REMITTANCES AND FINANCIAL INCLUSION IN NIGERIA

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ABSTRACT

This paper investigates the impact of remittances on financial inclusion. The study particularly focuses on whether remittances promote the use of deposit accounts, using the 2009 World Bank's Migration and Remittances Household Survey data for Nigeria, we conduct estimations of the likelihood of using deposit bank account controlling for household characteristics. The first assumption was that migration and financial inclusion are correlated only through unobservables and later included correlation due to endogenous migration variable. The instrumental variables recursive bivariate probit estimations reveal that remittances have a positive impact on financial inclusion by promoting the use of deposit accounts i.e. increases the probability of using bank account. Therefore, removing the barriers faced by recipients of remittances would further contribute in improving the financial sector.

1. INTRODUCTION

Remittances are among the most important financial transactions for populations with limited access to formal banking services. The total value of remittances has been increasing steadily over the past decade. Specifically, the 2019 Nigeria Economic Outlook prepared by the PwC revealed that in 2018 about US$ 25 billion was received as remittances in Nigeria, this represents about 6.1% of Gross Domestic Product (GDP), 83% of the Federal Government's budget in 2018 and even 11 times the Foreign Direct Investment (FDI) flows in the same period. The World Bank estimates that international migrant remittances (defined as the sum of workers' remittances, compensation of employees, and migrants' transfers) totalled USD 372 billion for developing countries in 2011 (World Bank, 2011). In these countries, according to the Global Findex report, the share of adults who have an account through money service or with a financial institution rose from 54% to 63% between 2014 and 2017. In particular, women remain 9% less likely than men to have a bank account (World Bank Group, 2018).. Given the size of these flows and lingering financial inclusion needs, remittance income is potentially an important factor for economic development in the recipient countries.

Previous literature identifies some positive impacts of remittances on a number of development dimensions such as poverty alleviation, schooling, capital accumulation and income equalisation (Adams and Cucuecha, 2010; Agwu *et al.,* 2018; Ajefu, 2018). These studies established the importance of studying the effects of remittances in developing countries. Remittances, in terms of size, are not only one of the main capital inflows in developing countries, often even more substantial than Official Development Assistance (ODA), but they also appear to affect household's capacity to save and approach the banks. However, this link to financial inclusion is yet to be robustly investigated, particularly in Nigeria.

Empirical regularities support that financial development in general, and banking sector deepening in particular, has a positive effect on economic growth (Levine, 2003). Following these, other studies suggest that remittances as a means of financial development may stimulate economic growth, for example, through improved financial inclusion, but there is a lack of empirical studies to confirm this hypothesis. Using the latest data from a cross sectional household-level survey for Nigeria obtained by the World Bank in 2009 , this study investigates the impact of remittances on financial inclusion. This study particularly focuses on whether remittances promote the use of deposit accounts hence, we conduct estimations of the likelihood of using deposit bank account controlling for household characteristics. The first

assumption was that migration and financial inclusion are correlated only through unobservables and later included correlation due to endogenous migration variable. The instrumental variables recursive bivariate probit estimations reveal that migration increases the probability of using bank account.

The other sections of this study are structured as follows: Section 2 explores the effect of remittances on financial inclusion. Section 3 discusses the data and the empirical methodology. Section 4 discusses the results while section 5 briefly concludes.

2.0   LITERATURE REVIEW

2.1   Empirical Studies on the Effect of Remittances on Financial Inclusion

Studies have examined the impact of remittances on the development of the domestic financial system. Aggarwal, Demirguc-Kunt, and Martınez Perıa (2011) use balance of payments data on remittances and analyzed how these flows affect bank credit and deposit amounts for 109 developing countries over the period 1975–2007. They find strong evidence indicating that remittances promote financial development as measured by the ratio of bank deposits and of bank credit to GDP. Gupta, Pattillo, and Wagh (2009) use a similar methodology as Aggarwal *et al.* (2011) and find analogous results for a sample of sub-Saharan African countries.

Moreover, on remittances and financial inclusion, Toxopeus and Lensink (2007) presented single equation estimates, and system estimates in which economic growth is explained by e.g, financial inclusion, and financial inclusion by, e.g., remittances inflows. Overall, they found that remittances have a development impact through their effect on financial inclusion. Focusing exclusively on Mexico and using municipality level data, Demirguc-Kunt, Lopez Cordova, Martinez Peria, and Woodruff (2011) find that municipalities where a higher proportion of households receive remittances have a higher number of bank branches, accounts per capita, and larger shares of deposits to GDP. Zins and Weills (2016) examined the various determinants of financial inclusion. Using the World Bank's Global Findex database on 37 African countries to perform probit estimations, they found that being a man, older in age, richer and more educated favor financial inclusion, with the latter two having a higher influence.

Another interesting work by Allen *et al.* (2016), the authors observed that there is enormous variation in the use of financial services between high-income and developing economies:

account penetration is close to universal (91 percent) in high-income economies, while only 41 percent of adults in developing economies, on average, report having an account at a formal financial institution. The authors reported financial constraint as the main driver of financial exclusion which immediately suggests that remittances could improve financial inclusion since it has been found to reduce financial constraint. Thus, we expect that remittance inflow to the "left-behind" household members would reduce financial strain and encourage financial inclusion.

One can easily criticise the above studies for lacking in depth of requirements for the estimation of causal impacts. Given that most of the studies used survey data, the mere association of remittances with financial inclusion could be anything other than causal impact, thereby requiring endogeneity treatment. In addition, Anzoategui *et al.* (2013) noted that some of the studies focused on financial depth but provided insufficient evidence on financial inclusion. These 2 concepts are very different.[1] As a result, Anzoategui *et al.* (2013) used household-level survey data to examine whether remittances affect households' use of savings and credit instruments from formal financial institutions. Applying the instrumental variable method, they found that although remittances have a positive impact on financial inclusion by promoting the use of deposit accounts, they do not have a significant and robust effect on the demand for and use of credit from formal institutions.

Furthermore, Aga and Peria (2014) did the first study for sub-Saharan Africa on the link between international remittances and financial inclusion. Focusing on household's use of bank accounts and using indicators of migrants' economic conditions in the destination counties as instruments, in order to control for endogeneity. The findings revealed that receiving remittances does increase the probability that households open a bank account in the selected countries. In Nigeria, Ajefu and Ogbebe (2018) make similar investigations and reveal similar results, however migrant network effect was used as the instrument. Although this study is very similar to the current study, this study differs in that we adopt a recursive bivariate probit regression technique, in which full observability is assumed, to examining both the receipt of remittances and use of formal financial services. This is in addition to   controlling for endogeneity using instrumental variables, such level of education and migrant mobility which is further justified in the methodology section.

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[1] Financial deepening is a term used by economists to refer to increasing provision of financial services. It can refer both a wider choice of services and better access for different socioeconomic groups. While financial inclusion is where individuals and businesses have access to useful and affordable financial products and services that meet their needs that are delivered in a responsible and sustainable way. Financial inclusion is defined as the availability and equality of opportunities to access financial services.

2.2   Channels through which Remittance Influences Financial Inclusion

Three main incentives can be associated with the positive relationship between remittances and financial inclusion; the demand factors comprising factors including earnings that push households to demand saving instruments, the supply factors comprising considerations motivating banks to target remittance receiving households for financial services and policy factors that alter the way remittances are sent and received including the requirement that the flows pass through formal financial institutions.

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┌──────────────────────────┐
│   Channels through       │
│   which Remittance       │
│   Influences             │
│   Financial Inclusion    │
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| Demand Channel | Supply Channel | Policy Channel |
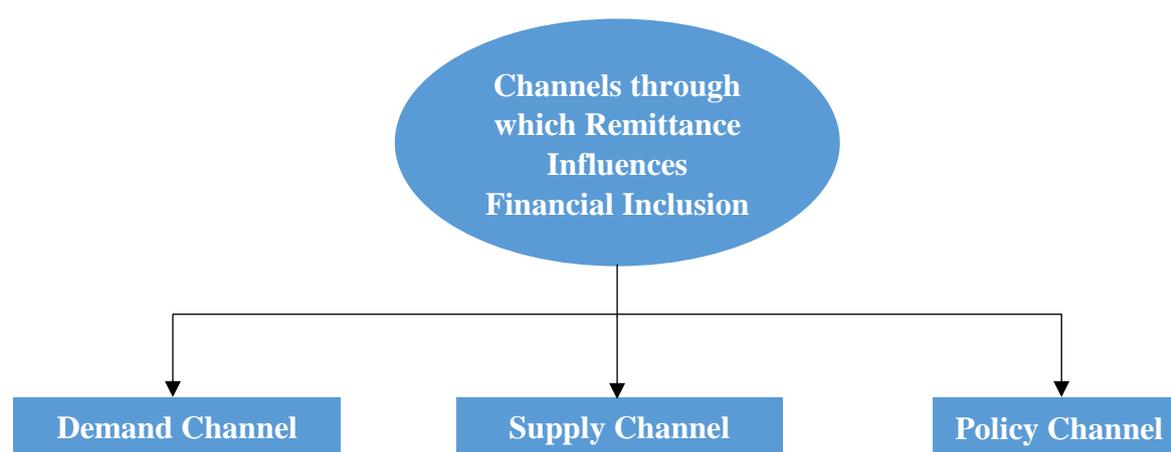
2.2.1   The demand channel

The commitment to sending remittances by migrants living abroad to their left behind households requires access to financial services, especially one that offers international payments. This demand provides incentive for turning towards the banking sector or other financial institutions as a supplier. At the other end of the transaction, the need to *receive* remittances may induce people to look for the first time for financial services beyond their neighbourhood. The World Bank (2005) notes that 'in contrast to cash transactions, remittances channelled through bank accounts may encourage savings and enable a better match for savings and investment in the economy'. Thus for many, migration and subsequent sending of remittance can be the first personal interaction with the global economy. The migrant sending the remittances induces the recipient to contact the institution through which the money is being transmitted. If this institution is a bank offering supplementary financial products (compared to a money transfer organization or informal channel that offers remittance-sending services only), this interaction can create a demand for products such as savings, credit, mortgages and insurance. In this manner, the increased financial awareness of the migrant can be the driving force for increased literacy at the receiving end. The fact that some cash inflow is invested indicates that a demand for complementary financial products does exist among remittance

receivers. Some remittances are sent in-kind, in order to stipulate the use of the remitted 'capital'. This implies that there is a certain need on the sender's side to influence the use of their money (i.e., sending an airline ticket or vouchers) (Toxopeus and Lensink, 2007). Linking other financial products, such as different payout options or mortgages, to the remitted amount is a service that is already at times requested by customers. Increasing the possibilities in this manner for formal money transfer services could be a response to the existing demand.
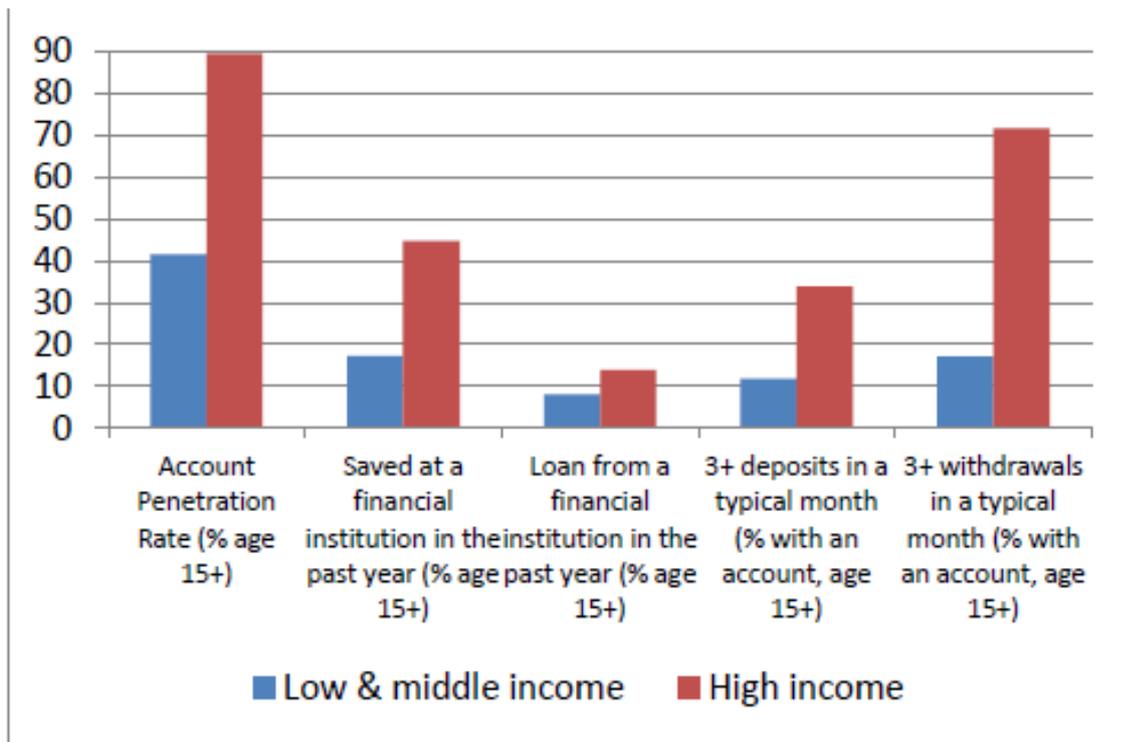

Figure 1: Household Financial Inclusion, 2011
Source: Calculations based on data from the Global Findex database (Demirgüç-Kunt and Klapper 2012)

2.2.2   The supply channel

On the supply side, a wide array of institutions exist to respond to the vast demand for remittance-sending services. In addition to many informal channels and the money transfer organizations that capture a large share of the market, other more diversified and formal financial institutions also offer similar services. Commercial banks, recognizing the vast size of remittance flows however small individual amounts may be, are increasingly interested in targeting this new market segment. Besides capturing money flows, the remittance channel can be used to sell financial service-packages geared towards low-income individuals. Hernández-Coss (2005) states that 'by developing formal remittance channels that are competitive with

informal ones, the formal financial sector has an incentive to develop and benefit from the overall opportunity to grow and expand through the remittance market'. Credit unions worldwide have also focussed on remittances and have collectively created a remittance service (IRnet) for sending money electronically. In the process, they offer other financial services to these users such as savings accounts and loans using the remittance account as collateral (Grace, 2005).

To send and receive remittances, households increasingly rely on mobile banking and other modern retail payments applications. For many households, this can serve as a primary point of entry to the financial system and use of financial services that can go beyond payment systems. Many providers of financial services have realized the enormous potential of introducing new client groups to financial services through remittances and are actively offering additional services along with remittance accounts (World Bank, 2013).

Bundling remittance accounts with other financial products can have a positive impact on financial inclusion. The often substantial fixed costs of sending remittances tend to make remittance flows lumpy and seasonal. This often increases households' demand for savings accounts that offer households a safe place to store temporary savings and use their income for consumption smoothing (World Bank, 2013). Indeed, there is some evidence that remittances can affect financial inclusion by increasing the demand for savings instruments (Anzoategui *et al.,* 2011). Processing remittance flows also provides financial institutions with additional information on the income of recipient households. This information might make financial institutions more willing to provide credit to otherwise informationally opaque borrowers. On the other hand, since remittances might help relax households' budget constraints, the demand for credit might fall as remittances increase. However, this effect is likely to be outweighed by the generally greater use of financial products that results from banking relationships established as the result of remittance flows.

The perceived benefits of serving the low-income market have increased as a result of the demand by the poorer people for remittance services and the ensuing constant inflow of money. Regular remittances can reduce informational problems because the continual inflow of money from abroad allows the lower-income segment of the population to build a sound financial history with a financial institution (World Bank, 2013). The earned income now needs some form of intermediation in order to transfer it to destination. Banks can cross-sell to obtain new clients and enable them to build a financial history by offering international transfer services

together with complementary services, such as savings or checking accounts. Through the remittance inflow, the bank gets an insight into the client's income and expected future funds, thus indicating the potential to service products such as loans (World Bank, 2013).

2.2.3 The policy channel

Domestic policies may also induce close relationship between the receipt of remittances and financial inclusion. Broadening access to financial services is important in its own right, but can also have important positive externalities for the wider economy. Recent research on the general equilibrium effects of financial inclusion suggest, for example, that when the economy-wide effects of broader access to financial services are accounted for, the vast majority of the population is positively affected by improved inclusion through an increase in wages (Buera, Kaboski, and Shin 2012; Kaboski and Townsend, 2012). Given the potential role remittances can play in increasing financial inclusion, it is important to make transfer systems less costly, more efficient, and more transparent. According to recent survey data (World Bank, 2012), account-to-account products between non-partner banks are the most expensive, with an average cost of about 14 percent, while transfers within the same bank or to a partner bank cost about 8 percent on average. Though not widely available, pre-paid card services and mobile services are the cheapest product types, with average costs of about 6 percent for both. However, mobile services do not appear to be competitive in terms of availability, and there is substantial scope to make the costs of mobile money transfers more transparent. The challenge for public policy is to ensure that expanding access is achieved through the removal of market distortions rather than price regulation or other anti-competitive policies that may exacerbate market distortions or threaten financial stability. Such policies can promote financial inclusion by addressing market imperfections in the *supply* of financial services (for example through modern payment and credit information systems, the use of new lending technologies, and support for competition in the provision of financial services) and the *demand* for financial services (e.g through financial literacy initiatives). Also, educating the population on the benefits and processes of financial institutions can increase demand for formal financial services (World Bank, 2003). These measures make it more attractive for diversified financial institutions to enter the remittance market, and for the clientele to send money through formal channels.

Policies to support financial inclusion also include initiatives to remove non-market barriers preventing the *equitable access to financial* services (e.g. through consumer protection and

anti-discrimination laws). More generally, the challenge for policy is to ensure that the financial system is one in which service providers are delivering financial services as widely as possible and the use of such services is not hampered by inappropriate regulatory policies, or non-market barriers leading the use of financial services to fall below the "access possibilities frontier" (Beck and Torre, 2007). In its role as regulator of financial providers, the government has the delicate task of weighing the pros of less stringent regulations for access to financial services (such as less burdensome customer identification and loan documentation requirements) against the drawbacks (such as the potential for money laundering or terrorist financing). Governments can create a more inclusive financial sector and a more efficient and formal economy. They can increase the financial depth of the economy and improve the monitoring of financial flows. Governments can influence access to formal financial services in a country by stimulating remittance sending through formal channels. This puts migrants and remittance recipients in touch with diversified financial institutions, and can lead to increased demand and supply of other financial products.

Governments can encourage transfers through formal channels by removing taxes on incoming remittances, relaxing exchange and capital controls, allowing domestic banks to operate overseas, providing ID cards for migrants, supporting hometown associations and providing matching grants, offering loan/pension schemes and bonds targeted at the diasporas, and by actively supporting the diaspora to help ensure the welfare of their citizens abroad (World Bank, 2005; Allen *et al.,* 2016). However, two regulatory issues in moving towards formal channels need to be highlighted here; identification requirements for migrants and regulation on money laundering and terrorist financing. Valid immigration status is often a problem in using formal channels to remit funds. Migrants without legal status lack adequate identification for opening bank accounts abroad or using the banking system to transfer funds. Surveys of migrants in Los Angeles and New York show that they are discouraged from opening bank accounts by the minimum balance requirements and strict identification regulations (Ratha, 2003). In these cases, migrants tend to resort to money transfer organizations or informal networks. With alternative, acceptable forms of identification for opening bank accounts, more migrants are able to participate in the formal banking system and use this channel to transfer money abroad. The most prominent example of this measure is the 'matrícula consular' issued to Mexican migrants at consulates in the US (Hernández-Coss, 2005). As private banks become more interested in the remittance market, they will increasingly start to accept identification other than those based on legal immigrant status. Much, however, depends on the immigration

policy of the country. For security reasons, some authorities may disagree with this alternative form of identification.

On the credit side, well-designed government regulations can help in ensuring that loans flow to creditworthy households, thereby helping to protect the stability of the financial sector and avoid the negative consequences of consumer over-indebtedness. On payments side, governments can play a crucial role in retail payment systems by addressing potential market failures arising from coordination problems. Streamlining these systems and increasing their interoperability can improve their efficiency and affordability. In the payments and savings arena, the governments can play direct role in promoting financial inclusion by using government to person (G2P) payments, which include social transfers as well as wage and pension payments, to increase demand for accounts or by facilitating access through existing government infrastructure such as post office networks. If well designed, these payments have the potential to become a vehicle for extending financial inclusion, and some observers have noted that providing poor G2P recipients with financial services could strengthen the development impact of G2P payments (Pickens, Porteous, and Rotman, 2009; Bold, Porteous, and Rotman, 2012).

3.0   METHODOLOGY

3.1   Theoretical Framework

Browning and Lusardi (1996) reviewed nine models in explaining motivations to save: precautionary, life-cycle (to provide for anticipated needs), intertemporal substitution (to enjoy interest), improvement (to enjoy increasing expenditure), independence, enterprise, bequest, avarice, and down payment. The lifecycle hypothesis (Ando and Modigliani, 1963; Modigliani, 1986) remains the most influential model of savings of the above listed. Its framework articulates the relationship between consumption, income, wealth, and savings, over the life of individuals. Its central insight is that households have a finite life and a long-term view of their income and consumption needs. They therefore increase their wealth during their working life and use it to smooth consumption during retirement. Wealth itself can come from the accumulation of savings (the difference between "permanent" and "transitory" income) or from bequests. The life cycle hypothesis was one of the first models used to explain savings; it is supported by many empirical analyses in rich countries and is robust to varying assumptions (Karlan and Morduch, 2009). However, for poor households, precautionary savings models are

often a better fit (Deaton, 1997). The models capture the fact that for many poor households the volatility of income and the inability to borrow to smooth consumption is potentially just as damaging as a persistently low level of consumption. Rutherford (2000) puts forward a simple prediction, one that also falls out of most models of savings that generate a preference for smooth consumption: the poor need mechanisms to make small deposits and large withdrawals. The idea is that poor people can save and that they want to save in order to meet life cycle needs, cope with emergencies, acquire assets and develop businesses. Most of these needs come in lump-sums, however, whereas income often comes in little instalments (cash labour income, or entrepreneurial income). Putting these points together: Households that have uneven cash flows such as those engaged in agriculture where returns are highly volatile needs to save in order to smoothen consumption (save for rainy days) and the fact that sometimes current income exceeds current consumption means that they are able to save. The receipt of remittances is another form of income smoothening, thus in addition to breaking household income and risk constraints, receipt of remittances might induce financial inclusion among the households through increased demand for saving products.

3.2   Area of Study and Research Design

The data used in this study are obtained from the 2009 Migration and Remittances Household Survey in Nigeria and were collected between late October and mid-December 2009. The survey is a single round, cross-sectional survey capturing information about households with internal, external, and no migrants. It was conducted as part of the Africa Migration Project, which was jointly undertaken by the World Bank and the African Development Bank for the purpose of improving understanding of migration and remittances in sub-Saharan Africa. A total of 2,251 households in 36 states of the country were surveyed. The main respondent to the questionnaire was the head of the household, or his/her representative. The sampling frame of the survey is representative of the whole population in the country and based on the 2006 population census. To the best of our knowledge, this dataset is considered the most suitable and recent as far as variables of remittances and financial inclusion is concerned.

3.3   Model Specification

The interest of the study is to identify the causal impact of receiving remittances on the household's propensity to access formal financial services. We operationalise access to formal financial services as a dummy variable that equals 1 if household has at least one bank account and zero otherwise. Similarly, the migration variable operates as a dummy in the model that equals 1 if household has a member who has migrated, hence, the household is a potential recipient of any amount of remittances from internal or international destinations. The main empirical concern of the study is that the receipt of remittances is not likely to be random because migration is a selective process. The appropriate estimation technique will not only follow the functional forms of the two decision variables in dummy form, but also account for the selectivity in the receipt of remittances. So we decide to estimate a system of equations as follows;

$$A_i \; = \gamma_0 + \gamma_1 X_{iA} + \; \varepsilon_{iA} \qquad\qquad (1)$$
$$R_i = \; \beta_0 + \; \beta_1 X_{iR} + \; \varepsilon_{iR} \qquad\qquad (2)$$

Where A_i is a dummy variable capturing whether a household has a bank account or not; X_{iA} is a set of household characteristics that are assumed to influence the probability of accessing financial services; and $\varepsilon_{iA} \; and \; \varepsilon_{iR}$ are the random error terms of the estimated equations respectively. R_i is a binary endogenous variable equal to 1 if the household receives remittances (internal or international) and 0 if the household does not receive; X_{iR} is a vector of household characteristics influencing the chance of receiving remittances. Equation 1 captures household behaviour with respect to the use of formal financial services which can be thought of as arising from a decision process in which the household's push and pull factors of financial inclusion are factored in. Assuming that both the receipt of remittances and use of formal financial services are not fully observed, the recursive bivariate probit estimation is thus applied to equations 1 and 2 with instruments for endogenous remittances variable. Two observable binary indicator variables can be defined to represent the latent variables as follows:

$$A_i \; = \gamma_0 + \gamma_1 X_{iA} + \; \gamma_2 R_i + \; \varepsilon_{iA} \qquad\qquad (3)$$
$$R_i = \; \beta_0 + \; \beta_1 X_{iR} + \; \beta_2 Z_i + \; \varepsilon_{iR} \qquad\qquad (4)$$

Where $A_i \; and \; R_i$ are as previously defined. The parameters for the latent relationship can be estimated by Maximum Likelihood techniques. Z_i is a vector of exogenous variables used in the first-stage estimation of the system of equations as instruments for the remittance variable.

Using the bivariate probit model with full observability, the equations are estimated and the associated probabilities calculated. The empirical focus is on obtaining from equation 3 the empirical estimates for the parameter, γ_2, corresponding to the coefficient of the endogenous remittance variable. However, since migration is a selective process, identifying the causal impact of remittance on household decision to use financial services in a cross sectional setting is a non-trivial challenge. Instrumental variable approach is adopted, where the instruments (which would be discussed in section 3.4) are applied. The first set of estimation for the seemingly unrelated regression (SUR) indicates the assumption that the two equations are correlated only through unobserved characteristics (i.e. they are not recursive), while the second assume that the equations are recursive through the migration variable.

Table 1 describes and summarises the estimation variables of the model. This table also includes a z-test performed to investigate whether differences in the means or proportions of the relevant variable exist between migrant and non-migrant households. The reported means and standard errors indicate that the null hypothesis of equal means between migrant and non-migrant households has to be rejected for ownership of bank accounts and total household expenditures. In particular, migrant households are 28 percent more likely to have a bank account than non-migrant households.

Table 1: Description and summary statistics of the estimation variables

Variable	All Households	Migrant	Non-migrant
Dependent Variable			
= 1 if household has member who has bank account	0.56(.49)	0.66(.47)	0.38 (.48)
Explanatory Variable			
Log of total household expenditure per capita	13.44 (.90)	13.60(.89)	13.16 (.84)
= 1 if household has at least one migrant	0.63 (.48)		
Age of household head (log years)	3.86 (.29)	3.92 (.28)	3.76 (.28)
= 1 if head is wage-employed	0.25 (.44)	0.25 (.43)	0.26 (.44)

= 1 if head is self-employed	0.59 (.49)	0.56 (.50)	0.65 (.48)
= 1 if head is unemployed	0.15 (.38)	0.19 (.39)	0.09 (.28)
Household size	5.94 (3.28)	5.71 (3.11)	6.35 (3.53)
= 1 if head is currently married	0.88 (.33)	0.85(.35)	0.92 (.27)
= 1 if household live in own house	0.66 (.47)	0.64 (.48)	0.69 (.46)
Head's highest education is less than 3 years	0.24 (.43)	0.21 (.41)	0.29 (.45)
Head's highest education is between 4 & 6 years	0.18 (.39)	0.18 (.38)	0.20 (.40)
Head's highest education is between 7 & 12 years	.32 (.47)	.32(.47)	.32 (.46)
Head's highest education is between 12 & 16 years	.22 (.41)	.25(.43)	.17 (.38)
Head's highest education is above 16 years	0.04 (0.20)	0.05 (0.22)	0.03 (.17)
Education level of most educated household member	4.92 (4.05)	5.25 (3.95)	4.30 (4.17)
Migration network	6.46 (6.32)	10.1 (5.1)	4.12(7.11)

3.4 Justification of instruments

Given that the migration variable might be endogenous, the equations need to be augmented with valid instruments. For this purpose, we use the following set of instruments: (i) the education level of the highest educated household member; (ii) the number of current and return migrants in the origin village minus any such number in the ith household. It is clear from literature that migrants' self-selection into different forms of mobility is highly driven by education level. At the same time, the importance of access to financial services is common, not reserved for the educated. Therefore, as long as we control for the average education level of household members in the main model, we can assume that the education level of the highest educated member does not directly influence the household behaviour with respect to financial inclusion, unless through the migration process. The second instrument is based on the theory of extra family migration networks. It captures the role of 'social learning' in shaping

household migration behaviour. In particular, it reflects the understanding that social networks between village neighbours contribute to reducing migration costs and make migration more likely (Mendola, 2008). Based on these, we assume that village migration network is a valid instrument for our case since we cannot suppose that such networks has any relevance for the decisions regarding the use of financial services. The use of similar instruments in this context is documented in literature (Agwu *et al.,* 2018; Rozelle *et al.,* 1999).

4.0 ANALYSIS AND INTERPRETATION OF RESULTS

Our models consistently predict that migration increases the chance of the household having bank accounts. The magnitude and sign of the coefficients appears consistent across different estimations. This observation is in line with migration having a robust positive impact on financial inclusion. The set of explanatory variables utilized for the estimation is standard in the field. In all the specifications, the coefficient of correlation (rho) between the two equations (remittance and financial inclusion) are statistically significant at the one percent level. The direct interpretation of this is that the unobservables driving the two outcomes are intrinsically related. This conforms to the assumption of selectivity with respect to the two outcomes and suggests that the two-part estimation of the bivariate probit model is appropriate. Without assumption of recursiveness in the two part estimation, the rho is positive and significant suggestive of positive selection bias as a result of omitted migration variable in the financial inclusion equation. However, controlling for migration, the rho becomes negative and significant. In all, the rho suggests that given migration, unobservables influence both migration and financial inclusion but in opposite directions, whereas migration in itself promotes financial inclusion. The probit estimation results are shown in table 2 below.

Table 2: Estimation Results

	(1)		(2)		(3)	
	FI	Migrate1	FI	Migrate1	FI	Migrate1
Migrate1	-	-	0.686*	-	0.804***	-
			(1.78)		(2.79)	
log_schooling	0.097	2.773***	0.086	1.017***	-	1.013***
	(0.43)	(7.77)	(0.53)	(5.28)		(5.31)
Urban	0.128*	0.453***	0.014	0.465***	0.001	0.462***
	(1.65)	(5.35)	(0.14)	(5.48)	(0.01)	(5.45)
wage_employed	-0.384***	0.169	-0.395***	0.207	-0.392***	0.205
	(-3.04)	(1.21)	(-3.11)	(1.48)	(-3.10)	(1.46)
self_employed	-0.095	-0.307**	-0.031	-0.265**	-0.017	-0.267**
	(-0.81)	(-2.53)	(-0.24)	(-2.19)	(-0.14)	(-2.21)
Married	-0.175	0.077	-0.187*	0.082	-0.187*	0.083
	(-1.55)	(0.63)	(-1.65)	(0.67)	(-1.65)	(0.68)
Islam	-0.419***	-0.319***	-0.340***	-0.361***	-0.329***	-0.360***
	(-5.38)	(-3.58)	(-3.72)	(-4.12)	(-3.71)	(-4.12)
Lnhhsize	-0.343***	-0.282***	-0.291***	-0.318***	-0.281***	-0.319***
	(-4.47)	(-3.39)	(-3.45)	-3.86	(-3.43)	(-3.86)
own_house	-0.097	-0.409***	-0.016	-0.418***	-0.003	-0.418***
	(-1.25)	(-4.60)	(-0.17)	(-4.68)	(-0.03)	(-4.68)
less3	-0.227	3.515***	-	-	-	-
	(-0.47)	(5.51)				
btw4_6	-0.053	1.412***	0.024	0.253*	-0.008	0.251*
	(-0.30)	(5.56)	(0.21)	(1.74)	(-0.09)	(1.73)
btw13_16	0.071	-0.297**	-0.024	0.163	-0.009	0.166
	(0.72)	(-2.19)	(-0.24)	(1.37)	(-0.09)	(1.39)
above 16	-	-	-0.271	1.278**	-0.244	1.281**
			(-1.52)	(2.52)	(-1.44)	(2.54)
log_age	1.265***	0.778***	1.161***	0.753***	1.126***	0.749***

	(9.01)	(5.05)	(6.97)	(4.91)	(7.33)	(4.89)
log_exppc	0.289***	0.450***	0.220***	0.464***	0.207***	0.464***
	(6.20)	(8.19)	(3.38)	(8.45)	(3.50)	(8.47)
Constant	-7.494***	-14.671***	-6.690***	-10.430***	-6.291***	-10.406***
	(-8.35)	(-11.60)	(-5.71)	(-10.17)	(-7.03)	(-10.17)
/athrho	-	0.290***	-	-0.114	-	-0.184
		(5.52)		(-0.49)		(-1.02)
Rho	-	0.282	-	-0.113	-	-0.182
Number of observations		1,727		1,727		1,727
Log-likelihood		-1652.066		-1661.186		-1661.332
Wald chi 2(27)		718.30		803.06		827.31

***, statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two –tailed tests. The numbers in parenthesis are the z-values.*

Some of the important explanatory variables, adhered to apriori expectations: A 1% increase in **years of schooling** will increase the chances of an individual to be financially included and migrate by 0.00097 and 0.0278 units respectively, ceteris-paribus. This basically means that the more educated a person is, the better the chances of him been financially included and migrating. This is justifiable as an educated person would be more of an asset in the host country/more likely to get a job. Also, an educated person is more likely to see the need for financial institutions. This result is fairly similar across various estimations and robust to the assumption (or none assumption) of recursiveness and use of instrumental variable. Like Allen *et al.* (2016) worldwide and Fungácová and Weill (2015) in China, who found that more educated adults are more likely to be financially included. Even more specifically, Zins and Weills (2016) found in their study that education and income are the most important individual characteristics explaining financial inclusion.

In terms of settlement type, living in an **urban** community, increases the chance of financial inclusion and migration. This is plausible as many banks have more branches situated in the urban areas (compared to rural areas), hence, people in the urban areas would have more banks

within reach. Also, people in urban areas (of Nigeria) have better access to information about banking operations. Furthermore, people in the urban areas are also more likely to get information about migration; eligibility for visa applications, information about visa lottery etc. From the above results, been *wage_employed* has a negative influence on financial inclusion but has positive influence on the probability to migrate, while *self_employment* exerts negative influence on both financial inclusion and migration.

From literature, we understand religion to be one of the key determinants of financial inclusion (Zulkhibri, 2016**;** Demirgüç-Kunt *et al.,* 2013). From the above result, being a muslim reduces the chance of financial inclusion. The results are highly significant across all 3 conventional levels of significance, and this holds true through all varying estimations. According to a study by Zulkhibri (2016), the low proportion of bank accounts (only 27%) in muslim countries can be explained by the absence and uneven access to financial services and instruments that are Sharia compliant. This is because the Islamic legal system (Sharia) has its own guidelines and regulations regarding financial transactions (mu'amalah) for Muslim believers. Many Muslim households as well as MSMEs may be voluntarily excluded from formal financial markets because of religious requirements or the lack of sharia-compliant products and services. Such requirements include the prohibition of interest on loans and the requirement for financial service providers to share in the profit and loss of business activities. The majority of conventional financial services do not meet these two main requirements. Therefore, conventional financial service providers are irrelevant to most Muslim individuals and firms in need of a bank account or financing.

Furthermore, for migration; a household who practices *Islamic* religion is less likely to have a migrant, relative to a household practicing Christianity. The size of the household also appears to be very important, from the above results, the larger *the household size*, the less likely it is for the members of such household to be financially included and the less likely for such household to have at least one migrant. This might be explained by the fact that, in a larger household, competition for the available scarce resources might be stiffer. Hence, members of such household might not have those minimum requirements, such as; education or even required skills that can increase chances of been able to migrate. Large households might have less money available for savings, given that the larger a household, the greater the need for higher spending. And depending on the size of the household income, the household might barely afford to save.

Older people are more likely to be financially included and more likely to migrate. A 1% increase in mean *age* would increase chance of financial inclusion and migration by 0.013 and 0.008, respectively. This conforms with the results in literature (Zins and Weills, 2016; Allen *et al.,* 2016). **Expenditure per capita** in this study has been used as a proxy for household income/wealth and this is supported by economic theory. Hence, we expect expenditure per capital to be positively related to financial inclusion and migration. From the above results, on average, a 1% change in expenditure would lead to 0.0029 and 0.0045 units increase in the probability of financial inclusion and migration, respectively. This is justifiable given that, a household with a high expenditure per capital might be indicative of a high household income. Hence, we would expect that high income to be positively correlated with financial inclusion and migration. Demirgüç-Kunt and Klapper in 2012 observed from their study that about 70.8% of Africans who are not financially included is because of lack of money. Hence, we expect that household wealth would significantly influence financial inclusion in this part of the world.

Most importantly, migration is positively related to financial inclusion. This is the crux of this study; on average, a household with at least one migrant is more likely to be financially included. More specifically, an extra one migrant in a household would increase the chance of financial inclusion by 0.804.

5.0   CONCLUSION AND AREAS OF FURTHER RESEARCH

There is a growing awareness of the importance of financial inclusion in the developing world. At the same time, remittances have helped to solve many of the problems of inclusiveness in the developing world, poverty included. This study examined the impact of remittances on the likelihood of using financial services by Nigerian households using data from the World Bank migration project. Overall, we find that remittances have a positive impact on financial inclusion by promoting the use of deposit accounts. These results hold controlling for unobserved household characteristics and using instrumental variables regressions to correct for the potential endogeneity of remittances. Due to data availability, this study could not answer a number of questions:

First, it would be interesting to analyse the extent to which remittance recipients that have accounts, actively use these accounts to save and manage their daily transactions. Second, it would be important to go deeper into the reasons why those that receive remittances do not

seem to have a higher demand for credit. In particular, it would be useful to analyse whether indeed this is due to the fact that remittances relax credit constraints or because the credit products offered to remittance recipients are not considered adequate by this population. A pointer to the last point is found in our estimation. Particularly that Muslims are less likely to have bank accounts than other religions. This suggests that products offered to given set of households might be a hindrance to financial inclusion.

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