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International Remittances and Price Stability in Nigeria

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Abstract: This study examined the impact of international remittances, on price stability in Nigeria from 1980 to 2019. The objective of the study is to examine the rate at which international remittances affect price stability in the country. The variables used in the study are consumer price index which serves as the dependent variable, and the independent variables are international remittance flow, trade openness, and exchange rate. The data were collected from CBN Statistical bulletin (2019) and World Bank development indicators (2019). These variables were used to capture objective one, two and three respectively. However, due to the mixed order co integration in the unit root test; the study made use of Auto Regressive Distributed Lag (ARDL) Model. The findings showed that International remittance flow increase the general price level in the economy, in the long run. Trade openness reduces the general price level on the long run; while exchange rate also reduces the general price level on the long run. The study therefore concludes that international remittance affects price stability in Nigeria. It was recommended that, Remittances from abroad, bulk of the time aren't utilized for productive means, they are rather used to increase household consumption, thereby resulting to a slight increase in inflation and the price index in the economy, therefore policy makers should implement policies, that directs a large chunk of this inflow into the productive sector. The government should encourage economic integration and liberalization that will reduce the general price level, hence minimizing the volatility of inflation in Nigeria. The exchange rate flows in the same line as international remittances as it forms a huge base of Nigeria's foreign exchange earnings. Thus this should be properly utilized to better grow the economy, and help achieve price stability.

Keywords: International Remittances, Price Stability, Consumer Price Index, Exchange Rate, Trade Openness.

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INTRODUCTION

The issue of international remittance and price stability cannot be overemphasized, that is, why many economies especially developing countries cannot sweep it under the carpet. However, it is very obvious that from 2003 to 2018, remittance Inflows increased while from 1990 to 2002 there were fluctuations in the flow of remittances to Nigeria, (WDI 2010).

The volume of remittances into Nigeria has been on the increase for about a decade now. From a meager \$1.8 billion in 1999, remittances Inflow to the country increased to \$9.98 billion in 2008, (World development indicator, 2010). This is second to oil receipts as the country's prime foreign exchange earner and in 2010 it increased by 4.2% [CBN, 2008; WDI, 2010).

According to CBN, (2008), Remittances as a ratio of GDP out performed foreign direct investments, non-oil exports receipts and portfolio investments from 2004 to 2018 and in 2017, it grew from 5.8 in 2015 to 10.7 in 2017. While research has shed some light on the potential Influence of remittances on education (Brempong-Gyimah & Asiedu, 2015), Poverty (Quartey, 2006), economic growth (Addison, 2004, Owiafe, 2008) and financial development (Adenutsi, 2011), no attention has been given to the potential effect

of these remittances on price stability (Inflation). Therefore, this research seeks to answer empirically on how domestic prices (Inflation) is affected by the remittances flow as it applies to Nigeria. Against this background, the research work seeks to evaluate the impact of international remittances on price stability in Nigeria as a basis for policies' adjustments to stabilize Inflation and maintain sustainable economic growth.

However, the broad objective of the study is to ascertain the effect of international remittances on price stability in Nigeria. The specific objectives are as follows:

- To determine the effect of international remittance flow on price stability in Nigeria.
- To ascertain the effect of trade policies on price stability in Nigeria
- To ascertain the effect of exchange rate, on price stability in Nigeria

LITERATURE

Conceptual Review

Migration and remittances are two concepts that go together, because remittances are as a result of migration. Englama (2007) defined migration as the voluntary movement of person(s) from one country to seek a more prosperous environment.

Migration is a phenomenon which can take place in different forms. It could be internal (rural-urban migration, urban-rural migration or urban-urban migration, within the same country) or international (from one country to another or one continent to another). In this research, attention is paid to international migration though references are made to other form of migration.

Remittances can be seen as the most beneficial outcome of migration. Augustine & Sunday (2015), submit that remittances are a logical follow up to migration.

There are several definitions of remittances. Puri & Ritzema (1999) defined remittances to be the fraction of a migrant workers' income sent from the country of employment to the home country.

Larsson & Angman (2014) defined remittances as money-transfers, earned by workers abroad and sent to persons in their country of origin. Tewolde (2005) as cited by Oluwafemi & Ayandibu (2014) saw remittances to be both monetary and physical resources that are earned and acquired by migrants as they ply their trade abroad. These are what make up what they send to their loved ones back home in their home countries.

Chami et al (2008) are of the opinion that remittances are solitary and are not market-based individual exchanges between families across nations. According to Englama (2007), the definition of remittances adopted by countries is that of the Balance of Payment Statistics Manual of the International Monetary Fund (IMF), where remittances are comprised of 3 components namely: migrant transfers, employee's compensation and remittances of workers.

Furthermore, different definitions have been attributed to Remittances inflows by different scholars. For instance, (Kihangire & Katarikawe , 2008) remittance is defined as money sent home by migrants working abroad to their home countries.

International Monetary Fund, (1999) maintains that remittance is limited to money sent by migrant workers who have been staying in a foreign country for more than a year to his/her household in his/her country of origin and this does not include migrants that are self-employed.

Furthermore International Organization for Migration (2006) largely defines remittances as the monetary flows connected to migration, that is, cash transfers by migrants or immigrants living abroad to a relation in home countries. Solari, (2019) further categories remittances into Monetary remittance and social remittance and she emphasized on the direct link between migration and remittance based on her findings

she conclude that Ukraine emigrants main motives for emigration are either poverty aversions or European aspirations.

According to the International Monetary Fund (IMF) remittance are recorded in three different sections of the BOP such as

- Compensation of employee are the gross earnings of workers residing abroad for less than 12 months and are recorded in the current account subcategory "income" item code 2310.
- Workers remittances are the value of monetary transfers sent home from workers residing abroad for more than one year recorded in the current account subcategory "current transfers" item code 2391.
- Migrant transfer represents the net wealth of migrants who move from one country of employment to another recorded in the capital account subcategory capital transfers item code 2431. Although the IMF standard is clear and precise but most countries face complications in implementation and compliance. Countries like Bulgaria and Czech Republic summed up all remittances under compensation of employees even for migrants who are abroad for more than a year and pull all remittances and merged them together with other private transfers respectively.

International Remittance

According to the IMF, remittances represent household income from foreign economies arising mainly from the temporary or permanent movement of people to those economies. Remittances include cash and noncash items that flow through formal channels such as electronic wire, or through informal channels, such as money or goods carried across borders.

The importance of remittances is in the role they play in economies. They help poorer recipients meet basic needs, fund cash and non-cash investments, finance education, foster new businesses, service debt and essentially, drive economic growth. Empirical studies show that the primary benefits of remittances to recipient households is the improvement in their general welfare. According to analysts, 70% of remittances are used for consumption purposes, while 30% of remittance funds go to investment related uses, Price Water Coopers (2019).

Foreign remittance refers to funds transferred by international workers migrants to the members of their family back home to their country of origin (Lim & Simmons, 2015; World Bank, 2014; Quartey & Blanson, 2004). Simply put, it's regarded as the fund which is sent back home by migrant workers for their family. This includes but not restricted to transfers of income or accumulated wealth by individual or collection of migrants back to their countries of origin,

which is expected by the families of the migrants to improve the standard of living, primarily designed to support their family members or dependents, either for consumption or investment activities (Lim & Simmons, 2015; World Bank, 2014). Over the years, there have been a tremendous increase in remittances even as Kanu and Ozurumba (2013) observed that for many developing countries in the world remittances, turned out and assumed the second position as the largest inflow channel in their economy which have resulted into economic growth, improving the income sources, standard of living of family members which has also encouraged and improved the ability to get sound financial services and products, there by increasing financial inclusion. Owing to the large amounts of funds, foreign remittances are now being considered as a significant contributor to the economic growth and development of a country (Lim & Simmons, 2015). To this end, World Bank (2014) is of the view that remittances inflows significantly support the economic growth of a country through supporting and complimenting consumption, investment activities, and savings also. Furthermore, Giuliano & Ruiz-Arranz (2009) has maintained that remittances enable and help in the development of the financial structure and system of a country with poorly developed financial systems. Since it provides other ways in which liquidity constraints can be reduced and investment can be financed. This is evidenced in the varieties of institutions and mechanisms available in transferring the foreign remittances. International remittances can be transferred or transmitted by formal and informal means. The formal means are vital to the flow of remittances, which follows a well laid down procedures with regulated framework to achieve comprehensive financial inclusion policies or drive of government through assisting, enhancing and increasing access to various financial service and products, in both the originating and receiving economies (Agunias & Newland, 2012; Gupta *et al.*, 2009).

The main players in the formal remittances services providers (RSPs) are the banks Money, Transfer Operators (MTOs), and the new transaction technology (NTT) platforms, which include mobile network operators (MNOs). Also Mohapatra, Ratha & Scheja (2011) support the view that remittances assist in the reduction of panic by investors through providing a creditable, stable secured, constant and important means of foreign exchange which assists in handling of challenges in balance of payments deficits and implementation of projects that are meant for development in the country. For remittance inflow to have any significant impact on the economy, a great proportion of remittance must be used as saving, which in the long run serve or turned into investment by financial intermediaries by providing loanable fund. If a significant proportion of remittances are to be utilized for consumption such as education, transport or health by the benefiting family, this may translate into building

up of the human capital, which can translate into economic increase in the long run. Even in situations where a greater proportion of remittances is expended for consumption, such consumption has the potentials to stirrup the aggregate demand in such an economy, thereby contributing significantly to efficiency, thus promote economic activities which now expressed through significant improvement and increase in productivity, also reducing unemployment in the short run (World Bank, 2014); Wahba(1991) has successfully grouped remittances inflows into four major categories namely; Potential remittances – which is assumed to be money left at the disposal of the migrant worker when expenditure has been made by the migrant in the host country; Fixed remittances – this represents the least amount of funds the migrant worker has to send back home so as to support in meeting the needs and also meet obligations set by the family members. Discretionary remittances – this involves the transferring of funds that is above what has been set as of fixed remittances and; Retained savings – this is regarded as the difference between potential remittances and the remitted funds by the migrant during a stipulated time. However, there may be some social costs that are not put into consideration in evaluating the impacts of remittances, which in many instances reduce work effort and encourage brain drain, on one hand while on the other hand remittances from migrants occupy a very important position in investment in human capital in the migrant's home country which receives the funds by enabling resource constraints to be relaxed (Lim & Simmons, 2015), which may serve as the origin of better health care, quality education and reduction in poverty. In recipient countries, remittance is a core source of an expansion in consumption and investment (Adam & Mahmood 1992), cushion the negative effect of economic instability and shocks on household/individual welfare (Quartey&Blanson,2004),having the potential to compliment foreign exchange reserves and income, thereby reducing current account deficit, enhancing the balance of payment position and reducing dependence on external borrowing which is a primary recipe for economic shock (Iqbal *et al.*, 2003). Just as African Banker (2013) summarily and clearly describe the effect by stating that “currently, significance of remittance in developing countries has become a source of finance and brings about economic growth and development through reducing household poverty and increasing their consumption, complimenting in building investment in both human and physical capital which results in less vulnerability from natural and economic shock”. Lim & Simmons (2015) opined that the developmental effect of international remittances which can be broken down into their impact on investments, consumption, savings, growth, income distribution and poverty at the macro-economic level.

Price Stability

In Nigeria, monetary and price stability is the central objective of the Central Bank of Nigeria. Price stability is a state of low and stable Inflation which has no substantial effect on people's economic condition. Economic agents such as firms, households and government are often worried about the impact of increasing prices because of its costs on their incomes and the general welfare of the people. Such uncontrolled price increases make it difficult for these economic agents to effectively plan and efficiently deploy their resources to achieve their immediate and future goals in the economy. Globally, the core objective of central bank is to keep Inflation low and stable and this is what is referred as the objective of price stability (Ajayi, 2012).

Nigerian Diaspora, Remittances and Contributions to National Development

Recognizing the strategic importance of the Nigerian Diaspora, the Federal Government signed the Nigerians in Diaspora Commission Establishment Bill into law in July 2017. For four consecutive years, official remittances have exceeded Nigeria's oil revenues. Since many transactions are unrecorded or take place through informal channels, the actual amount of remittance flows into the country is arguably higher. In 2018, migrant remittances to Nigeria equaled US\$25 billion, representing 6.1% of GDP. This also represents 14% year-on-year growth from the \$22 billion receipt in 2017. The 2018 figure translates to 83% of the Federal Government budget in 2018 and 11 times the FDI flows in the same period. Nigeria's remittance inflows was also 7 times larger than the net official development assistance (foreign aid) received in 2017 (US\$3.4 billion.) Egypt and Nigeria account for the largest inflows of remittances into Africa in 2018. In 2017, Nigeria led the Continent in terms of remittance receipts but dropped to second place behind Egypt in 2018. There are two main reasons behind this growth. First, global economic growth, especially in high-income OECD countries. The World Bank Migration and Development Brief attributes the rebound experienced in the global remittance industry to economic growth in Europe, the Russian Federation and the United States. Second, there was a rise in oil prices, which boosted economic activities in oil-producing countries worldwide.

However, in recent time, remittances have constituted one of the largest sources of foreign capital inflows to the developing economies as they account for about 27 percent of the gross domestic product (GDP) (Aggarwal *et al.*, 2009; Giuliano & Ruiz-Arranz, 2009; Meyer & Shera, 2017; Rao & Hassan, 2011; Sibindi, 2014). The dramatic increase in the volume of remittances to the developing nations can be attributed to the improved immigration between the developed countries and the developing countries and the technological advancement that has enhanced the

international transfer of payment between individuals at a low cost (Meyer & Shera, 2017).

According to the World Bank (2018), remittances are personal transfers or compensation of workers. Anten (2010), Woodruff (2007); Woodruff & Zenteno (2007); Yang (2008) noted that remittances constitute an important source of savings and capital for investment in health, education, and entrepreneurship thereby enhancing productivity and employment, which culminate into economic growth. Remittances can also help in enhancing the growth of the financial sector on the notion that some of the remittances are converted and deposited with banks thus making the funds available for lending to the private sector and this, in turn; facilitate economic growth (Aggarwal *et al.*, 2009; Misati & Nyamongo, 2011).

Remittances provide support for the welfare of the relatives left behind thus contributing to the eradication of poverty in the recipient country (Adams & Page, 2005; Gupta *et al.*, 2009).

Despite the enormous benefits of remittances on the performance of developing countries, the impact of remittances on economic growth is still ambiguous (Kumar *et al.*, 2018). Some literature noted that remittances exert a positive influence on economic growth (Catrinescu *et al.*, 2009; Jawaid & Raza, 2012; Kumar *et al.*, 2018; Meyer & Shera, 2017; Nyamongo *et al.*, 2012; Pradhan *et al.*, 2008), other strands of literature emphasized on a negative or zero relationship between remittances and growth (Barajas *et al.*, 2009; Chami *et al.*, 2005; Feeny *et al.*, 2014; Lim & Simmons, 2015). The inconclusive debate on the relationship between remittances and economic growth notwithstanding, the literature is more concerned whether the financial development plays a critical role in the remittances led growth relationship (Abida & Sghaier, 2014; Chowdhury, 2016; Kumar *et al.*, 2018; Raheem, 2015; Sibindi, 2014). It is argued that a well-developed and functioning financial sector is fundamental for economic growth because it helps to produce essential information for investments, enhance efficient allocation and utilization of savings, monitor investments, improve trading and diversification, and manage risk (Levine, 2005).

THEORETICAL REVIEW

Theory of Remittance (Altruism Theory)

The motivation for sending money home by immigrants from literature can be broadly be classified into two:- altruism and self – interest, this is modification of the work of Lucas & Stark (1985). These two classifications can be further broken down into: altruism, exchange, insurance, investment, inheritance and strategic motive.

The foremost reason why money is sent home by immigrants is altruism. According to Lopez –

Cordova & Olmedo (2006) it is a situation in which the transfer does not entail any present or future compensation nor does it represent payment for any past debt. Lucas & Stark (1985) posit that the remitter derives utility from the well-being of recipients at home and that the amount of remittance and the income are negatively violated. Those that support this theory include: Clipeta & Kachaka, (2004), which suggest altruistic motive is behind remittance in Malawi. The reasons for altruistic behavior of remitter may be to mitigate against poverty, low incomes, shocks, draught, which affect the well being of the family.

Exchange motive for remittance involvement sending money for services rendered, which may include taking care of the immigrant's children, house, property, repayment of loan borrowed by the immigrant to cover his/her migration cost or education etc.

The study of Cox *et al.*(1998), which surveys household in Peru, found evidence, which is consistent with exchange motive. Another motive for remittance is investment. The migrant may send money for purchase of land, house or financial interest or to start a small business in their own country because they know local market better than their host countries. According to Arranz, (2006), remitted funds are particularly used for investment where the financial sector does not meet the credit needs of local entrepreneurs.

Evidences abound from various studies on use of remittances for investment purpose. The study of Woodruff and Zenteno (2001) in Mexico revealed that about one – fifth of the capital invested in 6,000 micro enterprises in Urban Mexico was financed by remittances. Yang (2008) suggests that households in Philippines that received remittances and benefited from exchange shock spent more hours in self employment and were more likely to start relatively capital intensive entrepreneurial enterprises. The survey of 112 Nigerian migrant households in Chicago and a matched sample of 61 families in Nigeria by Osili (2007) found that a third of remittances were spent on housing investment in the preceding year. She further posits that the migrant's housing investment has a positive impact on macroeconomic condition such as, inflation, the real exchange rate and political stability. Remittance is also employ as a form of insurance. This motive can come in different form, for example migrants and the remitter household members can enter into a contract wherein migrants would insure the remaining household in the event there is a shortfall in their income. Such an arrangement is encouraging because government sponsored social insurance is general poor or non existence Yan and Choi, (2005). Also the rural areas are exposed to risk of crop failure, price fluctuation, insecurity of land tenancy, livestock diseases and inadequate availability of agricultural wages Stark and Levhari, (1982).

Funds sent by migrants assist to keep children in school in Ecuador during financial distress caused by adverse shock Calero, et al (2009). Remittances quicken disaster recovery and reconstruction after a devastating earthquake in Pakistan in 2005.

Migrant remittance may also be motivated by bequest. This theory is confirmed by the study of Schrieder and Knerr (2000) in Cameroon and asserted that the reason, for remittance was to keep sizeable inheritance. In Dominican Republic, De La Briere et al (2002) suggest that remittance is condition on future inheritance.

Review of literature also reveals that one of the motives of remittance is for strategic purpose in the high skilled migrants transfer to low workers to include them to remain at home. This is done to protect their wages against competition from potential migrants Kithe (2009). It is also suggested by Rapoport & Katz (2005) that the motive is possible when migrants are heterogeneous in skill and individual productivity is not perfectly observable on the labour market of host country.

However, as Stark, (1991) points out no general theory of remittances exist however level of remittances depends on the migrant's ability (income-savings) and his motivation to remit savings generated from earnings to home country. Also on the desire/willingness of migrants to remit money depends on the intended duration of migration either temporary on permanent basis as well as the family situation. In the literature there are number of hypothesis formulated as determinants of money remittances such as Pure Altruism, Pure Self Interest, Implicit family agreement (Co-insurance and loan), and Portfolio management decisions.

Pure Altruism

This principle emphasized on how a migrant gives weight to concerned relatives welfare at home country. The migrant derives satisfaction from the welfare/wellbeing of his/her family. Moreover the model assumes number of hypothesis that; Firstly amount of remittances should increase with migrant's income, secondly the amount of remittances should decrease overtime as the attachment of the family weakens.

Pure Self Interest

This is another motive of remitting money back home which emphasized the rationality/self-interest of the migrant. It also predict three hypothesis that firstly a migrant remits money to his/her parent driven his aspirations to inherit from their stock of wealth, secondly the ownership of assets in the home country might motivate migrant to family members to look after those assets and thirdly the intention to return home might promote remittances for procurement of

assets (financial & public) and undertake investment in real estate in a bid to enhance prestige, dignity, self-esteem and political affluence in the local community.

Implicit Co-insurance and loan agreement

This model is based on implicit family decision making which involves an informal mutual agreement. The main aim for principle is risk diversification and investment in the education of young family members. Under the implicit Co-insurance model, the migrant is first considered as an insuree and the family at home funds and finance the initial migration project which is relatively costlier and burdensome for it to be secured alone by the migrant alone, for that reason his family act as his/her support system. In the second phase of the migration project the migrant in turn act as an insurer to the family after securing employment abroad, high earnings and remit money to support his family consumption demands and undertake investments in the home country.

Portfolio Management Decision

This principle is distinctive from the entire hypothesis aforementioned which mainly focused on the individual (microeconomic elements) rather than macroeconomic variables. This model takes into cognizance the macroeconomic factors both in the host and home country that affects remittances. Migrant's savings on earnings might be remitted given the considerations of interest rate, exchange rate, inflation rate and relative rate of returns on different financial and real assets.

In view of these governments of remittance receiving nations used to implement incentives scheme ie premium of exchange rates, foreign exchange deposit with higher returns in order to attract remittances from their members in diaspora.

Structural or Dependence Theory

The structural or dependency theory was theory studied by Todaro (1997) and Chami *et al.* (2005) which assumed that dependency on global political-economic system have been dominated by the industrialized nations. The theory argued that as capitals from the industrialized nations grow, migration was assumed to have negative effect on traditional societies by undermining their economic potential and motivating migration from the less developed to developed countries. According to this theory, brain drain is one of the negative outcome of capitalism on less developed societies. Structural or dependency theory concurs with Marxist and Neo Marxist Theories on the negative impact of migration from least developed to developed countries.

Optimistic and Pessimistic Theory

Proponents of the positive effect contended that international remittance Inflows decrease inequality in the recipient countries Docquier *et al.* (2007). Also

the optimistic argued that international remittance Inflows enable household to relieve budget constraints, and stimulate demand of goods and services, which, in turn, stimulate production and employment (Stark *et al.*, 1986; Taylor & Wyatt, 1996). Moreover, Quibria (1997); Ratha (2003) argued that international remittance flows provide the much needed currency for importing essential inputs that are unavailable in domestic economy. Pessimism about the positive effect of remittance flows has two main arguments. Firstly, remittance flows may generate a level of domestic demand of goods that exceeds the domestic economy's production capacity, and thus may represent a source of higher Inflation Adams & Mahmood (1992), or increasing unemployment, if cheaper goods are imported to expunge the remittance-induced excess demand of goods. Secondly, given the income effect of international remittance flows, recipients of international remittances could afford to work less. Resulting in the decrease in labor supply, which in turn, may somewhat lead to a negative effect of on domestic economic growth. As determinants of gross domestic product (GDP), international remittance Inflows have been extensively studied by economists. However, the most existing works, both empirical and theoretical, either treated them separately Rapoport & Katz (2005); Docquier *et al.* (2007), or when treated jointly e.g., McCormick & Wahba (2000), their economic growth implications are not discussed

Empirical Review

Okodua *et al.* (2015) studied twenty one selected countries of Sub-Sahara Africa (SSA), the study employed the system Generalized Method of Moments (GMM) estimation technique within an extended neo-classical growth model framework on a set of three linear dynamic models in order to evaluate the relationship or the connection between the growth of output and remittances, remittances and domestic investment and remittances and external trade balance (proxied by real external balance). The period in the study spanned from 2000 to 2007. The findings of this study were that, remittances had a significant existing negative impact on output growth, domestic investment and external trade balance; this implied that remittances were not put to productive uses; it crowded out domestic investment and depressed trade balance in these SSA countries.

Minta & Nikoi (2015) analyzed the impact of migrant remittances on socio economic development in Ghana, made use of regression analysis as well as annual time series data for the period 1992 to 2012 with emphasis or focus on growth and poverty. The variables of interest to the study were economic growth (measured by GDP), remittances, HDI, poverty and inflation. The study found remittances and HDI to be positively related to economic growth in Ghana while inflation negatively influenced it. However, remittances did not have a huge impact on the reduction of poverty

in Ghana. The study therefore concluded from its findings that remittances had both positive and negative impact on the growth of Ghana's economy, and as such, migration in Ghana can be said to be a brain gain but not a brain drain.

Bayar (2015) conducted a study on the impact of remittances on the economic growth in the transitional economies of the European Union. The main aim of the study was to appraise the causal relationship between variables like Real GDP per capita growth, personal remittances inflows and net Foreign Direct Investment, for the period 1996 to 2013. The study employed a panel regression and cointegration technique in determining the causality among the variables. A unidirectional relationship was observed from remittances to economic growth at one period lag, and at two and three lags from FDI net inflow to economic growth. Consequently, the level of income growth in these countries can be hugely tied to the net inflows of remittances and FDI.

Beatrice & Samuel (2015) investigated the effect of remittances on economic growth in Kenya from 1993 to 2013, using the Granger causality test and the OLS estimation techniques. The variables included in the model include; population, investment, openness, enrolment, inflation, net export, government consumption and remittances. The study found out that remittances impacted positively on economic growth, and also, a bi-directional causal relationship was established between remittances and economic growth. Apart from secondary enrolment and inflation which were both negatively related with economic growth, others, impacted positively and significantly economic growth.

Qayyum *et al.* (2008) investigated the impact of remittances on economic growth and poverty, spanning the time frame of 1997 to 2007. The study was carried out on Pakistan. The Auto Regressive Distributed Lag (ARDL) approach was employed in analyzing the model comprising of variables such as; real GDP, poverty, investment, HDI, openness and inequality. The study revealed that economic growth and remittances are positively related; investment and HDI positively affected GDP, while openness showed a negative influence. The study concluded therefore, that there existed a significantly strong relationship between remittances with poverty reduction, and economic growth in Pakistan.

Adenutsi (2010) examined the macroeconomic impact of inward international remittances on human-centred development in 15 Sub-Saharan African countries. A fixed-effect balanced panel data estimation technique was adopted, having a time frame; 1987 to 2007. The model included variables such as; remittances, investment, human capital, international trade openness, CPI, government expenditure, and time

dummy. The study found all the variables to positively influence human development within the SSA countries.

Adeyi (2015) in his study on remittances and economic growth in Nigeria and Sri Lanka examined the causal relationship between remittances and economic growth. The study employed the granger causality test under the Vector Auto Regression (VAR) on the time series annual data for 1985 to 2014. The variables included in the study were per capita remittances and per capita GDP. The result showed remittances cause economic growth showing a unidirectional relationship between remittances and economic growth while the results for Sri Lanka, revealed a bi-directional link between remittances and economic growth.

Adarkwa (2015) examined the impact of remittances on economic growth in four West African countries namely: Cameroon, Cape Verde, Nigeria and Senegal over the period 2000-2010. Linear regression was used to estimate the relationship among the variables. The findings of the study demonstrated that the impact of remittances on the GDP of Senegal and Nigeria was positive while for Cameroon and Cape Verde was negative. According to the study, Nigeria benefitted the most.

Adams & Page (2005) examined the impact of international migration and remittances on poverty in emerging economies. They analyzed cross-country data from 71 developing countries using OLS and Instrumental Variables. The findings showed that remittances emanating from the act of migrating abroad can reduce the level of poverty. After instrumentation of possible endogeneity of remittances, it showed that a 10 per cent increase in per capita remittances led to a 3.5 per cent reduction in the number of people living in poverty.

Nyeadi *et al.* (2014) found remittances to be effective in fostering household welfare and health care in developing countries. To determine whether remittances can lead to economic growth, the study set to ascertain what could be the causal relationship between economic growth and remittances could be in the following remittance-receiving countries namely: Nigeria, Senegal and Togo. The study used Granger-causality and co-integration tests under Vector Auto Regression framework for the period of 33 years (1980-2012). The study realized that for Nigeria and Senegal, a unidirectional causal relationship exists implying that remittances led to economic growth but economic growth did not lead to remittances inflow. However, for Togo there was no causal link between remittances and economic growth.

Pradhan & Khan (2015) analyzed the contribution of remittance earnings to the quality of life

in Bangladesh. HDI was used to represent the quality of life. The period under study was from 1981 to 2011 using data for HDI and remittance earnings. The study employed the Vector Error Correction (VEC) model to analyze the desired relation between the variables. The results found a long run causal link from remittances to HDI, meaning that remittance earnings have a long run effect on the quality of life.

Both Taiwo (2007); Englama (2007) in different studies agree that the possibility of remittances leading to economic development for Nigeria depends on the formulation of policies and the development of appropriate structures to channel remittances into productive areas of the economy.

Roberts (2006) used the case of Guyana to study the developmental impact of remittances in Caribbean economies. The study used descriptive research method. The survey conducted revealed that even though quite a sizeable portion of remittances are used for consumption purposes and smaller amounts are used for productive purposes, collectively, these expenditures can lead to the achievement of development in the country.

Chowdhury (2016) used a dynamic panel estimation to investigate the link between financial development, remittances, and growth in 33 developing countries ranked as the top remittance recipients between the period 1979 and 2011. The study noted that while remittances exert a positive influence on growth, the role of financial sector development is insignificant in influencing the remittance-growth nexus. The study concluded that more developed financial systems might woo more remittances; however, the interaction effect of financial development and remittances does not enhance growth.

Meyer & Shera (2017) examined the economic growth effect of remittances in six (6) countries, Bulgaria, Albania, Moldova, Macedonia, Romania, and Bosnia Herzegovina between the period 1999 and 2013 and noted that remittances exert a positive effect on economic growth.

Ramirez (2013) carried a study on both upper and lower economies in 23 Latin America and Caribbean countries. Using a fully modified OLS and Co-integration techniques, the study concluded that remittances have got significant positive impact on both the upper and lower economies. This happens as remittances serve as a substitute for credit in these countries.

In a related studies conducted on SSA by Lartey (2013) using GMM a positive relationship between remittances and the growth was also established. This however happens as remittances are used for consumption.

Both of the above studies carried out on different continents go to confirm an earlier broader study on 39 developing countries in the world by Pradhan *et al.* (2008). In using fixed effect and random effect on standard growth model, they found remittances to impact positively on economic growth in developing countries. Testing this particular phenomenon on country specific, Adenutsi (2011) reported that remittances cause growth in Ghana not only in the short but also in the long run as well.

Driffield & Jonas (2013) in their study also found a positive impact of remittances on economic growth, using three step Least Squares. They however cautioned that this can only happen when institutions are established properly. Again, remittances is noted to promote economic growth in less financially advanced economies by serving as alternative source of finance for development to supplement the credit market (Giuliano & Ruiz-Arranz, 2009).

On the contrary, Roa and Takirna (2010) reported that aid and remittances have negative effect on output in receiving countries which serves as a confirmation of a previous study which realized that remittance flows is significantly negative to economic growth (Chami *et al.*, 2005). Another study undertaken later on ECOWAS countries by Koyameh-Marsh (2012) found that remittances do not lead to economic growth in all the ten ECOWAS countries studied. He also realized that in Benin, the remittance reduce output of labour. These go to confirm an earlier study which discovered that there is no significant link between remittances and growth (Spatafora, 2005).

Brown and Heaves (2011) studied two countries with differences in their level of advancement in migrant remittances using two steps least squares and three steps least squares estimators with the two countries (Fiji and Tonga). They reported a positive relationship in the country which is more advanced in migrant remittances while realizing no relationship to the country with early state of receiving remittances. Similar findings were established by Feeny *et al.* (2014). Using the dynamic panel data estimators (GMM) on 25 small island developing countries, they realized a positive impact on growth in all the islands except those of the Latin America Caribbean islands.

Using the Granger-Causality test under the VAR technique, Siddique *et al.* (2011) studied the direction of causality between remittances and the growth of three Asian countries namely India, Bangladesh and Sri Lanka. They had three findings for the study. In Bangladesh, remittance causes growth while economic growth does not cause remittances flow into the country. In India there is no causality between the variables while in Sri Lanka a bi-directional causality was found where each variable causes the other. Closely related is another study by Jawaid & Raza (2012) on Korea and China using sensitivity

analysis together with the Granger causality on 29 year period time series data. They reported a unidirectional relationship in both countries. In Korea, there was long run positive relationship between the variables caused by the remittances while in China remittances lead to negative impact on growth with no causality from economic growth.

Nyamongo *et al.* (2012) conducted a panel study of 36 African countries and found that remittances were a leading source of capital that drove growth. The authors further explained that their instability had a negative effect, while the inflow itself set a positive effect on financial development that helped in promoting growth. Bettin & Zazzaro (2012); Kumar (2013); Imai *et al.* (2014) find similar evidence in their empirical work.

Vargas-Silva *et al.* (2009) in 20 Asian countries, Jongwanich (2007) in developing Asia and the Pacific countries, Gupta *et al.* (2009) in Sub-Saharan Africa find that remittances have a positive impact on the financial system and institutions that lead towards the economic growth in the recipient economy.

Sobiech (2015) examined the remittance growth relationship with a mixed panel of both developed and developing economies and concluded that remittances had a positive impact on growth in the early stages of financial development. Despite the evidence mentioned above, Ziesemer (2012) argues that the results may vary across different economies. Few other studies came out with different results; for example, Chami *et al.* (2005) concluded in their study, covering 113 countries, that remittances hurt growth. The higher inflow of remittances increases the demand for local currency and stimulates spending; this uplifts the exchange rate and competitiveness through a decline in the labor supply of the recipient economy, thus affecting growth (Bussolo & Medvedev, 2007).

Likewise, Adolfo *et al.* (2009) and Ahmed (2010) draw similar conclusions. On the contrary, IMF (2005) did not find empirical linkages among remittances, per capita output growth and investment rate in an analysis conducted for 101 developing countries.

According to the World Bank (2006), in a sound policy environment with higher levels of human capital and strong institutions, remittances may be more efficient in driving investments and boosting growth. In particular, the flow of remittances is growing significantly due to favorable government policies that enhance the processes related to money transfer, that ease access to banking, lower transfer costs, temper concerns about terrorist financing and money laundering and expand the network of service providers in the remittance market. In a panel study of 79 developing countries for the 1995-2005 periods,

Bjuggen *et al.* (2008) studied the effect of remittances on investments using a dynamic panel data approach. The outcomes reveal that the marginal effect of remittances decreases in the presence of a developed credit market and an improved institutional framework.

Ahoure & Abidjan (2008) studied the role of governance in a remittances-investment relationship in Africa over a period from 2002 to 2006. The results show that remittances have a negative impact on investment when controlled by governance. The author further argues that countries with the right governance approach may reduce this adverse effect.

Sibindi (2014) studied the causal relationship among remittances, financial development and economic growth in Lesotho for the period of 1975 to 2010. Per capita remittances, real per capita, broad money supply and real per capital gross domestic product as the proxies for remittances, financial development and economic growth respectively. Johansen procedure was employed to test for co-integration among the variables and Granger causality test was based on vector error correction model (VECM). The results suggested that remittances cause economic growth without feedback and financial development causes remittances without feedback.

On the other hand, Sobiech (2015) studied the importance of remittances and financial development for 54 developing countries using a panel data for 1970–2010. The study estimated a financial sector development index and uses it to determine the relevance of finance as a transmission channel for remittances to affect economic growth. The index brings together information from existing measures reflecting sizes, depth and efficiency of the financial sector. The Panel Generalized Method of Moments (GMM) used showed a negative effects of remittances on economic growth of the sampled countries.

Agbélénko & Kibet (2015) examined the relationship between financial development and economic growth in West African Economic and Monetary Union (WAEMU) for the period 1981 to 2010. General Moment method (GMM) was used and a positively and statistically significant effect of financial development on economic growth was established. The causality between the two is also bi-directional, thereby supporting both supply-leading and demand-following hypotheses.

In examining the association between remittances received and how they affect the availability of credit to private sector, bank deposits intermediated by financial institutions and money supply, Karikari *et al.* (2016) explored the traceable causality between remittances and financial developments in some countries in Africa. A panel data on remittance flows to 50 developing countries in

Africa from 1990 to 2011 were used. The study used fixed effects and random effect estimations as well as Vector Error Correction Model method on the panel data. The findings generally indicated that remittances positively and significantly influence financial development.

According to Ulyses Balderas & Nath (2008), remittances may have an effect on Inflation through their direct and indirect effect on aggregate demand. Applying autoregressive techniques, Khan and Islam, (2013) find that in Bangladesh, a one percent increase in remittances Inflows lead to an increase in Inflation rate by 2.48 percent in the long run. However, in the short run, no significant relationship exists between these variables. A study by Durand *et al.* (1996) finds that about three quarters of reported remittances to Mexico are spent on consumption and this in turn, affects Inflation rate. Again, using panel dynamic estimator Arellano & Bond (1991); Arellano & Bover (1995) find that remittances cause an increase in Inflation in developing countries and the effect is more pronounced in the long run. Similarly, studies by Amuendo-Dornates and Pozo (2004); Moline & Bussolo (2007); Narayan *et al.* (2011) show that increase in remittances leads to an increase in Inflation rate.

Ball *et al.* (2013) used a theoretical model and panel vector autoregression techniques to test the same effect using yearly as well as quarterly data for 21 emerging countries. Their theoretical model predicts that remittances temporarily increase domestic money supply and Inflation under a fixed exchange rate regime while temporarily generate no change in the money supply, decrease Inflation and appreciate the real exchange rate under a flexible exchange rate regime. However, Reinhart & Rogoff (2004) show that, the resulting effect of remittance Inflows will be a rising price level and an appreciation of the exchange rate under a flexible exchange rate regime.

Oduonye & Emerole (2015) investigated the impact of international remittances on the Nigerian economy. The recent global surge in remittance flows and the twin consequences of migration and remittances on economic development have become contemporary topical issues. Thus the need to obtain evidence based information to drive policy formulation on the impact of remittances on the Nigerian economy. Following the behavioural pattern of the variables, we adopted Autoregressive Distributed Lagged model (ARDL) due to Pesaran & Shin (1999) in the study. The result of the Auto Regressive Distributed Lagged (ARDL) model showed that international remittance Inflow has positive and significant impact on the Nigerian economy. It further showed that there is a long run relationship between international remittances and the Nigerian economy. The ADF test suggested that the series in the model are random walk processes in their level form.

The CUSUM and CUSUMSQ tests showed evidence of long run stability of the parameters of the model.

Samuel & Stephen (2018) investigated if there is significant causal relationship between international remittance Inflows and the growth of domestic economy in Nigeria and to compare the Influence of oversea-development assistance and international remittance Inflows to the growth of domestic product in Nigeria. In the model specified, real gross domestic product (RGDP) is a function of the growth international remittance Inflows (IRIGWT), oversea-development assistance, (ODAGNI), balance of trade (BOT), and Inflation (CPIL). The study used co-integration, vector error correction mechanism and granger causality for estimation of specified models. The results of estimation depict a negative significant relationship between IRIGWT and RGDP. Also ODAGNI has positive significant correlation with RGDP, BOT has positive significant relationship while CPIL exhibit positive insignificant relation with RGDP. Granger causality results report that causality exist between IRIGWT and RGDP. The study recommends that Federal Government of Nigeria should adopt strict policy measures to regulate remittances and also to encourage international remittances passing through official channel by reducing the cost of remittances.

Abdul-Mumuni & Quaidoo (2015) empirically examines the effect of international remittances on Inflation in Ghana from 1979 to 2013 by incorporating international remittances as an exogenous variable to the standard Inflation function. Applying the bounds testing approach, the empirical results indicate that international remittances have a significant effect on Inflation in the long-run. However, in the short-run, no significant relationship is evident between these two variables. The study recommends that in order to reduce the effect of international remittances on Inflation rate and increase the impact on growth, the government should improve public infrastructure. By this, excessive transfer fees would reduce and these remittances could be channeled into more productive sectors rather than being used mainly for consumption purposes.

Le Thanh *et al.* (2015) applied such econometrics methods as Ordinary Least Squares (OLS), Two-Stage Least Squares (2-SLS), Panel Generalized Method of Moments (PGMM) and panel Granger causality to investigate this impact. Annual data for the period 1985 – 2013 of 32 developing countries in Asian and the Pacific is used in this study. The results found that remittance Inflows significantly increase Inflation during the research period and there exists a one-way Granger causality from remittances to Inflation.

Rao & Hassan (2011) lend credence to this assertion by emphasizing that remittances could have an indirect effect on economic growth through investment

and financial sector development. Whether remittances exert influence on economic growth through the development of the financial sector remains unclear in the literature (Chowdhury, 2016). Using the system generalized method of moments (SGMM) regression, Giuliano and Ruiz-Arranz (2009) studied the link between remittances, financial development and economic growth in 100 developing countries. The result showed that remittances exert a positive and significant influence on economic growth in nations where the financial sector is less developed by providing an alternate means to funding investment and assisting in overcoming liquidity challenges. Contrary to the study by Giuliano & Ruiz-Arranz (2009), Bettin & Zazzaro (2012) employed OLS and SGMM methods of estimation to analyze the growth effect of remittances and financial development in 66 developing countries between 1970 and 2005. The outcome of the study revealed that remittances and bank efficiency have a complementarities effect on economic growth. This implies that remittances only facilitate economic growth in countries with a well-functioning bank and does not promote growth in countries with bank inefficiency.

Sibindi (2014) investigated the tripartite relationship between the remittances, financial sector development and economic growth in Lesotho between the period 1975-2010 applying the vector error correction model (VECM) and Granger causality. The study noted a one-directional causality running from remittances to economic growth. The outcome of the study also lends credence to the supply leading growth hypothesis by noting a unidirectional causality of financial development on growth.

Nyamongo *et al.* (2012) in their tripartite study of remittances, financial development, and economic growth in 36 countries between 1980 and 2009 used panel econometric framework and noted that remittances exert a significant and positive effect on economic growth; however, the study found that the economic growth effect of financial development is weak, that is the development of the financial system has not culminated into economic growth in those countries studied.

In analyzing the link between financial development and economic growth Mundaca (2009) employed a dataset of 39 Latin American and Caribbean nations between the period 1970 and 2002, and found that there exists a complementarity between remittances and financial development in facilitating economic growth.

Chowdhury (2016) used a dynamic panel estimation to investigate the link between financial development, remittances, and growth in 33 developing countries ranked as the top remittance recipients between the period 1979 and 2011. The study noted that

while remittances exert a positive influence on growth, the role of financial sector development is insignificant in influencing the remittance-growth nexus. The study concluded that more developed financial systems might woo more remittances; however, the interaction effect of financial development and remittances does not enhance growth.

Meyer & Shera (2017) examined the economic growth effect of remittances in six (6) countries, Bulgaria, Albania, Moldova, Macedonia, Romania, and Bosnia Herzegovina between the period 1999 and 2013 and noted that remittances exert a positive effect on economic growth.

Ayomitunde Aderemi (2019) in his study between exchange rate volatility and foreign capital inflows remittances inclusive in Nigeria using VAR found that FDI and exchange rate significantly related while remittance and exchange rate insignificantly positively related.

Osigwe & Madichie (2015) examined the cointegration and granger causality between M2 (Money supply), remittance and exchange rate. The result obtained indicated the presence of cointegration, neutrality between M2 and remittance and unidirectional relationship between exchange and remittance.

Osigwe & Obi (2016) conducted a research to model impact of remittances on real exchange in Nigeria founds that remittance, openness, nominal exchange rate, terms of trade, RGDP growth positively impacted on RER While on the contrary government expenditure negatively affect RER.

Ogboi & Ezike, (2017), examine the trend of household inward remittances and banking sector development in Nigeria; (ii) analyse the effect of inward remittances on banking sector development in Nigeria. Annual time series data were sourced from World Development Indicators (WDI) (2015) edition of the World Bank for the period 1977 – 2014. We employed both descriptive statistics in the form of graph and Generalized Method Moment instrumental variables (GMM-IV) estimator to examine the inward remittances - banking sector development nexus Nigeria. Results show that inward remittances have positive but statistically insignificant effect on banking sector development in Nigeria ($\beta = 0.0727$; $t = 0.5165$). It is therefore recommended amongst others, that Nigerian banks develop remittance-linked financial products for Nigerians in Diaspora and remittance recipient households instead of treating remittance as a one-off transaction without value addition.

In a country-specific study, Hien (2017) examined the impact of remittance on Malaysia's trade balance from 1990 to 2015. The study employed the

OLS technique and results show that remittance influence trade balance positively and thus concluded that Malaysia did not face a symptom of Dutch disease impacted by remittance.

Ahmad, (2019), examined the impact of migrant inward remittances flow on exchange rate stability for the period 1990-2018. In an attempt to realize the major objectives of the study various writers' works on relevant topics were exhaustively reviewed. The study utilizes annual time series data for its analysis and data on Exchange rate Remittances inflow as percentage of GDP, FDI and Oil price were collected for the period under review. Autoregressive distributed lag (ARDL) model approach was applied to estimate long run and short run relationship among the aforementioned variables. Both the short run and long run levels result seems to be consistent with each other that migrant inward remittances is positively and significantly related to exchange rate meaning it leads to depreciation of Naira while FDI and oil prices found to appreciate the value of the Naira. The error correction model of the analysis is correctly sign and significant with 84% speed of adjustment per annum.

John *et al.* (2020) examined, migrant inward remittances and its effect on economic growth in Nigeria. It sought to assess the signification of migrant inward remittances, and to suggest measures that could enhance its effectiveness and economic growth in Nigeria. To achieve the objective of the research, some macroeconomic indicators in the Nigerian economy were evaluated using an ex-post facto research design. The data were collected, analysed and tested using the Ordinary Least Square (OLS) multiple. From the analysis, it was revealed that there was a significant relationship between total migrant inward remittances and gross domestic product in Nigeria. Furthermore, workers remittance was found to have an insignificant effect on gross domestic product in Nigeria. Based on the findings, the study recommended that total remittance distribution should always be backed by predictable, sound, and proportionate regulatory framework, in order to stimulate the participation of reputable international financial organizations via risk management practices and good governance. Also, the government of Nigeria should work towards creating a conducive environment that will attract international remittances. Thus, the establishment of migrant office in the Federal and State Ministry of Foreign Affairs, with branches nation-wide, will be a good step in the right direction in boosting workers remittance.

Oteng-Abayie, Awuni and Adjei (2020), examined the effect of inward remittances on economic growth in Ghana. The ARDL estimation technique is used to test for the relationship between remittances and economic growth, using annual data from 1970 to 2016. The traditional Granger causality test was also applied to explore the direction of causality between

remittances and economic growth. The results revealed that remittances had a negative long-run effect on growth and a positive effect on economic growth in the short-run. The study found no granger causality between economic growth and remittances in Ghana for the period of the study. FDI, which appears to have a relatively stronger appeal to support economic growth in Ghana, must be focused on. Sound economic and political institutions will be needed to ensure that the economy benefits fully from inward remittances by directing them from consumption to savings avenues and investment opportunities.

Literature Gap

There is obviously a dearth of empirical studies on how international remittances impact on price stability in Nigeria. The price stability effect of international remittances needs further verifications not only on cross-country settings, but also on country-specific setting, given the growing intellectual debates on the topic. For a country like Nigeria which is the largest remittance-recipient country in Sub-Sahara Africa in the face of persistent price instability and high rate of inflation, a study of this nature is very timely. In terms of methodology, the previous studies seem to have totally ignored the possibility of capturing the long run and short run dynamics within the sampled period as their methods did not account for that. We are not oblivious to the possibility of this time series phenomenon given the series of institutional, structural and political changes that have taken place in Nigeria within the period under review. The study fills the above gap and contributes to knowledge by using Auto Regressive Distributed Lag (ARDL) in analyzing the effect of international remittance on price stability in Nigeria. Further more, this study adopts Abdul-Mumuni & Quaidoo (2015) model in analyzing international remittances impact on price stability in Nigeria.

RESEARCH METHODOLOGY

Research Design

The research design adopted in this study is expo factor research design. This is ideal for conducting social research when it is not possible or acceptable to manipulate the characteristics of human participant. It is a substitute for true experimental research and can be used to test hypotheses about cause and effect or correlational relationships, where it is not practical or ethical to apply a true experimental design. Expo factor design uses data already collected, but not necessarily amassed research purpose.

Model Specification

This study adopts Abdul-Mumuni & Quaidoo (2015) model in analyzing international remittances impact on price stability in Nigeria. Abdul-Mumuni & Quaidoo (2015) empirically examines the effect of international remittances on Inflation in Ghana from 1979 to 2013 by incorporating international remittances as an exogenous variable to the standard Inflation

function. However, in modifying the model, we introduced Consumer Price Index, and trade openness to the model.

Our model is a linear one of the form:

$$CPI = f(X_i) \dots \dots \dots (1)$$

Where; CPI=Consumer price index

Xi = set of chosen explanatory variables.

The chosen variables are reflected in the model as

$$CPI = f(IRE, TOP, EXR) \dots \dots \dots (2)$$

Where,

CPI= consumer price index (proxy for price stability)

IRE = International remittance flow

TOP= Trade openness (Proxy for economic integration)

EXR = exchange rate

The mathematical form of the model

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + U \dots \dots \dots (3)$$

Further, the work set out to present an

Autoregressive Distributed Lag (ARDL) model. The

ARDL model is stated as:

$$CPI_t = \alpha_0 + \sum_{i=1}^p \gamma_i IRE_{t-i} + \sum_{i=0}^p \beta_i TOP_{t-i} + \sum_{i=0}^p \beta_i EXR_{t-i} + \mu_{it} \dots \dots \dots (4)$$

In order to obtain the co-integrating equation, equation 4 is transformed into 5 as follows:

$$\Delta CPI_t = \alpha_0 + \sum_{i=1}^p \gamma_i \Delta IRE_{t-i} + \sum_{i=0}^p \beta_i \Delta TOP_{t-i} + \sum_{i=0}^p \beta_i \Delta EXR_{t-i} + \phi ECT + \mu_{it} \dots (5)$$

Where $ECT_t = Y_t - \alpha_0 - \sum_{i=1}^p \gamma_i \Delta Y_{t-i} - \sum_{i=0}^p \beta_i \Delta X_{t-i}$ and

$$\phi = 1 - \sum_{i=1}^p \gamma_i \Delta Y_{t-i} \dots \dots \dots (6)$$

The Bound test procedure used equations 4 and 5 into 7 as:

$$\Delta Y_t = - \sum_{i=1}^{p-1} \gamma_i Y_{t-i} + \sum_{i=0}^p \beta_i \Delta X_{t-i} - \rho Y_{t-1} - \alpha - \sum_{i=0}^p \delta X_{t-i} + \mu_{it} \dots \dots \dots (7)$$

Then we test the existence of level relationship as $\rho = 0$ and $\delta_1 = \delta_2 = \dots = \delta_k = 0$

Where, Δ = difference operator, μ = white noise error term.

Diagnostic Test of the Model

Diagnostic test of the model were carried out using, unit root test, co integration, error correction, coefficient of multiple determination, R² analysis of variance and Durbin Watson statistics

Unit Root Test

To fully explore the data generating process, we first examined the time series properties of model variables using the Augmented Dickey- Fuller test.

The ADF test regression equations with constant are:

$$\Delta Y_T = \alpha_0 + \alpha_1 Y_{T-1} + \sum_{j=1}^k a_j \Delta Y_{T-1} + \epsilon_T \dots$$

Where Δ is the first difference operator ϵ_T is random error term that is iid k = no of lagged differences Y = the variable. The unit root test is then carried out under the null hypothesis $\alpha = 0$ against the alternative hypothesis of $\alpha < 0$. Once a value for the test statistics $ADF_T = \frac{\hat{\alpha}}{SE(\alpha)} \dots \dots \dots (9)$ is

computed we shall compare it with the relevant critical value for the Dickey-Fuller Test. If the test statistic is greater (in absolute value) than the critical value at 5% or 1% level of significance, then the null hypothesis of $\alpha = 0$ is rejected and no unit root is present. If the variables are non-stationary at level form and integrated of the same order, this implies evidence of co-integration in the model.

Test of Significance

The significance test were tested at 5% level of significance using the coefficients of the independent variables and following the Rule: Reject the Null hypothesis if the t-prob is less than 0.05, otherwise accept the Null hypothesis when t-prob is greater than 0.05 i.e. Reject if t-prob < 0.05, Accept if t-prob > 0.05

Test of Hypothesis

The Hypotheses were tested using the probability of t-statistics: Reject the Null hypothesis if the probability of t-statistics is less than the critical value (0.05), otherwise accept the Null hypothesis when critical value (0.05) exceeds probability of t-statistics.

Data Source

The data to be used in this study shall be obtained from Central Bank of Nigeria (CBN) statistical bulletin 2019 and World Bank development indicator 2019.

DATA PRESENTATION AND ANALYSIS

Data Presentation

The data on variables used in the study is detailed in table 4.1, marked, “Dataset on Consumer price index (%), International remittance to Nigeria in (\$) logged values of international remittance, Economic integration proxied by trade openness (%) and exchange rate(%)”.

Data Analysis

The estimates from the analysis (ADF, regression, test of co-integration) carried out using E-views 9 software are presented thus:

Unit Root Test

A unit root test (ADF) was conducted to ascertain whether the variables in the model are stationary. This is necessary as it helps to avoid spurious regression results. The summary of Unit Root Tests (ADF) results using E-views software is detailed in the table below:

Table 1. Summary of ADF test results at 5% critical value

VARIABLE	ADF TEST STATISTICS	CRITICAL VALUE 5%	ORDER OF INTEGRATION	DECISION RULE
CPI	-4.7737	-2.9434	I~ (0)	Reject Ho
LOG_REM	-6.4275	-2.9411	I~ (1)	Reject Ho
TOP	-8.2729	-2.9411	I~ (1)	Reject Ho
EXR	-5.1185	-2.9411	I~ (1)	Reject Ho

Source: Authors computation 2021

From table 1 above, observe that the endogenous variable CPI is integrated of order zero (I ~ (0)) as it is stationary at level form; LOG_REM, TOP, and EXR were not stationary at level form but became stationary after first difference which implies that the variables (LOG_REM, TOP, EXR) were integrated of order one (I ~ (1)). The decision is based on the fact the ADF statistics that is greater than the

ADF critical values at 5%, we reject H_0 and conclude that the variable is stationary.

Since the variables are integrated of order one and zero and none of the variables is integrated of order two. We therefore, apply the ARDL bound co-integration test.

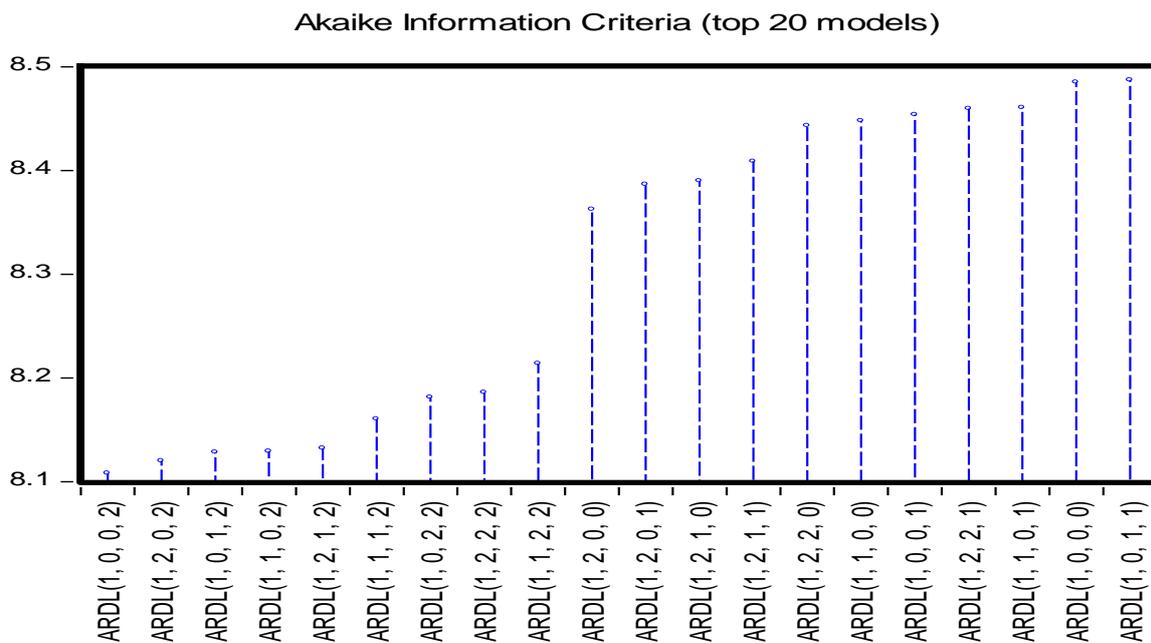


Figure 1: ARDL Optimum Lag Length Selection for the Model

After twenty (20) models automatically generated, ARDL (1,0.1.1) models were chosen based on Akaike information criteria for the model.

ARDL Bound Co-integration Test

A necessary condition for testing for ARDL bound co-integrating test is that each of the variables be integrated of either of order one or zero or both (Pesaran *et al.*, 2001). Since all the variables are

integrated of order one and zero, we proceeded to estimate the ARDL bound test. The null hypothesis of ARDL bound co-integration is that the variables are not cointegrated as against the alternative that they are cointegrated. The decision rule is to reject the null hypothesis if the F-statistics is greater than the upper bound critical values at chosen level of significance. The result of the ARDL co-integration test for the first and second objectives is shown in table 2 below.

Table 2. ARDL Bound Co-integration (5% critical value) Test Result for the Model

Model	F-Statistics	K	Significance level	Critical Bound Value	
				10 (Lower Bound)	11 (Upper Bound)
1	143.5040	3	5%	2.79	3.67

Source: Author’s Computation 2021

From table 2 the F-statistics for the model is 143.5040 and is greater than the upper (I1) bound of

3.67 at 5% level of significance. Thus, we reject the null hypothesis and conclude that there is presence of co-integration in the model. This implies that there is a

long run relationship between International remittance and price stability in Nigeria. Since there is a long run relationship we therefore estimate the short run and long run ARDL regression models and the results are presented in tables 4.4 and 4.5 below respectively:

Test And Interpretation Of Short Run Relationship

Having ascertained that there exist a co-integrating relationship between international remittance and price stability in Nigeria, the short run relationship needs to be ascertained.

Table 3. Summary of Parsimonious Short Run Relationship Result between International remittance and price stability in Nigeria

ARDL Model (1.0.1.1)

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CoIntEq(-1)*	0.076371	0.002697	28.31844	0.0000

Source: Author’s Computation 2021.

From table 3 above the co-integrating coefficient possessed positive value of 0.076371, entailing that there is no presence of short run relationship in the model; implying that there is no short run relationship between international remittance and price stability in Nigeria.

Interpretation of Long Run Coefficient

It’s imperative to examine the implications of the long run relationship that exists between international remittance and price stability in Nigeria. The ARDL long run coefficient test will be employed, as shown in the table below:

Table 4. Summary of Long Run Relationship between International Remittance and Price Stability in Nigeria Result

Levels Equation

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_REM	9.541591	4.306539	2.215605	0.0335
TOP	-0.711676	0.512944	-1.387434	0.1743
EXR	-0.662748	0.344448	-1.924088	0.0627
C	-146.0089	67.35972	-2.167600	0.0373

Source: Author’s Computation 2021

INTERPRETATION OF LONG RUN ARDL RESULT

$$CPI = -146.0089 + 9.5416LOG_REMM - 0.7166TOP - 0.6627EXR$$

The long run coefficient from table 4 above shows that the joint impact of all exogenous variables (LOG_REM, TOP, EXR) on the endogenous variable will amount to -146.0089units; this is on the basis that they are all held at constant. In other word if all the exogenous variables are held at constant it will amount to -146.0089unit contribution to consumer price index (CPI).

International remittance (LOG_REM)

International remittance as proxied by personal remittance received possessed a positive long run coefficient value of 9.5416; this implies that it shares a positive relationship with consumer price index in Nigeria on the long run. This means that in the long run, if international remittances to Nigeria increase by 1 unit, the price index in Nigeria (CPI) will change by 9.5416 units. The significance test reveals that the LOG_REM impact on CPI was every much significant.

Economic Integration (TOP)

Economic integration as proxied by value of international trade as a percentage of GDP (trade openness) possessed a negative long run coefficient, having values -0.7166; entailing that if TOP shares an inverse long run relationship with consumer price index. As a unit increase in TOP will result to a decrease in the price index of Nigeria. However Judging by the result of probability of t-test, TOP was found to be insignificant.

Exchange rate (EXR)

The coefficient of Exchange rate (EXR) was negative suggesting that on the long run, exchange rate shares a negative relationship with consumer price index in Nigeria. Hence if the exchange rate between the naira and dollar increase by a unit, it will cause CPI to fall by 0.6627 units. The significance test as well shows that Exchange rates impact on price stability was insignificant.

Diagnostic Test**Table 5.** Diagnostic Test Table

Diagnostic Test	Result	Decision
Adj. Coefficient of determination (R^2)	0.9954 =99.54%	Strong fitness
F-statistics Prob. (F-stat)	=8760.00 =0.0000	Model is significant

Source: Author's computation 2021

Coefficient of Determination

The coefficient of determination from table 5, showed that adjusted R-squared was 0.9954. This shows that the Explanatory variable could explain up to 99.54% of the total variation in the model. In other words, variations in LOG_REM, TOP, and EXR could explain 99.54% of the variations in price stability (CPI). This further shows a good explanatory power of the model.

Overall Test of Significance

The F-stat as shown in table 5, was 8760.00, with probabilities of 0.0000, entailing that international remittance possesses a joint significance with price stability in Nigeria. Hence for the period under study, they both have significantly impacted on price stability in Nigeria.

TEST OF HYPOTHESES**Individual Test**

The individual test was carried out to test for individual significance of the independent variables on the dependent variable at 5% level using t-probability, t-statistic and the coefficients of the independent variables, shown in table 4 the rule applied was:

If t-probability is greater than the prescribed level of 5% or 0.05, accept the null hypothesis, otherwise reject the null hypothesis when t-probability is less than 0.05.

Hypothesis 1

Ho₁: international remittance flow has no significant impact on price stability in Nigeria

Conclusion

From table 4 above (ARDL long run coefficient result), the probability of t-stat of parameter (LOG_REM) was 0.0335, and less than 0.05 critical values. Thus we reject the null hypothesis and conclude that international remittance flow has a significant impact on price stability in Nigeria.

Hypothesis 2

Ho₂: economic integration has no significant impact on price stability in Nigeria

Conclusion

From table 4 above (ARDL result), the probability value for economic integration (TOP) is

0.1743 and greater than 0.05. Thus we accept the null hypothesis and conclude that economic integration has no significant impact on price stability in Nigeria

Hypothesis 3

Ho₃: exchange rate has no significant impact on price stability in Nigeria

Conclusion

From table 4 above (ARDL result), the probability value for exchange rate (EXR) is 0.0627 and greater than 0.05. Thus we accept the null hypothesis and conclude that exchange rate has no significant impact on price stability in Nigeria.

DISCUSSION OF FINDINGS

This study seeks to examine international remittance and price stability in Nigeria for a 40 year period, viz; (1980-2019), the findings from this research are as follows:

The Stationarity of the time series data was ascertained by using the Augmented Dickey fuller Unit root test at 5% critical value, the result showed that consumer price index (CPI), was found to possess stationarity at level, showing an integrating order of zero [I~(0)]. While international remittance (LOG_REM), exchange rate (EXR) and trade openness (TOP) were stationary after first differencing, indicating an integration order of one [I~(1)]. Subsequently the ARDL test was conducted to test the dynamics of the model. The ARDL co-integration bound test result showed that F-stat was 143.5040, and exceeded the lower and upper bound test which were 2.79 and 3.67 respectively, entailing at 5% critical value, that there was presence of co-integration implying that there is a long run relationship between international remittance and price stability in Nigeria. There was no existence of short run relationship between international remittance and price stability in Nigeria.

The long run findings showed that international remittance as proxied by personal remittance received had a positive and significant long run relationship with consumer price index. This entails that personal remittance sent from abroad to Nigeria, has resulted in a significant impact on price stability in Nigeria. The coefficient reviewing that remittance inflow increases Nigeria's consumer price index by 9.54156 unit as it changes by a unit. While trade

openness and exchange rate share an inverse and insignificant long run relationship with consumer price index, with a reduction of CPI by -0.71661 and 0.6627 units as they increase by a unit respectively.

Diagnostic test were employed, and it showed that the model possessed strong goodness of fit, with adjusted-R² amounting to 99.54%. The F-stat was 8760.00 and its probability was 0.0000 showing that international remittance shares a significant relationship with price stability in Nigeria.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

Summary of Findings

The research's objective was to examine international remittance and price stability Nigeria for a 39 year period, viz (1980-2019). Time series data from CBN statistical bulletin (2019) was employed to help achieve the objective. The following summarizes the findings of the research:

- The ADF unit root test was employed to ascertain the stationarity of the variables, with findings showing that consumer price index (CPI), was found to possess stationarity at level, showing an integrating order of zero [I~(0)]. While international remittance (LOG_REM), exchange rate (EXR) and trade openness (TOP) were stationary after first differencing, indicating an integration order of one [I~(1)].
- The ARDL test revealed that there is a long run relationship between international remittance and price stability in Nigeria. There was no existence of short run relationship between international remittance and price stability in Nigeria.
- The long run findings showed that international remittance as proxied by personal remittance received had a positive and significant long run relationship with consumer price index.
- The long run findings showed that trade openness had a negative and insignificant long run relationship with consumer price index.
- The long run findings showed that exchange rate had a negative and insignificant long run relationship with consumer price index.

Conclusion

The research seeks to examine international remittances, and price stability in Nigeria. To this effect, time series data for 39 years (1980-2019) such as consumer price index, international remittance flow, trade openness, and exchange rate was employed from CBN bulletin (2019) and World Bank development

indicators (2019). The findings showed that International remittance flow will increase the general price level in the economy, both on the short and long run. Trade openness will reduce the general price level on the short and long run. While exchange rate will increase the general price level on the short run, but will start reducing the inflationary pressures of the economy on the long run. The study therefore concludes that international remittance affects price stability in Nigeria.

Recommendation

The findings from this study raise the following policy issues and recommendations:

- Remittances from abroad, bulk of the time aren't utilized for productive means, they are rather used to increase household consumption, thereby resulting to a slight increase in inflation and the price index in the economy, therefore policy makers should be implement a policy, that directs a large chunk of this inflow into the productive sector.
- The government should encourage economic integration and liberalization that will reduce the general rice level, hence minimizing the volatility of inflation in Nigeria.
- The exchange rate flows in the same line as international remittances as it forms a huge base of Nigeria's foreign exchange earnings. Thus this should be properly utilized to better grow the economy, and help achieve price stability.

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