Dynamic Impact of Remittance on Economic Growth in Nigeria

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Abstract
As a result of globalisation the world over which liberalise labour movement across international border, remittance have gained a place of prominence as a good source of foreign capital inflow. In Nigeria in the era of financial depression for instance remittance increases while other sources such as FDI and FPI plummeted. Based on the current trend of remittances, this study investigates the dynamic impact of workers' remittances on economic growth in Nigeria between 1970 and 2013. Adopting the model built by Glytsons (2012) as adopter by Malik and Junaid (2009), we constructed a Keynesian linear simultaneous equation of macro econometric to determine the effects of worker's remittances on consumption, investment, import and GDP at large. The above model was estimated using Generalised Method of Moment (GMM) estimation technique which overcome problem of endogeneity and autocorrelation inherent in OLS. The result of our GMM estimate shows that all the coefficients of consumption, investment and import are positive and significant. The short run or impact multiplier of private consumption, investment, import and income respectively are positive. This imply that a unit increase in remittance will lead to 0.91, 0.21, 0.41 and 0.7817 unit increase in consumption, investment, import and GDP respectively. The dynamic multiplier for consumption gradually converges while that of investment slightly converges. However the dynamic impact of import converges to zero in the third year. Finally the dynamic impact of income converges slightly. The study therefore concluded that remittance flows Nigeria between 1971 and 2013 have significant positive effects on economic growth of Nigeria. This effects work through the spill over that remittance has over local component of GDP namely, consumption, investment and import, following Keynesian open economy model of income.

Key words: Dynamic, Remittance, Nigeria, Economic Growth

Introduction
As a result of globalisation and industrialisation going on in the world the entire world has

become a global village. This opportunity affords workers in the developing countries to migrate from their home countries where the reward of labour is small to the industrial world where they are well compensated. The experience in Nigeria after collapse of stock market as a fall out of condition from international market triggers the rush for international job. The drive for capital inflow via remittance has also been on the increase as a result of the geometric increase in labour outflow to the industrial countries.. For instance, remittance that stood at $644,000 in 1970 rose to $22,000,000; $1,391,800,049 and $21,958.109,264 in 1980, 2000 and 2013 respectively.

Recent evidence in literature has proved that the inflows of remittance have exceeded other types of capital inflows into developing countries (Yang, 2011; Prakash, 2009). With specific reference to Nigeria, Nwosa (2014) discovered that workers' remittances have exceeded both FDI and foreign aid. Two further studies have also noted that workers remittance is not only more stable compared to other capital inflows but that it also increases when the recipient country is undergoing economic downturn due to financial upheavals, ecological problems or political uprising which compel migrants to send more funds home to assist their loved ones. (Junaid, Khalid and Iqtidar, 2011; Jamshaid and Waqar, 2008; Ratha, 2007; Kapur. 2006; Claudia and Anja, 2004). The above assertion was evidenced in Nigeria during the global financial crisis of 2007/2008 when FDI and foreign aids plummeted but remittances were on the increase (Nwosa, 2014).

2.0 Literature Review
2.1 Theoretical Review.
Over the years there has been growing number of theoretical literature which provided rational for migrants remitting funds to their home country. These include pure altruism theory, implicit family agreement theory and portfolio management decision theory.
According to Kaasschieter (2014), pure altruism theory is anchored on the motive for migrant remitting money home out of concern for the wellbeing of his family and associates in his or her home country. This theory is anchored on three basic assumptions. First remittance is a function of the immigrant income. Second is the level of income of the migrant family and associates in the home country (The higher such income, the lesser the remittance and vice versa). Third is the level of attachment to the family member by the migrant (The higher the attachment, the higher the remittance). However the level of attachment is inversely related to the number of years the migrant have been residing abroad.
On the other hand the implicit family agreement theory propounded by Lucas and Stark (1985), emphasises how migrants and family at home develop an implicit contract that will mutually benefits all from migration. The contract normally combines element of investment and repayment. In the loan repayment theory, the family invests in the education of the migrant as well as the cost of migrating. The repayment of the principal and interest will commence via remittance after the migrant has been gainfully settled (Kaasschieter, 2014). This theory was buttressed by empirical work of Poirine (1997).

The portfolio management decision theory was based on macroeconomic factors in both host and home countries of the migrants that significantly influence the flow of remittance. Among such macroeconomic factors identified in literature are; savings rate, inflation rate, exchange rates, government policies and political stability (Pozo, 2005; Prakash, 2009). Furthermore, Straubhaar (1986) provide empirical evidence on this theory in his research of Turkey. Out of these three theories, it is only portfolio management decision that directly affects investment and also impact into the economic growth. The rest are consumption based which do not bear direct influence on investment and economic growth. There is therefore

need to investigate indirect effect of the remittance on economic growth.

2.2 Empirical Review.

Several studies examined the relationship between workers remittance and economic growth. For instance, Glytson (2005) examined the effect of workers remittance on economic development for Egypt, Jordan, Greece, Morocco and Portugal for the period 1969 to 1998. The result shows that effect of workers remittance on economic development of the studied countries varies from time to time and across countries. Working along the same line, Natalia et al (2006) examined the relationship among remittances, institutions and economic growth for the period 1970 -2003 using Dynamic Data panel estimates, the study found that remittances exert weak positive impact on long term macroeconomic growth. Ang (2007) while working on the relationship between workers' remittance and economic growth in Philippines at both micro and macro levels found that there exist a positive relationship between workers' remittances and economic growth at macro level while such evidence did not exist at micro level.

Examining further the effect of workers remittance on economic growth of thirty seven African countries for the period 1980 to 2004 Fayissa and Nsiah (2008) adopted fixed-effects and random-effects model which accounted for heterogeneity of African economies and the difference in the traditional sectors contributions to the economic growth of African economies. The findings shows that remittances had significant impact on both the current level of gross domestic product (GDP) and the economic growth rate of Sub-Saharan African countries as well as investments in physical and human capital. The study therefore concluded that workers' remittances play an important role in the growth of Sub-Saharan African countries by augmenting the dwindling external sources of capital in the form of foreign aid and FDI in Africa. The work of Malik and Januid (2009) analysed the dynamic impact of workers' remittances on economic growth for Pakistan between 1973 and 2007 using Generalized Method of Moments (GMM). The study did not only concluded that remittances had positive influence on private consumption but that it positively influenced economic growth through the multiplier effects.

Advancing further the effect of workers remittance on economic growth for 84 recipient countries for the period 1970 – 2004, Barajas et al (2009) employed a panel regression approach and found no impact on the economic growth of the countries under study. This result was corroborated by the findings of Shafium (2013) in Bangladesh for the period 1976-2007 where the autoregressive distributed lag model and Engel- Granger two step procedures for co-integration test indicated that remittance had an insignificant impact on GDP per capita. The above results almost agreed with the finding of Karagoz (2009) in turkey where his time series regression analysis for the period 1970 – 2005 revealed that remittances had negative impact on economic growth. These observations appeared to be justified in the study carried out by Sami and Mohamed (2012) while examining the channels through which remittance can promote economic growth in MENA countries for the period 1980-2009. They concluded that remittances do not have impact on economic growth because most important parts of remittances were consumed and that remittances could only stimulate growth when they are invested. However, they concluded that remittances can enhance growth by encouraging human capital accumulation.

In Morocco, Makhlouf and Naamane (2013) examined the contribution of workers' remittances to economic growth. They applied a Vector Auto-Regressive model (VAR), the impulse response functions and variance decomposition which show that the workers remittance had a positive impact on the GDP per capita and economic growth through financial development. While working on the effect of remittance on economic growth in

Tunisia between 1976 and 2006, Barguellil and Zaiem (2013) employed both co-integration and ordinary least squared method of analysis. The co-integration estimate revealed the existence of a long run relationship among the variables while the ordinary least squared estimate showed that remittances had a negative effect on economic growth however the inclusion of education in the regression estimate changed the impact of remittance on economic growth to positive. This suggests that the impact of remittance could be better felt on economic growth through human capital development.

2.3 Trend of Workers' Remittances in Nigeria.

Workers' remittances are transfers either in cash or kind from a migrant to their friends and relations in their home country. According to Benmamoun and Lehnet (2013) remittances are often motivated by the desire of the migrant to support their families, friends and or investment in their home country. Remittance has been diversely viewed in literature. The World Bank and International Monetary Fund (IMF) while defining workers remittance' stratified it into three categories. First, is the transfer in cash or kind from migrants to resident household in the country of origin; second is compensation, wages, salaries and other remuneration paid in cash or kind to an employees who worked in a country other than where they legally reside and third is the migrant capital transfer in form of financial assets as they move from one country to another and stay for more than one year (Akkoyunlu and Vickerman, 1997; Edwards, 2010). The workings of United Nations Technical subgroup on the movement of persons classify distinctly remittances into personal, institutional and total remittances. While personal remittance capture capital transfers made by resident households to resident households; institutional remittances consists of transfers by any residential sector to non-resident households and non-profits organisations and total remittance is a combination of the above two (World Bank, 2006; Benmamoun and Lehnert, 2013).

Numerically, the level of workers remittance that stood at $644,000 in 1970, witnessed tremendous increase up till 1977 when it stood at $20,000,000 but declined sharply to $3,000,000 in 1978. However by 1980, it rose back to $22,000,000 before it began a consistent decline until it got to its lowest ebb of $2,000,000 in 1988. From 1989 to 1997 workers remittance witnessed a consistent increase until it got to the peak of $1,920,000,000 but thereafter it suffered a gradual decline until it got to a level of $1,062,800,049 in 2003.From 2004 however the story took a new dimension as there was a steady but sharp increase in workers remittance to the level of $21,958,109,264 in 2013. This new trend could be attributed to combination of factors. First there was high level of unemployment and insecurity in Nigeria which culminated in the citizen search for greener pasture abroad. Second, is the ease of transfer of fund at low cost arising from the global financial system. Third is the state of Nigerian economy which made migrants to see themselves as a possible messiah for their friends and relations in their home country.

We present the above picture graphically in Fig. 1. below.

Fig. 1: Trend Analysis of Workers Remittance (1970 – 2013)

YEARS
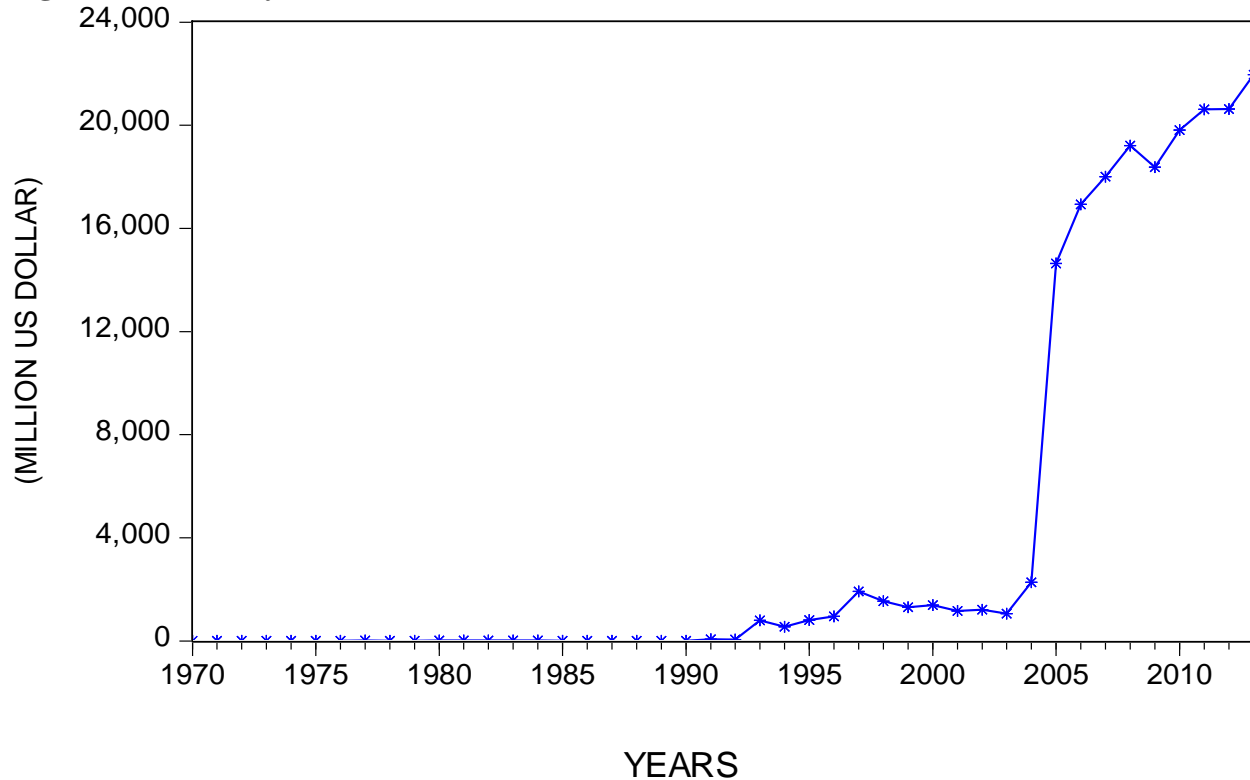
Source: Author's computation Using Data from WDI, 2015.

From fig.1 one could notice an unimpressive growth in workers remittance between 1970 and 1992 this could be attributed to the high strength of Nigerian naira which made it of no use for Nigerian to rush abroad for greener pasture. However from 1993, there was a noticeable rise in workers remittance with fluctuation from 1994 to 2004 after which a tremendous sudden and sharp rise in workers remittance was noted until year 2013 when remittance stood at $21,958,109,264.

3.0 Model specification.

The major goal of this model is to isolate empirically the impact of remittance on major economic variables that affect growth in Nigeria both in the short and long run. We adopt Glytsos (2002) model as adapted by Malik and Junaid (2009) to test this effects. Here we construct a linear simultaneous equation of macro econometric model in order to determine the effects of workers' remittances on consumption investment, import and the level of income. The model will consist of three behavioural equations and one equilibrium condition as specified

$$C_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 C_{t-1} \text{ -- (1)}$$
$$INV_t = \beta_0 + \beta_1 Y_t + \beta_2 K_{t-1} \text{ ---(2)}$$
$$M_t = \delta_0 + \delta_1 Y_t + \delta_2 M_{t-1} \text{ ---(3)}$$
$$Y_t = C_t + G_t + INV_t + (E_t - M_t + R_t) \text{ ---------------------------------(4)}$$

Where Y_t = Gross domestic product

C_t = private consumption expenditure

G_t = Government expenditure at time t

Inv = Gross fixed capital formation

R_t = Workers remittance at time t

M_t = import of Goods and Non-Factor services at time t

$K_{d,t}$ = Domestic Investment (Proxy for capital stock)

Equation (1) is a dynamic consumption equation that incorporates partial adjustment. Here the level of current income and lagged value of consumption are explanatory variables for the current consumption. Equation 3 assumes that investment is a positive function of income (Y) and negative function of a lagged capital stock ($K_{d,t-1}$) adjusted to the stock equation 4 is the imports equation where the level of income and lag of imports are used as the explanatory variables. Equation 5 is income identity.

Apriori expectation

$\emptyset_0 > 0$, $\emptyset_1 > 0$, $\emptyset_2 > 0$, $\lambda_1 > 0$, $\lambda_2 < 0$, $\lambda_3 > 0$, $f_1 > 0$, $f_2 > 0$, $\lambda_0 > 0$, $\delta_0 > 0$

Impact multiplier

After we carry out necessary operation on equation 1, 2 and 3, the following reduced form simultaneous equation for consumption, investment and import were obtained:

$$ZC_t = \alpha_0(1 - \beta_1 + \delta_1) + \alpha_1(\beta_0 - \delta_0 + \alpha_1 G_t + \alpha_1 E_t + \alpha_1 R_t + \alpha_2(1 - \beta_1 + \delta_1)C_{t-1} + \alpha_1\beta_2 K_{t-1} - \alpha_1\delta_2 M_{t-1} - (5)$$

$$ZINV_t = \beta_0(1 - \alpha_1 + \delta_1) + \beta_1(\alpha_0 - \delta_0 + \beta_1 G_t + \beta_1 E_t + \beta_1 R_t + \beta_2(1 - \alpha_1 + \delta_1)K_{t-1} + \beta_1\alpha_2 C_{t-1} - \beta_1\delta_2 M_{t-1} - (6)$$

$$ZM_t = \delta_0(1 - \alpha_1 + \beta_1) + \delta_1(\alpha_0 - \beta_0 + \delta_1 G_t + \delta_1 E_t + \delta_1 R_t + \alpha_2(1 - \alpha_1 + \beta_1)M_{t-1} + \delta_1\alpha_2 C_{t-1} + \delta_1\beta_2 K_{t-1} - - - - - - - - - - - - - - - - - - - (7)$$

Where $Z = 1 - \beta_1 - \alpha_1 + \delta_1$

α_1/Z = impact multiplier for consumption

β_1/Z = impact multiplier for investment

δ_1/Z = impact multiplier for import

Finally we obtained our reduced form equation for income as presented below:

$Y_t = \emptyset + (\frac{\alpha_1 + \beta_1 + \delta_1}{Z} + 1)G_t + (\frac{\alpha_1 + \beta_1 + \delta_1}{Z} + 1) E_t + (\frac{\alpha_1 + \beta_1 + \delta_1}{Z} + 1) R + \frac{\alpha_1}{Z} C_{t-1} + (\frac{\lambda_2}{Z})K_{t-1} + (\frac{\delta_2}{Z}) M_{t-1}$ ------ (8)

Note that the short run or impact multiplier for the income ($\frac{\alpha_1 + \beta_1 - \delta_1}{Z} + 1$) is equal to the addition of impact multiplier for consumption and impact multiplier for investment less impact multiplier for import plus one

$\frac{\alpha_1}{Z} + \frac{\beta_1}{Z} - \frac{\delta_1}{Z} + 1 = (\frac{\alpha_1 + \beta_1 + \delta_1}{Z}) + 1$

Dynamic Multiplier δ

We equally attempt to estimate the dynamic effect of Remittance on endogenous variables. In particular we examine the dynamic impact of change in Remittance by one unit in year 1 with no further change in the following years i.e. 2,3,4,5 _ _ n. From the reduced form, consumption function in equation 5 for the following period can be written as:

$ZC_{t+1} = \alpha_0 (1 - \beta_1 + \delta_1) + \alpha_1 (\beta_0 - \delta_0) + \alpha_1 G_{t+1} + \alpha E_{t+1} + \alpha_2 (1 - \beta_1 + \delta_1) C_t + \alpha_1 \beta_2 k_t + \alpha_1 R_{t+1} - \alpha_1 \delta_2 M_t$ ------ (9)

Let's suppose $\alpha_0 (1 - \beta_1 + \delta_1) + \alpha_1 (\beta_0 - \delta_0) = C_0$, then

$ZC_{t+1} = C_0 + \alpha_1 G_{t+1} + \alpha_1 E_{t+1} + \alpha_1 R_{t+1} + \alpha_2 (1 - \beta_1 + \delta_1) C_t + \alpha_1 \beta_2 k_t + \alpha_1 \lambda_3 - \alpha_1 \delta_2 M_t$ --- (10)

By substituting equation 5 into equation 10 we derived

$C_{t+1} = C_0 + (\frac{\alpha_1}{Z}) g_{t+1} + (\frac{\alpha}{Z}) Ex_{t+1} + (\frac{\alpha_1}{Z}) R_{t+1} + (\frac{\alpha_1\beta_3}{Z}) K_t - (\frac{\alpha_1\delta_2}{Z}) M_t (\alpha_2 \frac{(1 - \beta_1 + \delta_1)}{Z}) * ((\frac{\alpha_1}{Z}) G_t + (\frac{\alpha_1}{Z}) E_t + (\alpha_1/Z)R + (\alpha_2 \frac{(1 - \beta_1 + \delta_1)}{Z}) C_{t+1} + (\frac{\alpha_1\beta_2}{Z}) K_{t-1} +$

$$\left(\frac{\alpha_1 \beta_3}{Z}\right) R_t \left(\frac{\alpha_1 \delta_2}{Z}\right) M_{t-1}\bigg)\text{--------------------}(11)$$

It can be observed from equation 11 above that change of Remittance in the current year has the following effects on consumption in the following period as:

$$\frac{\partial C_{t+1}}{\partial R} = A * \left(\frac{\alpha_1}{Z}\right)$$

Where $A = \left(\alpha_2 \frac{(1-\beta_1 + \delta_1)}{Z}\right)$

By continuing the process of interaction the dynamic multipliers can be obtained for the next year as:

$$\frac{\partial C_{t+2}}{\partial R} = A^2 * \left(\frac{\alpha_1}{Z}\right) \text{x} \frac{\alpha C_{t+3}}{\delta R_t} = A^3 * \left(\frac{\alpha_1}{Z}\right)\text{----}\frac{\partial C_{t+n}}{\delta R_t} = A^n * \left(\frac{\alpha_1}{Z}\right)$$

Similarly from the reduced form the equation 6 investment function for the following year can be written as

$$ZINV_{t+1} = (C_1 + \beta_1 G_{t+1} + \beta_1 E_{t+1} + \beta_1 R_{t+1} + \beta_1 \alpha_2 C_t + \beta_2 (1-\beta_1 + \delta_1)K_t - \lambda_1 \delta_2 M_t \text{ ----------} (12)$$

Where $C_1 = \beta_0 (1-\alpha_1 + \delta_1) + \beta_1(\alpha_0 - \delta_0)$

Let $k_t = k_{t-1} + INV_t$ (P)

Substituting equation 6 into 12 by using the identity (p) we obtain

$$INV_{t+1} = C_1 + \left(\frac{\beta_1}{Z}\right)G_{t+1} \left(\frac{\beta_1}{Z}\right)E_{t+1} + \left(\frac{\beta_1}{Z}\right) R_{t+1} + \left(\frac{\beta_1 \alpha_2}{Z}\right)C_{t-1} + \left(\frac{\beta_2(1-\alpha_1 + \delta_1)}{Z}\right) K_t - \left(\frac{\beta_1 \delta_2}{Z}\right)M_{t-1} +$$

$$\left(\beta_2 \frac{(1-\alpha_1 + \delta_1)}{Z} * \left(\frac{\beta_1}{Z}\right) G_t + \left(\frac{\beta_1}{Z}\right) E_t + \left(\frac{\beta_1 \alpha \alpha_1}{Z}\right) C_{t-1} + \beta_2 \frac{(1-\alpha_1 + \delta_1)}{Z}\right) K_{t-1} * \left(\frac{\beta_1 \alpha_1}{Z}\right) C_{t-1} -$$

$$\left(\frac{\alpha_1 \delta_2}{Z}\right)M_{t-1} \text{-------------------} (13)$$

From equation 13, it is found that any change of Remittance in the current year has the following effects on investment in the subsequent period

$$\frac{\partial Inv_{t+1}}{\delta R_t} = B * \left(\frac{\beta_1}{Z}\right)$$

Where $B = \left(\beta_2 \frac{(1-\alpha_1 + \partial_1)}{Z}\right)$

By continuing the process of interaction the dynamic multipliers can be found for next coming years as:

$$\frac{\partial Inv_{t+2}}{\delta R_1} = B^2 * \left(\frac{\beta_1}{Z}\right), \frac{\partial Inv_{t+3}}{\delta R_t} = B^3 * \left(\frac{\beta_1}{Z}\right) \text{---} \frac{\partial Inv_{t+n}}{\delta R_t} = B^* * \left(\frac{\beta_1}{Z}\right)$$

Finally, from reduced form equation 7 import function for the coming year can be found as:

$$ZM_{t+1} = C_2 \delta_1 G_{t+1} + E_{t+1} + \delta_1 R_{t+1} + \delta_1 \alpha_2 C_t + \delta_1 \beta_2 K_t + \delta_2(1-\alpha_1 - \beta_1)M_t - - - -14$$

Where $C_2 = \delta_0(1-\alpha_1 - \beta_1) + \delta_t(\alpha_0 + \beta_0)$

Substituting equation 7 into 14

$$ZM_{t+1} = C_2 + \left(\frac{\delta_1}{Z}\right) G_{t+1} + \left(\frac{\delta_1}{Z}\right) E_{t+1} + \left(\frac{\delta_1}{Z}\right) R_{t+1} + \frac{\delta_1 \alpha_2}{Z})C_t \left(\frac{\delta_1 \beta_2}{Z}\right) K_t + \left(\frac{\delta_2(1-\alpha_1 \beta_1)}{Z}\right) *$$

$$\left[\left(\frac{\delta_1}{Z}\right) G + \left(\frac{\delta_1}{Z}\right) E_t + \left(\frac{\delta_1}{Z}\right) R_t + \left(\frac{\delta_1 \alpha_1}{Z}\right) C_{t-1} + \left(\frac{\delta_1 \beta_2}{Z}\right) K_{t-1} - \left(\delta_2 \frac{(1-\alpha_1 + \beta_1)}{Z}\right) M_{t-1}\right] \text{---------}$$

$$\text{--------------------------------}(15)$$

From equation 15 it is discovered that any change of Remittance in the current year has the following effect in the subsequent period that is

$$\frac{\partial M_{t+1}}{\partial R_t} = C * \left(\frac{\delta_1}{Z}\right)$$

Where $C = \delta \frac{(1-\alpha_1 + \beta_1)}{Z}$

By continuing the process of interaction the dynamic multiplies can be found for subsequent periods as

$$\frac{\partial M_{t+2}}{\partial Rme_t} = C^2 * \left(\frac{\delta_1}{Z}\right) \frac{\partial M_{t+3}}{\delta R_t} = C^3 * \left(\frac{\delta}{Z}\right) - - - - \frac{\delta M_{1+n}}{\delta R_t} = C^n * \left(\frac{\delta_1}{Z}\right)$$

Note that the income identity dynamic multiplies can be calculated by merely summing the multipliers for consumption and investment and then subtracting multipliers for imports from their sum.

4.0 Empirical Results;

We applied GMM estimation technique in our analysis of equation 1,2 and 3 instead of OLS to overcome the problem of endogeneity between private consumption, investment, import and income which could lead to biasness and inconsistency in equation 1,2 and 3 respectively. Also the GMM avoid the problem of autocorrelation inherent in OLS due to the imposition of the aggregation on variable and presence of lagged values of dependent variables as explanatory variables. We present the result below jn table 1.

Table1: GMM Estimates of Equation 1, 2 and 3

EXPNANATORY VARIABLES	CONSUMPTION EQUATION	INVESTMENT EQUATION	IMPORT EQUATION
Y	0.847523^* (12.30964)	0.188251^* (3.494679)	0.909270^* (7.007958)
$C(-1)$	0.268568^* (4.220052)	-	-
$K(-1)$	-	0.82049^* (73.48634)	-
$M(-1)$	-	-	0.388431^* (4.636243)
CONSTANT (C)	11.43917^* (10.10605)	5.142292^* (8.155130)	5.838772^* (6.127767)
R. Square	0.976266	0.850727	0.904892
Adjusted R^2	0.974367	0.837847	0.896625
J- Statistic	3.255712	8.896587	8.748471
J- Statistic Critical	0.799602	0.984074	0.509928
No of Observation	28	26	26
Instrumental variables	C(-1), Y(-1)Y(-2),C(-2), Y(-3), M(-3), C(-3), Y(-4), C(-4), Y(-5) C(-5)	Y(-1),INV(-1),K_d(-1), INV(-2), Y(-2),K_d(-2) INV(-3), Y(-3), K_d(-3) INV(-4), Y(-4), K_d(-4) INV(-5), Y(-5),K_d(-5) R(-6), INV(-6),K_d(-6) INV(-7),Y(-7),K_d(-7)	M(-1), Y(-1), Y(-2), M(-2),Y(-3), M(-3) Y(-4), M(-4), Y(-5) M(-5), Y(-6), M(-6) Y(-7), M(-7)

NOTE: Value of t- Statistics are given in parentheses, J- Test used for the validity of over identifying restrictions. *, ** and *** shows significance level at 1%, 5% and 10% respectively.

The results indicate that all the coefficients for consumption (0.847523), Investment (0.188251) and Import (0.909270) are significant and positive given that the probability is

less than 5 percent. Interestingly too the lagged dependent variables in equation 1,2 and 3 which shows the dynamic nature of the model are statistically significant. Equation2 which is our investment equation proves that investment behaves to expectation with high significant coefficient of the income variable. The investment restoring factor of capital stock has the right behaviour and statistically significant.

TABLE 2: Impact and Dynamic Multiplier of Remittance

Endogenous Variables	Impact Multiplier (Short run)	Dynamic Multipliers of Remittance Year		
	Year 1	2	3	4
Consumption	0.97026	0.51341	0.27167	0.14376
Investment	0.21551	0.21493	0.21436	0.21379
Imports	0.04095	0.15772	0.023898	0.0036209
Income	0.7817	0.4397	0.32998	0.353929

Source: Authors Computation, 2016.

We computed the impact and dynamic multipliers from the GMM estimate using equation 8 and the result is as summarised in table2 above. From the reduced form equation 5, the short run or impact multipliers for private consumption is computed using the formula $\frac{\alpha_0}{Z}$ which resulted in 0.97026 that imply that one unit increase in Remittance in the current year will leads to approximately 0.97 unit increase in private consumption expenditure. Also from the reduced form equation 6, the short-run or impact multiplier computed using formula ($\frac{\beta_1}{Z}$) was 0.21551 which imply that a unit increase in Remittance in the current year leads to approximately 0.22 unit increase in investment. The impact multiplier could not be said to be impressive from the above. Finally from the reduced form equation 7, the short run or impact multiplier for import calculated using formula $\frac{\delta_1}{Z}$ gave 0.04095 which imply that one unit increase in remittance in the current year leads to approximately 0.04 unit increase in import. At the general level equation 8, we computed the short run or impact multiplier of income using equation ($\frac{\alpha_0+\beta_1+\delta_1}{z} + 1$ and obtained 0.7817 which could be explained to mean that a unit increase in Remittance in the current year leads to increase in income level by approximately 0.78 unit through the multiplier effects.

From all the above discussion, it could be seen that the spill over effect of remittance is felt in all the variables considered (C, I, M, Y) though the effect is much felt on consumption followed by income, investment while it was least felt on import. Since investment which grows capital stock is required to grow the economy, more policy towards its impact multipliers is canvassed here.

We equally considered the dynamic multiplier of a unit change in Remittance in the current year without any change in subsequent years on the endogenous variables and discussed the result as shown in table 2 above for the 3 subsequent years. The dynamic multiplier effect on private consumption in year 2,3 and 4 are 0.51341, 0.27167 and 0.14376 respectively. This simply put means that the effect of Remittance on private consumption gradually converges to zero at a very slow rate. On the other hand the dynamic multiplier impact for investment in year 2, 3 and 4 are 0.21493, 0.21436 and 0.21379 respectively. This shows that there is just slight reduction in the dynamic multiplier of Remittance on investment year in year out. The dynamic effect of Remittance on import wear out speedily from year 2 to 4 as it decline from

0.15772 to 0.0023898 and then to 0.0036209 in year 2,3 and 4 respectively. The convergence to zero level is speedy. In respect of income identity, we compute the dynamic multiplier by adding the multiplier for consumption and investment and subtract the multiplier for import. Arising from the calculation above, we obtained the dynamic multiplier for income for year 2. 3 and 4 as 0.4397, 0.32988 and 0.353929 respectively. By implication the effect of Remittance on Income (GDP) gradually converges to zero at a very slow rate.

Working through the impact of Remittance on private consumption, investment and import equations, we can obtain the impact on current and future growth rate of economy (Y) by using the formula:

$$(Y_t - Y_{t-1}) = \Delta Y_t = \frac{\delta Y_t}{\delta R_1} * dR_1 + \frac{\delta Y_t}{\delta R_{t-1}} * dR_{t-1} + \frac{\delta \delta Y_t}{\delta R_{t-2}} * dR_{t-2} + \frac{\delta Y_t}{\delta R_{t-2}} * dR_{t-3}$$

The dynamic impact of Remittance on income decline gradually in year 2, 3 and 4 to 0.4397, 0.32998 and 0.353929 respectively. This result shows that Remittance affects economic growth via the effect on consumption, investment and import.

5.0 Conclusion

The result of GMM estimation shows that all the coefficient of consumption, investment and import are significant. The short run or impact multiplier for private consumption, investment, import and income as demonstrated in its coefficient of 0.847523, 0.188251 and 0.909270 respectively. This imply that a unit increase in Remittance will lead to 0.85, 0.19 and 0.91 unit increase in consumption, investment, import and income respectively. On the other hand the dynamic multiplier for consumption in year 2,3 and 4 was 0.51341, 0.27167 and 0.14376 respectively which shows its gradual convergence while that of the dynamic multiplier for investment for year 2, 3 and 4 are 0.21493, 0.21436 and 0.21379 respectively which shows just a slight decline over year. The dynamic effects of Remittance on import wears out in third year as the convergence to zero level was speedy from 0.15772 in year 2 to 0,023878 in year 3 and 0.00362. In respect of income, the dynamic income multiplier for year 2, 3 and 4 was 0.4397, 0.32998 and 0.2455 respectively which shows a gradual convergence.

The study therefore concluded that Remittance flows to the Nigeria between 1971 and 2013 have significant effect on economic growth of Nigeria. This effects work through the spill over effects that remittance has over local component of GDP namely, consumption, Investment and import following Keynesian open economy model of income.

Since our result shows that Investment multiplier was high while that of import was very high. We therefore recommend that government policy maker should direct policy towards how this will have greater spill over effect on investment which has the capacity to grow the GDP while that of import which has negative impact on economic growth should be reduced.

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