



## WILL EXPENDITURE PATTERNS OF REMITTANCES ENHANCE INDUSTRIALISATION IN NIGERIA?

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### **Abstract**

International remittance is currently acclaimed as the most stable and consistent of all the international flows. It is essentially an important source of inflows to developing countries, as they come with large amounts of foreign currency that directly assists households in the country. This study was motivated by the huge funds that Nigeria in particular receives as international remittances that currently places her first in Africa and sixth in the World. Several studies show that remittance has impacted positively on economic growth, development, poverty, inequality amongst others. However, this study contributes to literature by examining the difference industrial sector investments between remittance recipients and non-recipients. The study employed secondary data from a demographic household survey that was generated by a partnership program between the International Development Research Centre (IDRC) and the Centre for Demographic and Allied Research (CDAR) University of Nigeria, Nsukka in 2011. The objective was ascertained with the aid of a propensity score matching method. The study used five matching strategies to show that remittance recipients marginally have higher investments in industrialisation than their counterparts, though not significantly. The study recommends that the investment climate for the industrial sector be restructured with more industrial clusters and infrastructure and power alternatives to attract the huger resources that flow in as remittance into this lucrative sector.

**Keywords:** Secondary Data, Industrialization, Industrial Clusters, Infrastructure, Power, and Remittance.

### **Introduction**

Remittances remain essentially, an important and stable source of international flows to developing countries, as they come with large amounts of foreign currency that help sustain the balance of payments in the host country (World Bank, 2017). International remittances are transfers principally built on the unstructured and voluntary actions of migrants driven by the incentive to support their families, friends and/or invest in their home countries

(Mamoun & Lehnert, 2013; Barajas et al, 2009). What has been touted about in the 1980's as "Brain Drain" due to the upsurge of emigrants to developed economies has begun to give way to "Brain Gain". In some circles, remittances are regarded as an example of 'dead capital' exposed to the hazards of the informal market and the underground economy. By whatever name, remittances to third world countries has grown and have a great potential to improve the welfare of households in receiving countries as it is evident in many developing countries. Remittances have helped the region reduce poverty – its most pressing challenge, supplemented household incomes, provided working capital and, above all, created multiplier effects within the economy through increased spending (UNECA, 2013; Dzansi, 2013).

What remittances has been able to achieve over the years in terms of alleviating poverty and enhance economic growth, may not be sufficient to take it as alternative recourse to industrialization. For more often, remittance income fizzles out in the underground economy if not properly harnessed, since it is a private income. Notwithstanding, considering the quantum and the consistency of remittances, economist are beginning to look at remittances as alternative source of investible income outside foreign direct investment (FDI) and Official development assistance (ODA). This consideration is based on three key reasons: First, it has been established (Prasad, 2007; Bourguignon, 2006; Adams and Page 2003) that a significant proportion of migrants remit resources for investment and industrialization, this stands as a potential opportunity for sustainable investment for the migrants. Second, some migrants have gotten skill on advanced technology that if employed would through backward and forward linkages be a stimulant for other investments and industrialization (Kabi and Nazrul, 2016). Third, Industrialization in Nigeria is still very much under exploited and has a large market that constitutes a potential source of investment (Efobi et al, 2017; Hossain & Hasanuzzaman, 2015). The question is to what extent do remittance recipient households invest in industrialization when compared to their non-recipient counterparts?

### **The Nigerian Remittance Status**

For one thing, Nigeria's remittance status is high in Africa. Again, some countries like India have enhanced their global industrial status through Diaspora income. In 2013, inflows of remittances to sub-Saharan Africa increased by 3.5% (World Bank, 2014). Though not distributed evenly across the continent of Africa, the Economic Community of West African States (ECOWAS) ranks second in terms of the collective value of remittances in-flows by member-states falling behind the Southern African Development Community (SADC). Nigeria is the recipient of the greatest volume of remittances in West Africa and sub-Saharan Africa as a whole (World Bank, 2014). She receives between 30% and 60% of all the remittances to the West African sub-region and her remittances rank second as a foreign exchange earner after oil exports (World Bank, 2014). The international inflow of remittance into Nigeria is impressively high. According to the World Bank indicators, Nigeria's remittance stood at about \$10 billion and \$20 billion by 2010 and 2016

respectively; better than their African counterparts and currently 6th in the World. India is the highest recipient with \$72.2bn, China 63.9bn, the Philippines \$29.7bn, Mexico 25.7bn, France \$24.6bn and Nigeria \$20.77bn (World Bank, 2016).

### **Nigerian Diaspora and Industrialization: The odds favour Nigeria**

Nigeria has had some non-governmental organizations (NGO) such as Nigeria in Diaspora Support Programme, the Annual Diaspora Direct Investment Summit and the Nigerian Diaspora Trade and Investment Association. These are success stories on how the Diaspora can contribute to industrial growth and development (Gui-Diby & Renard, 2015; Efobi et al., 2017). Arguably, Nigeria does not have a common body like the Global Organization of People of India Origin (GOPIO) to galvanize and mobilize the income and activities of Nigerian diaspora for economic development. The political and investment climate in the country is not only volatile but averse to common mobilization. Nigeria's economic institutions are not inclusive enough to attract foreign capital inflow. Nigeria does not respect democratic institutions and also does not respect human values (Anochiwa et al 2017). These institutions and more are the underlying indices that have made the India Diaspora support the home government. Notwithstanding, the odds seem to favour Nigeria when compared to India, because the existing drawbacks are human and could be contained with meaningful effort. Another reason why the odds favour Nigeria is the volume of Diaspora income coming into the country, the market, the awareness created by the government and the Diaspora intelligentsia. In line with this thinking, government believes the Diasporas have the potential to become important class of investors and vital components both to resuscitate the ailing economy and also lay good foundation for industrialization. Structuring the expenditure pattern of the international remittances becomes very important as we see in the Indian case. Rational expenditure emanates from good economic plan. End-use of remittances to the recipient country determines the marginal gain of this income source to the beneficiaries and the economy at large. There are abundant literature of remittance and reduction of poverty and perhaps economic growth in a general sense. However, there exists little study that has investigated the expenditure patterns of remittance, with the aim to decipher its contribution to industrialization in Nigeria. It is therefore on this premise that this study investigated to what extent international remittance is invested to the industrial sector of Nigeria.

### **Literature Review**

Literature recognizes different motives for remittances. The theory of Altruism suggests that migrants willingly sacrifice self for the wellbeing and welfare of the family and remittances show affection to the family and meant to increase the family income for either consumption or investment. Lucas and Stark (1985) however modified the theory and introduced 'Tempered Altruism and enlightened self-interest', suggesting that remittances are not only motivated by altruism but also by mutual informal contractual arrangement between the migrant and the family. The family makes investment in the future prospect of

migrants and remittances therefore serve as return on investment for the family (Lucas and Stark 1985, Rempel and Lobdel 1978). Tempered Altruism therefore suggests that remittances are seen by migrants as obligation and responsibility to make the family better-off (Chimhowu et al 2003). In a different view, Poirine (1997) believes that families have implicit family loan agreement. Families enter into implicit family loan agreement with their children even when they are much younger. Remittances are therefore repayment of loan contracts made by a member of the family who is a migrant. However, the theory suffered some criticisms. The theory sees parents as shylocks and this contradicts the character of parents who would generally do the best for their children even without charging anything in return.

Allocation pattern of remittances may be influenced by the motive for which the remittances were made and how the recipients treat the remittances (Gofere 2003, Soraya 2007). Remittances influenced by Altruism may leave the receiving household with the freedom to allocate the remittances to day-to-day consumption activities to reduce poverty level and improve their living standard without the compulsion to invest. Remittances treated as a transitory income would more likely be spent in accumulating durables and housing and would more likely be spent on consumption and non-durables if seen as permanent income (Soraya 2007). However, regardless of the motives for remittances, they are believed to be inflows and can have positive effect on the receiving economy (Gofere 2003).

On the expenditure pattern of remittances, Gofere (2013) assessed the expenditure pattern of migrants' remittances in rural household in Ethiopia using data from ERHS. The study employed two-part model within Engle's curve framework. The results show no strong link between remittances and investment spending. The results further reveal that remittances positively and significantly impact on consumption spending. The study thus implies that remittances are allocated to consumption purposes and are less likely to be used for investment activities. Similarly, Yameogo (2014) applied Latent Class Model to assess the impact of remittances on household expenditure using 2010 cross-sectional data from Burkina Faso. The results show that estimate of remittances spending on education, health and housing is not significant but is positive and significant for expenditure on food and cooking fuels. Then, Musumba et al (2015) examined remittances receipt and allocation in Ethiopia, Uganda and Kenya, using World Bank survey data. The study indicates that household income and age influence the allocation pattern of remittances. Household headed by adolescents tend to allocate remittances towards human capital development. Because they are still of school age, they may be required to invest in education. This therefore supports the assertion that brain drain could lead to brain gain. The study also shows that household with increasing income tend to allocate remittances to savings. Household headed by females are more likely to invest remittances on small businesses. The study concludes that recipients in Ethiopia tend to allocate remittances to saving and education than recipient in Kenya.

Furthermore, Soraya (2007) analyzed the implication of migrants' remittances to household welfare and income distribution in Philippines. The study used Engle's curve framework to

show that household receiving overseas remittances spend greater percentage on non-food consumption other than medical care and had the highest expenditure on education and recreation. While, Nwokocha and Ajaegbu (2014) studied the socioeconomic development of remittances in Isiekenesi, South Eastern Nigeria using survey data. The study finds that about 50 percent of remittances by migrants from Isiekenesi community were allocated to consumption expenditure to improve the peoples' living standard and about 25 percent were invested in human capital development and scholarship. Also, Adams (1991) assessed the economic uses and impact of international remittances in rural Egypt with a sample of 74 households. From the result, migrant remittances are spent on investment. And remittances increase the marginal propensity to invest. The results further indicate that the investment is mainly on housing and land. However, various scholars have assessed the impact of remittances on economic development with few suggesting negative impact. Here, Olubiyi (2014) in this study of trade, remittances and economic growth, used time series data and employed Vector Error Correction and Granger causality technique. The study finds a unidirectional causation running from remittances to GDP in Nigeria.

The impact of remittances on investment is dependent on the level of financial system development. The more developed the financial system, the less impact of remittances on investment (Bjuggren and Dzansi 2008, Fayissa and Nsiah 2010). Bjuggren and Dzansi (2008) used the dynamic Panel data approach with data from 79 developing countries to examine the impact of remittances on investment. Remittance inflows exert positive and significant impact on investment. However, the marginal impact of remittances on investment diminishes with improved institutional framework and financial development. Thus, the absence of quality institutions and developed financial system increases the marginal importance of remittances for investment. Similarly, Fayissa and Nsiah (2010) used unbalanced panel data for 37 countries to examine the impact of remittances on economic growth in Africa. The results show remittances increase growth in developing countries where the financial system is less developed and remittances therefore provides liquidity and helps finance investment

Afaha (2013) evaluated the impact of migration and remittances on economic development of Nigeria. The study used time series data with OLS technique. The result reveals that generally remittances significantly contribute to economic growth in Nigeria. From the results, remittances improves the welfare of the household with better access to basic necessities; health care and education and long term investment on houses and land. Then, Osili (2007) investigated remittances from overseas migration using a Matched sample of US-Nigeria migration data. The study disaggregated remittances into transfers to the home family and saving in the country of origin. The results show that remittances in the form of transfers are mostly received by poorer-home family while remittances in form of savings increase capital formation in the origin country. The study therefore concludes that remittances contribute to economic development by alleviating poverty and improving the living standards and provides capital accumulation for investment in the migrants' country of origin.

Similarly, Anyanwu and Erhijakpo (2010) used a panel dataset on poverty and remittances for 33 African countries to study the effects of remittances on poverty in Africa. The results indicate that remittances reduce the level, depth and severity of poverty in Africa. A 10 percent increase in remittances as a share of GDP causes a 2.9 percent decrease in the share of people living in poverty. Similar findings were made by Adam and Page (2005), showing international remittances tremendously reduce the level, depth and severity of poverty in developing countries. A 10 percent increase in per capita overseas remittances causes a 3.5 percent decline in the share of people living on less than 1 dollar per day. Other studies such as Ratha (2003), Pernia (2006) and Cattaneo (2005) assert that inflow of remittances increase the foreign exchange earnings of the labour-supply country. Remittances positively affect the economic growth both directly and indirectly. The direct effect comes from savings and investment while indirect effect comes through consumption (Cattaneo, 2005 & World Bank, 2008). Rural household consumption have a multiplier effect as it increases the production of domestic goods (Ratha 2003).

However, some scholars have found negative impact of remittances on economic activity. For instance, Chami et al (2005), in their study to ascertain the effect of migrants' remittance flows on economic activity, used a panel data from World Development indicators. Results show remittances create moral hazard issues and reduces economic activity. The study further asserts that unless the nature of remittances is changed from compensatory transfers to investment, its future ability to contribute to economic development would remain uncertain. This could be the case if Altruism dominates remittances and recipients depend on remittances as source of income and therefore choose more leisure than work. This leads to dependency syndrome so common in social transfer and may have the tendency of retarding economic growth. In another view, Chimhowu et al (2003) asserts that in economies with low GDP, international remittances can distort the functions of capital market and destabilize exchange rate regimes through the creation of parallel currency market.

### **Methodology and Data**

The propensity score matching method was used to ascertain the objective of this study. The Propensity Score Matching (PSM) Model as proposed by Rosenbaum and Rubin (1983) could be defined as a matching technique that tries to determine the outcome of a policy, expenditure or any other of treatment by incorporating the covariates that foretell the effects of such intervention using observational data. The PSM was proposed as method to reduce the level of biasness involved the estimation of treatment effects using observational data (Grilli&Rampichini, 2011). A matched set consists of at least one participant in the treatment group and one in the control group with identical propensity scores. The propensity score is a balancing score that measures baseline covariates which are similar between treated and untreated subjects.

Austin (2011) notes that the Propensity Score (PS) is the probability of receiving treatment, conditional on the covariates ( $X_i$ ) and it estimates the predicted probability of receiving treatment given pre-treatment characteristics. This is written as follows;

$$P_{(X)} = Prob\left(D = \frac{1}{X}\right) = E\left(\frac{D}{X}\right) \dots \dots \dots i$$

Given the propensity score in equation i above, instead of matching on  $x$ , we match on the propensity score using the Nearest Neighbour Matching, Caliper Matching and the Radius Matching designs. The nearest neighbour matching design works such that for each treated observation  $i$ , a control observation  $j$  that has closest  $x$  is selected. Grilli and Rampichini (2011) note that the Nearest Neighbour matches treated and control observations by picking a treated and then, searches for a control observation that has the closet propensity score (i.e. nearest neighbour). This is given as follows;

$$\|\rho_i - \rho_j\| = \min_{k \in W=0} \|\rho_i - \rho_k\| \dots \dots \dots ii$$

Where  $\rho_i$  represents the propensity score for the  $i$ -th unit. We assume that for every unit  $i$ ,  $I_{m(i)}$  represents the directory of non-treated unit that is  $m$ -th closest to unit  $i$  expressed as a distance measured by the conventional  $\|\cdot\|$  operator.

On the hand, Cochran and Rubin (1973) offers Caliper Matching as a variation of Nearest Neighbour that tries to reduce the possibility of bad matches (i.e.  $\rho_j$  far from  $\rho_i$ ) through the imposition of tolerance on the highest distance  $\|\rho_i - \rho_j\|$  allowed. Here, the rule is such that an already specified  $\delta > 0$  treated unit  $i$  is matched to a non-treated unit  $j$  is;

$$\delta > \|\rho_i - \rho_j\| = \min_{k \in W=0} \|\rho_i - \rho_k\| \dots \dots \dots iii$$

The Caliper matching estimator shown above excludes a unit  $i$  from the analysis if none of the non-treated units falls within  $\delta$  distance from the treated unit  $i$ . The inability to know a priori the appropriate choice of a tolerance distance to give, is the basic drawback of the Caliper matching method (Grilli and Rampichini, 2011).

The Radius Matching design works such that an observation  $i$  is matched with control observations  $j$  whose propensity score fall within a pre-specified neighbourhood or radius of the treated unit. This is given as;

$$\|\rho_i - \rho_j\| < r \dots \dots \dots iii$$

The relation above shows that all the control units with  $\rho_j$  fall within the radius  $r$  from  $\rho_i$  and are been matched to the treated unit  $i$ , otherwise, there are not matched. This implies that a smaller radius would turn up better matches but would reduce the number of matches of the control units to the treated.

Within the set of potential outcomes from the first  $M$  matches for unit  $i$ , there are two sets of possible treatments. These may be denoted as  $\gamma_i(0)$  and  $\gamma_i(1)$  representing active and control treatment outcomes respectively. Given that each outcome can only receive either of the two possible treatments, the treatment effect can be estimate as follows;

$$\Delta = \gamma_1 - \gamma_0 \dots \dots \dots iv$$



The Average Treatment Effect (ATE) is defined as the average effect required to move the entire population from the control to the treated population. This can be denoted as;

$$ATE = E(\Delta) = E(Y^1/X, D = 1) - E(Y^0/X, D = 1) \dots \dots \dots vi$$

The Average Treatment Effect on the Treated (ATET) measures the difference between the outcomes of the treated and the outcomes of the treated observations if there were not treated. This can be stated as follows;

$$ATET = E(\Delta/D = 1) = E(Y^1/X, D = 1) - E(Y^0/X, D = 1) \dots \dots \dots vi$$

Assuming our outcomes for the treated and the control observations are matched with the propensity scores, the expression would be as follows;

$$ATET = E(\Delta/P_{(X)}, D = 1) = E(Y^1/P_{(X)}, D = 1) - E(Y^0/P_{(X)}, D = 1) \dots \dots \dots vii$$

The generalised class of estimators for our analysis is as stated below;

$$ATET = \frac{1}{N^T} \sum_{i \in \{W_i=1\}} [\gamma_{1i} - \sum_{j \in C(i)m} W_{ij} \gamma_{0j}] \dots \dots \dots viii$$

Where;

$N_T$  is the number of observations in the treated group,  $N_i^C$  is the number of controls matched with treated observations  $i$  and  $W_j = \sum_i W_{ij}$

This study implores secondary data from a demographic household survey that was generated by a partnership program between the International Development Research Centre (IDRC) and the Centre for Demographic and Allied Research (CDAR) University of Nigeria, Nsukka in 2011. This data remains the most recent publicly available data on migrant remittances with details on expenditure patterns of remittances. The data has expenditure patterns on investment on the industrial sector for both remittance and non-recipient households.

**Presentation of Results and Analysis**

The study employed a propensity score matching to analyse the key objective of the study which was to ascertain the extent to which remittance recipient households invest in industrialization when compared to their non-recipient counterparts. The study employed five key matching strategies which include; nearest neighbour matching method (random draw version), Nearest Neighbour Matching method (equal weights version), Stratification method, Kernel Matching method and the Radius Matching method. This is to ensure that the results shall not be biased by the type of matching strategy employed. The balancing property was satisfied and the common support condition was satisfied as well. The results are presented on Table 1 below:



**Table 1: Difference in the Industrial sector investment between remittance recipients and non recipients.**

| <i>Matching Strategies</i>                                      |  | Average treatment effect on the treated (ATT) | Standard Error | t-value |
|---|--|---|----------------|---------|
| <i>Nearest Neighbor Matching method (random draw version)</i>   |  | 3.445   | 2.889          | 1.192   |
| <i>Nearest Neighbor Matching method (equal weights version)</i> |  | 3.432   | 2.618          | 1.311   |
| <i>Stratification method</i>                                    |  | 3.952   | 2.738          | 1.443   |
| <i>Kernel Matching method</i>                                   |  | 3.323   | 2.293          | 1.449   |
| <i>Radius Matching method</i>                                   |  | 3.239   | 2.273          | 1.425   |

The average treatment effect on the treated (ATT) as presented on Table 1 suggests that, the investment on industrialisation is relatively higher for remittance recipients than for non recipients though not significantly. This is because the absolute t values are all less than 1.96 and 1.65 hence not significant at 5% nor 10% significant level respectively. The ATT ranges between 3.239 for the Radius matching method and 3.952 for the Stratification method; which implies that the difference in investment on industrialisation between remittance recipients and non recipients is marginal. The non significant difference between the two groups could be explained by the fact that the investment climate in Nigeria is still plagued with several challenges that make it difficult to think of investing there. Especially because the migrants; most of them in western countries are exposed to standard practices and laws that make industrialisation friendly and lucrative. There is need for the investment climate to be revamped and improved to attract the huge funds from remittances into the sector.

### **Conclusion**

There exists a general consensus that remittance is currently the most stable and consistent international inflow to Africa when compared to foreign direct investment and foreign aid. This study was motivated by the huge funds that Nigeria in particular receives as international remittances that stood at about \$10 billion and \$20 billion by 2010 and 2016 respectively. Several studies show that remittance has impacted positively on economic growth, development, poverty, inequality amongst others. However, this study contributes to literature by examining the difference industrial sector investments between remittance recipients and non-recipients. The study used five matching strategies to show that remittance recipients marginally have higher investments in industrialisation than their counterparts, but the difference is not significant. The study recommends that the investment climate for the industrial sector be restructured with more industrial clusters

and infrastructure and power alternatives to attract the huger resources that flow in as remittance into this lucrative sector.

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