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## FDI inflows and stock market development in Nigeria

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### Abstract

**Keywords:**

- Stock market
- FDI
- External debt
- Capital inflows
- ARDL

*This paper investigated the impact of FDI on stock market performance in Nigeria during the period from 1981 to 2021 using the Auto Regressive Distributed Lag (ARDL) technique. The findings suggest that FDI has a positive and significant effect on stock market both in the short run and in the long run. External debt was negative and significant in the short run but became positive and significant with the stock market in the long run. Interest rate had a negative and significant effect on stock market performance in the short run but had a positive and nonsignificant effect on stock market performance in the long run. Inflation was seen to be positive but not significant both in the short and long run. Consequently, this study recommends the following: the drive for inflow of FDI into Nigeria should be intensified in order to further improve stock market performance; the government should employ well-structured external debt policies and channel funds to the stock market in order to promote stock market performance.*

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### 1. Introduction

The significant role played by the inflow of capital into an economy cannot be downplayed because it forms the basis on which an economy can embark on substantial economic development and the achievement of its economic goals. Schatz (2007) is of the opinion that a high rate of capital flow and accumulation is necessary and nearly sufficient for rapid economic development. Onuoha (2009), in his study, found that developed countries have a well-formed capital base, but this does not apply to developing countries because they solicit capital inflow from developed nations in order to reduce deficiencies caused by the low capital base in their economies. However, in the last three decades, due to liberalisation policies, several developing economies have experienced improvement due to the inflow of capital, as it has helped to reform their capital markets (Omorokunwa, 2018). This has led to free trade and economic openness, and the amount of foreign capital inflow has increased substantially over the years. Bekaert and Harvey (2000) believe that such reforms lead domestic investors to diversify their portfolios internationally, which provides foreign investors with easy access to the local market.

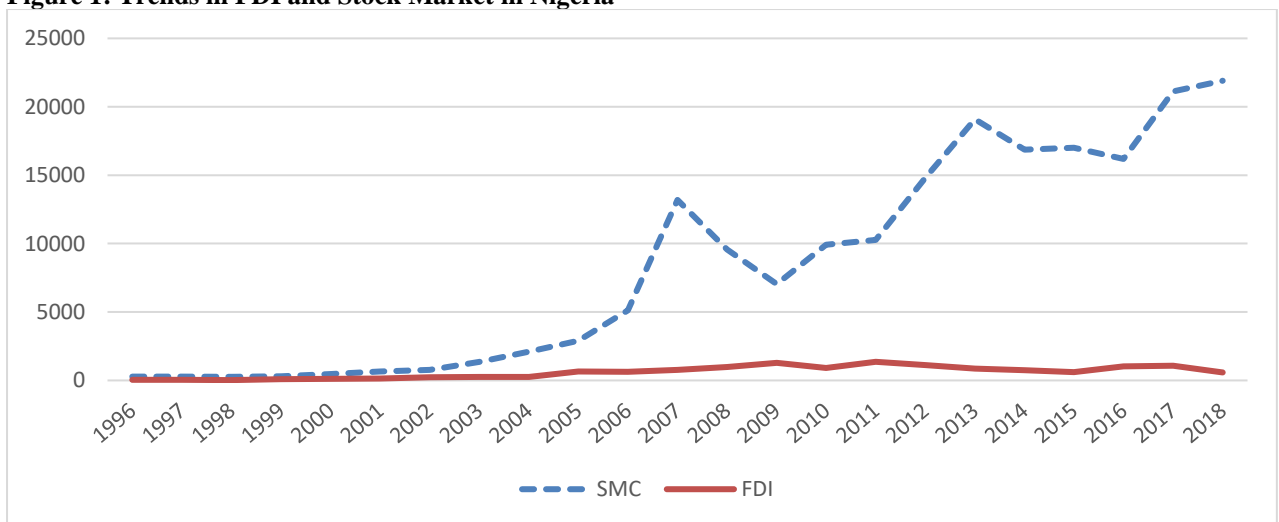
The stock market can be a very sophisticated marketplace where stocks and shares are the traded commodity, where government and industry can raise long-term capital and acts as an avenue for intermediation between the deficit and the surplus users (Omorokunwa, 2018; Massoud, 2013; Arnold, 2004). This is the reason why the stock market is seen as an important segment of the financial sector of the Nigerian economy, as the constant inflow of funds enables the market to perform at its optimal level. When the stock market is at the optimal level, it should impact positively on the performance of that particular economy. However, despite the importance of the stock market, theoretically, a consensus has not been reached on the effect of capital inflow on stock market performance. This is because the Harrod-Domar growth model emphasised the role capital plays in the attainment of economic growth and development in an economy, and it shows that growth is a function of accumulated capital, while the dependency theory developed in the 1950s maintained that capital inflow does not contribute positively to the economy of the recipient economy, insisting that it impacts on such economies negatively. In a developing country like Nigeria, the level of domestic savings is usually not sufficient enough to attain its macroeconomic goals and objectives. Nigeria's gross domestic savings for 2018 amounted to 76.6 billion USD, while in comparison, the total gross savings for the USA for 2018 totalled 3.8

trillion USD. The low level of savings motivates developing countries to seek funds from their developed counterparts, and these funds are mostly transferred into the economy through the stock market. Under the Harrod-Domar model, such transfer of funds is encouraged. However, the dependency theorists opined that such transferred funds may augment the sustainability of a dependency relationship between advanced economies and developing economies.

The inflow of foreign capital is considered to have a significant impact on the balance of payment problems of most developing economies. This is because the earned profits of the multinational companies are usually repatriated to the investing economies. The general concept of the dependency theory is that the inflow of capital has a negative impact on the economic conditions of recipient countries and this was supported by Todaro and Smith (2002). He maintained that “the negative activities of foreign investors more often than not create imbalances in the developing economies, affecting their prospects for growth and as a result lead to considerable overturn flows in the form of profits and dividends” (2002, pg.123.) Several studies have been done on the relationship between FDI and stock market performance. However, there is no general consensus or agreement between the studies, as several authors have reached different conclusions. Some authors (Adigun *et al.*, 2011; Babalola *et al.*, 2012) are of the opinion that there is a significant steady-state long-run relationship between stock market performance and development in Nigeria and foreign capital inflows, while other authors (Onyinyechi *et al.*, 2017; Akinmulegun, 2018) are of the opinion that there is no causal relationship between capital flow and stock market performance. In Nigeria, it has been difficult to explicitly state the relationship between FDI and stock market performance. In 1996, the total FDI inflow into the country amounted to 35 billion Naira, while the stock market capitalisation amounted to 286 billion Naira. By 2000, the total FDI inflow into the country had increased by 231% from 1996, while the stock market capitalisation also experienced a corresponding increase of 65% which indicates a positive relationship between FDI and stock market performance. In 2005, FDI increased by 464% from the year 2000, which led to a 514% increase in stock market capitalisation from the year 2000. Again, these increases may indicate a positive relationship between the capital inflow and the stock market.

In 2010, the increase in FDI by 38% from 2005 coincided with an increase in stock market capitalisation by 242% from 2005 (Central Bank of Nigeria, 2018), indicating that FDI does have a positive and significant influence on stock market performance. In 2015, however, total FDI decreased by 34% from 2010 while the stock market capitalisation increased by 71% from 2010 (Central Bank of Nigeria, 2018), indicating that perhaps FDI has no significant effect on stock market performance. According to the Central Bank of Nigeria (2018), in 2018, FDI decreased by 2.5% from 2015, while the stock market capitalisation increased by 29% from 2015. The dichotomy of the relationship between capital flow and stock market performance in the years mentioned makes it difficult to draw a conclusion on the relationship between the variables. This study, therefore, aims to critically analyse the relationship that exists between capital flow and stock market performance in Nigeria and whether or not a long run relationship exists between the variables in the Nigerian context. The relationship among the key variables is displayed in Figure 1, showing that the stock market is trending upwards despite the sluggish trend experienced in FDI for Nigeria.

**Figure 1: Trends in FDI and Stock Market in Nigeria**



Source: Central Bank of Nigeria (2018)

The rest of the paper is organised as follows: Section 2 gives an overview of previous studies. Section 3 deals with the methodology, empirical analysis, and the discussion of the empirical results. Section 4 concludes the study.

## 2. Literature Review

In explaining the relationship between FDI and stock market performance in Nigeria, it is of utmost importance to examine some theoretical links. The dependency theory is of the opinion that foreign capital inflows do not contribute positively to the economy; rather, it brings about the sustenance of the dependency relationship between developed and developing economies and that the reliance on foreign flow aggravates corruption. However, the investment development cycle theory suggests that when a country develops, it will affect the flow of capital, which has a positive effect. This is also in line with the Harrod-Domar growth model, where the role capital plays were emphasised in the attainment of economic growth and development in an economy, and it shows that growth is a function of accumulated capital.

Several studies have been done regarding capital flow and stock market performance. Examining studies done outside Africa on capital inflows and stock market performance, Ibrahim (2011), in utilising the four variable frameworks, examined the effect of stock market and macroeconomic performance in Thailand and found that the model of investment to stock market development reveals that foreign investment contributes positively to stock market development in Thailand. Chauhan (2013) examined the impact of capital inflow on stock market development in India. Three indicators were used to capture inflows: Foreign Direct Investment (FDI), Foreign Institutional Investment (FII), and Foreign Portfolio Investment (FPI). The results reveal that FDI greatly affected both Bombay and National stock exchanges by 61% and 86%, respectively. The correlation analysis revealed that FDI was strongly and positively correlated in both markets with a score of 0.78 and 0.92, respectively.

Other studies, such as Raza *et al.* (2013), Irfan (2014) and Afaq (2017), all showed a positive relationship between FDI and stock market performance. Arcabic, Globan and Kristic (2012) attempted to find the short and long-run impact of FDI and stock market on economic growth in Croatia using the cointegration and VAR model analysis. The outcome for the long run shows that there exists no long-run impact among the estimated variables, and this was a result of no connectivity between FDI and economic growth in Croatia. However, the results from the VAR analysis were consistent with the theory as the stock market was seen to be an important determinant of FDI in the short run in Croatia.

Choong *et al.* (2010) examined private capital flows and their effect on stock market and economic growth in developed and developing countries using the stock markets as a transmission channel. The study found that FDI exhibits a positive impact on growth, while foreign debt and portfolio investment have a negative impact on growth in all countries. The stock market was also found to be a significant channel or leading institutional factor through which capital flows affect growth. A recent study by Khan *et al.* (2022) examined the influence of foreign direct investment and foreign portfolio investment on stock market returns in South Asian Association for Regional Co-operation (SAARC) member countries. They found that FDI and FPI had a low correlation with stock market returns. However, FDI negatively and significantly affected stock market returns, while FPI increased stock market returns. This study is also in line with the work of Topaloglu *et al.* (2019), where the focus was on Emerging Seven (E7) countries where FDI had a negative effect on stock market returns and a positive relationship between FPI and stock market. Lastly, Nittayagasetwat *et al.* (2022) examined the influence of foreign fund flow on the returns and trade value of emerging stock markets in Indonesia, South Korea, Taiwan and Thailand. Findings showed that foreign fund flows directly influence the returns of all markets and the trading value in some markets.

In examining studies in Africa, Yartey's (2008) study focused on 42 emerging economies, taking into consideration institutions and the determinants of macroeconomy from 1990 to 2004. The results show that the levels of income, investment, financial sector development and stock market liquidity were important in developing the stock market. Also, in a study focusing on Ghana, Anokye and Tweneboah (2009) used cointegration techniques to examine how FDI affects the stock market. The results show that a positive long-run relationship exists among the variables. In examining the causal relationship between FDI and the stock market in developing countries, Soumaré and Tchana (2011) focused on 29 emerging markets, which included four African countries, 15 Asian countries, four Eastern European countries, and six countries in Latin American countries from 1994 to 2006. Findings show that bi-directional causality exists between FDI and stock market development.

Also, Aigheyisi and Edore (2013) used various foreign capital inflows in their comparative analysis between Nigeria and Ghana. Foreign direct investment, foreign portfolio investment, personal remittances and official development assistance and aid were significant to market capitalisation in Nigeria except for external debt GDP, which was insignificant. All the variables mentioned earlier were insignificant to the Ghanaian stock exchange except the official development assistance and aid to GDP, which was significant. In 2014, Agbloyor *et al.* focused on the private inflow of capital and growth in Africa, and the results show a negative effect of foreign direct investment, foreign portfolio investment, and private debt flows on economic growth. However, countries with strong domestic financial

markets benefit more by transforming the negative effect of capital flow into a positive one. This implies that private capital flows promote economic growth in the presence of strong domestic financial markets. In a recent study carried out by Osei *et al.* (2022), private capital flows were examined in relation to domestic financial markets and energy use in Africa. They found that the domestic financial market plays a crucial role in constituting the connection between the inflow of private capital and energy use. Also, the inflows of private capital are based on a favourable market environment, which boosts energy use in Africa.

Several studies have also been done in Nigeria. Nsofor (2016) examined the impact of investment on stock market development in Nigeria from 2001 to 2010 using the ordinary least square regression technique. The findings revealed a positive and significant impact on stock market development within the year covered. Adaramola and Obisesan (2015) analysed the impact of FDI on the Nigerian capital market from 1970 to 2010 using the Johansen cointegration technique. The findings from the study showed no long-run relationship between FDI and market capitalization. However, the OLS regression result showed that FDI impacts market capitalisation positively and significantly. Ifeakachukwu (2015) explored the inflow of capital and the stock market in Nigeria using error correction techniques. The study's findings revealed that market capitalisation and value traded ratio influenced foreign portfolio investment significantly, while none of the other stock market measures had a significant influence on FDI in the long run. However, in the short run, market capitalisation was the only measure of the stock market that had a significant effect on both FDI and FPI, while the value traded ratio only had an influence on FDI.

The study conducted by Ajayi *et al.* (2017) examined the impact of foreign private investment on the development of the Nigerian capital market from 1986 to 2014 using an error correction model. Their findings show that both types of private investment have a positive impact on market capitalisation, but only the FDI is significant in determining the market capitalisation. Abubakar and Danladi (2018), while using the ARDL bound test approach, examined the relationship between FDI and stock market development in Nigeria from 1981 to 2016. Their findings show that a positive and significant relationship exists between FDI and the development of the stock market. Likewise, the exchange rate and gross domestic savings displayed a positive effect on the stock market. In contrast, the inflation rate had a negative but insignificant impact on stock market development in Nigeria. Lastly, the work of Arikpo and Ogar (2018) revealed that a significant positive relationship exists between foreign direct investment and market capitalisation, number of listed companies, ASI, turnover ratio, and value of the transaction in Nigeria.

### 3. Model, Data and Methodology

#### 3.1 Model Specification

The purpose of this study is to empirically investigate the dynamic effect of capital flows on stock market performance in Nigeria. This study adopts the Keynesian model of growth as its framework because more investment leads to economic growth which indirectly affects the performance of the stock market. The Keynesian model of growth is based on a linear production function with output given by the capital stock,  $K$ , times a constant, often labeled  $A$ . The model maintains that in order for any economy to grow, new investments representing additions to the capital stock are necessary. The general concept of the model is that for any economy to grow, there must be a sufficient level of savings and capital. In developing countries where savings and capital are low, funds are usually solicited from developed countries and international organisations and these funds are usually transferred through the stock market. The model is applicable to this study in that a major indicator of the economic performance of any economy is the performance of the stock market. It, therefore, shows that savings and investment are necessary for the efficient and smooth performance of the stock market. The model can be modified to suit this study and can be represented mathematically as:

$$Y = f(K) \tag{1}$$

$Y$  = stock market performance

$K$  = capital stock

From the equation, it can be seen that stock market performance is a function of capital.

#### 3.2 Model Specification

The main focus of this paper is to analyse the dynamic relationship that exists between capital flow and stock market performance in Nigeria. Following the study by Ngobe and Emenike (2020), the variables used in estimating the model are stock market capitalization (SMC) used to capture stock market performance, foreign direct investment (FDI), external debt (EXDBT), inflation (INF) and interest rate (INR). The model is thereby given as:

$$SMC = f(FDI, EXD, INF, INR) \tag{2}$$

However, the econometric model of the equation can be specified as:

$$SMC_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXDBT_t + \beta_3 INF_t + \beta_4 INR_t + \mu_t \quad (3)$$

Where:

$\beta_0 - \beta_4$  = coefficients

$\mu$  = stochastic disturbance

$t$  = time trend over the period of analysis

This study makes use of the ARDL approach to estimate the link between the variables. The reasons for using this approach are as follows: firstly, it can be adapted when the series is stationary at level or at first difference or a combination of both. Secondly, a robust and reliable result can be generated irrespective of the sample size. Finally, the outcome displays both short and long-run results at the same time. (Pesaran, Shin, & Smith, 2001). Thus, the ARDL model can be specified as:

$$\begin{aligned} \Delta SMC_t = & \beta_0 + \sum_{t=1}^n \beta_1 \Delta SMC_{t-1} + \sum_{t=0}^n \beta_2 \Delta LFDI_{t-1} + \sum_{t=0}^n \beta_3 \Delta LEXDBT_{t-1} + \sum_{t=0}^n \beta_4 \Delta INF_{t-1} + \sum_{t=0}^n \beta_5 \Delta INR_{t-1} \\ & + \alpha_1 LSMC_{t-1} + \alpha_2 LFDI_{t-1} + \alpha_3 LEXDBT_{t-1} + \alpha_4 INF_{t-1} + \alpha_5 INR_{t-1} + \mu_t \end{aligned} \quad (4)$$

Note that  $\beta_0$  to  $\beta_5$  are the short-run coefficients, whereas  $\alpha_1$  to  $\alpha_5$  are the long-run coefficients of the variables. Furthermore, the error correction model of the ARDL model is specified as:

$$\begin{aligned} \Delta SMC_t = & \beta_0 + \sum_{t=1}^n \beta_1 \Delta LSMC_{t-1} \\ & + \sum_{t=0}^n \beta_2 \Delta LFDI_{t-1} + \sum_{t=0}^n \beta_3 \Delta LEXDBT_{t-1} + \sum_{t=0}^n \beta_4 \Delta INF_{t-1} + \sum_{t=0}^n \beta_5 \Delta INR_{t-1} + \lambda ECM_{t-1} + \mu_t \end{aligned} \quad (5)$$

### 3.3 Data and Sources

In order to achieve its objective, this study employs secondary annual time series data in Nigeria from 1981 to 2021. The data is from the World Bank and the Central Bank of Nigeria statistical bulletin. The data include stock market capitalisation, which represents the stock market performance, and foreign direct investment, which represents capital inflow, while external debt, inflation and interest rate are control variables.

### 3.4 Empirical Analysis and Discussion

#### 3.4.1 Unit Root Test

The stationarity test is carried out to establish the order of integration of the variables used in this study. A major strength of the ARDL method is that the model can be estimated with variables that are I(0) and I(1). The results of the stationarity test are reported in Table 1.

**Table 1: Unit Roots Test Results**

ADF		PP		ADF-GLS	
Intercept & trend		Intercept & trend		Intercept & trend	
<i>Level</i>					
SMC	-0.599	-0.597		0.297	
FDI	-1.955	-1.644		-1.771	
EXDBT	-0.667	-0.491		-0.421	
INF	-3.009(**)	-2.877(**)		-3.044(**)	
INR	-2.307	-2.319		-1.676	
<i>First difference</i>					
ΔSMC	-4.888(*)	-4.905(*)		-4.475(*)	
ΔFDI	-5.031(*)	-5.038(*)		-4.879(*)	
ΔEXD	-3.732(**)	-3.762(**)		-3.779(**)	
ΔINF	-6.549(*)	-10.369(*)		-5.338(*)	
ΔINR	-6.843(*)	-6.845(*)		-6.933(*)	

Where (\*\*) and (\*) denote significance level at the 5% and 1%.

### 3.4.2 Correlation

Table 2 below presents the results of the correlation matrix in the study. The results show a weak relationship among the variables, with the exception of external debt exhibiting a strong correlation of 65.8%. The results are a good fit, as the rule of correlation states that variables should not have a correlation of 80% (Bewick, Cheek and Ball (2003).

**Table 2: Correlation Analysis**

Correlation Matrix					
Variables	SMC	FDI	EXTDB	INF	INR
SMC	1				
FDI	0.383	1			
EXTDB	0.658	-0.192	1		
INF	-0.265	-0.265	0.052	1	
INR	-0.254	-0.014	0.138	0.374	1

Source: Author's Computation

### 3.4.3 Autoregressive Distributed Lag Model (ARDL)

The ARDL model provides for the estimation of both the short-run and long-run effects of the independent variables on the dependent variable. Before the ARDL result was estimated, the study determined the appropriate lag length for the estimation of the ARDL Bound test due to the sensitivity of F-statistics to lag length selection. The findings show that the appropriate lag length for estimation of the ARDL technique is one following the Akaike Information Criterion (AIC) and this was found to be appropriate.

### 3.4.4 Autoregressive Distributed Lag Model (ARDL) Bounds Test

The ARDL bounds test examines the existence of co-integration among the variables under study. The results of the bounds test are reported in the Table 3.

**Table 3: ARDL Bound Test**

Null Hypothesis: No long run relationship exists					
T-stat	Value	Significance Level	Bound Critical Values		
F-statistic	3.999		I (0)	I (1)	K = 4
		10%	2.45	3.52	
		5%	2.86	4.01	
		2.5%	3.25	4.49	
		1%	3.74	5.06	

Source: Author's Computation

The results of the co-integration test based on the ARDL bounds test approach are presented in the table above. The null hypothesis is that there is no long-run relationship and the alternative hypothesis states there is a long-run relationship. If the F-statistic is less than the critical value, the null hypothesis is accepted that no long-run relationship exists among the variables, while if the F-statistic is greater than the critical value, the null hypothesis is rejected, and it is concluded that a long-run relationship exists among the variables. From the table above, the bounds co-integration test shows that the F-statistic of 3.999 is greater than the I(0) and I(1) critical bound value of 2.45 and 3.52 at the 10% significance level. Although, it was greater at the other level of significance at the I(0) bound, it was not significant at the I(1) bound of 4.01, 4.49 and 5.06 respectively. Thus, the null hypothesis is easily rejected, indicating that a steady state long-run relationship exists among the variables. Our finding is in line with the work of Oyerinde (2019), whose study found a long-run relationship between capital flows and stock market performance. However, it does not agree with the work of Adaramola and Obisesan (2015), where no long-run relationship was found between foreign direct investment and stock market performance.

### 3.4.5 Autoregressive Distributed Lag Model (ARDL) Estimates

The evidence of the effect of FDI on stock market performance in Nigeria is shown in Table 4. In the long run, the result showed that foreign direct investment was positively related to stock market performance in Nigeria, and it was statistically significant. This implies that it will bring about a better performance of the stock market, which would have an indirect effect on the growth of the economy. This follows the studies of (Chauhah, 2013; Irfan, 2014; Afaq, 2017) who found that an increase in FDI led to improvements in stock market performance and economic growth. Also, external debt had a positive and statistically significant effect on stock market performance. This points to the fact that borrowed funds, if directed to the stock market, would affect it positively. This conforms to the study of Oyerinde (2019), who affirms that external debt is important for a better-performing stock market. However, the works of (Khan *et al.*, 2022 & Topaloglu *et al.*, 2019) did not agree with our findings. They found that foreign direct investment had a negative effect on stock market performance.

The short-run results shown below reveal that although foreign direct investment had a positive relationship with the stock market, it was statistically insignificant in the short run. External debt is negative and significantly linked to stock market performance. This implies that keeping other variables constant, a 1% increase in debt will lead to a 0.886% reduction in the performance of stock market performance in Nigeria. This finding is in line with Arcabic, Globan & Kristic (2012), which found that in the short term, foreign direct investment was important for the stock market. The interest rate had a negative and significant relationship with the stock market performance, which shows that holding all other variables constant, a 1% increase in interest rate has an adverse effect on the stock market by -0.029%. Lastly, the inflation rate was found to be positive but insignificant in its effect on stock market performance.

**Table 4: ARDL Long Run and Short Run Analysis**

<b>DEPENDENT VARIABLE: LSMC</b>				
<b>Variables</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>Long-Run Dynamics</b>				
LFDI	1.791	0.675	2.654	0.014
LEXTDB	4.941	2.233	2.212	0.036
INR	0.184	0.255	0.721	0.478
INF	0.044	0.065	0.680	0.503
C	-127.396	53.588	-2.377	0.025
<b>Short-Run Dynamics</b>				
D(LFDI)	0.015	0.064	0.238	0.814
D(LEXTDB)	-0.887	0.209	-4.235	0.000
D(INR)	-0.030	0.014	-2.096	0.046
D(INF)	0.002	0.003	0.909	0.372
CointEq (-1)	-0.055	0.031	-1.758	0.091

Source: Author's Computation

#### 4 Conclusion and Policy Implications

The objective of this study was to examine the relationship between FDI inflow and stock market development in Nigeria. Secondary data obtained from the World Bank and Central Bank of Nigeria from 1981 to 2021 was used. The variable used to capture capital flow was foreign direct investment (FDI). The ARDL approach was used to estimate the relationship among the variables. The ARDL analysis showed that foreign direct investment impacts positively on stock market performance both in the short run and long run. This follows the works of (Choong *et al.*, 2010; Ibrahim, 2011; Raza *et al.*, 2013; Irfan, 2014; Afaq, 2017; Abubakar and Danladi, 2018) and conforms to the Harrod-Domar growth model theory that investment in an economy leads to economic growth and development of various sectors of the economy. The analysis also showed that external debt has a positive and statistically significant relationship with stock market performance in the long run but a negative and statistically significant effect in the short run. This implies that if the government mobilises external funds and invests in the stock market, it will lead to an improvement in the stock market performance, and this conforms to the Harrod-Domar growth model. From the analysis, it can also be seen that inflation has a positive but not statistically significant relationship with stock market performance in Nigeria. The ARDL bounds test conducted in this study showed the existence of a steady state long-run relationship among the variables under study, which is supported by the study of Syed *et al.* (2013) and Oyerinde (2019). The result from the empirical analysis showed that under favourable economic and political conditions, capital inflows will significantly improve the performance of the stock market in the long run. The study, therefore, concludes that capital flow and investment play a significant role in stock market capitalisation and development. Increasing capital flow will lead to a better performance of the stock market in the long run, and this could promote economic growth and development. Thus, it is recommended that continual efforts be made to increase the flow of FDI into the country.

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