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The Impact of International Remittances on Financial Development in Nigeria: 1981-2021

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Abstract: Interconnectivity between international remittances and financial development has been center of academic discussions in recent time. High cost of remittances and underdeveloped financial system may be counterproductive as remittances may flow more through informal avenues than formal ones. Consequently, its impact on financial development may not be adequately captured. This study examined the impact of remittances on financial development in Nigeria for the period 1981 to 2021. The study measured financial development by banking sector development and stock market development, and analyzed the data using the auto-regressive distributed lag estimation techniques. The findings of the study showed that international remittances had positive and significant impact on banking sector development while international remittance had insignificant impact on stock market development. Thus, the study concluded that international remittances had different impact on measures of financial sector development. Hence, the study recommends among others the need for government to ensure that the high cost of remittances is reduced, such that significant percentage of the remittances can be kept in the financial system through innovative banking products.

Keywords: International Remittances; Financial Development; Banking Sector Development; Stock Market Development; ARDL

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1. Introduction

Over the years, the stock of migrants especially in the developed countries have been an issue of academic and international policy discourse. Particularly considering the increase in remittance inflow to the developing countries which have attained enviable

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heights, surpassing other capital inflows - such as foreign direct investment, foreign portfolio investment and foreign aid – (World Development Indicator, 2020; Yang, 2006). Unlike other capital inflows, international remittances are more stable and counter-cyclical. In this regard, international remittances have increased during periods of economic recessions and natural disasters while other capital inflows have declined (Yang, 2006). In addition, literature has shown that international remittances are important source of external finance to poor individual households, thereby contributing to improve welfare of poor in developing countries (Ugwuegbe, Onyeke, Nwonye & Ibe, 2018).

Studies have shown that the volume of international remittances into any countries is influenced among others factors by the development of the financial system (World Bank, 2014; Chami, Jahiah & Fullenkamp, 2005). For instance, the increase in the size of remittances to Asia and Latin-America have largely been attributed to the growth of the financial sector and declined in the average cost of remittances (Jansen, Vacaflores & Naufal, 2012; Orozio & Fedewa, 2006). In contrast, the African region has the highest average cost of remittances in the world (IFAD-World Bank, 2015). The cost of remittances in Sub-Saharan African region and within the Southern African Development Community (SADC) is placed at 11.34% and 14.22% respectively. This is a highly worrisome, contributing to the high level of unrecorded remittance through the informal channel (estimated between 10% - 50% of the official record).

Despite the potential danger that high cost of remittance (indicating an underdeveloped financial system) portrays for the flows of international remittances, the dearth of existing indigenous studies on the impact of international remittance on financial development makes it even worrisome. Most studies on international remittances have focused on its impact on economic growth (Nejo, 2021; Olabisi & Ogbeide; 2020; Adesina-Uthman, 2019), poverty and inequality (Prakash, 2009), household consumption (Ogunwole, 2016; Rocher & Pelletier, 2008; Maimbo & Ratha, 2005) and on capital formation (Ojapinwa & Lateef, 2013).

The very few literatures on international remittances and financial sector development have largely focused on Asia and Latin America (Bandura, Zivanomoyo, & Tsaurai, 2019; Karikari, Mensah & Harvey, 2016; Fromentin, 2015). Emanating evidence from such literature is controversial, which can be broadly categorized into three stands. On the one hand, some studies argued that international remittance promote financial sector development (Fromentin, 2015; Cooray, 2012; Aggarwal, Demirguc-Kunt & Peria, 2011), while others argued that international remittances impede financial development in developing countries (Bandura *et al.*, 2019; Githaiga & Kabiru, 2014). Some studies noted that international remittances had insignificant impact on financial development (Githaiga & Kabiru, 2014; Akkoyunlu, 2013). However, within the context of Nigeria, the issue is yet to be addressed. Thus, the objective of this study is

to examine the impact of international remittances on financial development in Nigeria for the period 1981 to 2021.

Examining the above is important because through financial development, international remittance can enhance deposits, ease credit constraints and promote efficient financial allocations of scare resources from the surplus units to the deficit units (Giuliano & Ruiz-Arranz, 2009; Woodruff & Zenteno, 2007). More so, the believed that remittance promotes the development of the financial system is premised on the grounds that remittances transferred through the formal channel (that is, through the banking institution) provides other financial services access to the recipients within the financial sector, which the poor households might not have been privy to, such as deposits, even if such fund were not received through the financial sector (Orozco & Fedewa, 2005). In addition, unlike previous local studies which focused only on the banking sector development as a measured of financial development (Hussaini, Musa & Muhammad, 2021; Omobolanle, Sheriffdeen & Abissoye, 2019), this study considered both the banking and stock market segment of the financial sector. This is expected to give a more comprehensive results of the influence of international remittances on financial development in Nigeria.

Consequently, this study seeks to fill the gap in literature by examining the relationship between international remittances and financial development in Nigeria for the period 1981 – 2021. In addition to this introductory section, section two is presents review of related theoretical and empirical literature, while section three presents the research methods on which the study is based. The data analysis and interpretation are discussed in section four while the summary, conclusion and policy references are discussed in section five.

2. Literature Review

Issues on international remittances and financial development have received attention by previous empirical studies. In this regard, Hussaini, Musa and Muhammad (2021) investigated the impact of migrants' remittances on the development of the financial sector in Nigeria, using data from 1986 to 2020. The study used the autoregressive distributed lag (ARDL) technique and the outcome of the estimates showed that migrants' remittances contributed to the growth of the Nigerian financial sector. More so, the study observed that gross savings and interest rate spread had negative impact on financial sector development in Nigeria.

Mustafa, Shah and Iqbal (2020) examined the relationship between migrants' remittances and financial development in Pakistan. The study spanned 1976 to 2015 and utilized the Auto-Regressive Distributed Lag technique. The results of the study showed the impact of migrants' remittances on financial development depends on the proxy for financial development. Specifically, the study observed that migrants'

remittances significantly enhanced financial development (proxy by the ratio of broad money supply to gross domestic product). However, international remittances had insignificant impact on financial development (proxy by ratio of credit to the private sector to gross domestic product).

Using a panel of selected ECOWAS (Economic Community of West African States) countries, Keho (2020) analyzed the effect of migrants' remittances on financial development. The study spanned the period 1980 – 2017 and utilized the Common Correlated Effects Mean Group (CCEMG) panel estimation technique. In the study, financial development was proxy by money supply and domestic credit to the private sector. The results of the study showed that migrants' remittance had negative and significant impact on financial development measured by credit to the private sector while migrants' remittances significantly promoted financial development measured by money supply.

Focusing on a panel of 124 developing countries, during the period 1990 – 2015, Azizi (2019) analyzed the impacts of migrants' remittances on financial development. The study measured financial development with four proxies – domestic credit to the private sector, bank credit, bank deposit and liquidity liability. Using panel fixed effect technique, the results showed that migrants' remittances promote financial development. Specifically, the results showed remittances had the most significant influence on bank credit (1.9 percent), followed by domestic credit to private sector (1.7 percent), then bank deposit (1.2 percent), and finally liquid liabilities (0.8 percent).

Using the error correction estimation technique, Omobolanle *et al.* (2019) analyzed the effect of migrants' remittances on financial development in Nigeria. The results of the study showed that migrants' remittances significantly contributed the financial sector development in Nigeria. More so, error correction term of the estimate, showed it was negatively sign and statistically significant. Ugwuegbe *et al.* (2018) analyzed the impact of international remittances on financial sector development in West Africa Monetary Zone (WAMZ). The study covered 6 countries in WAMZ region for the period 1996 – 2016. Using one-step differenced -Generalized Method of Moments method, the results of the study showed that migrant remittances significantly promoted financial development in WAMZ region.

Nyangau (2018) analyzed the relationship between diaspora remittances and financial development in Kenya. The study covered the period 1970 to 2017 and employed the auto-regressive distributed lag technique. The results of the study showed that diaspora remittance contributed significantly to promoting financial development in Kenya. More so, the study observed that investment and interest rate had significant and positive impact on financial development while inflation and fiscal balance had negative but significant impact on financial development in Kenya. Finally, the study

revealed that the lagged values of financial development contributed to the significantly to the growth of current financial development.

Misati and Kamau (2018) examined the impact of migrants' remittances on financial development in Kenya. The study used quarterly data covering the period 2006 – 2016, and the autoregressive distributed lag (ARDL) technique was utilized. The results revealed a positive and significant relationship between the variable. According to the results the positive impact was through technological advancement in the banking sector which reduced remittance costs.

Covering the period 1976 to 2012, Muktadir-Al-Mukit and Islam (2016) investigated the impact of migrants' remittances on the disbursement of banking sector in Bangladesh. Employing the vector error correction model (VECM) and vector auto-regressive (VAR) techniques, the study observed that migrants' remittances significantly enhanced the disbursement of banking sector credit in Bangladesh. The causality results showed two-way causation between credit disbursement and migrants' remittances in Bangladesh

In Jordan, Alaaddin (2016) explored the relationship between international remittances and banking sector development for the period 1964 – 2013. Banking sector development was measured by the ration of credit to the private sector to gross domestic product. The study utilized the error correction modelling method, and the results showed that international remittances promote banking sector development.

Karikari et al. (2016) analyzed the nexus between diaspora remittances and financial development for the period 1990 to 2011. The study covered 50 developing African countries and employed the Vector Error Correction Model. The panel fixed as well as the random effects technique was utilized. The results showed that migrants' remittances had significantly positive impact on financial development in the sampled countries.

For a panel of 54 developing countries, Sobiech (2015) investigated the relationship between diaspora remittances and financial development from 1970–2010. The study constructed an index of financial sector development from the existing proxy of financial development indicating efficient size and depth of the financial sector. Consequently, the index was used to the importance of financial development channel in the relationship between migrants' remittances and economic growth. Utilizing Panel Generalized Method of Moments (GMM) method, the study observed migrants' remittances resulted in a declined in financial development of the studied countries.

Shahzad and Raza (2014) examined the effect of international remittances on financial development for five South Asian countries. The study covered the period 1989 to 2011 and used panel pooled estimation technique. The findings of the study revealed that remittances significantly enhanced financial development. Specifically, the study found that international remittances enhanced financial development in South Asian

countries by 12.6%. For a panel of 32 Sub-Saharan African countries, Ojapinwa and Bashorun (2014) analyzed the relationship between remittances and financial development for the period spanning 1996 – 2010. The study utilized panel dynamic Generalized method of moments technique, and the results showed that remittances significantly enhanced financial development in Sub-Saharan African countries, suggesting a complementary relationship between the two variables.

For a panel of 31 countries for the period 1980 – 2012, Githaiga and Kabiru (2014) examined the impact of international remittances on financial sector development. The study utilized the general method of moment, and the findings of the showed that remittances had a negative and significant impact on financial development (proxy by domestic credit to private sector) and foreign direct investment. More so, the study observed that migrant remittances had positive but insignificant impact on financial sector development (proxy by bank deposit).

Using secondary data over 50 years in Turkey, Akkoyunlu (2013) studied the link between financial development and migrants' remittances. The study employed the Toda and Yamamoto, and the vector auto-regression techniques and the findings of the study showed that migrants' remittances had insignificant impact on financial development in Turkey. More so, the causality results showed that migrants' remittances had no causality with financial development while no feedback was observed from financial development to migrants' remittances.

Conducting a cross-sectional study on five Sub-Saharan African (SSA) countries, Ajilore and Ikhide (2012) examined the relationship between migrants' remittances and financial development. The countries covered are Lesotho, Cape-Verde, Senegal, Nigeria, and Togo. The study spanned 1985 to 2009 and utilized the auto-regression distributed lag procedure. The findings from the study revealed that migrants' remittance significantly promoted financial development in four of the studied SSA countries (Lesotho, Cape-Verde, Senegal, and Togo) with exception to Nigeria.

The study by Oke, Uadiale, and Okpala (2011) in Nigeria, investigated the effect of remittances on financial development for the period spanning 1977 – 2009. In the study, financial development is measured by broad money supply as a ratio of gross domestic product (GDP) and credit to the private sector as a ratio of GDP. The Generalized Method of Moments (GMM) and the ordinary least square (OLS) techniques were used for data analysis. The OLS estimate showed that migrants' remittances had positive and significant both measures of financial development. The GMM result showed that migrants' remittances significantly enhanced financial development (measured by ratio of money supply to GDP) while migrants' remittances had insignificant impact on financial development (measured by ratio of credit to private sector to GDP). According to the study, the results suggest that migrants' remittances flow in Nigeria affect liquid liabilities than loanable funds.

In Bangladesh, Chowdhury (2011) explored the impact of remittances on financial development. The study covered the period 1971 – 2008 and used the Vector Error Correction (VEC) method of analysis. The study found that remittances had positively influence the development of the financial sector. Using dynamic panel estimation technique, Bjuggren Dzansi and Shukur (2010) investigate the between migrants' remittances and financial development for a panel of 79 developing countries covering the duration of 1995 to 2005. The results of the study showed that migrants' remittances had positive and significant impact on financial development for countries with a well-developed financial sector.

3. Methodology

Examining the relationship between international remittances and financial development, this study adopts the model of Oyelami (2019) and Ugwuegbe *et al.* (2018). This model is specified thus:

$$FD_t = f(REM) \quad 1$$

From equation (1) *FD* is financial development, and equation (1) indicates that financial development is influenced by international remittances. Studies have noted that certain control variables influence the relationship between international remittances and financial development Such variables are per capita gross domestic product (PCGDP), inflation rate (INF), exchange rate (EXT) and household consumption expenditure (HCE) (see Eggoh & Bangake, 2021; Githaiga & Kabiru, 2014). Incorporating the control variables into equation (1) becomes:

$$FD_t = f(REM, PCGDP, INF, EXT, HCE) \quad 2$$

Where FD = financial development measured by banking sector development and stock market development.

REM = International Remittances

PCGDP = Per Capita Real Gross Domestic Product

INF = Inflation Rate

EXT = Exchange Rate

HCE = Household Consumption Expenditure

Expressing equation (2) in estimation form and including the constant term and the stochastic error term, equation (2) becomes:

$$FD_t = \delta_0 + \delta_1 REM_t + \delta_2 PCGDP_t + \delta_3 INF_t + \delta_4 EXT_t + \delta_5 HCE_t + \mu_t \quad 3$$

Equation (3) presents the effect of international remittances on financial development in the long term. More so, study attempts to examine the effect of international remittances on financial development in the short term. The short-term equation is expressed as:

$$\Delta FD_t = \delta_0 + \delta_1 \sum_{i=1}^{n} \Delta FD_{t-1} + \delta_2 \sum_{i=1}^{n} \Delta REM_{t-1} + \delta_3 \sum_{i=1}^{n} \Delta PCGDP_{t-1} + \delta_4 \sum_{i=1}^{n} \Delta INF_{t-1}$$

$$+ \delta_6 \sum_{i=1}^{n} \Delta EXT_{t-1} + \delta_6 \sum_{i=1}^{n} HCE_{t-1} + \psi ECT_{t-1} + \mu_t \qquad 4$$

The ECT_{t-1} is the error correction term of the short run equation which shows the speed at which the short run disequilibrium adjusts to long run equilibrium.

Theoretically, it is expected that increase in international remittances (REM) and per capital gross domestic product (PCGDP) would bring about an increase in financial development while increase in inflation rate (INF), exchange rate (EXT) and household consumption expenditure (HCE) is expected to negatively impact financial development in Nigeria.

With respect to the variables measurements and sources of these variables, financial development (FD) is proxy by two categories of variables – bank-based variable and market-based variable. The bank-based variable is measured by the ratio of credit to private sector to RGDP while the market-based variable is measured by stock market turnover ratio. Turnover ratio is measured by the value of domestic shares divided by their capitalization of market. It indicates the liquidity in the stock market. Data on financial development is sourced from Section A (Financial Sector) of the CBN Statistical bulletin, 2020 edition.

International Remittances (REM) (Independent Variable): This is measured by the volume of remittance inflow through the official financial channels. Data on workers' remittances is sourced from the World Bank Development Indicators (WDI) bulletin 2020 edition. Per Capita Income (PCGDP) (Control Variable): This is proxy by the real gross domestic product as a ratio of total population. Data on real gross domestic product is sourced from Section C (Real Sector) of the CBN Statistical bulletin, 2020 edition, while data on population is sourced from the World Bank Development Indicators (WDI) bulletin 2020 edition.

Inflation Rate (IF) (Control Variable): It is measured by the annual inflation rate and sourced from Section C (Real Sector) of the CBN Statistical bulletin, 2020 edition.

Exchange Rate (EXT) (Control Variable): It is measured by the official exchange rate of the Naira (₦) to the United State Dollar ($). Data on exchange rate is sourced from Section D (External Sector) of the CBN Statistical bulletin, 2020 edition. Household Consumption Expenditure (HCE): This is measured by the final consumption

expenditure by households in Nigeria. The data is sourced from Section C (Real Sector) of the CBN Statistical bulletin, 2020 edition.

Consequently, the auto-regressive distributed lag (ARDL) estimation technique is utilized. The technique allows the estimation of both the long and short run relationship between the variables under focus (Peseran, Shin, & Smith, 2001). Also, the ARDL technique, automatically generate the error correction term, which measures the speed of adjustment from the short run disequilibrium to the equilibrium in the long run.

4. Result and Discussion

Descriptive statistics from Table 1 showed that the mean values of international remittances (REM), banking sector development (FDB), and stock market development (FDS) are US$8.2b, 11.29, and 0.06 respectively whereas the mean values of per capita income (PCGDP), inflation rate (INF), exchange rate (EXT) and household consumption expenditure (HCE) are 0.003, 19.58 per cent, ₦100.87/US$1 and ₦23,338.66b respectively. Furthermore, the descriptive estimate revealed that the median values for international remittances (REM), banking sector development (FDB), and stock market development (FDS) are US$8.19b, 8.09, and 0.055 respectively whereas the median values of per capita income (PCGDP), inflation rate (INF), exchange rate (EXT) and household consumption expenditure (HCE) are 0.0002, 12.9 per cent, ₦107.03/US$1 and ₦17,749.07b respectively.

The standard deviation statistics revealed that international remittances (REM) had the highest deviation value while per capita income (PCGDP) had the least variance value. From the skewness statistics, it was noted that all the series or variables were skewed to the right. The kurtosis showed that the distributions of inflation rate (INF) and stock market development (FDS) were peaked or high, which is above the acceptance kurtosis value of 3.0, while the distribution of the remaining series with exceptions to exchange rate were flat, that is, below 3.0. In addition, exchange rate has normal distribution since its kurtosis value is approximately 3.0. Finally, from the Jarque-Bera statistic, it was noted that the two measures of financial sector development (that is, banking sector development (FDB) and stock market development (FDS)), international remittances and inflation rate were normally distributed given that their probability values were significant at five per cent ($p<0.05$) level of significance whereas per capita income (PCGDP), exchange rate (EXT) and household consumption expenditure (HCE) were not normally distributed because their probability values were insignificant at five per cent.

Table 1. Descriptive Statistics

Statistics / Series	REM	FDB	FDS	PCGDP	INF	EXT	HCE
Mean	8.23E+09	11.294	0.060	0.0003	19.576	100.873	23338.66
Median	1.19E+09	8.09	0.055	0.0002	12.9	107.025	17749.07
Std. Dev.	9.74E+09	5.477	0.034	6.68E-05	17.856	100.759	13057.8
Skewness	0.476	0.767	0.941	0.509714	1.724	0.885	0.375
Kurtosis	1.332	1.849	4.701	1.610	5.064	2.988	1.505
Jarque-Bera	6.146	6.129	10.719	4.951	26.917	5.225	4.661
Probability	0.046	0.047	0.005	0.084	0.000	0.073	0.097
Observations	40	40	40	40	40	40	40

Source: E-views 9 computation, 2022.

Evidence from the correlation matrix showed a strong positive association between banking sector development and international remittances with a co-efficient value of 88.44 whereas the association between stock market development and international remittance is below average (35.50 per cent). Furthermore, it was observed that per capita income (PCGDP), exchange rate (EXT) and household consumption expenditure (HCE) had positive correlation with measures of financial sector development (FDB and FDS) and international remittances while inflation rate (INF) was negatively correlated with both measures of financial sector development (that is, banking sector development (FDB) and stock market development (FDS)) and international remittances.

Table 2. Correlation Matrix

Series	FDB	FDS	REM	PCGDP	INF	EXT	HCE
FDB	1.0000						
FBS	0.3198	1.0000					
REM	0.8844	0.3545	1.0000				
PCGDP	0.8950	0.3130	0.9517	1.0000			
INF	-0.2501	-0.3129	-0.3649	-0.3646	1.0000		
EXT	0.7811	0.1904	0.8321	0.8313	-0.3393	1.0000	
HCE	0.8674	0.3436	0.9366	0.9592	-0.3874	0.9074	1.0000

Source: E-views 9 computation, 2022

The study continued with the data analysis by conducting the stationary test, using the Phillip-Perron (PP) unit root test. Evidence from Table 3 showed that the following series or variables – both measures of financial sector development (FDB and FDS), international remittances (LREM), per capita income (PCGDP), exchange rate (EXT) and household consumption expenditure (HCE) – became stationary at first difference. This suggests that the variables were integrated of order one. However, inflation rate (INF) was stationary at level, suggesting that the series is integrated of order zero. The

mixture in the observation of the stationary results indicate the application of the Auto-regressive Distributed Lag (ARDL) Bound co-integration technique, in estimating the co-integration among the variables.

Table 2. Stationarity Estimate

Philips-Perron (PP) Test			
Series	**Level**	**1st Difference**	**Observation**
FDB	-0.9150	-6.5780*	I(1)
FDS	-2.6854	-10.8082*	I(1)
LREM	-0.8947	-6.3348*	I(1)
PCGDP	-0.4968	-3.2764**	I(1)
INF	-3.2221**	-	I(0)
EXT	2.3844	-4.0753*	I(1)
LHCE	-0.1173	-7.5940	I(I)

Note: LHCE and LREM are logs of Household Consumption Expenditure and Workers' Remittances respectively.

*Source: E-views 9 computation, 2022. * and ** signifies 1% and 5% significant levels.*

From the auto-regressive distributed lag (ARDL) bound estimate, it was observed that the F-statistics values for the models were statistically significant. This F-statistics value of FDB model (4.7999) is more than the upper bound value at one percent critical value (4.68), while the F-statistics value of the FDS model is more than the upper bound values at five per cent critical value. The results of the co-integration estimates indicate the presence of long run relationship among the variables in all the models.

Table 3. ARDL Bound Co-integration Estimate

Models	**FDB-Model** Financial Development proxy by Banking Sector Development (FDB).		**FDS-Model** Financial Development proxy by Stock Market Development (FDS).	
F-statistic Value	4.7999		4.3716	
Critical Value	Upper Bound	Lower Bound	Upper Bound	Lower Bound
1%	4.68	3.41	4.68	3.41
5%	3.79	2.62	3.79	2.62
10%	3.35	2.26	3.35	2.26

Source: E-views 9 computation, 2022.

With respect to the focus of this study, the results from the regression estimates on FDB - model (with banking sector development (FDB) as dependent variable) showed that international remittances (LREM), per capita income (PCGDP), inflation rate (INF), and household consumption expenditure (HCE) showed the expected theoretical relationship with banking sector development while exchange rate (EXT) did not show the expected theoretical relationship with banking sector development. More so, the outcomes of the ARDL estimate showed that international remittances

(LREM), per capita income (PCGDP), exchange rate (EXT), and household consumption expenditure (LHCE) significantly influenced banking sector development while inflation rate had insignificant effect on banking sector development in Nigeria. A unit increase international remittances (LREM), per capita income (PCGDP) and exchange rate (EXT) is expected to enhance banking sector development by 1.55 units, 1.43 units and 0.04 units respectively. However, a unit increase in household consumption expenditure (LHCE) is expected to reduce development in the banking sector by 22.27 units. Furthermore, the estimate from the short run analysis, indicated that the error correction term had the correct negative signs. Thus, the coefficient of the error correction term (CointEq(-1)) is -2.4158, which connotes that the short-run disequilibrium is adjusted by 241.58 percent towards the long-run equilibrium.

Table 4. Regression Results

Independent Variables	**FDB Model Co-efficient [Stand. Error] (t-Statistics)**	**FDS-Model Co-efficient [Stand. Error] (t-Statistics)**
Regression Estimate		
LREM	1.5483 [0.2348] (6.5938)*	-0.0107 [0.0052] (-2.0475)
PCGDP	1.4318 [0.1252] (11.4360)*	0.1069 [0.0364] (2.9362)*
INF	-0.0031 [0.0195] (-0.1609)	-0.0009 [0.0004] (-2.4149)**
EXT	0.0350 [0.0066] (5.3018)*	-0.0004 [0.0001] (-2.7483)**
LHCE	-22.2658 [3.2643] (-6.3864)*	0.2487 [0.0795] (3.1269)*
C	158.7714 [24.8610] (6.3864)*	-1.8323 [0.5917] (-3.0969)*
CointEq(--1)	-2.4158 [0.5040] (-4.7936)*	-0.8429 [0.1755] (-4.8019)*
R-Square **Adjusted R-Square** **F-Stat. (Prob)** **Durbin-Watson Stat.**	0.880327 0.823496 17.249 (p<0.05) 2.0843	0.7753 0.6629 6.901 (p<0.05) 1.9031

*Source: E-views 9 computation, 2023. * and ** signify 1% and 5% significant level.*

With respect to FDS - Model (with sector market development (FDS) - proxy for financial sector development - as dependent variable), the regression estimate on

column three showed that per capita income (PCGDP), inflation rate (INF), and exchange rate (EXT) showed the expected theoretical relationship with stock market development while international remittances (LREM) and household consumption expenditure (LHCE) failed to show the expected theoretical relationship with stock market development. Furthermore, the estimate on FDS - model showed that per capita income (PCGDP), inflation rate, exchange rate (EXT), and household consumption expenditure (LHCE) had significant effects on stock market development while international remittances (LREM) had insignificant effect on stock market development in Nigeria. A unit increase per capita income (PCGDP) and household consumption expenditure (LHCE) is expected to increase stock market development by 0.11 units and 0.25 units respectively while a unit increase in inflation rate (INF) and exchange rate (EXT) is expected to diminish the development in the stock market by 0.0009 units and -0.0004 units respectively. Furthermore, the estimate from the short run analysis indicates that the error correction term had the expected negative signs. The coefficient of the error correction term (CointEq(-1)) of -0.8429, connotes that the short-run disequilibrium is adjusted by 84.29 percent towards the long-run equilibrium.

In addition to the foregoing, the coefficient of determination (R-Square) from the estimated models were above 75 per cent, suggesting that the explanatory variables significantly explained the dependent variables. More so, the values of the F-Statistics for the estimated models were significant at one per cent significant level while the Durbin Watson statistics were appropriate, indicating the absence of serial correlation in the estimated models. The Durbin-Watson results are equally supported by the Breusch-Pagan-Godfrey Serial Correlation LM estimates in Table 7.

Table 5. Diagnostic Tests

Breusch-Pagan-Godfrey Serial Correlation LM	F-Statistics	Prob. value
Model 1- FDB	1.2385	0.3463
Model 1- FDS	2.6017	0.1231
Model 2- FI	0.1893	0.8288

Source: E-views 9 computation, 2023.

With respect to the aim of this study, it was shown that international remittances (LREM) significantly influenced financial sector development (measured by banking sector development). This can be attributed to the increase in the size of remittances inflow into Nigerian and the various development in the banking sector. Such as the introduction of International Money Transfer Organizations (while IMTOs) that eased the remittances from migrants to their family or relatives in the home country. More so, the need to own bank accounts by the recipients for safe keeping and to benefits from modern banking facilities (such as credit facility and interest on saving deposits) may have contributed to the positive impact of migrants' remittances on banking development in Nigeria. The finding of this study on the impact of international

remittances on banking sector development is in line with Azizi (2019), Misati and Kamau (2018), Ugwuegbe *et al.* (2018), Nyangau (2018), Alaaddin (2016), and Oke, Uadiale, and Okpala (2011). However, the result is in contrast to the findings of Mustafa *et al.* (2020), Keho (2020), Bandura *et al.* (2019) and Sobiech (2015).

Unlike the positive and significant impact of international remittances on banking sector development, it was observed that international remittances had insignificant effect on financial development (measured by stock market development) in Nigeria. The insignificant effect may be attributed to the fact that capital market is not a conduit for international remittances like the banking institutions. More so, recipients of remittances are assumed to be poor households and thus may not be able to partake in capital market activities such as trading in financial instruments. The above discussion may be attributed to the insignificant relationship between international remittances and stock market development.

5. Conclusion

This study analyzed the impact of international remittances on financial development in Nigeria for the period 1981 to 2021. In the study financial development was measured by banking sector development and stock market development. The study employed secondary data and the data were analyzed using the auto-regressive distributed lag estimation techniques. The findings of the study showed that international remittances significantly promoted banking sector development in Nigeria while international remittance was insignificant in enhancing the development of the stock market. Thus, the study concluded that international remittances had different impact on the two measures of financial sector development (that is, banking sector development and stock market development). Consequently, the study recommends the need for government to ensure that the high cost of remittances is reduced, such that significant percentage of the remittances can be kept in the financial system through innovative banking products. More so, there is the need for the government to introduce remittances bond in the stock market which would attract significant proportion of the remittance inflow into the country, and contribute to the growth of the capital market in Nigeria.

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