Drivers of Financial Inclusion and Gender Gap in Nigeria

Abdu, Musa[1*]; Buba, Abdullahi[2], Adamu, Idi[3], Muhammad, Tasiu[4]

[1, 2, 3] Department of Economics, Gombe State University,

Gombe-Nigeria

[4] General Manager, Sauki Oil, Gombe-Nigeria

[1*]Corresponding Author: Abdu, Musa

musaabdu87@gmail.com abdumusa2011@hotmail.com

ABSTRACT

Financial inclusion serves as an effectual tool to reducing poverty and improving welfare of generality of the masses thereby attaining inclusive growth. This study has been informed by the mission of World Bank Group to achieve universal financial inclusion. The study analyses the drivers of financial inclusion and its gender gap in Nigeria using The Global Findex 2011 dataset. The study adopts Binary Probit Model and technique of Fairlie decomposition to realize its objectives. The empirical findings suggest that youthful age, better education and high income improve the chances for households to be financially included whereas old age, female and low income reduce the likelihoods for households to be financially included. The decomposition results confirm the existence of gender gap in financial inclusion in favour male households, to which education (particularly secondary) and income quintiles 2 and 5, contribute significantly to the explained gap. Focusing on these significant determinants of financial inclusion during formulating and designing policies would be useful in improving financial inclusion in Nigeria.

Keywords: financial inclusion, inclusive growth, Probit model, Fairlie decomposition

JEL Classification: G20, O40, C35, C14

1. Introduction

In this era of inclusive growth, financial inclusion remains an important mechanism of reducing poverty substantially thereby attaining national progress and prosperity. This is because finance is necessary for economic growth (Ajide, 2014). And well-functioning financial system is fundamental in achieving universal financial inclusion. Again, there are numerous benefits derivable from financial inclusion ranging from micro to macro benefits (Karlan and Zinman, 2010, Demirguc-Kunt and Klapper, 2013, Dupas and Robinson, 2013 and Karpowicz, 2014). Among others, the micro benefits include ability to start-up and expand businesses, investment in education, risk management and absorption of financial shocks. However, the macro benefits are employment generation and wealth creation, reduction in income inequality and stimulating economic growth, increased savings and improved general welfare of the populace. In view of these benefits, financial inclusion has been so much prioritized world over by both policy makers and financial regulators in their quest to fully develop financial sector (Demirguc-Kunt, Klapper, Singer and Oudheusden, 2015 and World Bank, 2012a).

A cursory view of data on global financial inclusion portrays that there have been a significant progress in expanding financial inclusion. World Bank (2015a) reports that about 700 million adults have gained access to financial institutions for the period 2011-2014. This implies that 62 per cent of global adult population in 2014, as against 51 per cent in 2011, have accounts at banks, other financial institution or mobile service money service providers. It is equally reported that it is only 58 per cent women are financially included in 2014 as matched with 65 per cent of the men. This means that there exists a gender gap in financial inclusion on the globe.

Conversely, The 2014 Global Findex Data by World Bank (2015b) observes that there are still about 2 billion adult population that are financially excluded in 2014 world over due to one reason or the other. In other words, 38 per cent of the global adult people do not still have access to formal financial products and services in 2014 and more than half of which are in the poorest 40 per cent of the households in developing countries. Although owning bank account is a primary step to be financially included; the frequency of using such an account matters a lot in consolidating financial inclusion. It is asserted that more than 65 per cent of account holders in

developing counties use their accounts at least thrice a month. Also, more than 1 billion adult account holders in developing countries carry out most of their transactions (like paying utility bills and even school fees) in cash. World Bank (2015b) corroborates further that it is only 28 per cent adults in developing countries that save only in case of emergency while 56 per cent never save at financial institutions.

World Bank and IMF have collaboratively formulated an agenda to attain universal financial inclusion by 2020 (World Bank, 2015a). This is in view of wide gap in financial inclusion between high-income and low-income countries. On average, there is 94 per cent financial inclusion in most of high-income OECD economies, as contrasts with just 54 per cent in low-income countries (Demirguc-Kunt, Klapper, Singer and Oudheusden, 2015). To achieve this, the collaboration has targeted 25 countries mostly from Asia and Africa where 73 per cent of financially excluded people live. The 2014 Global Findex Data by World Bank (2015b) reports also that Nigeria is among these countries with about 56 per cent financially excluded people as compared to 30 and 24 per cents in South Africa and Kenya respectively. Of the 44 per cent financially included people in Nigeria, only 34 per cent are women and also it is just 34 per cent are adults in the poorest 40 per cent of households.

This study has been informed by the afore-said poor rate of financial inclusion in Nigeria, despite the country's recent economic prosperity, coupled with lack of comprehensive micro-study on determinants of financial inclusion in Nigeria. Therefore, this study sets out to find empirical answers to the following research questions: what are drivers of financial inclusion in Nigeria? Is there any gender gap in financial inclusion and if yes, what are contributors to the gap?

The remaining parts of the study are organised as follows: section 2 reviews both relevant literatures while section 3 presents the methodology of the study. Section 4 presents and discusses the results whereas section 5 concludes the study with some recommendations.

1. Literature Review
1.1. Conceptual Issues

Amidzic Massara and Mialou, (2014) defined financial inclusion as "an economic state where individuals and firms are not denied access to basic financial services based on motivations other than efficiency criteria". To Centre for Financial Inclusion (2011), financial inclusion refers to "a

state in which all people who can use them have access to a full suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity for the clients. Financial services are delivered by a range of providers, most of them private, and reach everyone who can use them including disabled, poor, rural and other excluded populations". The World Bank's Global Financial Development Report (2014) defined financial inclusion from financial exclusion perspective, in which financial exclusion is dichotomized into voluntary and involuntary financial exclusion. Voluntary exclusion refers to the proportion of the population that voluntarily decides not to use financial services, on the grounds of lack of need for those services and/or because of cultural or religious purposes.

Involuntary exclusion is the segment of the population that is denied financial services, perhaps due to government failures or market imperfections. Finally, to Central Bank of Nigeria (2012) "financial inclusion is achieved when adults Nigerians have easy access to a broad range of formal financial services that meet their needs and are provided at affordable cost".

In line with the above definition by World Bank, Demirguc-Kunt and Klapper, (2012) came up with four sets of indicators of financial inclusion. The first set of indicators centres on *formal accounts* and their mechanics of the use, their purpose, barriers and alternatives to the formal accounts. It also deal with *account penetration*, which measures individual or joint ownership of formal accounts and having debit or ATM cards attached to the accounts. The set also covers *indicators of receipt of payment* measuring the use of formal accounts to receive wages and settle some bills. The second set of indicators concentrates on *saving behaviour* while the third set of indicators covers the sources of borrowing, purposes of borrowing and the use of credit cards. Lastly, the fourth set deals with the use of insurance products for health care and agriculture.

1.2. Empirical Studies

With reference to 57 emerging and developing economies, Gopalan and Rajan, (2014) analysed the effects of foreign bank entry on financial inclusion. Their findings suggest that foreign banks have a positive impact in strengthening financial inclusion, but the relationship turns negative when foreign bank entry is followed by greater banking concentration. Naceur, Barajas and Massara, (2015) examined the relationship between the development of Islamic banking and

financial inclusion in countries of Organisation for Islamic Cooperation (OIC). They established that there exists a positive link to credit households and to firms for financing investment.

In a discourse of determinants of financial inclusion in China, Fungăĉovă and Weill (2012) uncover that higher income, better education, being man and being older, significantly determine the use of formal accounts and formal credits while income and education significantly borrowing in China. On the supply-side, branches and ATMs determine access to formal financial services whereas level of education, income and age, are the significant determinants of financial inclusion on the demand-side in Argentina (Tuesta, Sorensen, Haring and Cămara, 2015). Low income and age are the barriers to involuntary exclusion. Clamara, Peña and Tuesta, (2014) established that loans and mortgages appear to be better drivers for financial inclusion than saving products in Peru, from financial products perspective. Such factors as age, gender, education and income level seem to affect perception of the barriers to financial inclusion whilst formality and education are the significant factors for financial inclusion for enterprises.

Jang, Benicio, and Chiyaba, (2014) examine the impact on growth and inequality of various policy measures to enhance financial inclusion and deepening in Zambia using a micro-founded general equilibrium model. The study finds that relaxing constraints on collateral seems to offer the greatest benefits in terms of growth while inclusion of firms and inequality are better tackled through measures that lower financial participation costs. Similarly, Akudugu (2013) found out that age, literacy level, wealth class, distance to financial institutions, lack of documentation, lack of trust for formal financial institutions, money poverty and others, determine financial inclusion in Ghana. Finally, Adewale (2009) concludes, with reference to Ilorin in Nigeria, that necessary documentation and collateral security impede micro-entrepreneurs from accessing financial resources. Affordability also determines involuntary exclusion. Unreliable income source of potential borrowers make them financially contented.

Unlike the above studies reviewed, this study will contribute to knowledge by finding the determinants of financial inclusion in the entirety of Nigeria and factors responsible for gender gap in the financial inclusion.

2. Methodology of the Study

2.1.Empirical Model

In the studies reviewed in section 2, the structural form of the model can be specified as follows:

$$fin_i = (age_i, gender_i, income_i, edu_i) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (1)$$

Where: fin_i is the financial inclusion or exclusion, age_i is the age in years, $gender_i$ is the sex (female/male), $income_i$ is the income quintile, and edu_i is the education level, of household i in Nigeria. The model can be re-specified as follows:

$$fin_i = \beta_1 + \beta_2 * age_i + \beta_2 * agesqr_i + \beta_3 * gender_i + \beta_4 * income_i + \beta_5 * edu_i + \mu_i \dots (2)$$

Where $agesqr_i$ stands for age squared to capture for the nonlinear effect of age, and μ_i is the error term of the model.

3.2. Data and Estimation Techniques

This study used the 2011 World Bank's Global Financial Inclusion (Global Findex) dataset by World Bank (2012). Thus, the Global Findex data on financial inclusion and the relevant socioeconomic variables are used to estimate the model specified above.

Binary Probit Regression Model was used to estimate the equation (2) since the assumptions of OLS technique break down because of the discrete and dummy nature of the explained variable (see Greene, 2012, p 671-690). As such, equation for binary probit model can be derived from equation (2).

$$Log \left[\frac{Pr (fin_i)}{1 - Pr (fin_i)} \right] = \beta_1 + \beta_2 * age_i + \beta_2 * agesqr_i + \beta_3 * gender_i + \beta_4 * income_i + \beta_5 *$$

$$edu_i + \mu_i \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3)$$

Where: $Pr (fin_i)$ is the probability of household will be financially included while $1 - Pr (fin_i)$ is the probability of household will be financially included.

The study also adopted the technique of Fairlie nonlinear decomposition to analyse gender gap inclusion in Nigeria. Fairlie decomposition is an extension of Blinder-Oaxaca decomposition to fully resolve the problems of discrete variables, in which nonlinear models like logistic and probit models, are used (Fairlie, 1999 and Fairlie, 2006). Fairlie decomposition model is specified:

$$GF = f^{-m} - f^{-f} = \left[\sum_{i=1}^{N^m} \frac{F(X_i^m \beta^f)}{N^m} - \sum_{i=1}^{N^m} \frac{F(X_i^f \beta^f)}{N^f}\right] + \left[\sum_{i=1}^{N^m} \frac{F(X_i^m \beta^m)}{N^m} - \sum_{i=1}^{N^r} \frac{F(X_i^m \beta^f)}{N^m}\right] \dots (4)$$

Where Nj is the sample size for group j. The first term in brackets shows the part of the gender gap that is due to group differences in distributions of X and the second term represents the part due to differences in the group processes determining levels of financial inclusion. The second term also captures the portion of the gender gap due to group differences in immeasurable or unobserved endowments. Note that negative value implies that the gap in narrowing.

3. Presentation and Discussion of Results

The table 4.1 below contains the summary statistics of variables of interest for the analysis.

Table 4.1: Summary Statistics of the Variables

Variable	Observation	Mean	Std. Dev.	Min	Max
Formal Acct. Yes=1 No=0	1000	.389	.4877673	0	1
Savings Yes=1 No=0	697	.4519369	.498042	0	1
Borrowing Yes=1 No=0	998	.0240481	.1532753	0	1
Insurance Yes=1 No=0	1000	.029	.1678904	0	1
Gender Female=1 Male=0	1000	.454	.4981286	0	1
Edu Level Primary=1 Secondary=2 Tertiary=3	1000	1.78	.4645598	1	3
Income Quintiles	1000	3.431	1.384614	1	5
Age	1000	32.436	13.10166	15	93

Source: Authors' construction and Global Findex Database (2011)

In table 4.1, the summary statistics of each variable is clearly indicated. For example, the ages of

VARIABLES	(1) Formal Acct	(2) Savings	(3) Borrowings	(4) Insurance
Age	0.103***	0.0794***	0.0617	0.0766**
	(0.0200)	(0.0275)	(0.0452)	(0.0384)
Agesqr	-0.000945***	-0.000786**	-0.000818	-0.000662
	(0.000258)	(0.000364)	(0.000609)	(0.000499)
Female	-0.169*	-0.286***	-0.194	-0.0350

respondents fall between the range of 15 and 93 years while their education levels are between primary/less and tertiary/more levels. Also, there are five income quintiles in the data: poorest 20%, second 20%, middle 20%, fourth 20% and richest 20%. The rest of variables are dummy.

Table 4.2: Probit Models of Determinants of Financial inclusion in Nigeria

	(0.0905)	(0.105)	(0.172)	(0.183)
Income quintile1	-0.470**	-0.651***	0.472	
	(0.187)	(0.222)	(0.290)	
Income quintile2	-0.489***	-0.573***	-0.274	0.393
	(0.163)	(0.196)	(0.331)	(0.372)
Income quintile4	0.0794	-0.106	-0.0734	0.658**
	(0.136)	(0.159)	(0.285)	(0.327)
Income quintile5	0.468***	0.267*	-0.143	0.935***
	(0.128)	(0.151)	(0.260)	(0.310)
Secondary	1.229***	1.094***	0.368	0.739**
	(0.145)	(0.157)	(0.305)	(0.366)
Tertiary	1.770***	1.921***	1.072**	1.644***
	(0.359)	(0.428)	(0.468)	(0.443)
Constant	-3.448***	-2.510***	-3.245***	-4.984***
	(0.403)	(0.511)	(0.843)	(0.805)
Prob > chi2	0.0000	0.0000	0.0475	0.0000
Pseudo R2	0.2078	0.1667	0.0577	0.1676
Observations	1,000	697	998	877

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4.2 above contains four probit models of determinants of financial inclusion using the four major indicators of financial inclusion. Model 1 is the one with determinants of having formal account at financial institution. The model shows that age, gender, income and education level, significantly determine having formal account. Most of them are significant at 1% except female and income quintile1 whom are significant at 10% and 5% respectively. While age, income quintile5 (compared to middle 20%), and secondary and tertiary (in relation to primary) positively determine the possibility of owning formal account; age-squared, female, and income quintile1 and quintile2 (middle 20%) have negative effects on the probability of households having formal accounts. The inclusion of both age and age-squared in the models is to capture both linear and nonlinear effects of age in the models.

Model 2 is the one that contains the determinants of saving at financial institutions. The model also shows that age, gender, income and education level, significantly determine savings. Age (at 1%), income quintile5 (at 10%) (compared to middle 20%), and secondary and tertiary (at 1%) (in relation to primary) positively determine the possibility of savings whereas age-squared (at 5%), female (at 1%) and income quintile1 and quintile2 (at 1%) (middle 20%) have negative

effects on the probability of households' savings. Finally, models 3 and 4 are for determinants of borrowings from financial institutions and having personal insurance at also financial institutions respectively. While tertiary education (compared to primary) is the only variable that has significant positive effect on the likelihood of households to borrow from financial institutions at 5% level of significance; age (at 5%), income quintile4 (at 5%) and quintile5 (at 1%) (compared to middle 20%), secondary (at 5%) and tertiary (at 1%) (in relation to primary), that significantly and positively determine the likelihood of having formal insurance policy.

Table 4.3 below contains the marginal effects of each significant of financial inclusion in using different indicators. In models 1 and 2, it is indicated that as age advances by a year the probabilities of households to have formal account and savings increase by 3.80% and 3.12% up to age 93 when the likelihoods fall by 0.09% and 0.08% respectively. But in the case of model 4, age has just linear effect, i.e., as it rises by a year the probability to have formal insurance policy increases by 0.30%. Being female and in the first and second poorest 20% (as compared to middle 20%) brings about 6.22%, 15.90% and 16.60% less possibilities to have formal accounts whilst that results in 11.20%, 23.30% and 21.0% less likelihoods to save respectively. Being in income quintile5 or richest 20% there would be 17.70% and 10.50% more chances for households to have formal accounts and savings respectively. Secondary and tertiary education leads to 37.80% and 57.50% more chances for households to have formal accounts respectively than just primary education. Again, secondary and tertiary education results in 37.70% and 54.10% more chances for households to have savings respectively than just primary education.

In the case of model 3, tertiary education causes 13.30% more probability for households to borrow formally. In model 4, being in income quintiles 4 and 5 or richest 40% brings about 3.85% and 5.51% more tendencies to have insurance policy.

Table 4.3: Probit Models with Marginal Effects of Determinants of Financial inclusion

VARIABLES	(1) Formal Account	(2) Savings	(3) Borrowings	(4) Insurance
Age	0.0380***	0.0312***	0.00281	0.00304**
	(0.00733)	(0.0108)	(0.00199)	(0.00153)
Age-squared	-0.000350***	-0.000309**	-3.73e-05	-2.63e-05
	(9.47e-05)	(0.000143)	(2.67e-05)	(1.93e-05)
Female	-0.0622*	-0.112***	-0.00871	-0.00139
	(0.0332)	(0.0407)	(0.00766)	(0.00711)
Income quintile1	-0.159***	-0.233***	0.0314	-
	(0.0561)	(0.0688)	(0.0261)	
Income quintile2	-0.166***	-0.210***	-0.0103	0.0207
	(0.0497)	(0.0647)	(0.0106)	(0.0256)
Income quintile4	0.0297	-0.0416	-0.00321	0.0385**
	(0.0510)	(0.0619)	(0.0120)	(0.0253)
Income quintile5	0.177***	0.105*	-0.00618	0.0551**
	(0.0490)	(0.0596)	(0.0107)	(0.0250)
secondary	0.378***	0.377***	0.0142	0.0207***
	(0.0328)	(0.0427)	(0.00987)	(0.00748)
tertiary	0.575***	0.541***	0.133**	0.279***
	(0.0604)	(0.0458)	(0.104)	(0.136)
Obs Pr (mean)	.389	.4519369	.0240481	.0330673
Predicted Prob	.350707	.4327609	.0186156	.0158547
Observations	1,000	697	998	877

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Finally, secondary and tertiary education also cause 20.70% and 27.70% more chances for households to have insurance policy. Note that all the models predicted the mean the dependent variables correctly (compare the means of formal account, savings, borrowing and insurance in table 4.1 with those in table 4.3). However, to check the predictive power of the models in terms of observation, table 4.4 has been constructed using the data.

Table 4.4: Frequency Table of Indicators of Financial Inclusion

Variables	Frequency	Percentage	Total
Formal Account	389	38.90	1,000
Savings	315	45.19	697
Borrowing	24	2.40	998
Insurance	29	2.90	1,000

Source: Authors' construction and Global Findex Database (2011)

The models in table 4.3 predicted that 35.08%, 43.28%, 1.86% and 1.59% are the proportions of households that are likely to have formal accounts, savings, borrowing and insurance policy, as against the actual value of 38.90%, 45.19%, 2.40% and 2.90% in table 4.4 respectively.

Table 4.5: Fairlie Non-Linear Decomposition of Gender Gap in Formal Accounts

VARIABLES	Logistic Result	Decomposition	Share to Gap
Age	.2084105***	0.00139	
	(.0444293)	(0.00789)	
Age-squared	-.0019851***	-0.000953	
	(.0005562)	(0.00693)	
Quintile1	-.9679619**	-0.000520	
	(.4041863)	(0.00117)	
Quintile2	-.9066281**	0.0102**	18%
	(.3725992)	(0.00436)	
Quintile3	-.0683856	0.000454	
	(.3087534)	(0.00218)	
Quintile5	.5820626**	0.0102**	18%
	(.2612575)	(0.00460)	
Secondary	2.179149***	0.0361***	63%
	(.323095)	(0.00533)	
Tertiary	3.30997	0.000215	
	(.8621287)	(0.000606)	
Group (Male)		.43772894	
Group (Female)		.33039648	
Difference/Gap		.10733246	
Unexplained Gap		.05027154	
		47%	
Explained Gap		.05706092	
		53%	
Constant	-6.447723***		
	(.9031388)		
Observations		1,000	

Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.5 contains analysis of gender gap in formal accounts. The logistic results validate the probit results in table 4.3 above. The decomposition results indicate that male households have 0.4377 likelihood to have formal accounts as compared to 0.3304 for female households. This implies that male households are 0.1073 more likely to have formal accounts than their female counterparts. However, 53% or 0.0571 of the gap is being explained by the socioeconomic variables in the model while 47% or 0.0503 remains unexplained.

Of the explained gap, secondary education contributes 63% to the gap while quintile2 and quintile5 contribute 18% each to the gap. It is note-worthy that positive value suggests that the gap is increasing while negative value means the gap is reducing.

4.   Conclusion and Policy Implications

Financial inclusion is critical to attaining inclusive growth world over as it serves as an effectual tool to reducing poverty and improving welfare of generality of the masses. This study is thus timely and relevant in view of the agenda by World Bank Group to achieve universal financial inclusion, and Nigeria is one of the targeted countries where financial inclusion is poor. The study came up some important revelations as regards drivers of financial inclusion and its gender gap in Nigeria.

First, the study examined the socioeconomic determinants of financial inclusion in Nigeria using its four indicators. The study discovers that traditional factors like old age, being female and poor income level may reduce the likelihood of being financially included while youthful age, high income level, and secondary and tertiary education, increase the chances of being financially included. These findings supported the earlier findings by Clamara, Peña and Tuesta, (2014) and Tuesta, Sorensen, Haring and Cămara, (2015). Therefore, any meaningful policy aiming at improving financial inclusion in Nigeria should target the determinants of financial inclusion established by this study.

Second, this study also decomposed gender gap in financial inclusion in Nigeria using Fairlie decomposition technique. The decomposition results show that there is a gap between male and female households in financial inclusion. Moreover, explained part captures 53% of the gap and out of which, secondary education contributes 63% whilst income quintile2 and quintile5 contribute 18% each to the gap. Hence, to bridge the gap policy makers should also focus so much educating female households in the country.

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Appendix

Explanatory Variables	Definition
Age	Age in years of the households
Agesqr	Age-squared of the Households
Female	Dummy taking the value of 1 for female household and 0 otherwise.
Income Quintile1	Dummy taking the value of 1 for household in the lowest income quintile, and 0 otherwise.
Income Quintile2	Dummy taking the value of 1 for household in the second lowest income quintile, and 0 otherwise.
Income Quintile3	Dummy taking the value of 1 for household in the middle income quintile, and 0 otherwise.
Income Quintile4	Dummy taking the value of 1 for household in the second highest income quintile, and 0 otherwise.
Income Quintile5	Dummy taking the value of 1 for household in the highest income quintile, and 0 otherwise.
Primary/less	Dummy taking the value of 1 for household with primary education or less and 0 otherwise.
Secondary	Dummy taking the value of 1 for household with secondary education and 0 otherwise.
Tertiary/more	Dummy taking the value of 1 for household with tertiary education or more and 0 otherwise.

Source: Authors' construction