

Effects of Remittance Inflows on Economic Growth of Nigeria

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Abstract

This study investigates the impacts of remittance inflows on the economic growth of Nigeria. We employed remittance inflows, and some other traditional sources of economic growth, such as Gross Capital Formation, Foreign Direct Investment, openness and foreign exchange rate to evaluate the influence of remittance inflows on economic growth of Nigeria. Co integration and causality tests were deployed to analysis the data collected, the result of our study revealed that there are long run equilibrium relationship among the variables that were employed. Furthermore, the causality test shows a uni-direction causality from Gross Domestic Product to Remittance Inflows Gross, Capital Formation to Remittances, and Remittance Inflows to Openness.

Keywords: Remittance inflows, Economic growth, Cointegration.

1. Introduction

Remittance is a new phenomenon in the global financial system because of its seize and impact on the world economic system. Data from (World Bank, 2011) indicates that global remittance is \$440.1 billion dollar in 2011 and remittance is 0.31% of global GDP in 2009. The impact of remittance on economy system is more profound in developing countries because, they receive \$307.1 billion of the total \$416 billion inward remittances, which is about 74 percent. Remittance is also 27 percent of the GDP of developing countries.

Because of these, academicians around the world have shown keen interest through investigation of various aspects of remittances. For examples, studies have been conducted on the motivation for remittance, cost of remittance, the effect of remittance on inequality and poverty, the impact of remittance on economic growth etc.

For Nigeria, data from World Bank revealed that total remittance in 2011 was \$10.681 billion compared to \$1.392 billion in 2001, this represents a growth of over a 767 percent in ten years. Furthermore, remittance is about 5 percent of Nigeria's GDP in 2011.

It is foregoing that necessitated the need to investigate the impact of remittance on Nigerian economic growth. Review of literature also shows that the papers on remittances that are related to Nigeria at moment are: (Osili, 2007) which investigated remittance and saving among Nigeria migrants in Chicago using matched sample, (Mbutor, 2010) looked at the impact of monetary policy on remittances in Nigeria, (Oke, et al., 2011) checked the influence of workers' remittances on financial development of Nigeria and (Babatunde and Martinetti, 2010) which investigated the impact of remittances on food security and nutrition in rural Nigeria. Therefore, to our knowledge, this is the first paper that would attempt to investigate the relationship between remittances and economic growth in Nigeria to fill this gap in the literature.

This paper is structured as follows, section II reviews theory of economic growth, motivations of remittance inflows by the senders and previous empirical studies on remittance, in section III, the data and mode, employed were explained, while section IV discusses the results of our data analysis and in section V, we make concluding remarks.

2.0 Economic Growth Theory

In the literature various economic growth model have been proposed by economist we outline some of these models

The Gross Domestic Product equation model is $Y = f(K, L)$ where Y is output, K is capital, and L is labour. Capital stocks include plant and machinery, bridges, factories, land etc, while, labour represents economically active population. Consequently, for an economy to grow based on this model there must be an increment in the stocks of capital through investment and supply of labour through population growth and investment on capital stock depends on savings.

The endogenous growth theory states that investment in human capital; innovation and knowledge are significantly contributors to economic growth. Therefore, positive policy measures, such as, subsidies for research and development or education increase the growth rate by increasing the incentive for innovation.

However, exogenous growth theory postulates that rate of growth is determined by either the saving (the Harrod – Domar Model) or the rate of technical progress (Solow Model). Even though the saving rate and rate of technological development are not stated.

This BIG PUSH model states that large investment in infrastructure and education coupled with private investment would increase the production of goods and services of a country, which would automatically translate to an economic growth.

There is no consensus of opinion on the impact of remittance on an economic growth. Some schools of thought hold the view that remittance has positive impact on economic growth; while others believe remittance do not have effect on economic growth. Those who expect remittance to have effect on economic growth of productive capacity in receiving economies hinge their arguments on the followings. According to (Barajas, et al., 2009), if domestic households face financial restrictions that constrain their investment activities – for example, as a result of poor domestic financial development – remittance can be used as substitute for domestic funds, which is lacking to enable recipient household improve their rate of physical and human capital accumulation. Furthermore, future remittance inflow can improve the creditworthiness of domestic investors, which may result into lower cost of capital in remittance receiving economies. The multiplier effect of remittance spent on consumption can also have positive effect on economic growth of domestic countries, (Stapl and Arnold, 1986).

(Stark, 1991) posits that additional income from remittance is fungible and investments may well increase even if the actual cash remitted is not invested because it serves as insurance to household members, which allows some household to engage in risk activities (e.g. increased investments in production, adoption of new technologies) which otherwise they would not have ventured into. Because of countercyclical nature of remittance, it acts as insurance against macroeconomic shocks for receiving economies, (Chami, et al., 2009). Remittance inflows can lead to stability of foreign exchange receipt, which can improve sovereign credit of receiving countries. The other school of thought who believes that remittance cannot have impact on economic growth hinged their arguments on the followings

According to (Barajas, et al., 2009), remittance may lead to reduction in labour participation because recipient household may rationally substitute unearned remittance income for labour income. Remittance may induce currency appreciation (Dutch Disease) of receiving country, which may have negative effect on the competitiveness of local goods and services in the export market, which in the long run may result in contraction of local production capacity. Remittance can be procyclical when they are sent for investment purpose as they sometimes are in middle – income countries (Sayan, 2006). It also argued by (Abdih et al 2008) that remittance can reduce pressure to improve the quality of policies and institutions by making recipients to depend less on government benefits.

2.1 Theory of Remittance

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 and 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 and 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 and 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: (Chipeta and 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 (Ruiz – 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 ,2004) 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 and Docquier 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.

2.2 Empirical Studies

There are large empirical studies on various aspect of remittance, such as motivation of remittance senders, impact of remittance on economic growth, cost of remittance etc.

(Quinn 2005) hypothesis that remittances are used for consumption by receiver and alternative saving mechanism for migrants. The model further states that remittance/saving behavior is influence by the relative rate of return on their saving using Mexican migrant worker in United of America for his study he discovered that migrants remit more and save less when the remittance receiving household’s rate of return on savings is high.

In his study on motive for remittance by Entrean migrants’ workers in German (Kifle 2009) using personal questionnaires of about 50 households which average yearly income of the household was about 2,110 Euro and each household remitted about 1,424 Euro per year. The result suggested that there is positive association between remittances and migrants’ intention to return home and desire to invest in parents businesses or assets at home.

According to (Ratha 2007) remittances rose during the financial crises in Mexico in 1995 and in Indonesia and Thailand in 1998. Remittance can also stabilize foreign exchange receipts hence improve sovereign credit worthiness in receiving country. Remittances are now being factor into sovereign ratings in middle income countries and credit sustainability analysis in low income countries (IMF 2010).

(IMF 2010) reveals that banks in several developing countries – including Brazil, Egypt, El Salvador, Guatemala, Kazakhstan, Mexico and Turkey – have been able to raise cheaper and longer – terms financing (more than \$815 billion since 2000) from international capital market by securitizing future remittance flow. African banks have also taken advantage of remittance inflow to obtain lower cost and longer tenure credit facilities. According to

(Rutten and Oramah 2006), in 1996 the African Export –Import Banks co-arranged the first ever future flow securitization by a Sub – Saharan African country, \$840 million medium term loan to a development bank in Ghana, backed by its Western Union remittance receivables.

In 2001 Afrieximbank launched its financial future flow pre financing programme in order to expand and effectively use migrants remittances and other future flow – credit cards and checks, arising from bilateral services agreements on air flights fees, and so forth – as collateral to leverage external financing to fund agricultural and other projects in such – Saharan African by 2001 it arranged a \$50 million remittance backed syndicated note issuance facility for a Nigeria entity using remittances through Money Gram (Afreximbank 2005).

(Schiope and Fiegfried 2006) suggest that altruism is an important factor for remitting with weak investment motive. According to (World Bank 2006) a cross – country evidence shows that a 10% increase in per capital remittances leads to a 3.5% decline in the share of poor people. Furthermore, a household surveys in the Philippines shows that a 10% increase in remittances reduces poverty rate by 2.8% by increasing the income level of the receiving family but also via spillovers to the overall economy.

(Amuedo – Dorantes and Pozo 2004) reported that when remittances doubled, the real exchange rate appreciate by about 22% for selected 13 Latin American and Caribbean countries implying that such flow might hinder the competitiveness in tradable goods and services export. The study of (Mbutor 2010) that examines the influence of monetary policies on remittance in Nigeria reports that monetary policy action which induce depreciation of Naira by 1.4% resulted in 0.03% increase inflow of remittance in the year, following the period when the policy was taken. In the third period when monetary policy induced a depreciation of 5.9% the flow of remittance contracted by 0.09%. The contraction is seen in all the years when monetary policy action caused an appreciation of the naira.

(Fayissa and Nsiah 2010) investigated the aggregate impact of remittance on economic growth of 18 Latin American countries for the period 1980 to 2005 and conclude that there is a positive and significant relationship between remittances and economic growth of the Latin American countries.

The result of (Barajas 2009) suggested that remittances do not seem to make positive contribution to economic growth. Remittances have a statistically insignificant impact on growth in less than half of the estimations, and when they do have a significant impact it is generally negative. The study of (Fajnzylber and Lopez 2007) revealed that the magnitude of the estimated effect of remittances on growth is relatively small in economic terms. This is because for the average Latin American country in their sample, an increase in remittance from 0.7 percent of GDP in 1991 – 1995 to 2.3 percent of GDP in 2001 – 2005 is estimated to have led to an increase of only 0.27 percent per year per capital GDP growth.

(Azam and Khan 2011) found that the impact of worker remittances on economic growth is positive and statistically significant. Further analysis of their result reveals that one unit change in remittance would lead to 0.4 unit change in economic growth for Azerbaijan. While the result of Azerbaijan also shows that overall model is significant and shows 60% variation by the explanatory variable in economic growth of the country. (Jongwanich 2007) posits that remittances seem to have a positive but marginal impact on economic growth in Asia and the Pacific countries through improvement of domestic investment and human capital. In addition to this remittance significantly reduces poverty by increasing income smoothing, consumption and easing capital constraints to the poor.

3.0 Methodology

3.1 Model Specification

To determine how remittances inflows and traditional sources of economic growth such as investment in physical capital, an external sources of capital represented by Foreign Direct Investment, openness of the economy as measured by the ratio of the sum of imports and exports to GDP, the variation in the exchange rate influence economic growth the following models are employed.

$$GDP = F(CAPFOR, EXCH, FDI, OPENNESS, REMIT) \dots \dots \dots (1)$$

Equation (1) is transformed to econometric equation.

$$\text{GDP} = b_0 + b_1\text{CAPFOR} + b_2\text{EXCH} + b_3\text{FDI} + b_4\text{OPENNESS} + b_5\text{REMIT} + e \dots\dots\dots(2)$$

where:-

- GDP = Gross Domestic Product
- b₀ = Intercept (constant)
- CAPFOR = Capital Formation
- EXCH = Foreign Exchange Rate
- FDI = Foreign Direct Investment
- OPENNESS = Degree of Openness (proxied by imports and exports to GDP)
- REMIT = Remittance Inflows
- e = Error Term.

Annual data with a sample period from 1991 to 2011 were collected from World Bank database and Central Bank of Nigeria websites.

3.2 Estimation Techniques

3.2.1 Unit Root Test

In order to check the stationarity of the series variable data employed in this study, unit root test was carried out. Test for stationarity of data is very important in time series data because of spurious regression as explained by (Granger and Nwehold 1979). Augmented Dickey – Fuller (ADF) unit roots test were calculated for individual series to produce evidence as to whether variables are integrated. Consequently, Augmented Dickey Fuller (ADF) test involving these equations are employed.

$$\Delta X_t = BX_{t-1} + \sum_{j=1}^p j \Delta X_{t-1} + \sum_t \dots\dots\dots(3a)$$

$$\Delta X_t = a_0 + BX_{t-1} + \sum_{j=1}^p j \Delta x_{t-1} + \sum_t \dots\dots\dots(3b)$$

$$\Delta X_t = a_0 + a_1t + BX_{t-1} + \sum_{j=1}^p j \Delta x_{t-1} + \sum_t \dots\dots\dots(3c)$$

The additional lagged terms are also included to ensure that the errors are uncorrelated. The maximum lag length begins with 1 lags and proceeds down to the appropriate lag by examining the A/C and SC information criteria. If the calculated ADF statistic is higher than McKinnon’s initial values then the series is stationary or integrated of order zero I(0). If the series are not integrated at level, this would lead to conducting the test on the difference of the series in order for them to be stationary.

3.2.2 Co-integration Test:

Once it is established that the series are integrated of order 1(1) co-integration test is performed. A number of methods for testing co-integration have been proposed in the literature. However, we employed (Johnson and Juselius 1990) maximum likelihood framework. The objective of this test is to establish if there is a long run relationship between remittances, Gross Domestic Product, Foreign Direct Investment, trade openness, foreign exchange rate and gross capital formation in Nigeria. This framework that is adopted proposes two tests the (Atrace) and the maximum eigenvalue (Δmax) statistics. The equations for the test are: Trace (Atrace).

$$\text{Atrace}(r) = -T \sum_{i=r+1}^p \ln(1 - \Delta_i) \dots\dots\dots(4a)$$

where Δ_i = is the largest estimated value of ith characteristic root (eigen value) obtained from the estimated Π matrix, r = 0, 1, 2 p – I and T is the number of usable observations.

The alternative is the maximum eigen value (Δmax)

$$\Delta_{\max}(r_1 r + 1) = -T \ln(1 - \Delta r + 1) \dots\dots\dots(4b)$$

3.2.3 Causality Test

According (Gujarat and Porter 2009) although regression analysis deals with the dependence of one variable on other variables, it does not necessarily imply causation. Which implies that because there is a relationship between variables that does not prove causality or the direction of influence. Therefore causality test would show

the direction of causality between two variables and the direction can be uni-direction, bi-direction or no direction. Granger causality test model is used in this study.

4.0 Result and Discussion

4.1 Unit Root Test

Table 1 shows the result from Augmented Dickey – Fuller (ADF) test which reveals that all the variables except openness has unit root. However, they become stationary in first difference. Consequently, from the result we can conclude that all variables are $I(1)$ except openness which is $I(0)$. What this infers is that all the variables under consideration except openness follows a random walk pattern which possess a purely non-predictable component.

4.2 Co-integration Test

Table 2 shows the result of co-integration test using (Johansen and Juselius 1988) model. The estimation was done using intercept and linear deterministic with a lag length of one. The Johansen co-integration test employs traces statistic and max-eigen statistic tests.

The result revealed that both traces statistic and max-eigen statistic tests indicate three co-integrating equations at the 0.5 level. Consequently, the null hypothesis of $r = 0$ is rejected. Therefore, there was a unique long run equilibrium relationship between remittances (REMIT) capital formation (CAPFOR) exchange rate (EXCH), foreign direct investment (FDI) trade openness (OPENESS) and gross domestic product (GDP). However (Siddique et al 2010), found that there is no long run equilibrium relationship between per capital remittances and economic growth in India, Sri Lanka and Bangladesh.

4.3 Causality Test

Table 3 shows the result of the causality test at lag 2. The direction of causality is from GDP to remittance inflows into Nigeria thus, it could be construed that an increase in GDP in Nigeria would induce more remittance inflows to the country. This contradicts the notion that remittances inflows induce economic development because it is a unidirectional causality. There is also, a unidirectional causality between capital formation and remittances inflows in Nigeria which is also not in consonance with the theory that remittances inflows can be as a substitute for domestic capital where receiving country has a shortage of fund for investment in capital goods.

However, there is unidirectional causality from remittance inflow to openness; which implies that remittances inflows induce removal of restrictions in conduct of trading and business activity in Nigeria. Finally the result suggests no directional causality between remittances and foreign exchange rate and foreign direct investment. The prior work of (Siddique et al 2010) reported that there seems to be no causal relationship between growth in remittances and economic growth in India and Bangladesh, however, a two way directional causality is found in Sri Lanka.

5.0 Conclusion

The objective of this study is to investigate the relationship between remittances inflows and economic growth in Nigeria. In order to achieve this objective, other macro economic variables that prior studies have adjudged to influence economic growth were included in the models. In order to confirm the relationship and the impact of remittances inflow on economic growth co-integration and causality tests were conducted on the macroeconomic variables data collected. The outcome of co-integration test showed that there is a long-run equilibrium relationship between GDP and remittance inflows, exchange rate, foreign direct investment, openness and capital formation. The result of causality test revealed that there is a unidirectional causality from GDP to remittance inflows, capital formation inflows to openness while there is no directional causality between remittances and foreign exchange rate and foreign direct investment.

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Table 1
 Unit Root Test Results

Variables	Level	1st difference
CAPFOR	-3.362 (-4.98)	-5.461 (-4.532)
EXCH	-1.436 (-4.493)	-4.008 (-3.673)
GDP	-1.226 (-4.478)	-5.532 (-3.673)
FDI	-1.012 (-4.532)	-7.833 (-4.532)
OPENNESS	-5.941 (-4.532)	-6.221 (-4.532)
REMIT	-1.110 (-4.498)	-2.8504 (-2.655)

Table 2
 Co-integration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.999915	298.1511	95.75366	0.0000
At most 1 *	0.957700	120.1476	69.81889	0.0000
At most 2 *	0.867771	60.05130	47.85613	0.0024
At most 3	0.538876	21.61015	29.79707	0.3207
At most 4	0.284070	6.902490	15.49471	0.5890
At most 5	0.028696	0.553198	3.841466	0.4570

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.999915	178.0035	40.07757	0.0001
At most 1 *	0.957700	60.09630	33.87687	0.0000
At most 2 *	0.867771	38.44115	27.58434	0.0014
At most 3	0.538876	14.70766	21.13162	0.3099
At most 4	0.284070	6.349292	14.26460	0.5688
At most 5	0.028696	0.553198	3.841466	0.4570

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

Table 3
 Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
CAPFOR does not Granger Cause GDP	19	0.21692	0.8076
GDP does not Granger Cause CAPFOR		0.07290	0.9300
EXCH does not Granger Cause GDP	19	2.22035	0.1454
GDP does not Granger Cause EXCH		0.35528	0.7071
FDI does not Granger Cause GDP	19	0.11549	0.8918
GDP does not Granger Cause FDI		3.58946	0.0552
OPENESS does not Granger Cause GDP	19	0.15329	0.8593
GDP does not Granger Cause OPENESS		4.52692	0.0305
REMIT does not Granger Cause GDP	19	2.29136	0.1378
GDP does not Granger Cause REMIT		6.92894	0.0081
EXCH does not Granger Cause CAPFOR	19	0.51661	0.6075
CAPFOR does not Granger Cause EXCH		1.38481	0.2826
FDI does not Granger Cause CAPFOR	19	0.68381	0.5208

CAPFOR does not Granger Cause FDI		0.15841	0.8550
OPENESS does not Granger Cause CAPFOR	19	0.83856	0.4529
CAPFOR does not Granger Cause OPENESS		0.76273	0.4848
REMIT does not Granger Cause CAPFOR	19	0.41180	0.6702
CAPFOR does not Granger Cause REMIT		5.24588	0.0199
FDI does not Granger Cause EXCH	19	0.31754	0.7330
EXCH does not Granger Cause FDI		1.04656	0.3771
OPENESS does not Granger Cause EXCH	19	1.49728	0.2575
EXCH does not Granger Cause OPENESS		4.87789	0.0247
REMIT does not Granger Cause EXCH	19	0.37618	0.6932
EXCH does not Granger Cause REMIT		1.56326	0.2439
OPENESS does not Granger Cause FDI	19	0.97725	0.4006
FDI does not Granger Cause OPENESS		1.56241	0.2441
REMIT does not Granger Cause FDI	19	2.61615	0.1083
FDI does not Granger Cause REMIT		0.47734	0.6302
REMIT does not Granger Cause OPENESS	19	3.66925	0.0523
OPENESS does not Granger Cause REMIT		0.59834	0.5632

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