Does Remittances and Output Growth Improve Household Welfare in Nigeria?

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Abstract

Remittances are welfare-improving private external inflows that directly alleviate poverty levels and inequality by raising living standards via increased consumption of non-durable (food and clothing etc), and durables goods (education and health), a significant part is kept as savings. At the macro level, remittances serve as a stabilizer by providing foreign currency that increases capital formation, employment, and national income. This study apply secondary data spanning from 1981-2012 to analyze the impact of remittances and economic growth on poverty in Nigeria using various econometric techniques such as Augmented Dickey Fuller test to ascertain the stationarity and Johansen Co-integration test to establish the long-run relationship among the variables; Granger causality test is employed to test pair-wise causality while, the Two Stage Least Square technique is used to estimate to impact of the variables on each other. Our results confirm that remittance exerts a positive significant impact on consumption and economic growth, while real GDP is negatively significant, contributing about -2.3% to consumption. The study concludes that remittances are valuable complement to broad-based development efforts, and has a paradoxical impact on poverty and economic growth. Thus, government should implement an apt policy sufficient to checkmate the adverse effects of remittances (e.g., over dependency), and create an enabling environment for business growth.

Keywords: Remittances, economic growth, consumption, Two-stage least square

1.1 Introduction

The burgeoning debate on how remittances and output growth impact household consumption calls for a grave attention; because of the quest to eradicate abject poverty which is prevalent amongst developing nations and evident by the failed millennium development goals and the newly embraced sustainable development goals (SDGs). The output growth in a country is driven by a twin source: internal sources which include saving which accounts for stock of investment overtime; development of human capacity and other various policies that could advance productivity etc., while external sources are the interactions of import and export, net foreign exchange rate, inflow of foreign direct investment and aids, and remittances inflow is not exempted etc.

Remittances[1] are less volatile global phenomenon; it is an essential means of external private capital inflow and gives financial support to developing economies as it helps reduce consumption shocks. In literature, the household present consumption is expressed as a function of its current disposable income, however, remittances inflow form a part of budgeted current income of recipient household.

It is important to recall that the arrival of Crude oil in 1970s birth the study of poverty in Nigeria, this later gave rise to inter-sectoral shifts from agriculture to oil thus, leaving masses that were engaged in agriculture jobless. A continuous increasing output growth is germane to achieving development overtime while poverty swelling, slow growth down however, improper planning, rent seeking, bad governance, insecurity and corruption should be nailed for it. Though, several programmes capable of alleviating poverty and raising living standard have been designed and implemented by the Nigerian government.

At micro level, migrants leave their countries to hunt for a greener pasture, the resultant effect is that it helps replenish aging highly skilled workforce in the receiving country while, migrant sending countries in return acquire expertise, technological advancement, and probable investment. However, migration poses grave threat to sending economies in terms of brain drain which deplete the stock of human capital. A larger part of remittances is used to smoothen household consumption of non-durable goods (e.g. food, clothing, and housing), and a reasonable part is spent on durable goods (financing education and health care assistance) while, a small percentage is used for savings and productive investments.

Consequently, an increasing remittance inflow often results in labour supply decline, helps loosen recipient's budget constraints, and raises overall consumption and aggregate demand that is bias towards non-tradable goods. It also serves as financial support on special occasions like funerals, religious celebration e.g., Ileya, Christmas etc, and weddings. Remittances have positive effect on the balance of payments and foreign exchange revenues as it serves as macroeconomic stabilizer by providing foreign currency that can lead to

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[1] Remittances are portion of migrants' earnings sent from the migrant's destination to family members resident in their places of origin; it includes both domestic and foreign remittances. The remittance is a function of migrant stock and economic conditions in remittance-sending, migrants' skill level, ability (their income and savings), and the motivation, willingness to remit is determined by migrant's duration of stay; marital status and network effects (OECD, 2006)

capital formation, increased employment, and increase national income, it then transcends to increased overall productivity leading to growth of GDP and later development. But in the absence of market failures, dwindling labour supply and growing consumption level will lead to rising production costs and expansion of non-tradable sector at the expense of the tradable sector, thus resulting into labour resources reallocation, i.e. Dutch disease phenomenon (Acosta et al 2009)[1].

The World Bank (2009) cited in UNCTAD report (2011) posit that remittances to developing nations has since 1988 increased in 15-fold, with a rose of $328 billion from $20 billion in 2007, among this, India; China; Mexico; Philippines and the Russian Federation received the largest shares of remittances relative to other economies of the world. Europe, Africa, Asia and Oceania, Latin America and the Caribbean received about US$50,805; US$38,611; US$113,055; US$67,905 billion respectively (IFAD, 2007). In 2005, stock of migrants among developing countries was around 47 per cent while to developed countries were around 53 per cent, with about 95 per cent of total emigrants evolving from developing countries.

Remittances inflow to Nigeria gained wide interest in 2002 when the Central Bank of Nigeria commenced the recording of remittances data. In 2004, the CBN reported about US $2.26 billion remittance inflows, this is equivalent to 3.15% of the GDP. More so, the Nigerian economy is been faced with the challenge of accelerating growth (recently lingering at about 7%) and reducing poverty. Nigeria is the largest and fastest growing economy in Africa as a result of the GDP rebasing that re-placed Nigeria's 2013 GDP at ₦80.2 trillion from ₦42.4 trillion, consequently the country recorded an average growth rate of about 7.6 percent with inflation rate of 8.9 percent in 2014 (CBN, 2014). The GDP figures for 1990 base year were strictly based on output estimates and the new base year incorporated ten new categories reflecting spending and income thereby giving greater weight to industries like communications and entertainment etc.

Earlier studies have examined the direct impact of remittances on poverty (welfare effect), and in another case, remittances on economic growth. However, to the best of our knowledge, only few studies have empirically analysed remittances and economic growth on household consumption. Given this background, the revived interest to examine the impact of remittances and economic growth as it trickles-down on citizens' welfare was revived to help fill the lacuna by shedding additional insight into how remittances evolve and how remittance and economic growth impact household consumption in Nigeria. This study is at variance with other studies in terms of choice of variables, specific sample size, methodology, and estimation techniques, it does this within the extended neoclassical growth framework using time series data set spanning from 1981 to 2012. In this study, we shall limit our study to foreign remittances.

Other than the introductory section, the rest of the paper is organized as follows: the next section provides trends and patterns of remittances, economic growth and poverty in Nigeria, section three presents a review of relevant literature. The fourth section addresses the methodology and discussion of results. The last section gives the conclusion and recommendations.

2. Stylised Facts
2.1 Brief History of Migration in Nigeria
Remittance primarily depends on the size of the population that chose to migrate[2], it has long followed dissimilar dimension. Since the 1990s, migration across borders has been rising in many countries, World Bank Africa Migration Project and a household surveys conducted in 2014 shows that over 50% of households in Nigeria, Burkina Faso, and Ghana; and 30% of households in Senegal receiving remittances from outside Africa sit at the top two consumption quintiles.

In the case of Nigeria, migration took a new trend after 1960 when some Nigerians began to travel to England with government backings to acquire study and are to return to occupy the vacant positions of the departing colonial masters. In the 1980s[3] migrants travelled for diverse reasons ranging from skill acquisition to pursuit of greener pasture as a result of dwindling economy and political tension. Nigeria's migration history saw both the Ibos and Yoruba's contribute significant number to the migrating population as the highest remittances inflows. Other prominent migrating-ethnic communities are the Edos, and Ogonis etc. The number of intra-developing countries migration constitutes 47% of total migrants from developing countries in 2005, 59% of total migrants are based in developed countries as compared to 41% in developing countries (DFID (2006)).

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[1] In their empirical analysis of the impact of remittances on export competitiveness and Dutch disease, they observed that an influx of foreign currency may result to an unexpected real exchange rate appreciation, leading to weak international trade competition and further hampering long-run economic growth.

[2] Migration is engendered by lack of opportunities at home and available economic gains elsewhere thus; migration is a family strategy to raise funds for investment and also insurance against risks Okodua (2010).

[3] The Presidential committee on Brain Drain in Nigeria set up by the Gen. Ibrahim Babangida in 1988 reveals that the country lost over 40,694 people to migration.

2.2 Remittances, economic growth and poverty

Remittances remain a vital and steady supply of private inflows to developing countries bringing large amounts of foreign currency; it is also a lifeline to the poor. Total global remittance figure stood at US$414 billion and US$440 billion in 2009 and 2010 respectively out of which US$307 billion and US$325 billion went to developing countries. Prior to this, total remittances received by developing countries was US$2.98 billion in 1975 but rose to US$93 billion in 2003, and then later to US$221 billion in 2006 from US$167 billion in 2005. Also, remittances to the Sub Sahara Africa grew steadily from US$4.62billion in 2000 to US$4.66billion in 2001 and rose to US$12.6billion in 2013 (World Bank, 2006). Nigerian remittances figures rose from less than US$1 million in 1970 to US$2.98 billion in 1975 and US$22 million in 1980. Also, between 1990 and 2000, the figure rose to US$1,618 million from US$10 million and thereafter follows a steady growth of US$17,945.94 million in 2007, US$19,200 million, and US$18,432.00 million in 2008 and 2009 respectively. In 2011, Nigeria's remittances inflow grew to $10,681 billion from $10,045 billion in 2010 (about half of all officially recorded remittances to Sub-Saharan Africa in 2010) compared to $1,392 billion in 2001 representing growth of over 767% in ten years, thereby placing Nigeria as the biggest recipient of remittances (World Bank, (2011)).

Similarly, the World Bank report, (2013) reveals that Nigeria sits at the table top as the highest-remittance receiving country in Africa and fifth in the world, with total value of US$ 21 billion following after India ($71 billion); China ($60 billion); Philippines ($26 billion); and Mexico ($22 billion). Remittances were estimated at $515 billion in 2014, while $441 billion of it is expected to flow to developing countries and to rise by 4.4% to $454 billion in 2015. A 2.9% remittance increase was estimated for Middle East and North Africa (MENA) region to reach $51 billion in 2014. Remittances to the African region are expected to attain $33 billion and $34 billion in 2014 and 2015 respectively.

An increase in GDP is generally taken to mean an increase in the standard of living; this is called the 'trickle-down effect' but, despite a weaker growth globally, African economies expanded at a moderately rapid pace, with regional gross domestic product (GDP) projected at 5.2% in 2015 from 4.6 per cent in 2014 (World Bank (2014)). The share of remittances to GDP are most significant in Lesotho, the Gambia, Liberia, Senegal and Cabo Verde while, remittances as a share of foreign exchange reserves are highest in Sudan, Senegal, Togo, Mali and Cabo Verde. In 2013, remittances' contribution to GDP saw the Gambia and Liberia ranked with 42%, and 32% respectively from top; Lesotho and Samoa had 24 percent each, and Armenia and Haiti with 21 percent each (World Bank, (2014)).

The contribution of remittances to gross domestic product in Nigeria stood at US$5.03billion in 2002, and further rose to US$9.41billion in 2005. It fell from 4.5% in 2010 to 5.4% in 2012 yet poverty incidence rose from 28.1 percent in 1980 to 46.3 percent in 1985, then it grew to 65.6 percent in 1996 despite Nigeria's position as the 10th highest world's remittances recipient country (World Bank, (2014)).

Furthermore, the humanitarian conflict (World War II) which led to forced migration had over 51 million people affected while, about 22 million people were forced migrate due to natural disasters. In developing Europe and Central Asia, about one million people were displaced, Pakistan and Iran top the list of refugee host countries, as millions of people from neighbouring countries remain displaced due to conflict. At the end of 2013, nine out of 10 refugees were being hosted in developing countries, e.g., the Syrian war displaced half the country's population with 3 million refugees crossing borders to Lebanon, Turkey and Jordan and 6.5 million people displaced internally (World Bank, (2014)). In particular, Nigeria's internal conflict such as Boko Haram insurgency and political instability are resulting in increasing forced migration in the region.
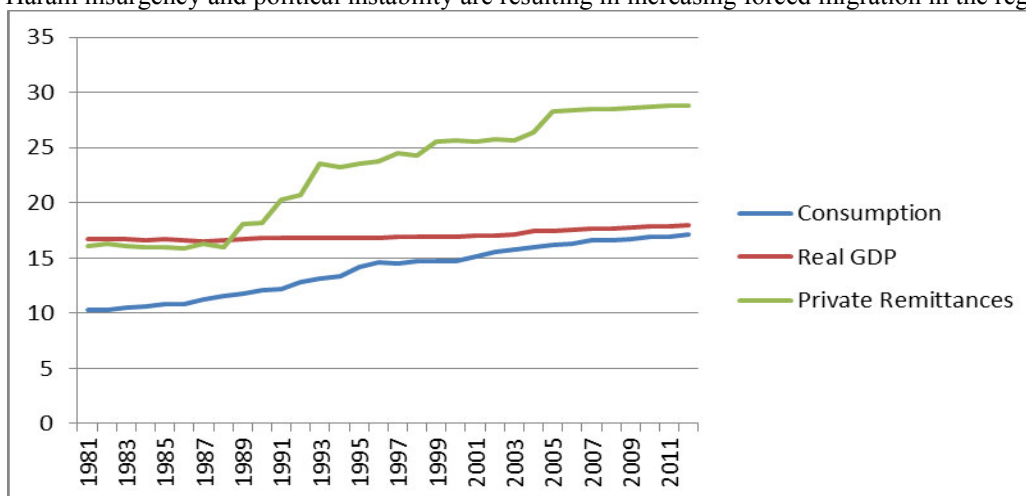

Fig 1: Pattern of remittances, economic growth and poverty in Nigeria

The figure above shows the trend analysis of remittances, real economic growth and household consumption in Nigeria. Following from the above figure, it can be seen clearly from the figure that between 1981 and 1988, the remittances inflow in terms of its growth rate rose in an unparalell lying below real GDP whereas real GDP practically maintains a stable growth rate though, rising but at a steady rate.

From 1988 beyond, growth rate of remittances witnessed a sporadic rise above real GDP and household consumption, this increases may be as a result of an increase in migration at independence and the devaluation of the Nigerian currency as a result of the structural adjustment programme, it thus means that it leaves a citizen better off to remit part of income earned abroad for either investment or direct consumption purposes. This increase in the growth of remittances continue to linger and perpetually overshot far above real GDP in Nigeria.

The incidences of poverty in Nigeria as measured by Nigerians access to food, clothing and shelter, that is, the citizens immediate welfare level has not been encouraging. Starting from 1981, household consumption was very lower and rises below real GDP and remittances, interestingly, consumption began to rise at a parallel level but never at any point neither reached nor rise beyond remittances and real GDP, though in 2011, it appears as if consumption level in Nigeria will catch up with real GDP but never did. Remittances contribution to gross domestic product in Nigeria stood at US$5.03billion in 2002, US$6.00billion in 2003, and rose to US$8.05billion in 2004 and highest in 2005 at US$9.41billion, with a ratio of 13.04 per cent, this supports the fact that Nigeria is the sixth highest destination of remittances from its citizens (World Bank, 2006).

3. Literature Review

Understanding the impact of remittances on economic growth, poverty or both is the result of the research efforts of the developmentalist optimism (1950-1960) and the pessimism (1970-1990) formed the crux of the theories of remittances. Different approaches to the theories of remittances have been highlighted of which the two prominent ones are: The endogenous migration approach which centres on the economics of the family include motivations based on altruism but not entirely limited to it. Migrant earns income and decides how to allocate savings between host and home countries assets. Conversely, portfolio theory considers the decision to remit as being influenced by the offer of a risk-return option which is weighed against local sources of income. Here, remittances behave like capital outlay which is conditioned on the rate of return; this approach is unique in that, it isolates the decision to remit from the decision to migrate.

Furthermore, determinants of remittance inflows hinges on the migrants' motivation to remit, Solimano (2003) posit that the theories of motives are the main drivers of remittances. First among the theories is the pure altruism theory which views concern about relatives' welfare in the home country as the focal motive to remit. Resting on some assumptions, remittances are expected to increase with the migrant's income and decrease with the domestic income of the family and over time as the attachment to the family gradually weakens. Secondly, under the theory of pure self-interest, remittances behave like investment is driven by the will to own assets in the home area. However, self-interested theories of remittances are still based on altruism i.e., self interest operates as machinery of risk-sharing arrangements by which agents could find partners (Chami and Fisher (1996), and Chami et al, (2003)).

The third one has both the implicit family loan agreement and coinsurance; the former believes that remittance determination is placed in a family framework of decision-making, with remittances being endogenous to the migration process. Poirine (1997) model the household as migration financier for some family members with the migrants remitting funds as loan repayment. Subsequently, the funds are made available to further the interests of other individual family member based on pareto-superior allocation strategy. Under the implicit co-insurance model, the migrant's family acts the role of the insurer; they finance the initial costs on behalf of the migrant because the migrant could not afford all the expenses alone. Lastly, Migrant's Saving Target judge migrants' goal is to return home with a certain amount of savings as motivation for remittance, the aim of achieving a desired level of saving causes a reduction in money remitted for family member consumption expenses.

On the consumption side, various proponents of consumption theories expressed different views toward the determinant of consumption. Generally, they believe that consumption is partially or wholly dependent on income. Keynes absolute income hypothesis believes that current consumption depends absolutely on current income; though, Duesenbery posit that it is the level of household income in relation to the household with which it identifies itself with that determines the proportion of the household income to be consumed, he called this 'the Relative Income Hypothesis'. Another line of argument in favour of determinants of consumption considers the mean of all anticipated income in the long-run i.e., the labour income plus capital income as the determinant of current consumption; this is regarded as the Permanent Income Hypothesis.

Economic growth can be propelled by a variety of factors. Theoretically, the classical theorist believes that huge capital transfer and industrialization moves poor economies towards rapid economic development. Several growth theories have been discussed in literature, only few ones relevant to the study are discussed below: the Solow growth model (1956) is built on four major variables; output, capital, labour, and knowledge or

effectiveness of labour. It assumes a Cobb-Douglas production function with constant returns to scale. Output is then expressed in unit of effective labour. The initial levels of labour, capital, and knowledge being given, labour and knowledge growth rate are constant rates and equals the rate of change of its log. The output produced is either consumed or invested. The only line of deviation between this model and the new growth theory is the inclusion of investment in human capital; innovation and knowledge as a significant contributor to economic growth. Thus, policy measures (e.g., subsidies) that promote research and development, and education; the increasing saving rate could increase the growth rate.

On the other hand, the Mundell-Fleming model gives an approach to analyzing the short-run dynamics of transfers, here, the impact of remittances on national output crucially depends on the prevailing exchange rate regime and the degree of capital mobility an economy is operating. Under fixed exchange rate regime, inflows will increase money supply and create a positive demand shock which can be transmitted over to the domestic economy; this may produce an increase in output coupled with an increase in domestic prices. On the contrary, the flexible exchange rate regime will greatly insulates the domestic economic system from an external shock. Since inflow of remittances leads to the appreciation of the local currency which further reduces foreign demand of domestic goods, it therefore counteracts the stimulus on national expenditure stem from remittances.

Among studies that have been reviewed on remittances, economic growth and poverty or consumption, some presented a positive result while others are negative. Combes and Ebeke (2011) in the analysis of the impact of remittance on consumption instability used a System-GMM-IV model for a cross-sectional panel of 87 developing countries over the period 1975–2004. They found that remittances significantly reduce consumption instability, the impact being stronger in financially less developed countries. However, the stabilising impact of remittances decreases at higher levels of remittances. Remittances also increases recovery to shocks, such as natural disasters and macroeconomic shocks thereby acting as both ex-ante risk avoidance tool as well as ex-post risk management mechanism.

Chami et al. (2009) found evidence supporting the notion that remittance inflows provide a stabilizing influence on output; also, remittances could foster investment by reducing the volatility of consumption and fosters a more stable macroeconomic environment. Quartey (2006) examined the impact of remittances on household welfare in Ghana by employing Ghana Living Standard Survey (1 to 4), he found that remittances improve household welfare and help to minimize the effects of economic shocks on household welfare. Gupta et al. (2009) observed that remittances reduce poverty via increasing household income which helps smooth the poor's consumption and ease capital constraints; it also has a marginal impact on growth going through domestic investment and human capital development.

Barajas et al., (2009), used the ratio of remittances to GDP of 84 recipient countries (1970–2004) to capture the effects of global reductions in transactions costs and other systematic changes in the microeconomic determinants of remittances. They posit that remittances could impact growth by its effect on capital accumulation; thus, it implies that it increase the rate of accumulation of capital and lower the cost of capital in the recipient country. Also, remittances have negative impact on labour force growth, remittances lead to a decline in labour force participation by substituting remittance income for labour income, and by consuming more leisure and doing less work.

Samuel et al (2013) in a study on the nexus between remittances and poverty in Ghana applied ARDL framework and poverty headcount ratio measured by the share of the population living below the national poverty line (defined as $1 on PPP basis (consumption base)) on data covering the period 1980 to 2010. They observed that real GDP, remittances and human capital are negative both in short and long-run. Poverty reduces as GDP increases; also, remittances indirectly impact economic growth through human capital and investment which are key determinants of the poverty equation.

Another striking study was the one carried out by Anyanwu and Erhijahpor (2013). They investigated how remittances affect poverty in 33 African countries and 75 observations over the period 1990-2005 using the OLS and IV-GMM technique. Both results confirmed that remittances reduce the level, depth, and severity of poverty in Africa but the size of the poverty reduction depends on how poverty is being measured (poverty headcount and poverty gap/depth and severity of poverty). They observed that an average of 10% increase in remittances will lead to an average 2.7% and 2.9% decline respectively in the share of people living in poverty while, estimates for poverty gap/depth and severity of poverty shows a slightly more negative for poverty incidence. Thus, as the amount of remittances increase the distance of the poor people from the poverty line decreases. The result of the OLS and IV-GMM yields similar results. They found that the coefficients for the IV-GMM are slightly more negative for poverty incidence, same level for poverty gap/depth and slightly lower for severity of poverty but all at equal level of significance.

Relatively few studies examined the impact of remittances on growth, a notable exception is Imai et al., (2014); they examined the effects of remittances on growth of GDP per capita using annual panel data for 24 Asia and Pacific countries. The results confirm that remittances inflows are not only beneficial to economic growth but also reduce poverty directly. Thus, migration and remittances are potentially a valuable complement

to broad-based development efforts. Guilano and Ruiz-Arranz (2005) criticized Chami et al (2003) for not accounting for endogeneity problem, their result assert that remittances improve credit constraints on the poor, improve the allocation of capital, substitute for the lack of financial development and thus accelerate economic growth.

In another study, Giuliano and Ruiz-Arranz (2009) verified the link between remittances and economic growth, and its interaction with the financial development in the recipient country using the data for over 100 countries in 1975–2002. They found that remittances have promoted growth in less financially developed countries. Rao and Hassan (2009) explain the effects of remittances on growth by using the Solow growth model and observed that remittances have positive but marginal effect on growth. Also, Natalia et al. (2006) found a positive impact of remittances on economic growth and also concluded that a sound institutional environment can affect the volume and efficiency of investment. Udah (2011) posit that remittances affect economic performance in Nigeria via its interaction with human capital and technology diffusion.

Another line of studies present contrasting view in that remittances do not sufficiently benefit output growth or the plight of the poor. De Hass (2007) raised caveat on the danger of unrestrained optimism concerning the potential of remittances to reduce poverty, he posit on the observation that remittances significantly contribute to income stability and welfare in developing countries does not necessarily imply that they contribute to poverty alleviation. Cattaneo (2005) estimated the average income of the poor as a function of the nations' average income, income inequality, level of migration and remittances and other local factors in 149 labour sending countries; he found that remittances do not impact poverty. Imai et al., (2014) conclude that remittances should not be completely seen as a panacea for growth and poverty reduction because it often resulted in lower work effort, brain drain and Dutch disease. More so, Chami et al, (2003) regressed per capita real growth on investment, change in remittances, and net private capital inflows; they suggest that remittances are unlikely to promote economic growth because of a moral hazard problem.

Agu (2009) used a four-sector medium scale macro model to study the relationship between remittances and the macro economy in Nigeria. The study revealed a weak link between remittances, the real sector and components of aggregate demand highlighting that the existence of leakages of remittances proceeds through imports could be responsible for the weak nexus. Imai et al. (2014) presents some new evidences that the volatility of remittance and FDI is harmful to economic growth. This means that, while remittances contribute to better economic performance, they are also a source of output shocks. Barajas et al. (2009) found no relation between remittances and growth. In conclusion, the Global Forum on remittances held by IFAD and the World Bank in Bangkok (2013) emphasised that remittances could benefit economic development more than other foreign inflows combined.

4. Methodology
A methodology apt towards achieving reliable results and taking necessary steps at abating the problem the research seeks to solve is employed. This study obtains data spanning through 1981 to 2012 from the World Bank development Indicator (2014) and Central Bank of Nigeria statistical bulletin (2014). The model adopted in this study hinges on the theory of pure self-interest and the neoclassical growth model[1]. The latter view the motive for remitting as being influenced by investment decisions, remittances enter is a source of capital for investment purposes and driven by the will to own assets in the home country. Also, Remittances increase the rate of capital accumulation and lower the cost of capital in the recipient country while, remittances spent on education affects total factor productivity growth by impacting the efficiency of investment (Barajas et al. 2009).

On the other hand, the neoclassical growth model helps to explains: how remittances augment capital or replaces capital for investment, remittances affects investment could influence growth in the long run output growth and subsequently, the trickle-down mechanism of remittances and output growth on household welfare. This model is considered appropriate because it allows us to extend and estimate without a need for a complicated non-linear dynamic specification compared to other endogenous growth models. The model assumes that economic growth is independent of the savings rate in the long run and equates saving to investment by assuming a closed economy so as to avoid the issues of trade surpluses and deficits.

4.1 Model Specification
The output growth model followed the works of Giuliano and Ruiz-Arranz (2005) and Ahortor and Adenutsi (2009), they use the Cobb Douglas production function and an explicit estimable function, after taking the natural logarithms on both sides, I re-specify the equation as:

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[1] Economic growth depends on capital accumulation; physical-consumed directly in production process, and human capital investment e.g., education, health etc, and technological progress

$$\text{In}RGDP_t = \alpha_0 + \alpha_1 \text{In}REM_t + \alpha_2 \text{In}OILR_t + \alpha_3 \text{In}EXR_t + \alpha_4 \text{In}RINV_t + \alpha_5 \text{In}LIT_t + \varepsilon_{1t} \dots (4.1)$$

Thus,

$$\text{In}GDP_t = \beta_0 + \beta_1 \text{In}A_t(Z_t) + \beta_2 \text{In}Q_t + \varepsilon_{2t} - (4.2)$$

Where, RGDP is proxy for real GDP in million of US Dollars in constant prices; REM_t is Foreign remittances as percentage of GDP; OILR is oil revenue; LIT is literacy rate proxy for secondary school enrolment; EXR is Exchange rate; RINV as a share of real GDP proxy for Gross fixed capital formation; Z_t is a vector of growth improving variables specified in Eq. (4.2), Q_t is a vector of control variables like Foreign Direct Investment (FDI); the ratio of total exports and imports to GDP proxy for Trade openness (TOP); CPI proxy for inflation which is an indicator of macroeconomic stability, which are relevant to the country under study. β_0 is a constant parameter, β_1 and β_2 are parameter coefficients, u is the white noise error term. The signs of all the coefficients are expected to be positive in human capital, investment and trade openness on output and negative in foreign exchange.[1]

On the other hand, following from Ravallion (1997) and Adam and Page (2005) with little modifications[1], the model that shows the link through which remittances and economic growth affects poverty proxy for welfare in Nigeria is specified below:

$$\text{In}PV_t = \phi_0 + \phi_1 \text{In}RGDP_t + \phi_2 \text{In}REM_t + \phi_3 \text{In}LIT_t + \phi_4 \text{In}CPI_t + \mu_t - (4.3)$$

Where PV is the index of poverty measured by household final consumption expenditure, Real GDP (RGDP) is used as proxy for economic growth, REM is remittances, Literacy levels are captured by literacy rate in adult total (% of people ages 15 and above), CPI is inflation. ϕ_0 is the intercept; based on previous studies, $\phi_1 > 0$, $\phi_2 > 0$, $\phi_3 > 0$, $\phi_4 < 0$ and μ is the stochastic disturbance term.

Then taking the natural logarithms on both sides, I specify the reduced form equation modified[2] models as;

$$Log PV_t = \phi_0 + \phi_1 Log RGDP_t + \phi_2 Log REM_t + \phi_3 Log Q_t + \mu_t - (4.4)$$

Where, PV is the index of poverty measured by household final consumption expenditure, real GDP (RGDP) measured in millions of US Dollars in constant prices is used as proxy for economic growth, REM is foreign remittances, Q_t is a vector of control and growth improving variables which includes: GOVEX is government spending, Literacy levels are captured by literacy rate in adult total (% of people ages 15 and above), Foreign Direct Investment (FDI), Trade openness (TOP) measured as the ratio of total exports and imports to GDP, and CPI proxy for inflation which is an indicator of macroeconomic stability. ϕ_0 is the intercept; $\phi_1 - \phi_3$ are the coefficients of the parameter; u is the white noise error term. Based on previous studies, $\phi_1 > 0$, $\phi_2 > 0$, ϕ_3 is ambiguous depending on the components of Q. The choice of consumption as proxy for poverty was born out of limited time series data on poverty in Nigeria; , thus, number of indicators for measuring poverty have been used by previous studies; such as Gini coefficient, annual per capita income (this does not take into account other poverty dimensions), rate of population living within 1 or 2 $ per day. However, studies have shown that consumption expenditure for the poor is usually more stable than income (see Ravallion, 1992), this is corroborated by study from Quartey, (2005).

4.2 Estimation Techniques

Although time series data are used heavily in econometric studies, it presents special problems for econometricians. The estimation techniques employed to estimate and interpret the econometric and empirical investigation sub-existing between the variables are:

Unit root test- The time series properties of the variables are examined to ascertain its stationarity by applying the Augmented Dickey-Fuller (ADF). This involves the estimation of equations with drift and trends as expressed below:

$$\Delta Z_t = \eta_0 + \eta_1 Z_{t-1} + \sum_{i=1}^{n} \pi_i \Delta Z_{t-i} + \nu_t \qquad (2)$$

$$\Delta Z_t = \eta_0 + \eta_1 Z_{t-1} + \eta_1 t + \sum_{i=1}^{n} \pi_i \Delta Z_{t-i} + \nu_t \qquad (3)$$

$$H_0: \quad \eta_1 = 0$$

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[1] None of the poverty measures (Poverty headcount ratio at $1.25 a day (PPP) (% of population); Poverty gap measures the mean distance below the poverty line as a proportion of the poverty line, which captures how far below the poverty line the average poor person's income is) can be applied in the study due to data unavailability between the study period.

[2] The modification enable us incorporate specific variables which are relevant to the macroeconomic performance of the country under study

$$H_1: \quad \eta_1 < 0$$

The time series variable is represented by Z_t and ν_t as time and residual respectively. Equations (2) and (3) are the test model with intercept only, and linear trend respectively. The Co-integration test is conducted to determine existence of long-run linear dependency among the choice variables co-integrating vector(s). The Johansen co-integration test will be used to answer the cointegration questions using the Eigen value and the trace statistic at given level of significance. If Johansen trace statistics or maximum Eigen value statistics is greater than its critical value, the null hypothesis is rejected meaning that co-integration exists, and vice versa.

Lastly, the Theil (1954) and Basmann (1957) developed the Two-Stage least squares (2SLS) regression for analysing structural equations, it is most applicable when the error terms of the dependent variable correlates with the independent variables and in presence of feedback loops. The TSLS requires that the endogenous regressors on the right-hand side of each equation are being instrument with the regressors X from other equations in the model. Thus, the TSLS is used to correct probable errors of endogeniety amongst the variables and yet estimate the effects of remittances and economic growth on household consumption.

5. Discussion of Empirical findings

5.1 Unit Root Test Result

The first step in investigating the impact of remittances and economic growth on consumption requires that the stationarity status and orders of integration of variables in equation (5.1) be determined. Based on the ADF test, the null hypothesis is that the series is non-stationary, or contains a unit root. The rejection of the null hypothesis is based on MacKinnon critical values. The results of the unit root are presented in Table 5.1.

Table 5.1: Augmented Dickey-Fuller Unit Root Test[1]

Variable	Critical values: Levels		Difference		Order of Integration
	t-Statistic	Prob.* Values	t-Statistic	Prob.* Values	
LPV	-1.132739	0.6894	-3.600763	0.0121	I (1)
LRGDP	1.224728	0.9976	-3.341103	0.0220	I (1)
LREM	-0.735898	0.8225	-2.583756	0.1077	I (1)
LGEXP	-0.697308	0.8326	-4.675413	0.0008	I (1)
LOILR	-1.168481	0.6746	-4.971436	0.0004	I (1)
LINV	-1.452189	0.5435	-4.668075	0.0008	I (1)
LEXR	-1.946725	0.3075	-3.501045	0.0152	I (1)
LFDI	-1.094288	0.7048	-4.013223	0.0044	I (1)
LTOP	-0.498875	0.8780	-3.989247	0.0047	I (1)
LLIT	-0.884722	0.7791	-3.657036	0.0105	I (1)
LCPI	-3.627592	0.0111	-6.128340	0.0000	I (0)

Note:* & ** denote 1%, and 5% significance level respectively, the optimal lag structure is determined by SIC.

Source: Author's Estimation, E-view 7.0 **(2015)**

The results shows that none of the series is integrated of I(2) or higher. However, all variables are integrated of order I(1) except for CPI that is integrated of order I(0).

5.2 Co-integration Result

Having confirmed the stationarity of the variables, I proceed to determine whether there is an existence of a long term linear relation Table 4.2 and 4.3 shows the result of both trace and max-Eigen value statistics for variable used in the models.

Table 5.2: Johansen Co-integration Test Result

Hypothesized No. of CE(s)	Trace Statistic		Max-Eigen Statistic	
	(λ trace)	Critical values (5%)	(λ Max)	Critical values (5%)
None *	193.9393	125.6154	65.30519	46.23142
At most 1 *	128.6341	95.75366	53.73504	40.07757
At most 2 *	74.89906	69.81889	38.16938	33.87687

Trace test and Max-Eigen value indicates 3 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values

Result of table 5.2 (i.e. trace and maximum Eigen value) rejected the null hypothesis; thus accepting the fact that there is co-integration among the variables. The result of the trace statistic test and maximum Eigen value test

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[1] In order to save space, the full length of the unit root tests is removed from this summary, however, the results will be made available if requested

revealed 3 co-integrating vectors. The presence of co-integration unveils the existence of a long run relationship between real consumption and the independent variables used in the model, which has been established. Since there is at least one co-integrating vector, an economic interpretation of the relationship between real consumption and the independent variables can be obtained by normalizing the estimates of the unconstrained co-integrating Vector. Consequently, the result shows a statistically significant positive link between real consumption and economic growth, trade openness and inflation; while remittances, real investment, and literacy rate revealed a negative relationship to growth in the long run. The co-integration result shows that there exist long-run relationships between real consumption and the independent variables.

5.3 Granger Causality Test Results

It is pertinent to examine the linear causation between each of the remittances, poverty and economic growth before estimating the model. This is usually done through the Granger causality test which states that a variable such as remittances, real GDP, and real consumption (proxy for poverty) can each other Granger-cause if and only if the prediction of RGDP, PREM, and PV is improved solely by their past values and not by other series included in the analysis. For instance, a simple Granger causality test involving the variables can be written as:

$$REM_t = \alpha_0 + \sum_{i=1}^{N1} \alpha_{1i} REM_{t-1} + \sum_{i=1}^{N2} \alpha_{2i} RGDP_{t-1} + \varepsilon_{1t} \qquad (4)$$

$$RGDP_t = \beta_0 + \sum_{i=1}^{T1} \beta_{1i} RGDP_{t-1} + \sum_{i=1}^{T2} \beta_{2i} REM_{t-1} + \varepsilon_{2t} \qquad (5)$$

$$REM_t = \phi_0 + \sum_{i=1}^{N1} \phi_{1i} REM_{t-1} + \sum_{i=1}^{N2} \phi_{2i} PV_{t-1} + \varepsilon_{3t} \qquad (6)$$

$$PV_t = \varphi_0 + \sum_{i=1}^{N1} \varphi_{1i} PV_{t-1} + \sum_{i=1}^{N2} \varphi_{2i} REM_{t-1} + \varepsilon_{4t} \qquad (7)$$

$$RGDP_t = \delta_0 + \sum_{i=1}^{N1} \delta_{1i} RGDP_{t-1} + \sum_{i=1}^{N2} \delta_{2i} PV_{t-1} + \varepsilon_{5t} \qquad (8)$$

$$PV_t = \alpha_0 + \sum_{i=1}^{N1} \alpha_{1i} PV_{t-1} + \sum_{i=1}^{N2} \alpha_{2i} RGDP_{t-1} + \varepsilon_{6t} \qquad (9)$$

Where: $N_{i's}$ and $T_{i's}$ are the maximum lag length, ε_{1t} to ε_{6t} are white noise error terms, identically and independently normally distributed with mean zero and constant variance. The results of the bi-variate Granger causality test are presented in Table 4.4.

Table 5.4: Bi-variate Granger Causality Tests

Null Hypothesis:	F-Statistic	P-Value
REM does not Granger Cause PV	2.07379	0.1468
PV does not Granger Cause REM	3.57693	0.0430
RGDP does not Granger Cause PV	0.60039	0.5563
PV does not Granger Cause RGDP	2.95647	0.0704
RGDP does not Granger Cause REM	5.37674	0.0114
REM does not Granger Cause RGDP	1.23700	0.3074

Source: **Author's Computation 2015**

A closer look at table 5.4 revealed that the null hypothesis that remittance does Granger cause poverty and real GDP at the five per cent level is rejected. This demonstrates that remittance actually does not cause increase in poverty and real GDP in Nigeria. Also, the null hypothesis that poverty, real GDP does not Granger-cause remittances is rejected even at the ten per cent level. The results also indicate that there is no causality moving from real GDP to poverty in Nigeria.

5.4 Empirical Estimate of the model

Following from the first model stated in chapter four; Table 5.4 showed the TSLS results obtained from the empirical analysis of the impact of remittances and other macroeconomic variables on economic growth in Nigeria. The dependent variable is the logarithms of real GDP, the independent variables are the logarithms of REM, RINV, OILR, FDI, EXR, LIT, TOP and CPI.

Table 5.4: TSLS result of the impact of remittances and economic growth on welfare
Dependent Variable: Consumption in real terms

Dependent Variable	Coefficient	T-Statistic	P-value
C	28.05956	2.111745	0.0445
RGDP	-2.299409	-2.114480	0.0442
REM	0.536894	10.54632	0.0000
LIT	3.941985	2.774319	0.0101
CPI	-0.138763	-1.192803	0.2437
R-squared	0.970659		
Adjusted R-squared	0.966145		
F-statistic	216.9669		
Prob(F-statistic)	0.000000		
Durbin-Watson stat	1.619518		

Note: *, ** and * denote 1%, 5% and 10% significance level respectively**
Source: Author's Estimation from E-views 7. 2015

Table 5.4 above shows the TSLS regression results of the impact of remittances and economic growth on poverty in Nigeria. It indicates that only the coefficients of remittances and literacy rate exert a positive and statistically significant impact with approximately 't-test' statistic value (Absolute) of 10.6 and 2.8 respectively at 5% level of significance, also real GDP is statistically significance but at 10% level of significance with approximately 't test' statistic value (Absolute) of 2.1. However, inflation is not is statistically significance. Sequel to the table above, the variables considered under this model are explained and discussed as follows. The first of these variables is the real GDP, the coefficient of this variable is -2.299409, and this shows that real GDP exerts a negative significant impact on real consumption (proxy for poverty) implying that a 1 percent increase in real GDP raises poverty by about 0.058 percent.

Though theoretically, the neo classicalist believes that an increase in real GDP is expected to translate to poverty reduction, this is not the case with Nigeria and this could be attributed to several reasons. Chief among these is corruption, only those who have access to loot funds invest and get the return and it does not trickle down to the citizenry. Secondly, major investments (such as oil, communication, banking and manufacturing) which drive the economy are being controlled by very few Nigerians thus; imply that the rich get richer while the poor get poorer. The second variable remittances (REM) have a coefficient of 0.536894 implying a positive and significant impact on real consumption in Nigeria, meaning that a 1 percent increase in remittances (REM) inflow will raise remittances receiving-household welfare by about 0.54 percent, thus, translating to poverty reduction.

The next variable, Literacy rate (LIT) has a positive significant impact on real consumption with coefficient of 3.941985, suggesting that a 1 percent increase in the level of education raises Nigerians welfare by 3.94 percent. CPI proxy for inflation exerts a negative insignificant impact on poverty reduction in Nigeria with coefficient of -0.138763, because a higher inflation rate leads to money illusion and reduces the purchasing power of money. This can be interpreted as 1 percent increase in inflation reduces real consumption by about 0.13 percent, implying a reduction in welfare.

The coefficient of determination indicated by (R^2) shows that about 97 per cent of the variations in real consumption (proxy for poverty) are explained within the model, and adjusted R^2 = 0.96. The overall regression result measured by F-statistic (Prob./.000000) is significant, indicating a good fit for the model. Pertinent to the above, the Durbin-Watson (DW) statistic (measure for the presence of autocorrelation in the model) is 1.62, it is noticed therefore, that our model is free from autocorrelation as the value is approximately close to 2. This means that the model is reliable in explaining the real consumption (proxy for poverty) in Nigerian.

6. Conclusion

Despite the miracles that remittances can and has performed, it is unimpressive that the Nigerian government is yet to maximise the growth-remittances importance on poverty reduction. This study recommends that the government officials should critically contextually, develop workable models and implement programmes that can enhance the positive impact of remittances and economic growth on welfare in Nigeria. Policy makers should design, tailor and implement policies that can sufficiently encourage the most use of remittances for the consumption of domestic goods which invariably increases production and boosts investment in both human and capital goods. Also, the Nigerian government should endeavour to fight corruption and all forms of political instabilities and terrorism in other create an enabling environment for growth and development.

Finally, Nigerian government should examine several growth-remittances techniques and models that have worked in countries with similar structures as a point of reference so as to maximise the growth-remittances importance on poverty reduction. However, the joint impact of remittances and economic growth on poverty

reduction has been down played in Nigeria. Remittances inflow is seen to boosts per capita income and when spent on domestic consumption raises household's welfare, and increases production. In spite of the position Nigeria occupies as the top remittances recipient country and the fastest growing economy in Africa, little effort has been made to efficiently put to use the huge remittances inflow for welfare improving and development programmes since remittances cannot be said to contribute significantly to the increasingly growing Nigerian economy.

Although, several economies might have benefitted immensely from the huge flow of remittances yet, the case of Nigeria is different. Several factors accounts for the insignificant impact of remittances on welfare and growth ranging from high unemployment rate 24% (CBN, 2014), Corruption which has proven itself to be the chief parameter that retard poverty reduction this is because, though we are the fastest growing economy in Africa yet the concentration of much funds in the hands of the few cripple the trickling down effect of economic growth to increase per capita income.

The intense political instability (Boko Haram insurgence) in some part of the country could also hinder remittances inflow as migrants would not be encourage to remit, the unending fluctuation of the exchange rate due to massive fall in the prices of oil at the international market cum heavy dependence on oil serves as a greater incentive to the entire system, as it increases the final value of money received by remittance receiving household.

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