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Developing an Empirical Framework for Macroeconomic Determinants of Insurance Companies' Stock Performance in Nigeria.

BY

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Abstract

In this study, the researchers examined the macroeconomic determinants of the stock's price performance of insurance companies in Nigeria. Specifically, the study examined the relationship between interest rate spread, exchange rate, and inflation on the stock price of insurance companies listed in the Nigerian Stock Exchange and equally sought to establish an empirical model of the relationship between the variables of interest in the study. Longitudinal research design was adopted for the study as panel data from the Nigerian Stock Exchange (NSE) fact book and Central Bank of Nigeria annual statistical bulletin for the period 1990-2021 was used in the study. Panel data regression model was used in data analysis. The result from the analysis revealed a significant negative relationship between interest rate spread and stock price of insurance companies, a significant positive relationship between exchange rate and stock price of insurance companies, and a significant negative relationship between inflation and the stock price of insurance companies. Furthermore, results from the analysis indicated a long-run relationship between the macroeconomic variables and stock price of insurance companies which is captured by a random effect model. Based on the findings, ensuring relative stability of macroeconomic determinants which will enhance the predictability of stock prices of insurance companies in Nigeria was recommended.

Keywords: Interest rate spread, Exchange rate, Inflation, Insurance stocks, Nigeria.

1. Introduction

Every economy of the world is driven by the financial industry and insurance firms happen to be one of the key players in this industry. They are seen as the core of a nation's financial risk management system. No nation can survive without adequate risk management mechanism. As such, the financial wealth of the nation is being secured by insurance firms and by playing an inevitable and important role in the financial intermediation chain. This is through their ability to generate long-term funds and enhance domestic investments from servings derived from premium. Through effective risk management,

Insurance firms improve infrastructural facilities. Given these many benefits, insurance firms play vital role in a nation's economy and its societal development (Poontirakul, 2013).

According to Mwangi and Murigu (2015), insurance companies provide unique financial services ranging from the underwriting of risks intrinsic in economic entities to the mobilization of funds through premiums for long-term investments. The risk absorption role of insurance promotes stability in the financial market and provides a sense of peace to most economic institutions. The insurance market constitutes a large part of the overall financial sector and its activities include covering risk transfer in financial intermediation. Long-term funds for development are facilitated by well-structured and evolved insurance companies which will obviously boost development in the economy. Also, financial markets that are well-developed have positive influence on total factor productivity which translates into higher long-run growth (Haiss and Sumegi, 2006).

It is quite understood that stocks are exposed to systematic and unsystematic risk. Even though there is no controversy regarding the effect of unanticipated changes in macroeconomic environment on stock returns, there is less agreement on which macroeconomic variable are more relevant in this context and how these variables influence stock prices of insurance firms. Thus, it is important to examine the relationship between macroeconomic variables and their effects on the stock prices of this firm in order to observe the influence of these variables. All investors, be they

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institutional or individual, hold one common objective when they invest in the capital market, they all hope to maximize expected returns at some preferred level of risk Adedoyin (2011).

Consequently, the traditional concept of risk and return relationship applies to insurance firms the same as it does to other investors. The market movement is considered very crucial to the insurance companies due to the fact that the investment function is an important subset of the overall financial management of insurance companies. As postulated by Isa and Yakob (2013), the total investment portfolio of insurance companies consists of assets which are invested to provide guaranteed and fixed benefit payments. These investments are used to finance liabilities associated with investment risks. Any changes in the market can simultaneously affect the value of a company's assets and liabilities and the behaviour of its customers. This means that insurance assets seem to react to some macroeconomic variables which ultimately will lead to share price volatility. But the big question is which of these macroeconomic variables exert a higher impact on the stock price of insurance firms which will give a direction as to when to invest considering pointer, hence our investigation.

1.1 Statement of the problem

There is no doubting the influence of insurance companies in shaping and growing the financial sector of most capitalist economy. Together with mutual and pension funds, insurance remains one of the largest institutional investors in the stock and bonds market. Although several researches have examined the macroeconomic determinants of stock prices in Nigeria, a great number of such studies focus on the macroeconomic factors influencing the stock prices of firms other than institutions in the financial sector. Thus, a gap exists in the literature for research into the determinants of stock price management in the insurance sectors of the Nigerian economy, as well as establishing an empirical framework to guide investors in investing in insurance stocks while considering the effect of market risks as conferred through macroeconomic aggregates or factors. In other words, the researcher considers it necessary to investigate if changes in interest rate and other macroeconomic factors will produce greater changes in insurance stock price. Arising from this, it becomes necessary to explore the influence of macroeconomic variables on stock prices of insurance and by so doing provide an empirical model in this regard. In doing so, we are to investigate whether macroeconomic variables individually and/or collectively contribute to the variability of stock prices of insurance firms in Nigeria.

1.2. Objective(s) of the Study

The goal of this study is to examine the effects of macroeconomic variables on the stock prices of insurance firms in Nigeria. The specific objectives are to:

i. Examine the effect of interest rate spread on the stock prices of insurance firms in Nigeria.
ii. Examine the relationship between exchange rate and the stock prices of insurance in Nigeria.
iii. Examine the effect of inflation on stock prices of insurance firms in Nigeria.

Establish an empirical model that captures the effect of interest rate spread, exchange rate, and inflation rate on changes in stock market prices of quoted insurance companies in Nigeria.

2.0 Literature Review

2.1. The Relationship between Interest Rate and Stock Price

The influence of economic variables on the insurance industry has been broadly investigated in the literature. Several empirical studies have been conducted in order to examine the relationship between insurance premiums, insurance stock prices, and economic factors like interest rate and the consumer price index (or the inflation rate) in different countries (Perera, 2015).

Understanding the relationship between insurance stock prices and the macroeconomic variables is essential for setting the proper pricing levels, especially in competitive markets, for monitoring the reliance and the market risk from a competitive point of view, and for forecasting the profitability. According to the recommendations in Solvency II, the importance of incorporating all the risks, including the inflation risk and the interest rate risk, when striking the solvency capital rules was emphasized. Some studies found that fluctuations in insurance premiums (or measures of underwriting profits) and insurance stock prices are related to the changes in the interest rate (Choi, Hardigree, and Thistle, 2002; Fenn and Vencappa 2005; and Adams, Diacon, Fenn, and Vencappa, 2006).

Few studies have recognized the impact of the inflation rate on the insurance industry performance indicators. Meier and Outreville (2006, 2010) established that underwriting profits and stock prices are interrelated with the inflation rate. Eling and Luhnen (2008) also establish that fluctuations in insurance premiums and stock prices are linked to the inflation rate. According to Krivo (2009), the relationship between insurance stock prices, underwriting profits, and the inflation rate varies with time: between the periods of 1951-1976, the relationship was negative, while in 1977-2006, the relationship was positive.

The fact that the authors applied linear regression models and linear error correction models shows lack of consensus which assume that the relationship between the variables are stable over the period. Due to the presence of structural breaks and the existence of regime change, that assumption seems to be restrictive. An alternative approach based on the smooth conversion regression model will allow the structural breaks and regime change which supposes that the transition from one regime to another is linked to an exogenous variable, has been useful. More specifically, Higgins and Thistle (2000) engaged a smooth transition regression model to look at the influence of the interest rate on stock prices and underwriting profits but they establish no significant relationship between the variables. Also, to examine the influence of the economic

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variable on the combined ratio, Bruneau and Sghaier (2009) considered a smooth transition regression model. Their study revealed that combined ratio is not affected by the interest rate. These studies were constrained with the used of stationary variables therefore, they discovered only the short-run dynamics.

Furthermore, non-linear cointegration approach was considered by Jawadi, Bruneau, and Sghaier (2009) to consider non-stationary variables. More specifically, evidence of a nonlinear cointegration relationship between the stock market index and the interest rate for three countries was established by Jawadi, Bruneau, and Sghaier (2009), United States, Japan, and France, while evidence of a nonlinear cointegration relationship between insurance stock prices, and the consumer price index for the same countries were found by Bruneau and Sghaier (2009b). Even though these authors offer a comparative analysis of the relationship between the variables in an international framework, they adopted individual time series models and made the evaluation country by country. The weakness of the individual time series models is that they do not report for the homogeneity and the heterogeneity that may exist. They adopted a panel data approach to overcome this problem. The benefit of this method was to increase the power of the econometric tests (the unit root tests, the cointegration tests, and the linearity tests, etc). Even though, several studies have applied panel data approach (Lamm-Tennant and Weiss 1997), Fenn and Vencappa (2005), and Eling and Luhnen (2008)), they have measured stationary series, thus studied only the short-run dynamics. Besides, they measured panel linear models which presume that the parameters are stable over time. These assumptions are limiting because the parameters of the panel models vary with time.

1.2. The Relationship between Inflation Rate and Stock Prices

Extensive researches have been carried out on the relationship between stock prices and inflation in Nigeria as revealed in the literature. Precisely in 2007, inflationary rate was 6.5 percent, this rose from a single digit to 15.1 percent as at December 2008. According to the central banks of Nigeria, the inflationary pressure continued into 2009 and this was attributed to the depreciation of the naira, rising food prices, port congestion, inefficient and poor transport services, and the rush to expend the budgeting allocation by the government agencies before the fiscal year ends and a host of many factors. The Nigerian capital market within the same period experienced a bullish trend with market capitalization of ₦10.284 trillion and the highest value of 66,371 was achieved ever in the same year 2008 with a market capitalization of ₦12.640 trillion. Again, in October 2009 the capital market lost about ₦3.38 trillion, over 26.7 percent as market capitalization stood at ₦9.11trillion. However, the apparent anomaly of the negative relationship between inflation and stock market returns as revealed in several studies has been the issue even though majority of these studies concluded that stock market returns may provide an effective hedge against inflation in Nigeria. This argument may also imply that since stock market serves as a hedge against inflation, the investors are fully compensated for the increase in the general price level through corresponding increase in nominal stock market returns and hence the real returns remain unaltered. As hypothesized by Fisher (1930) that equity stock represents claims against real assets of a business and as such may serve as a hedge against inflation.

Furthermore, it is normal to assume that equities would provide a striking hedge against inflation for the reason that the dividend streams that return to shareholders which are obtained from the corporate profits are based on the operation of real assets. Therefore, it could be assumed that corporate organizations would more often than not be able to pass on inflationary price increases to their customers. However, studies have revealed that although equities are good hedges in the long run, they are poor hedge in the medium or short run. Equities experience even larger negative effects than bonds and long-term real asset returns are provided by equities. Clearly, the relationship between inflation and equity returns in the short term is negative hence the conclusion that using common stock to hedge against inflation must be in the short run (Bruneau and Sghaier 2009b).

Moreover, examining the relationship between stock market returns and inflation taking into consideration the existence of possible structural breaks within the reviewed period 1985-2000, Shukairi, Waleed, Abdulbaset and Marwan (2012) applied ARDL cointegration and Granger causality test to find out if there is long run and short run effects between the variables under study as well as the direction of the effects. Their findings revealed a negative long-run causal relationship among the studied variables.

By estimating the common long-run trend in real stock prices Shukairi, *et al*. (2012), considered stock prices, inflation, and stock returns predictability as a new perspective in the relationship between stock prices and inflation as reflected in the earnings-price ratio and both expected and realized inflation. The study focused on the role of transitory deviations from the common trend in the earnings price ratio and the realized inflation for predicting stock market fluctuation. Specifically, the study revealed that these deviations exhibit substantial in-sample and out-of-sample forecasting abilities for both real stock returns and excess returns. Also, information about future stock returns at short and intermediate horizons were provided by these variables which were not captured by other popular forecasting variables.

1.3. The Relationship between Exchange Rates and Stock Prices

The relationship between exchange rate and stock prices can be explained using the flow-oriented model and this elucidate the effect of changes in exchange rate on stock price that are seen as the present values of a company's cash flow in the future. Given that a firm's cash flows depend to a large extent on the impart of exchange rates through the transaction, economic and accounting outcomes, change in exchange rates

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will also be apparent in stock prices (Homaifar, 2004, Madura, 2008; Bekaert and Hodrick, 2012).

Since the rapid expansion of international capital flows, theoretical linkage has been very strong and this has brought about the exchange rate risk to the trading partners. On the other hand, exchange rates determination is influenced by the effect of stock price which was formalized in stock-oriented models of exchange rate determination. As stated in the portfolio balance model, foreign direct investment is driven by an increase in stock prices in a country and thus, foreign exchange would be converted into domestic currency that will boost the appreciation of the domestic currency. Given that capital controls were removed and capital flows between countries were relaxed, the relationship between stock price and exchange rate became robustly relevant.

The implementation of the global financial integration instigated empirical studies to be conducted on the interaction between exchange rate and stock price. Though, different observations were found based on empirical results. No significant relationship existed between exchange rate and stock market. However, the classical economic theory maintained that the two markets were related. In an effort to examine the relationship between US stock prices and exchange rates, Vygodina (2006) apply Granger causality techniques to cover 1987–2005. The study revealed that large-cap stocks granger caused exchange rate; however, there was no causality between small-cap stocks and exchange rates, concluding that global integration might be confined to large multinational corporations.

By applying cointegration techniques and multivariate Granger causality test, Hatemi and Irandoust (2002) investigated the long and short-term dynamics between stock prices and exchange rates and found that a short-term relationship between stock prices and exchange rates existed given that empirical results show that Granger causality was unidirectional from stock prices to exchange rates. Also, using cointegration techniques and multivariate Granger causality tests, Phylaktis and Ravazzolo (2005) examined the long and short-term dynamics between stock prices and exchange rates. Their results revealed that stock and foreign exchange markets were positively related, the appreciation of the domestic currency in real terms led to an increase in stock prices.

However, there are studies in the literature that reveals empirical results that are inconsistent with bivariate causality between stock prices and exchange rates in the Asian financial markets (Ramasamy and Yeung, 2002; Muhammad and Rasheed, 2002). Also in the literature, there are studies examining the relationship between exchange rates and stock prices with other econometric and time-series techniques in the Asian countries. For example, in China, Zhao (2010) investigated the relationship between real effective exchange rates and stock prices using the VAR and multivariate generalized autoregressive conditional heteroscedasticity (GARCH) models. The study found volatility in the foreign exchange market is cause by the shocks in the stock market and vice versa. Hence, there was no stability in the long-term equilibrium relationship between real effective exchange rates and stock prices. According to Kubo (2012) and also as construed by the portfolio balance approach, depreciations of real exchange rates in Indonesia, Korea, and Thailand led to an increase in stock prices. Tsai (2012) applied a quartile regression model for six Asian countries (Singapore, Thailand, Malaysia, the Philippines, South Korea, and Taiwan), and concluded that the negative relationship between stock prices and foreign exchange rates was more apparent when exchange rates were excessively high or low. More so, and in line with the portfolio balance effect, Tsai (2012) revealed that the increase of the returns of the stock price index would cause the domestic currency to appreciate.

Furthermore, real exchange rates and stock prices linkages could be determined by the domestic and global factors and their cointegrating relationship can be influence by these same factors. Thus, econometric techniques besides the statistical approaches that incorporate the relationship between exchange rates and stock prices have been used in line with economic conditions. In an attempt to buttress this point, Michelis and Ning (2011) examined the Canadian economy to consider the influence of macroeconomic factors on the relationship between exchange rates and stock prices. They applied Symmetrized Joe Clayton (SJC) copula function with one dependent variable and found that lagged commodity prices and energy prices influence significantly the time series properties of exchange rates and stock prices over time, they also revealed that because the Canadian stock market is dominated with energy firms, there was a significant asymmetric static and dynamic tail dependence between the real stock returns and the real exchange rate return.

Diamandis and Drakos (2011) investigated the long-term relationship and the short-term dynamic of stock market and exchange market through the operating mechanism of US stock market for four countries (Argentina, Brazil, Chile, and Mexico) covering 1980-2009. Their study revealed that the appreciation of the domestic currencies of the four countries in real terms affected the stock returns in these countries positively. During the financial crises of the EU and US, Tsagkanos and Siriopoulos (2013) detected the non-linear relationship between stock price and exchange rates by using macroeconomic variables and applying a structural nonparametric cointegrating regression model, they found that there was a causal relationship from stock price to exchange rates that was relevant in the long run in the EU and short run in US.

3.0. Methodology

The study area for this research shall be the emerging economy of Nigeria over a thirty-year period, given as status as the biggest economy in Africa. Data for this study will be gathered from secondary sources. Weekly time series macroeconomic data (Interest rate spread, Inflation rate, and Exchange rate) from 1990 to 2019 will be sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and reports from the Nigerian Bureau of Statistics (NBS). The weekly average of annual stock prices data of all the sampled listed

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insurance companies on the Nigerian Stock Exchange (NSE) will also be sourced from Exchange's Factbook and Weekly Market reports from 1990 to 2019. We shall adopt a longitudinal research design for this project. This is because both time series and cross-sectional effects are expected to be captured using this design.

3.1. Justifications of Macroeconomic Variables Used

3.1.1. Interest Rate

There are two explanations why higher interest rates should lower stock prices. First, for an investor to value future dividends, they must discount them back to the present time. Since higher interest rates make future dividend less valuable in today's naira, the value of that share or stock will decline. Second, higher interest rates increase the required return on stocks and reduce what investors are willing to pay for these stocks. Therefore, investigating the relationship between interest rate and insurance firms' stock prices will reveal the influence one has on the other.

3.1.2. Inflation Rate

The impact of inflation on equity prices is a matter of considerable debate both theoretically and empirically. A highly inflationary environment leads to an increase in interest rate, leading to decrease in investment activity and ultimately the stock price, given that high inflation induces low savings and the cash at hand will be channel to consumption and that will further result in low investment hence the decrease in stock prices. Similarly, most investors during the period of high inflation will diverse their stock holding which inherently will affect stock prices negatively. Fama (1981) and Schwert (1981), among others, support this negative correlation between inflation and stock market prices (returns). This study includes inflation to provide a new insight about the generalized Fisher effect from the perspective of an emerging market.

3.1.3. Exchange Rate

Theories and empirical literatures postulate a positive relationship between stock prices and exchange rates, with stock prices being the root cause of the relationship. This conclusion is based on the fact that investors hold domestic and foreign assets, including currencies, in their portfolio. The exchange rate plays a significant role in balancing the demand for assets included in their portfolio. An appreciation of the local currency, for example, makes exporting goods unattractive and leads to a decrease in foreign demand, hence revenue for the firm and it value would fall, leading to a fall in the stock prices. Therefore, a vibrant stock market would attract capital inflows from foreign investors which increase the demand for its currency. By including the exchange rate in this study, we gain a better understanding of how exchange rates will affect stock prices of insurance firms within the Nigerian economy.

3.2. Model Specification

A panel data multiple regression model is specified. A panel data multiple regression model is one that seeks to explain changes in the value of one variable (share price) on the other independent variables using pooled data (combination of cross-sectional and time series data). The assumption of panel data regression is that the dependent variable is a linear function of the explanatory variables with consideration to the heterogeneity in the pooled firms. That is the differences in the characteristic of the firm example, firm size, age, and liquidity level, and management style.

The panel multiple regressions with an error term are expressed in equations 1 below.

$ISP_{it} = \alpha_0 + \alpha_1 SPD_{it} + \alpha_2 IFR_{it} + \alpha_3 EXR_{it} + \mu_{it}$…… (Equation 1)

Where:

$\alpha_1, \alpha_2, \alpha_3$ are alpha coefficients of the explanatory variables

α_0 is the intercept of the regression line

Table 1: Variables of the study

Variables	Code	*Description*
Insurance firm Stock Price	ISP	This is measured as reported average of weekly Share Price of each insurance firms
Foreign exchange	EXR	Weekly Naira to US Dollar Foreign exchange rates (Average rate)
Inflation rate	*IFR*	Weekly Actual Inflation rate (%) or Consumer Price Index (CPI)
Interest rate spread	SPD	Weekly interest rate spread
Error term	μ_{it}	Error term over cross-section and time

Source: Compiled by the Researchers

As earlier stated, this project shall employ a longitudinal research design. This involves repeated observations of the same variables over long periods of time different from the cross-sectional design which examines variables at a point in time. Researchers conduct several observations of the same variables over a period of time in a longitudinal research design. In longitudinal study, researchers have the advantage of detecting developments or changes in the variables of interest. Longitudinal data permit the measurement of differences or change in a variable from one period to another; allow the analysis of duration, that is, the description of patterns of change over time; and can be used to locate the causes of social phenomena.

The panel fixed and Random effects regression techniques is the econometric techniques that will be adopted in this study. Fixed effects and random effects model work to removed omitted variables bias by measuring change within a group. A number of potential omitted variables unique to the group are controlled by measuring within a group, (a cross time). Hence, the justification for its usage is based on the following good reasons: the data that have been collected have time and cross-sectional features that gives room for studying stock price over time (time series) as well as across the sampled firms (cross-section); panel data regression provides better results

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since it increases sample size and reduces the problem of degree of freedom (Muhammed, 2012); it avoids the problem of multicollinearity and help to capture the individual cross-sectional (or firm-specific) effects that the various pools may demonstrate with respect to the dependent variable in the model. Hausman and Taylor (1981) also recommended panel data estimation method because it enables a cross-sectional time series analysis which usually makes provision for broader set of data points. For this reason, the individual-specific effects usually unobservable which may be interrelated with other explanatory variables included in the specification of the relationship between dependent and explanatory variables are controlled by panel data estimation.

The Hausman specification test will be use to evaluate the panel regression results between fixed effect and random effect. The individual statistical significance test (T-test) and overall statistical-significance test (F-test) will also be used. Importantly, the goodness of fit of the model will be ascertained using the coefficient of determination (R^2). All analyses would be conducted at 5% level of significance. Our panel regression analysis will be done after descriptive statistics, panel unit root, and Johansen cointegration method to test for unit root problems and a possible long-run relationship respectively.

4.0. Data Presentation, Analysis, Results, and Findings

4.1. Data Presentation

Data gathered for this research is presented in Table 1 in Appendix I. Data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and reports from the Nigerian Bureau of Statistics(NBS). The weekly average of annual stock prices data of all the sampled listed insurance companies on the Nigerian Stock Exchange (NSE) were sourced from Exchange's Factbook and Weekly Market reports from 1990 to 2021.

4.2. Data Analysis

The data gathered were subjected to various econometric tests using Eviews software. The researchers employed quantitative method of data analysis, also employing descriptive statistics to determine the means, minimums, maximums, and standard deviations of the regression variables. Inferential statistics was used to make judgment about the population on the basis of the research sample, and panel regression was employed in the estimation of the parameter of the model drawn in this research.

4.3. Descriptive Statistics

Table 1 shows that ISP has a mean score of 1.043368.ISP has a standard deviation of 1.208691, showing that the deviation from the mean is below the mean hence; the data are clustered below the mean, thus indicating moderate disparity in ISP demand for different years. It further shows that SPD, IFR, and EXR have standard deviations lower than their mean scores, showing that the deviation from the mean is low hence; the data are clustered below the mean, also indicating low level of disparity in the variables for different years. By implications, fluctuations, changes or volatilities in exchange rate, inflation rate, and interest rate were at low levels for the period covered.

Table 1: Descriptive Statistics Results

	ISP	SPD	IFR	EXR
Mean	1.043368	13.65625	11.15813	137.9141
Median	0.575000	13.50000	11.10000	129.0050
Maximum	7.900000	26.00000	29.29000	399.9600
Minimum	0.200000	6.000000	3.310000	8.040000
Std. Dev.	1.208691	3.778955	5.320482	105.2201
Skewness	2.853593	0.810866	1.072493	0.785065
Kurtosis	12.08789	5.196025	5.077325	2.946869
Jarque-Bera	16583.29	1073.166	1283.939	355.4105
Probability	0.000000	0.000000	0.000000	0.000000
Sum	3605.880	47196.00	38562.48	476631.0
Sum Sq. Dev.	5047.528	49339.13	97802.52	38251252
Observations	3456	3456	3456	3456
Cross sections	27	27	27	27

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4.4. Panel unit root

Table 2 shows the results of the unit root (stationarity) tests of the panel data series in respect to variables at 1%, 5%, and 10% level of confidence. Since the p-value of ADF model is less than 0.05 at 1%, 5%, and 10%, this means that shocks were not present in the model. Therefore, by implication, shocks have been removed from these models which confirmed that the series were stationary.

TABLE 2: PANEL UNIT ROOT TEST RESULTS

Pool unit root test: Summary

Series: ISP, IFR, EXR, SPD

Date: 07/17/23 Time: 16:45

Sample: 1990 2021

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 5 to 20

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	4.66754	1.0000	4	3388
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-22.1706	0.0000	4	3388
ADF - Fisher Chi-square	402.738	0.0000	4	3388
PP - Fisher Chi-square	301.638	0.0000	4	3452

** Probabilities for Fisher tests are computed using an asymptotic Chi

-square distribution. All other tests assume asymptotic normality.

4.5. Panel Cointegration test

When variables are stationary, the tends to be a long-run cointegration between them. Therefore, Cointegration test is employed in this study to test for the presence of a long-run relationship between the dependent and independent variables. From Table 3, the trace statistic values for all the variables were clearly less than 0.05 significant level meaning that all the variables cointegrated. The implication of this result is that there is a long-run equilibrium relationship between the dependent variable and independent variables. The max-eigenvalue test also supported this claim of long-run equilibrium relationship among the variables. The maximum eigenvalue statistics also were clearly less than the p-value of 0.05, thus, not accepting the null hypothesis of no cointegrating relationships among the variables.

TABLE 3: PANEL COINTEGRATION TEST RESULTS

Johansen Fisher
Panel Cointegration
Test

Series: ISP IFR EXR SPD

Date: 07/17/23 Time: 16:47

Sample: 1990 2021

Included observations: 864

Trend assumption: Linear deterministic trend

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Lags interval (in first differences): 1 1

Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	73.68	0.0000	73.68	0.0000
At most 1	73.68	0.0000	73.68	0.0000
At most 2	73.68	0.0000	77.05	0.0000
At most 3	309.3	0.0000	309.3	0.0000

* Probabilities are computed using asymptotic Chi-square distribution.

Individual cross-section results

Cross Section	Trace Test Statistics	Prob.**	Max-Eign Test Statistics	Prob.**
Hypothesis of no cointegration				
ISP	819.7228	0.0001	531.1323	0.0001
SPD	819.7228	0.0001	531.1323	0.0001
IFR	819.7228	0.0001	531.1323	0.0001
EXR	819.7228	0.0001	531.1323	0.0001
Hypothesis of at most 1 cointegration relationship				
ISP	288.5905	0.0001	143.7018	0.0001
SPD	288.5905	0.0001	143.7018	0.0001
IFR	288.5905	0.0001	143.7018	0.0001
EXR	288.5905	0.0001	143.7018	0.0001
Hypothesis of at most 2 cointegration relationship				
ISP	144.8887	0.0001	104.5452	0.0001
SPD	144.8887	0.0001	104.5452	0.0001
IFR	144.8887	0.0001	104.5452	0.0001
EXR	144.8887	0.0001	104.5452	0.0001
Hypothesis of at most 3 cointegration relationship				
ISP	40.3434	0.0000	40.3434	0.0000
SPD	40.3434	0.0000	40.3434	0.0000
IFR	40.3434	0.0000	40.3434	0.0000

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EXR	40.3434	0.0000	40.3434	0.0000

**MacKinnon-Haug-Michelis (1999) p-values

4.6. Hausman Test Analysis

To select the most appropriate model estimate test, there are several tests that can be done, such as Chow Test, Hausman Test, and Lagrange Multiplier test (LM) (Adesete, 2017; Zulfikar, 2019). In this study, the researchers conducted Hausman Test, which is a statistical test to select whether the most appropriate Fixed Effect or Random Effect model is used. If the calculated p-value is less than 0.05, then H_1 is accepted which means the best method that must be used is fixed effect. On the contrary, if the calculated p-value is greater than 0.05, then H_o is accepted which means the best method that must be used is the random effect. Furthermore, if Hausman Test accept H_0 or p-value > 0.05 then the method the researchers choose is random effect and proceed with Lagrange Multiplier test (LM) to determine whether Random effect or Common effect will be most appropriate

From Table 4, checking the probability value and making decision based on the decision criterion. The probability value is 1.0000 which is greater than 5% thus, accepting the null hypothesis and concluding that the random effects model is appropriate. Since Hausman Test accepted H_0 because of the p-value> 0.05, then the method the researchers choose is random effect and proceeded with Lagrange Multiplier test (LM) to determine whether Random effect or Common effect will still remain most appropriate.

TABLE 4: HAUSMAN TEST ANALYSIS RESULTS

Correlated Random Effects - Hausman Test

Pool: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	3	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOG(SPD)	-0.616803	-0.616803	0.000000	0.0000
LOG(IFR)	-0.120243	-0.120243	0.000000	0.0000
LOG(EXR)	0.089017	0.089017	0.000000	0.0000

Cross-section random effects test equation:

Dependent Variable: LOG(ISP)

Method: Panel Least Squares

Date: 07/17/23 Time: 13:56

Sample: 1990 2021

Included observations: 864

Cross-sections included: 4

Total pool (balanced) observations: 3456

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.108765	0.169306	6.548884	0.0000
LOG(SPD)	-0.616803	0.051686	-11.93370	0.0000
LOG(IFR)	-0.120243	0.032607	-3.687642	0.0002
LOG(EXR)	0.089017	0.015981	5.570247	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.370805	Mean dependent var	-0.356147
Adjusted R-squared	0.269189	S.D. dependent var	0.824150
S.E. of regression	0.795128	Akaike info criterion	2.381396
Sum squared resid	2180.556	Schwarz criterion	2.393849
Log-likelihood	-4108.053	Hannan-Quinn criter.	2.385843
F-statistic	43.80257	Durbin-Watson stat	1.526307
Prob(F-statistic)	0.000000		

4.7. Lagrange Multiplier Test (LM) Analysis

Lagrange Multiplier Test or commonly referred to as Lagrangian Multiplier Test is an analysis performed with the aim to determine the best method in panel data regression, whether to use common effect or random effect. The Lagrange Multiplier test has a function to determine the best estimate, whether using a random effect or not. Since the Hausman Test shows that the best method is the Random effect of the Fixed Effect. Therefore, the next step is to determine whether the Random Effect is better than the Common Effect, hence the Lagrange Multiplier Test is required (Adesete, 2017; Zulfikar, 2019).

From Table 5, the p-value is shown by the number which is 0.000 where the value is less than 0.05. Consequently, the Lagrange Multiplier Test indicates that accepting H_1 means the best estimation method is Random Effect. If the value of p-value is greater than 0.05 then accepting H_0 will means the best estimation method is Common Effect (Adesete, 2017; Zulfikar, 2019). In this scenario, the researchers employed Random Effect Regression Data Panel Analysis for testing of research Hypotheses.

TABLE 5: LAGRANGE MULTIPLIER TEST (LM) ANALYSIS RESULTS

Residual Cross-Section Dependence Test

Null hypothesis: No cross-section dependence (correlation)

Pool: Untitled

Periods included: 864

Cross-sections included: 4

Total panel observations: 3456

Total panel observations: 3456

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	5184.000	6	0.0000
Pesaran scaled LM	1493.605		0.0000
Pesaran CD	72.00000		0.0000

4.8. Testing of Research Hypotheses

The researchers employed Random Effect Regression Data Panel Analysis for testing of research hypotheses. Random Effect Model (RE) will estimate panel data where interference variables may be interconnected between time and between variables. In the Random Effect model, the difference between intercepts is accommodated by the error terms of each insurance company stock price. The first hypothesis was that there is no significant effect of interest rate spread on the stock prices of insurance firms in Nigeria. The empirical results presented in Table 6 revealed a negative coefficient of -0.616803 with p-value of 0.000 for SPD, the finding is that there is a significant effect of interest rate spread on the stock prices of insurance firms in Nigeria, and such effect is negative. Thus, the researchers found no sufficient evidence to support the null hypothesis. This implies that a percentage increase in SPD led to about 6.168% decrease in insurance firm stock price.

The second hypothesis was that there is no significant relationship between exchange rate and the stock prices of

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insurance in Nigeria. The empirical results presented in Table 6 revealed a positive coefficient of 0.089017 with p-value of 0.000 for EXR, the finding is that there is a significant relationship between exchange rate and the stock prices of insurance firms in Nigeria, and such relationship is positive. Thus, the researchers found no sufficient evidence to support the null hypothesis. This implies that a percentage increase in EXR will lead to about 8.9% increase in insurance firm stock price.

The third hypothesis was that there is no significant effect of inflation on stock prices of insurance firms in Nigeria. The empirical results presented in Table 6 revealed a negative coefficient of -0.120243 with p-value of 0.0002 for IFR, the finding is that there is a significant effect of inflation on stock prices of insurance firms in Nigeria, and such effect is negative. Thus, the researchers found no sufficient evidence to support the null hypothesis. This implies that a percentage increase in IFR led to about 1.2% decrease in insurance firm stock price. The model returning this result is significant given the F-statistic value of 87.68 with p-value of 0.000, which is significant at 5%, the explanatory power of the model as indicated by the R^2 value of 0.370 is strong; it means that the variables in the model combined together explained about 37% variations in insurance firm stock price while 63% of the variations are explained by variables not included in the model.

Furthermore, a post-estimation tests analysis were conducted. On the suitability of the model and reliability of the parameters returned by the model, the model diagnostic analysis was performed for multi-collinearity, autocorrelation, and heteroskedasticity checks. As presented in Table 7, the results showed no presence of any of these problems. For Multi-collinearity, the VIF indicates values less than 2 which is within the acceptable threshold of 5; the Durbin-Watson Stat (DW-Stat.) value of 1.526 in Table 6 was within acceptable region of no autocorrelation, the Breusch-Godfrey Serial CorrelationLM Test was further conducted; it showed F-statistic (1.958651) with P-value of 0.2560 which is greater than 0.05 meaning that there is no autocorrelation problem, Also, heteroskedasticity Test revealed an F-statistic value of 1.040736 with p-value of 0.4053 which is insignificant as it is greater than 0.05, meaning there is no heteroskedasticity problem. In all, the result can be considered valid and reliable for both policy decision and predictive analysis.

TABLE 6: RANDOM EFFECT OUTPUT REGRESSION DATA PANEL ANALYSIS RESULTS

Dependent Variable: LOG(ISP)

Method: Pooled EGLS (Cross-section random effects)

Date: 07/17/23 Time: 13:54

Sample: 1990 2021

Included observations: 864

Cross-sections included: 4

Total pool (balanced) observations: 3456

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.108765	0.169306	6.548884	0.0000
LOG(SPD)	-0.616803	0.051686	-11.93370	0.0000
LOG(IFR)	-0.120243	0.032607	-3.687642	0.0002
LOG(EXR)	0.089017	0.015981	5.570247	0.0000
Random Effects (Cross)				
ISP—C	0.000000			
SPD—C	0.000000			
IFR—C	0.000000			
EXR—C	0.000000			

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.795128	1.0000

Weighted Statistics

R-squared	0.370805	Mean dependent var	-0.356147
Adjusted R-squared	0.269998	S.D. dependent var	0.824150
S.E. of regression	0.794782	Sum squared resid	2180.556
F-statistic	87.68134	Durbin-Watson stat	1.526307
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.070805	Mean dependent var	-0.356147
Sum squared resid	2180.556	Durbin-Watson stat	0.226307

TABLE 7: POST-ESTIMATION TESTS ANALYSIS RESULTS

Variance Inflation Factors

Date: 07/17/23 Time: 10:13

Sample: 1990 2021

Included observations: 864

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Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.040790	2.429954	NA
SPD	0.000133	1.587459	1.128814
IFR	6.75E-05	6.146832	1.138402
EXR	1.92E-07	3.447828	1.268291

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.958651	Prob. F(2,858)	0.2560
Obs*R-squared	7.087612	Prob. Chi-Square(2)	0.4979

Heteroskedasticity Test: White

F-statistic	1.040736	Prob. F(9,854)	0.4053
Obs*R-squared	9.373491	Prob. Chi-Square(9)	0.4035
Scaled explained SS	53.14997	Prob. Chi-Square(9)	0.5086

4.9. Discussion of Findings

The first objective was to examine the effect of interest rate spread on the stock prices of insurance firms in Nigeria. The finding revealed that there is a significant effect of interest rate spread on the stock prices of insurance firms in Nigeria. This finding is consistent with the findings of Choi, Hardigree, and Thistle (2002); Fenn and Vencappa (2005); Adams, Diacon, Fenn, and Vencappa (2006) that fluctuations in insurance premiums (or measures of underwriting profits) and insurance stock prices are related to the changes in the interest rate. The second objective was to examine the relationship between exchange rate and the stock prices of insurance in Nigeria. The result showed that there is asignificant relationship between exchange rate and the stock prices of insurance firms in Nigeria. This discovery is consistent with the findings of Hatemi and Irandoust (2002); Phylaktis and Ravazzolo (2005) that stock and foreign exchange markets were positively related, the appreciation of the domestic currency in real terms led to an increase in stock prices. The third objective was to examine the effect of inflation on stock prices of insurance firms in Nigeria. It was found that there is asignificant effect of inflation on stock prices of insurance firms in Nigeria, which is consistent with the finding of Meier and Outreville (2006, 2010) that underwriting profits and stock prices are interrelated with the inflation rate. Eling and Luhnen (2008) also establish that fluctuations in insurance premiums and stock prices are linked to the inflation rate. The fourth objective was to establish an empirical model that captures the effect of interest rate spread, exchange rate, and inflation rate on changes in stock market prices of quoted insurance companies in Nigeria. From the empirical analysis results, it was found that the empirical model that captures the effect of interest rate spread, exchange rate, and inflation rate on changes in stock market prices of quoted insurance companies in Nigeria is Random Effect Model (RE).

5.0. Conclusion and Recommendations

The study examined the effects of macroeconomic variables on the stock prices of insurance firms in Nigeria from 1990 to 2021. We used recent empirical model's developments in a panel data framework. The panel unit root tests shows that the series are integrated thus, we adopted an econometric approach based on panel cointegration. The panel cointegration tests results shows that the series are cointegrated. We then estimated the long-run relationship and we deduced that there is a long-run equilibrium relationship between the macroeconomic determinants and insurance companies' stock performance in Nigeria. Hausman test results recommended that the method the researchers choose is random effect and this was supported by Lagrange Multiplier test (LM) results hence confirmed the use of Random effect or Common effect. The discovery is that there is a significant effect of interest rate spread on the stock prices of insurance firms in Nigeria but such effect is negative. Another result revealed that there is a significant relationship between exchange rate and the stock prices of insurance firms in Nigeria, and such relationship is positive. It was further found that there is a significant effect of inflation on stock prices of insurance firms in Nigeria, and such effect is negative.

The empirical results shows that the macroeconomic determinants of stock prices of insurance firms in Nigeria affects differently depending on the volatilities of interest rate, inflation rate, and exchange rate. By implications, the macroeconomic conditions affect the insurance industry differently depending on the value of the inflation rate. During the inflationary periods, the effects of the interest rate, the inflation rate, and exchange rate on the insurance stock prices are confirmed positive and negative respectively. However, in deflationary periods, the insurance stocks are negatively related to the interest rate and positively related to the inflation rate and exchange rate. Based on these findings, it is concluded that there is a significant effect of macroeconomic determinants on insurance companies' stock performance in Nigeria.

The study makes some policy recommendation that there should be stability in macroeconomic determinants in Nigeria by regulatory authorities. The stock/securities prices of insurance companies listed on the floor of Nigerian Stock Exchange should be made attractive to investors for increased volume of stock/securities traded. There is need for setting the appropriate pricing levels, especially in competitive markets, for forecasting the profitability and for monitoring the dependence between the underwriting risk and the market risk

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from a regulatory point of view. There is also need of incorporating all the risks, including the inflation rate risk, the interest rate risk, and exchange rate risk, when imposing the solvency capital rules.

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References

1. Adesete, A. A. (2017). *Panel data Regression Models in Eviews: Pooled OLS, Fixed or Random Effect Model*? A Study Guide, pp1-24.
2. Adams, M., Diacon, S., Fenn, P. and Vencappa, D. (2006). Underwriting Cycles and the Role of Internal and External Capital, *Working Paper*, University of Nottingham. 3(6): 56-68.
3. Adedoyin, A. O. (2011). *Share Price Determinants and Corporate Firms' Characteristics*. Unpublished M.Sc Dissertation, Accounting School of Development Studies, Covenant University. Ota. pp. 34-38.
4. Bekaert, G. and Hodrick, R. (2012). *International Financial Management*. Pearson Education Inc, USA: 33-42.
5. Bruneau, C. and Sghaier, N. (2009). Modeling the Dynamics of the Combined Ratio in France: Evidence from Structural Change. *Working paper*, 71-84.
6. Choi, S., Hardigree, D. and Thistle, P. D. (2002). The Property and Liability Insurance Cycle. A Comparison of Alternative Models. *Southern Economic Journal*, 68(3): 30-548.
7. Diamandis, P. F. and Drakos, A. A. (2011). Financial Liberalization, Exchange Rates, and Stock Prices. Exogenous Shocks in Four Latin American Countries. *Journal of Policy Modelling*, 33(3): 381-394.
8. Eling, M. and Luhnen, M. (2008). Underwriting Cycles in German Property Liability Insurance, *Working Paper*, Institute of Insurance Economics, University of St. Gallen: 44-48.
9. Fama, E. F. (1981). Stock Returns, Real Activity, Inflation, and Money. *American Economic Review, 71 (4):* 545-565.
10. Fenn, P. and Vencappa, D. (2005). Cycles in Insurance Underwriting Profits. Dynamic Panel Data Results, *Nottingham University Business School Working Paper*: 65-68.
11. Haiss, P. R. and Sumegi, K. (2006). *The Relationship of Insurance and Economic Growth-A Theoretical and Empirical Analysis.* A paper presentation at the 2006 ECOMOD Conference, Hong Kong: 66-69.
12. Hatemi, J. A. and Irandoust, M. (2002). On the Causality between Exchange Rates and Stock Prices. A Note, *Bulletin of Economic Research*, 54: 197-203.
13. Hausman, j. A. and Tailor, W. E. (1981). Panel Data and Unobservable Individual Effects. *Econometrica,49 (6):* 1377-1398.
14. Higgins, M. L. and Thistle, P. D. (2000). Capacity Constraints and the Dynamics of Underwriting Profits. *Economic Inquiry, 38(3):* 442-457.
15. Homaifar, G. A. (2004). *Managing Global Financial and Foreign Exchange Rate Risk.* New Jersey. John Wiley & Sons Inc: 43.
16. Krivo, R. (2009). An Update to D'Arcy's. *A Strategy for Property-Liability Insurers in Inflationary Iimes*, Casualty Actuarial Society E-Forum: 54.
17. Kubo, A. (2012). The United States Tech Pulse, Stock Prices, and Exchange Rate Dynamics. Evidence from Asian Developing Countries. *Journal of Asian Economics*, 23(6): 680-687.
18. Lamm-Tennant, J. and Weiss, M. A. (1997). International Insurance Cycles. Rational Expectations and Institutional Intervention. *Journal of Risk and Insurance, 64(3):* 415-439.
19. Madura, J. (2008). *International Financial Management.* Thomson South-Western, USA: 38-44.
20. Meier, U. B. and Outreville, J. F. (2006). Business Cycles in Insurance and Reinsurance. The Case of France, Germany, and Switzerland. *Journal of Risk Finance*, 7(2): 160-176.
21. Meier, U. B. and Outreville, J. F. (2010). Business Cycles in Insurance and Reinsurance. International Diversification Effects. *Applied Financial Economics, 20(8*): 659-668.
22. Michelis, L. and Ning, C. (2011). The Dependence Structure between the Canadian Stock Market and the US and Canada Exchange Rate. A Copula Approach. *Canadian Journal of Economics, 43(3):* 1016-1039.
23. Muhammad, N. and Rasheed, A. (2002). Stock Prices and Exchange Rates. Are they Related. Evidence from South Asian Countries. *Pakistan Development Review,41(4):* 535-550.
24. Muhammed, A. H. (2012). Determinants of Cost of Financial Intermediation in Nigeria's Pre-Consolidated Banking Sector. *International Journal of Advance Research in Management and Social Sciences1(1):* 180-194.
25. Mwangi, M. and Murigu, J. W. (2015). Determinants of Financial Performance in General Insurance Companies in Kenya. *European Scientific Journal,11 (1):* 288-297.
26. Perera, M. (2015). Importance of Interest Rate in Determining Stock Returns of Banks Finance and Insurance Companies in Sri Lanka. *International Journal of Management and Commerce Innovations, 3(2):* 451-454.
27. Phylaktis, K. and Ravazzolo, F. (2005). Stock Prices and Exchange Rate Dynamics. *Journal of International Money and Finance, 24(7):* 1031-1053.

*Corresponding Author: **Francis Aniefiok Bassey .**

28. Poontirakul, P. (2013). The Impact of Microeconomic Factors on Non-Life Insurance Consumption in Thailand. Unpublished M.Sc Dissertation for Insurance, Actuarial Science and Risk Management, School of Applied Statistics. *National Institute of Development Administration*: 48-53.
29. Ramasamy, B. and Yeung, M. (2002). The Relationship between Exchange Rates and Stock Price. Implications for Capital Controls. *Asia Pacific Journal of Economics and Business,6:* 46-60.
30. Schwert, G. W. (1981). Anomalies and Market Efficiency, *The National Bureau of Economic Research. Working Paper*: 54-59.
31. Shukairi, N. M., Waleed, A. S., AbdulBaset, H. and Marwan, M. A. (2012). The Relationship between Inflation and Stock Prices (A Case of Jordan). *International Journal of Research in Social Sciences,10 (1):* 6.
32. Tsagkanos, A. and Siriopoulos, C. A. (2013). Long-Run Relationship between Stock Price Index and Exchange Rate. A Structural Non-Parametric Cointegrating Regression Approach. *Journal of International Financial Markets, Institutions, and Money, 25:*106-118.
33. Tsai, I. C. (2012). The Relationship between Stock Price Index and Exchange Rate in Asian Markets. A Quantile Regression Approach. *Journal of International Financial Markets Institutions and Money, 22(3*): 609-621.
34. Vygodina, A. V. (2006). Effects of Size and International Exposure of the US Firms on the Relationship between Stock Prices and Exchange Rates. *Global Finance Journal, 17(2):* 214-223.
35. Zhao, H. (2010). Dynamic Relationship between Exchange Rate and Stock Price. Evidence from China. *Research in International Business and Finance, 24(2):*103-112.
36. Zulfikar, R. (2019). Estimation Model and Selection Method of Panel Data Regression: An Overview of Common Effect, Fixed Effect, and Random Effect Model. *Fakultas Ekonomi Universitas Islam Kalimantan MAB Banjarmasin*, pp 1-10

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