



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ACCOUNTING, FINANCE AND MANAGEMENT SCIENCES



The Macroeconomic Effect of Remittances on the Nigerian Economy: A Time Series Approach

Nathan Pelesai Audu

To Link this Article: <http://dx.doi.org/10.6007/IJARAFMS/v2-i3/9961> DOI:10.6007/IJARAFMS /v2-i3/9961

Received: 03 August 2012, **Revised:** 28 August 2012, **Accepted:** 10 September 2012

Published Online: 25 September 2012

In-Text Citation: (Audu, 2012)

To Cite this Article: Audu, N. P. (2012). The Macroeconomic Effect of Remittances on the Nigerian Economy: A Time Series Approach. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 2(3), 252–267.

Copyright: © 2012 The Author(s)

Published by Human Resource Management Academic Research Society (www.hrmars.com)

This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen

at: <http://creativecommons.org/licenses/by/4.0/legalcode>

Vol. 2, No. 3, 2012, Pg. 252 - 267

<http://hrmars.com/index.php/pages/detail/IJARAFMS>

JOURNAL HOMEPAGE

Full Terms & Conditions of access and use can be found at
<http://hrmars.com/index.php/pages/detail/publication-ethics>



The Macroeconomic Effect of Remittances on the Nigerian Economy: A Time Series Approach

Nathan Pelesai Audu

Department of Curriculum/Instruction Niger Delta University Wilberforce Island Bayelsa State,
Nigeria

Email: awudupel@gmail.com

Abstract

Remittances have become an important source of foreign exchange earning in many developing economies like Nigeria as migrants continue to send money (income) to relatives at home but the main motive for remitting income remains controversial among scholars and policy makers. This paper therefore assesses the relative importance of the socio-political and economic determinants of remittance inflow using an Error Correction Mechanism to analyze panel data in Nigeria. We find that altruism is important for remitting, as per capita income differentials, gross capital formation, official Nigerian migrant remittances and economic/political freedom are significant and positive, implying that remittances are countercyclical in nature. However, there is evidence to suggest that the relationship between per capita income and worker's remittances is not linear—positive at low level of income and negative at higher income. The result also shows that the development of the financial sector would encourage remittance inflow although this is not robust to the differential specification.

Keywords: Migration, Remittance Inflow, Economic Growth, Macroeconomic, Structural Rigidity

Introduction

In the past recent decades, workers remittances especially international remittances, has become a very attractive source of foreign earning for developing countries. The large size of remittances relative to other external flows and to the gross domestic product (GDP) in many countries suggest that macroeconomic effects of remittances may be of critical importance to many countries (World Bank, 2006), and more so in developing countries like Nigeria where underdeveloped financial system and structural rigidities make the compilation and evaluation of such remittances difficult. According to Adams (2005), despite the increasing size of international workers remittances to home country in developing countries, there has been little attention on examining the impacts of these remittances on the households in these countries and thus the economy at large.

Early studies on remittances like that of Adepaju (1974) tend to assert that internal migration brought about internal remittances which enabled rural households to significantly improve their livelihoods, construct houses and enabled children's education. He also noted that contribution of internal migration has possible been more positive than that of international migration, although the dominant policy analysis tends to put international migration into more positive light, in contrast to the negative role ascribed to internal migration. However, the empirical evidence to assess the development impacts of internal and international migration more precisely in either lacking or inconclusive.

It has also been observed that most studies tend to address the microeconomic impact of remittances, for example the impact of remittance at household poverty, spending etc without paying attention to its macroeconomic consequences. This is the focus of the paper. The foremost question we intend to answer therefore in this paper is "*What is the macroeconomic impact of remittances on the Nigerian Economy?*" According to the Adenuga (2009), remittances are composed of three types:

- i. Workers remittances – transfer of money by those workers who reside abroad for more than a year;
- ii. Compensation worker – gross earning of workers residing abroad for less than a year, including the value in-kind benefits such as housing and payroll taxes;
- iii. Migrant transfer – net worth of migrants who move from one country to another.

From the fore goings and in order to unravel the answer to the question above, the broad objective of this paper is to estimate the impact of workers remittances on the economy of Nigeria measured by these three macroeconomic indices (GDP, investment and exchange rate), but also to determine the short-run causal relationship between GDP, investment and exchange rate by employing the multivariate Granger causality test in Nigeria.

Theoretical Framework

The concept and measurement of remittances is seen as the transfer in the balance of payments (BOP). Addison (2004), opined that transfers is the offsetting of entries for real resources or financial items provided, without a quid pro quo, by one economy to another. This means that a transfer occurs when the receiving or giving economy does not receive or give any recompense in the form of real resources or goods or services supplied to or received from another economy. Therefore, the fact that remittances are transmitted through different channels makes it difficult to capture the full amount in the BOP statistics of the recipient country, which tends to underestimate the actual flow of remittances. These problems make it difficult to come up with strong conclusion on the actual impacts of remittance in the economy. As such there are reasons why migrant workers decide to send money back home.

According to Lucas and Stark (1985), they observed that microeconomic motives such altruistic motive which has to do with care and concern for the home family, loan repayment for educational and other purposes as well as for cost incurred in the course of travelling abroad; exchange motive which is payment for services rendered for either the migrant or his parents or relatives by others which has to be paid for and for coinsurance in other to cushion the effect of economic shocks and downturn. Conversely, Adams (2006) held that macroeconomic motive explains the amount of remittances sent to the home country by the levels and fluctuations of economic activities in the host and home countries because a positive remittance effect in the home country results in favourable

economic conditions, improved living standards for the senders relatives and hence in the willingness to send more remittance. Contrarily, the improved economic conditions in the host country will increase the employment and earning opportunities of migrants and thus encourage them to send more remittances.

Fayissa and Nsiah (2008) observed that the basic neoclassical framework can be presented in an unrestricted form by modifying and extending it to bring it more in line with observed empirical phenomena by taking into consideration technological change which account for increasing returns. But Essia (2000) opined that the Cobb–Douglas formulation has been criticized severally due to the fact that it makes some assumptions which are considered unrealistic i.e. it assumed that the production function is deterministic; the problem of unitary elasticity of substitution and comparative equilibrium etc while Lovell (1993) argued that a random term should be added to capture the effects of statistically noise. The stochastic production frontier is determined by the structure of production technology and by external events, favourable beyond the control of the producer. Here the stochastic production frontier is ignored because it is difficult to determine the favorability or otherwise of external events especially in the real world with uncertainties and intrigues because technological progress is assumed endogenous and that improved domestic management can attract favourable external condition which is consistence with most East Asian countries.

Nyong (2005) observed that factor price equalization theory attributes migration to wage differentials between regions or between countries of origin and migrants' country of residence. The theorist believed that for economic growth to take place in an economy there should be a balance between the various sectors. It believes that growth in unison and simultaneous investment in and development of the various sectors of the economy. People migrate to take advantage of higher wage rates but as more and more people migrate, human resources are reallocated from regions of abundance to where they are scare and this leads to factor price equalization and once there are no more wage differentials, then migration will cease while Todaro (2007) believe that the reallocation of labour from rural agriculture settlement to urban industrial sector whether within national or across international boundaries is a precondition for economic growth and a component of the entire development process.

Haas (2006) opined that the migration optimists believed that for poor countries to pave the way for rapid economic development, there must be massive transfer of capital and industrialization and for this to happen, large movements of the workforce which is abundant in the poor countries of the South were encouraged towards the Northern industrialized countries. Those who hold this view believes that not only do these massive movements have as its benefit capital repatriation, but also transfer of knowledge, skill and education, democratization as well as technological transfer, as such migrants are perceived as important agents of change, innovators and investors as they act as transmitter of modern systems and investment capital to poor countries because migrant funds serve as a huge source of investment in financial, educational, health and industrial sector in their home countries and thus leading to the process of development take–off in third world countries.

The historical structural–dependency theory came into being following the worldwide economic downturn of the 70s which followed the industrial restructuring and massive unemployment gave rise to a paradigm shift in world migration trend. These theorists held that with the removal of human capital from their traditional places of origin comes economic distortions and breakdown thus reinforcing the problem of underdevelopment as a result these communities are left

with shortage of agricultural and other labour thereby retarding the process of industrial growth and development of the affected countries (Nyong, 2005).

Literature Reviews

There are several scholarly researches in the development world which seeks to evaluate the economic implications of the recently growing impact of international workers remittances. However, as stated in the theoretical framework, the of Lucas et al (1985) on motivation to remittance serves as the basis that stimulated research in this field of discourse and constitute the backbone of empirical work in the area of economic enquiry.

Various scholarly studies from Rodriguez (1996); Itzisoehn (1995); Martin et. al (2002) and Lucas et al (1985) among others on remittances deal with the micro-factors affecting the inflow of remittances into a country. The micro approaches uses variables like gender, age marital status, wage levels, per capita consumption, number household left at home, length of stay abroad, educational attainment of potential remitter, skill levels, occupation, etc to explain remittances while macro approaches deal with either the impact of remittances on macro economic variables in the countries of origin or the impact of macroeconomic variables on the inflow of remittances. This study is therefore concern with the macroeconomic approach and specifically on the impact of international migrant (Nigerian) workers remittances on the performance of the macro economy of Nigeria.

Osili (2001) in his household work on Chicago, Illinois, USA and their home family in Nigeria observed that over 90% of migrant household's remittance average \$6,000 on the survey, 60% of this amount were remitted for home family needs and of this percent, the housing need took a greater percentage of the funds remitted while the remaining 40% was reserved for savings. Similarly, a study IFAD (2007) on the Nigeria – UK remittance corridor, concluded that Nigeria received about \$3 billion in registered remittance in 2007 while in kind remittance was estimated at about \$0.6 billion. For Hernandez-Coss et. al (2006), a large proportion of remittances via the Nigeria – UK remittances corridor were done through the informal sector and this assumes that 50% of the remittances to Nigeria are unrecorded. They conclude that the real level of remittances to must be around \$5 billion. They further held that most remittances to Nigeria from the UK were destined for cities in main origin areas of Nigerians migrants in the South–West and South–East regions. Thus, international remittances seem to exacerbate rather than level down the income differentials between Nigerian States.

Martin et al (2002) observed that the large volume of remittances to the Kayes region in Mali has improved the lives of residents and financed the construction of public institutions, but do not seem to have led to the establishment of large numbers of businesses that promise stay at home development. This means that remittances may not support for long term economic growth of the region. This position was collaborated by Azam et. al (2005), when they opined that the receipt of remittances has reduced work efforts in Kayes while households receiving remittances did adopt new technologies, agricultural performance was worse than in the non-migrant households but contrarily, remittance income may be large enough to adopt technologies that result in increased production. World Bank, (2006) in a study on Uganda, found out those workers remittances have been a significant source of external funding for most households. Workers' remittances inflows to Uganda averaged \$314.5 million between 1996 and 2005, representing 4.9% percent of GDP.

Faini (2002), in finding out whether skilled workers remit more to cushion the welfare impact of brain drain observed that remittances declined as the share of migrant with tertiary education,

goes up contrary to expectation. This can be explained by the fact that skilled workers tend to be more permanently attached to the host country which makes their attachment to the home country increasingly weaker and so does the propensity to remit. Faini's finding is contrary to that of Lucas et al (1985) who observed a positive relationship between the predicted wage of migrant and the amount remitted.

The World Bank (2006) held that a large and sustained remittance inflow causes real exchange rate to appreciate and makes the production of goods and services which are cost sensitive to me less profitable. The Bank believes that the adverse effects of large inflows in the form of remittances are more for small economies with high remittances even though empirical evidence on this is inconclusive. This position is further collaborated Amuedo–Dodantes et al (2004) in their study of twenty-three Latin American countries with the exception of Nicaragua opined that real exchange rate appreciated in parallel with an increase in remittances during 1993–2005 and 7 out of the 8 countries has the highest remittances to GDP ratio. The resultant effect of exchange rate appreciation is a situation where production of tradable goods which are cost sensitive less profitable to produce and therefore a loss in their export competitiveness relative to others in the market.

Ratha (2007) observed that the level at which remittances finance education and health, increases the level of investment and this in turn would have a positive effect on economic growth while Yang (2006) and Woodruff et. al (2004) in their separate study opined that remittances may relieve credit constraint in the recipient community and spur entrepreneur activity which engender economic growth. Guiliano et al (2005) observed that in economies where the financial system is underdeveloped, remittances alleviate credit constraints and works as a substitute for financial development thus improving the allocation of capital thereby spurring or accelerating economic growth. This position is affirmed by Beck et. al (2005) who discovered that a well developed financial market can enhance growth and reduce poverty.

Similarly, Adams (2006) observed that remittances receiving households in Guatemala tends to spend more considerable on housing, education and health than non–remittance receiving households. He further states that expenditures on education and health at the household level contribute s to national human capital development which is an important component of national economic growth. It in this vain that Stark (2006) held that an increase in the interest cost lending in the remitting country lowers remittance flows. He suggest that this is consistent with the possibility that remitter and receiving households save or invest a portion of remittance flow for economic activity in the country of origin.

Theoretical Construct for Remittances in Nigeria

The theoretical construct for the macroeconomic effects of remittances on Economic growth in Nigeria is based on an eclectic theory as discussed in section II.1 as well as the augmented Cobb–Douglas production function which follows the works of Fayissa et al (2008) but employs the error correction mechanism. The data used in this study is basically secondary annual data that spanning through forty–one years (1970 – 2010).

Empirical Model Specification

In line with the eclectic approach which is rooted in the theories discussed, we specify the empirical function model thus:

$$PCY = f(PCR, GCF, SSE, FDI, TOT, EPF) \quad (1)$$

Equation (1) can be transformed into an econometric semi-log linear form as follows:

$$\log PCY_t = \beta_0 + \beta_1 \log PCR_t + \beta_2 \log GCF_t + \beta_3 \log FDI_t + \beta_4 \log SSE_t + \beta_5 TOT_t + \beta_6 EPF_t + \mu_t \quad (2)$$

where: *PCY*=real GDP per capita, *PCR*=Nigerian migrant remittances from official sources as estimated by the International Monetary Fund, *GCF*=Gross capital formation, *FDI*= Foreign direct investment, *SSE*=Secondary school enrolment (proxy for investment in human capital), *TOT*=Terms of trade, *EPF*=Economic/political freedom (i.e. dummy variable – 1 for civilian rule and 0 for military rule), μ =error term, \log =natural logarithm and t = time, β_0, \dots, β_6 = coefficients

The expected signs of the coefficient *a priori* are: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$, $\beta_5 < 0$ and $\beta_6 < 0$.

Unit Root Tests

The Augmented Dickey-Fuller and Phillips-Perron tests are used in testing the null hypothesis that there is a unit root in a particular time series of interest. These are not the only tests available, but they represent widely used approaches. The unit root tests are presented in Table 1. The lag length used in the ADF test based on minimizing the Akaike Information Criterion (AIC), starting with a lag length of 5. For the Phillip-Perron test, the spectral estimation is based on the Bartlett Kernel method while the bandwidth is selected based on the Newey-West approach.

Table 1. Unit root tests

Variables	Augmented Dickey-Fuller Test				Phillips-Perron Test				Remark
	Levels		1 st Difference		Levels		1 st Difference		
	C	C & T	C	C & T	C	C & T	C	C & T	
logPCY	-1.85	-1.44	-3.11	-3.31	-1.62	-1.46	-5.32	-5.38	I (1)
logPCR	-5.90	-5.99	-3.23	-2.60	-0.34	-0.45	-6.08	-6.52	I (0)
logGCF	-2.08	-0.57	-3.04	-5.13	-2.23	-0.08	-4.41	-5.82	I (1)
logSSE	-2.21	-0.44	-3.05	-4.71	-1.90	-0.24	-7.77	-9.85	I (1)
TOT	-3.11	-2.25	-1.74	-3.02	-0.87	-0.68	-5.13	-8.99	I (0)
logFDI	-3.14	-0.18	-1.42	-2.59	-3.90	-0.50	-4.61	-6.34	I (0)
EPF	-2.33	-3.13	-3.85	-3.67	-2.20	-2.56	-6.08	-6.15	I (1)

Critical value at 5% = 2.53. C implies estimation with a constant term in the unit root while C & T implies the use of both constant and trend.

Source: Author's own computation

Both unit root tests in Table 1 shows that per capita remittances (PCR), terms of trade (TOT) and foreign direct investment (FDI) where stationary at levels while per capita income (PCY), gross capital formation (GCF) and secondary school enrolment (SSE) indicates that they were non-stationary series in levels but stationary at first different. Having ascertained the stationarity status of the variables we proceed next to consider if there exists at list a linear combination of the variables with unit roots that is stationary using the Johansen full information maximum likelihood method.

Cointegration Analysis

We used the Johansen approach to test if there exists, at least a linear combination of the variables with unit roots that is stationary. The I(0) variables are also included in the Vector Autoregressive (VAR) model for the cointegration test. A constant is included in the VAR but no trend. First, we estimate a level-based VAR to determine the relevant VAR lag order. Starting with a maximum lag length in levels of the variables is optimal as shown in table 2. An error correction representation of the VAR (Vector Error Correction Model – VECM) would imply that the VAR, in first difference of the variables, will have a lag order of 1.

Table 2. VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-237.3238	NA	23867.98	12.91178	13.25653	13.03444
1	-232.5351	7.309130*	19607.39*	12.71237*	13.10022*	12.85037*
2	-232.4296	0.155446	20624.91	12.75945	13.19040	12.91278
3	-232.4289	0.000966	21833.62	12.81205	13.28609	12.98071

** indicates lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level, FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion*

Source: Author's own computation

The Johansen tests revealed that the trace and maximal Eigen statistics show the existence of two cointegrating relationships between log (PCY) and its determinants at 5% level of significance (Table 3). The conclusion drawn from this result is that there exist a unique long run relationship between log (PCR), log (FDI), log (SSE), log (GCF), TOT, EPF and log (PCY). Since there is one cointegrating vector, an economic interpretation of the long-run remittances can be obtained by normalizing the estimates of the unconstrained cointegrating vector on the remittances. The parameters of the cointegrating vectors for long-run remittances are presented in Panel B of Table 2. The identified cointegrating equation(s) can then be used as error correction variable that is akin to the residuals generated when using the Engle–Granger two–stage approach.

Table 3. Johansen Cointegration test for remittance

Panel A.

Date: 09/19/11 Time: 16: 07

Sample(adjusted): 1973 – 2010

Included observations: 38 after adjusting endpoints

Trend assumption: Linear deterministic trend

Series: Log(PCY) log(PCR) log(GCF) log(SSE) log(FDI) TOT EPF

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.909781	172.2593	94.15	103.18
At most 1 **	0.663660	80.84970	68.52	76.07
At most 2	0.397860	39.44366	47.21	54.46
At most 3	0.300826	20.16761	29.68	35.65
At most 4	0.125614	6.569092	15.41	20.04
At most 5	0.037901	1.468223	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Trace test indicates 2 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.909781	91.40959	39.37	45.10
At most 1 **	0.663660	41.40604	33.46	38.77
At most 2	0.397860	19.27605	27.07	32.24
At most 3	0.300826	13.59852	20.97	25.52
At most 4	0.125614	5.100868	14.07	18.63
At most 5	0.037901	1.468223	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Max-Eigenvalue test indicates 2 cointegrating equation(s) at both 5% and 1% levels

Panel B

Normalized cointegrating coefficients (std.err. in parentheses)

LOG(PCY)	LOG(PCR)	LOG(GCF)	LOG(SSE)	LOG(FDI)	TOT	EPF
1.000000	2.261145	-1.831847	-0.409395	-0.073081	-0.037389	-0.216517

Source: Author's own computation

Preceding the dynamic analysis, the results from the estimated static model on the long-run determinants of remittances in Nigeria is presented in Table 4 and Table A of the appendix.

Table 4. The Parsimonious error correction model

Dependent Variable: LOG(PCY)

Method: Least Squares

Date: 09/19/11 Time: 18:32

Sample(adjusted): 1974 2010

Included observations: 37 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.807778	1.242209	-2.260311	0.0324
LOG(PCY(-1))	0.670500	0.137908	4.861930	0.0001
LOG(PCR)	-0.011481	0.086787	-0.132287	0.8958
LOG(PCR(-1))	0.321862	0.079636	4.041654	0.0004
LOG(GCF(-1))	0.380203	0.129705	2.931284	0.0069
LOG(FDI)	0.352572	0.337924	1.043349	0.3064
LOG(FDI(-1))	0.403346	0.316263	1.275352	0.2135
LOG(SSE)	-0.027002	0.229153	-0.117836	0.9071
TOT	1.20E-09	8.06E-08	0.014904	0.9882
EPF	-0.776246	0.231405	-3.354486	0.0024
EPF(-1)	0.669909	0.256905	2.607615	0.0149
ECM(-1)	-0.000729	0.000177	-4.109253	0.0004
R-squared	0.884595	Mean dependent var		7.808965
Adjusted R-squared	0.840208	S.D. dependent var		0.855765
S.E. of regression	0.342083	Akaike info criterion		0.934248
Sum squared resid	0.542543	Schwarz criterion		1.413169
Log likelihood	6.283580	F-statistic		19.92933
Durbin-Watson stat	2.873333	Prob(F-statistic)		0.000000

Source: Author's own computation

The adjusted R2 of the estimated model indicates that about 84% of the variations in remittances are explained by the combined effects of all the determinants while the F-Statistics shows that the overall regression is significant at both the 1% and 5% levels. Also, the equation's standard error of 0.342 signifies that in about two-thirds of the time, the predicted value of PCY would be within 34.2% of the actual value and given the DW value of 2.87, there was no suggestion of autocorrelation.

As shown in Table 4, the lagged value of PCY significantly influences the volatility of PCY over time with a strong inertia of 67%. This means that an increase in workers' remittances into Nigeria will positively impact on the country's economic growth. Also, the first lag of official migrant remittances (PCR) significantly influenced per capita remittances and per capita income (PCY) by 32% growth in GDP per capita in the year. This is in consonance with the *a priori* expectation as well as economic through which states that foreign capital would help relieve the credit constraints faced by developing countries which have stood on their way to output growth, thus, engender economic growth. This view is supported by Fayissa et al (2008), Adams (2006) Ratha (2006), Guiliano et al

(2005) and Yang (2004) who observed in their separate study that remittances supports economic growth in the recipient country.

The first lag of gross capital formation (GCF) that is measured by gross fixed capital (GFC) formation bears a positive sign and is statistically significant at the 5% level, it can therefore be inferred that if GCF (investment in physical capital) is increased by 1%, it would lead to a 38% increase in GDP per capita. Similarly, the negative/positive statistically significant relationship exists between economic/political factor (measured by dummy) and PCY suggests that poor governance constitute a bottleneck to the country's economic growth, as a 1% increase in EPF would lead to a reduction in GDP per capita by 78% and an increase in GDP per capita by 67%. This position is in line with Fayissa et al (2008),

The current and first lagged FDI bears a positive sign and conforms to our economic *a priori* expectation but it is not statistically significant. Be that as it may, if FDI is increased by 1%, PCY would increase by 355 and 40% respectively. This is in consonance with Audu (2010) who opined that private capital should flow to countries where the stock of capital is relatively low and where their marginal returns are highest. This means that third world countries such as Nigeria should receive relatively higher levels of FDI. Conversely, the current secondary school enrolment has a negative sign and is statistically insignificant as a 100% increase in investment in human capital leads to a reduction in PCY by 3%. This means that investment in human capital at the secondary school level retards growth as people who leave school at that level do not necessarily acquire capabilities which make them productive but rather have reduced work effects which retards per capita GDP while terms of trade (TOT) bears a positive sign but it is highly insignificant and has a very weak inertia on PCY.

Having presented the results from the empirical analysis, it is also necessary to examine the statistical properties of the estimated model. The model was tested for normality, serial correlation, autoregressive conditional heteroskedasticity, heteroskedasticity, specification error and stability. The results is presented in Table 5 suggest that the model is well specified. The diagnostics indicates that the residuals are normally distributed, homoskedastic and serially uncorrelated and the parameters appear to be stable.

Table 5. Diagnostic test

S/No.	TEST	F-STATISTICS	PROBABILITY
1	Normality Jarque-Bera Statistic	0.953804	0.228344
2	Serial Correlation Breusch-Godfrey Serial Correlation LM Test	2.984885	0.069556
3	Autoregressive Conditional Heteroskedasticity ARCH LM Test	0.747634	0.481575
4	Heteroskedasticity White heteroskedasticity Test	0.483181	0.933920
5	Stability Chow Breakpoint Test (Mid sample) Chow Forecast Test (1970 – 2010)	4.954592 28.98807	0.002570 0.145848
6	Specification Error Ramsey Reset Test	68.10230	0.000000

Source: Author's own computation

Conclusions

This paper evaluated the macroeconomic effects remittances from migrant Nigerian workers abroad on the per capita GDP relative to other sources investment such as investment in human and physical capital. Remittances have become important sources of funding for most developing countries involved in exporting labour. In the world, India, China and Mexico are the countries with highest remittances. Similarly, Nigeria though not amongst the world's top ten, leads the pack in Sub-Saharan Africa with an emerging prospects in the world scene given its pace and growth of its remittances.

Nigeria has also witnessed increasing remittances due partly to the fact that migrant workers want to cushion from the effects of poor economic conditions for themselves and relatives left back at home and these increased remittances has translated into growth in domestic output and investment. As such, the country can improve its economic growth performance, not only by investing in the traditional sources of growth like physical, trade etc but can take measures to systematically and strategically take advantage of the contributions of the remittances. It is in this vain that we recommend that Nigeria should ensure efficient and reliable transfer mechanisms for remittances fund into the country which would ensure that more is remitted by Nigerian citizens in the Diaspora as this would relieve constraints caused by lack of capital investment thus stimulating economic activity. Also, the country should formulate policies that would encourage and target productive activities of remittance receipt as is down in Mexico as well as the putting in place institutional measures that would strengthen democracy dividend and good governance, as this is the only potential way of enhancing the economic growth of the country.

Conclusively, due to the growing importance of remittances to developing economies, the Nigerian government should put in place proper mechanisms for the efficient utilization of such remittances as this will contribute greatly to the development of the country's economy.

References

- Adams, R. H. jnr (2006). Migration remittance and development: The critical nexus in the Middle East and North Africa. United expert group meeting on International Migration and Development in Arab region. Washington DC.
- Addison, E. K. Y. (2004). The macroeconomic impact of remittance in Ghana. In Takyiwaa, M. Edited *At home in world, interenational migration and development in contemporary Ghana and West Africa*. Accra: Sub-Saharan Publishers.
- Adenuga, A. O. (2009). Determinants of Remittances in Nigeria from 1970 – 2006. In Adenikinju, A., Busar, D. & Olofin, S. Edited *Applied Econometrics & Macroeconomic Modelling in Nigeria*. Ibadan: Ibadan University Press,
- Adepoju, A. (1974). Migration and socio-economic links between urban migrant and their home communities in Nigeria. *Journal of the International African Institute* 44(4) 383 – 396.
- Amuedo-Dorantes, C., and Pozo, S. (2004). Workers' remittances and real exchange: A paradox of gift. *World Development* 32(8). pp. 1407 – 1417.
- Audu, N. P. (2010). Foreign direct investment, economic growth and export performance in Nigeria: An Error Correction Model. *African Journal of social Sciences* 1(2). Pp. 53 -63
- Azam, J. P., & Gubert, F. (2005). Those in Kayes: The impact of remittances on their recipient Africa. *Revue Economique* 55. pp. 1331 - 1358.

- Beck, T., Levine, R., & Loaya, N. (2005). Finance and Source of growth. *Journal of Financial Economics*, 58. pp. 261 – 300.
- Essia, U. (2000). Industrialization and technological progress: Comparative development in East Asia and Sub-Saharan Africa. Proceedings of Millennium Development Goals Conference of Nigeria.
- Faina, R. (2002). Migration remittance and growth. *European Economic Review* 34. pp. 1675 – 1698.
- Fayissa, B., & Nsiah, C. (2008). The impact of remittances on economic growth in Africa. Middle Tennessee State University Department Economics and Finance working paper series. February.
- Guiliano, P., & Ruiz-Arranz, M. (2005). Remittances, financial development and growth. International Monetary Fund working paper WP/05/234
- Haas, H. D. (2006). International migration and national development the viewpoints and policy initiatives in countries of origin: The case of Nigeria. International migration institute working paper No. 12
- Hernandez-Coss, R., & Egwuagu-Bun. (2007). The UK –Nigeria remittance corridor, challenges of embracing formal transfer systems in a dual financial environment. Washington DC. World Bank working paper No. 92.
- IFAD. (2007). Sending money home: Worldwide remittance flows to developing and transition countries. IFAD Conference on Remittance and Development. Washington DC. Retrieved on 17th September, 2011 at www.ifad.org/remittance and development
- Itzigsohn, J. (1995). Migrant remittances, labour markets and household strategies: A comparative analysis of low income household strategies in the Caribbean Basin. *Social Forces* 74(2). 633 – 655.
- Lucas, R., & Stark, O. (1985). Motivations to remittance: Evidence from Botswana. *Journal of Political Economy* (93(5)). 901 – 918.
- Lovell, K. C. A. (1993). Production frontier and Productive efficiency. *Journal of Monetary Economics*, 32(5). 513 – 542.
- Martins, P., & Jonas, W. (2002). International Migration: Facing the challenges. *Population Bulletin*, 57(1), pp. 100 – 129.
- Nyong, M. O. (2005). *Internal Economics: Theory, policy and application*. Calabar: Wusen Publishers
- Osili, U. O. (2001). Migrants and household investments: Evidence from Nigeria. Indiana: Indianapolis Press.
- Ratha, D. (2007). Leveraging remittances for development. Migration Policy World Bank Institute Brief. Washington DC.
- Rodriguez, E. R. (1996). International migrants' in the Phillipines. *Canadian Journal of Economics*, 29. pp. 427 – 432.
- Stark, O. (2006). Altruism and beyond: An economic analysis of transfers and exchange within the families and group. Cambridge: Cambridge University Press.
- Todaro, M. P. (2007). A model of labour migration and urban unemployment in less developed countries. *American Economic Review* 59(1): 138 – 148.
- Woodruff, C., & Zenteno, R. (2004). Remittance and micro enterprise in Mexico. UCSD graduate School of International Relation and Pacific Studies Working paper, University of California, San Diego.
- World Bank. (2006). Global Economic Perspective: Economic implication of remittance and migration. Washington DC. Retrieved on 17th September, 2011 at www.worldbank.org/prospects/migration and remittances.

Yang, D. (2006). International Migration, remittance and household investment: Evidence from Philippine migrants exchange rate shocks. *The Economic Journal*, 118. pp. 591 – 630.

Appendix

Table A. The over-parameterized error correction model

Dependent Variable: LOG(PCY)

Method: Least Squares

Date: 09/19/11 Time: 18:28

Sample(adjusted): 1974 2010

Included observations: 37 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.749916	1.373173	-2.002600	0.0571
LOG(PCR)	-0.007117	0.095887	-0.074224	0.9415
LOG(PCR(-1))	-0.326485	0.088488	-3.689614	0.0012
LOG(GCF)	-0.024419	0.144442	-0.169058	0.8672
LOG(GCF(-1))	0.374192	0.141940	2.636268	0.0148
LOG(FDI)	0.376163	0.389444	0.965899	0.3441
LOG(FDI(-1))	0.387507	0.390415	0.992552	0.3313
LOG(SSE)	-0.031011	0.268149	-0.115647	0.9089
LOG(SSE(-1))	0.026963	0.248347	0.108569	0.9145
TOT	-6.62E-09	1.59E-07	-0.041540	0.9672
TOT(-1)	2.17E-09	1.55E-07	0.013954	0.9890
EPF	-0.755568	0.272020	-2.777623	0.0107
EPF(-1)	0.647896	0.299636	2.162277	0.0412
ECM(-1)	-0.000742	0.000215	3.448655	0.0022
R-squared	0.884765	Mean dependent var		7.808965
Adjusted R-squared	0.819631	S.D. dependent var		0.855765
S.E. of regression	0.363442	Akaike info criterion		1.094938
Sum squared resid	3.038069	Schwarz criterion		1.704475
Log likelihood	-6.256355	F-statistic		13.58395
Durbin-Watson stat	1.304812	Prob(F-statistic)		0.000000

Table B. Summary statistics of the variables used in the remittances model

	PCY	PCR	GCF	FDI	SSE	TOT	EPF
Mean	2783.580	5616.520	163987.5	97312.05	30338.84	678802.7	0.463415
Median	3520.000	0.927000	34219.00	11339.20	1676.300	27111.00	0.000000
Maximum	4449.180	70021.60	643217.8	427618.5	159566.3	3892730.	1.000000
Minimum	108.8100	0.037000	1005.000	1003.200	158.9000	-85562.00	0.000000
Std. Dev.	1487.478	17933.32	216736.4	128166.5	50614.45	1260015.	0.504854
Skewness	-0.965917	3.246400	1.068287	1.224955	1.569594	1.729902	0.146735
Kurtosis	2.228479	11.62130	2.572596	3.312972	3.965618	4.317675	1.021531
Jarque-Bera	7.392348	198.9924	8.110517	10.42085	18.42764	23.41530	6.834125
Probability	0.024818	0.000000	0.017331	0.005459	0.000100	0.000008	0.032809
Sum	114126.8	230277.3	6723487.	3989794.	1243893.	27830911	19.00000
Sum Sq. Dev.	88503688	1.29E+10	1.88E+12	6.57E+11	1.02E+11	6.35E+13	10.19512

Table C. Correlation coefficients of the variables used in the remittances model

	PCY	PCR	GCF	FDI	SSE	TOT	EPF
PCY	1.000000						
PCR	0.251524	1.000000					
GCF	0.580980	0.647498	1.000000				
FDI	0.570879	0.718091	0.976042	1.000000			
SSE	0.481588	0.748015	0.962726	0.954854	1.000000		
TOT	0.453208	0.712170	0.902473	0.923446	0.930319	1.000000	
EPF	0.108129	0.337255	0.583938	0.526665	0.580782	0.525132	1.000000