not normally distributed, series are correlated, and the presence of heteroskedasticity results from this rejection.

Table 2: Diagnostic Tests Results

Test	Statistics	P-value
Normality	0.179161	0.914315
Serial correlation	0.040177	0.9503
Heteroskedasticity	0.349848	0.6988

Source: Eviews 9

Additionally, a stability test was carried out by this study using a Cumulative Sum Chart (CUSUM) and the cumulative sum of square (CUSUMSQ) test with the view to verify

whether or not the model of the study is stable and the result is presented in figure 2. The rule of thumb is that when the recursive error line is less than 0.05 and lies in-between the critical lines, it indicates that the model is stable. Therefore, Figure 2 revealed that the model of this study is stable as the recursive error line lies between the critical lines and is less than 0.05.

Figure 2: CUSUM: Model Stability Test Result

Hypothesis One

The interest rate has no significant long-term effect on the share price of the insurance companies listed in Nigeria.

Long-run ARDL Estimation

Table 3 is the long-run result of the ARDL model. The result is used to test hypotheses 1, 3 and 5 earlier established in Chapter One of this study. The findings revealed a positive and significant association between EXR and SP at a 1% significance level. It implied that a 1% increase in EXR would attract a response of a 0.0009 point increase in SP. In addition, a negative and significant relationship exists between CPI and SP at 5% significance. This means that when CPI is increased by 1%, there would be a corresponding 0.015 point decrease in the SP. The probability value of TBR (0.0316) showed a negative and significant relationship between TBR and SP. The result revealed that a 1% increase in TBR would result ina 0.010 point decrease in the SP. Based on the impact of the long-run estimation, the null hypotheses of no long-run relationship between the independent variables and dependent variable of the study are rejected, and the alternative hypotheses of long-run relationship are accepted.

Furthermore, the R^2 of the model indicates that 95% of the variation in Stock Price (SP) is described by the mutual effect of the independent variables used in the study. The remaining 5% is explained by the variables not captured in this study. The Durbin-Watson statistic of 1.79 can be approximated to the value of 2, which showed the absence of autocorrelation in the series used in the model. Equally, the probability of the F-statistic (0.000000) is highly significant, pointing to the fact that the model of the study is fit.

Table 3: Long-run Coefficients of ARDL (4, 0, 1, 0, 9) Model
Dependent Variable: SP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	0.000948	0.000322	2.946287	0.0042
CPI	-0.014945	0.006074	-2.460565	0.0160
TBR	-0.010145	0.004637	-2.188006	0.0316
DUMMY	-0.480073	0.072470	-6.624469	0.0000
CointEq(-1)	1.327912	0.067946	19.543592	0.0000

R^2 = 0.853524, Adjusted R^2 = 0.84907, DW = 1.09, F-Stat = 92.29152 (0.00001)
Source: Eviews 9

Hypothesis Two

Interest rate has no significant short-term impact on the share price of the insurance companies listed in Nigeria.

Estimated Short-run ARDL Model

****The estimated short-run coefficients of the ARDL in Table 4, test hypotheses.** The result showed that EXR has a positive and statistically significant short-run impact on SP. An increase in EXR by 1% would result in a 0.000325 point increase in SP. The result also revealed that CPI has a negative and statistically significant short-run impact on SP. 1% increase in CPI would bring about a 0.017819 point decrease in SP. Similarly, TBR has a negative and statistically significant short-run relationship with SP. A percentage increase in TBR would translate to a 0.003482 point decrease in SP. Based on this premise, the null hypotheses set to short-run relation between the independent and dependent variables are rejected, and the alternative hypothesis is accepted. The coefficient of the error correction term (-0.343) is less than 1 and is highly significant at 1% level of significance (0.0000). Furthermore, the coefficient of the error adjustment term has a negative sign which further validated the earlier confirmation of the presence of long-run relationships among the variables. It suggested that in the event of disequilibrium in the Share Price, the system may correct itself back to equilibrium at the speed of 0.34% every month.

Table 4: Estimated Short-run Coefficients of the ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	0.000325	0.000130	2.501741	0.0144
CPI	-0.017819	0.004911	-3.628245	0.0005
TBR	-0.003482	0.001681	-2.071427	0.0415
DUMMY	-0.119788	0.039975	-2.996554	0.0036
CointEq(-1)	-0.343198	0.064104	-5.353808	0.0000

R^2 = 0.85912, Adjusted R^2 = 0.90121, DW = 1.62, F-Stat = 95.01519 (0.00010)
Source: Eviews 9

Discussion of Findings

The study used the ARDL estimation model to determine the long-run and short-run relationship between interest rates and the return on the stock of insurance firms listed in Nigeria. The model assumed no variable should be stationary at the second difference I(2). Hence, the researchers tested the sequence through the Augmented Dickey-Fuller (ADF) testing techniques. The results produced by the ADF showed that the independent variable is stationary at a level I(0), and the other variables at the first difference I(1) are stationary. The outcome is set out in Figure 2. So, this justified the application of ARDL to model the study series.

The interest rate is the variable that has a more relevant influence on the stock returns of the listed insurance firms in Nigeria due to both long-run and short-run estimates. It was also found that the velocity of change to long-run equilibrium is 0.34% per month in the event of disequilibrium. The findings contradicted other reviewed studies such as Uwubanmwen and Eghosa (2015), Okoro (2017), Mlambo, Maredza and Sibanda (2021), Safitri and Kumar (2020), Rabin and Khakan (2015), among others. However, the study is consistent with findings from, among others, Ifionu and Ibe (2015), Qamri, Abrar Ul Haq and Akram (2015), Ali (2020), Pourrahnama and Daei-karimzadeh (2020), Alam and Haseebullah (2021), Okonnor (2016) and Aliyu (2022). The results also supported Stephen Ross's propounded Arbitrage Pricing Theory. The theory noted that interest rates influence returns on stocks. The null hypothesis is therefore, rejected for both long-run and short-run relationships and the alternative hypothesis is accepted.

Conclusions and Recommendations

Based on the findings from the long-run and short-run estimation of the ARDL model, the study concluded that interest rates impact the stock returns of insurance firms listed in Nigeria. The exchange rate positively and significantly affects stock returns over the long and short run. Conversely, inflation and interest rates have a negative and significant long-run and short-run impact on the insurance industry's stock returns. Based on the study's analytical results, the report proposes:

i. Monetary authorities in Nigeria should keep interest rates low to make the share prices of the insurance industry and other industries attractive to local and international investors. Higher returns on stock may be achieved when the interest rate is decreased, which would help the insurance industry to trail on the path of growth.
ii. The listed insurance firms should intensify their efforts to appeal to

investors because the firm's stocks seem to be a good hedge for investors. This implies that companies should undertake worthwhile projects to boost their performance over time by considering that investors are always ambitious in firms with good financial performance.

iii. Many people are still not aware of the operations of the stock exchange market. The insurance industry should enlighten potential investors about the benefit of investing in their shares for mutual benefits.

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