HOUSEHOLDS' POPULATION DATA DISAGGREGATION: A FINANCIAL PERSPECTIVE

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ABSTRACT

Financial inclusion is an important aspect of financial development crucial for economic growth and financial stability. Assessment of financial inclusion activities is done using indicators with tested validity. Indicators rely on data sourced from the population. Financial inclusion measured from the demand side rely on population statistics such as; age, gender, income, education and location as determinants. The demand side also identifies two dimensions of financial inclusion; households and small and medium businesses as drivers of financial inclusion. The conflicting results presented in high level empirical studies on the impact of financial inclusion so far may be attributed to the lumping of population data on households and small businesses. In the real sense, financial inclusion could have different effects on the socio-economic outcomes for households and businesses. Differentiating households' from small businesses' need and usage of financial services may produce better results for financial inclusion policy. For the purpose of this study, data was sourced from The Global findex (2017). We specify a multivariate tobit model and employed the maximum likelihood for estimation. Our result makes a good case for the

separation of business owner households from the non-business owner households for a robust financial inclusion policy leading to economic development.

Keywords: Financial Inclusion, Financial Services, Economic Growth, Households, Small and Medium Businesses

JEL: D1, O13

1. INTRODUCTION

Financial inclusion as a developmental strategy involves giving access to the majority of the adult population within a country to a broad range of financial services that meet their needs and at an affordable cost (World Bank 2014; Chakrabarty 2015; United nations 2017). In line with the goal of financial inclusion, financial products and services must be easily accessible to all segments of the population devoid of stringent requirements. This in turn guarantees the acceptance from the population leading to usage of financial products and services. If financial products and services must be acceptable by the population, then, apart from the proximity and cost, it must also be designed to meet the needs of clients with proper consideration given to income levels and channels of distribution (Muralidharan et al 2016; Barnejee et al 2016; European Commission 2008). For countries with majority of the adult population still financially excluded, the need to achieve financial inclusion becomes even more pronounced with governments designing policy framework and setting objectives and targets to drive the achievement of financial inclusion. This is then subjected to periodic evaluation and assessment. Assessment and evaluation of financial inclusion targets and objectives are important to ascertain the effectiveness of the policy framework adopted. Amongst other things, where financial inclusion is effective, it is expected to deliver on some socio-economic outcomes such as poverty alleviation/ poverty reduction, improved productivity and improved standard of living, financial independence and social inclusion (Vashisht&Wadhwa 2015).

Financial inclusion can be viewed and assessed from two sides which are; the supply side and the demand side. The supply side involves the provision of financial services accessible by the adult population. Indicators used to measure the supply side follow a "top-down" approach which originates from the providers of financial services

(Gadanecz&Tissot 2015). The demand side involves the assessment of the needs of individuals and businesses. Data used for this purpose are mostly collected through surveys. In order to achieve the goals of financial inclusion, policy makers need well-structured and accurate national data (AFI 2013). Valuable indicators can be derived from such data which makes it possible to compare data on the basis of products, delivery channels and policies. This in turn makes assessment of the impact possible. Proper assessment will reveal how adequately the financial inclusion policy has been implemented and monitored. Subsequently, the result of the assessment may call for a review and adjustment of existing policy.

Empirical evidences on the determinants of financial inclusion for households and businesses as supported by Clamara, Pena and Tuesta, (2014); Mlachila et al (2014) reveal factors such as; age, gender, education, income and location. Studies conducted on financial inclusion in Africa also indicated more factors such as financial literacy and internet access, presence of islamic banking as determinants (Evans &Adeoye, 2016). Aga and Martinez Peria (2014) identified inflows of international remittances as an important factor for financial inclusion in Sub-Saharan Africa. Further, some studies have identified two types of constraints to financial inclusion peculiar to Africa (Nacuer et al 2015). The first which is the structural characteristics is said to be time invariant while the second has to do with the policy factors. The structural characteristics involve the population size and density, income per capita and the level of economic informality, while the policy factors involve the extent of the macroeconomic stability together with the institutional frameworks that define the provision of financial services. This makes financial inclusion a function of both structural and policy factors.

Data collection and harmonization for country-specific needs and inter-country comparisons have gone through different stages of structuring and modification. International Monetary Fund (IMF 2014) tasks national statistical agencies on improving data availability and quality. Further, data availability and quality should also focus on missing indicators which can provide a better and accurate insight on the access and usage dimensions of financial inclusion (AFI 2015). As part of the improvement expected from national data, there should be a clear distinction between indicators on household access and usage of financial services and small and medium scale enterprises access and usage of financial services especially the women owned

enterprises and agricultural SMEs (Gadanecz&Tissot 2015; IMF 2014). The need to design impact indicators which is necessary for the evaluation of financial inclusion policies has also been identified (Chakrabarty 2012). The impact dimension is expected to isolate the effect of financial inclusion policies on the well-being of individuals and businesses (IMF 2014).

Notable international data set on financial inclusion like; World Bank Global financial inclusion index (Global Findex); IMF Financial Access Survey; World Bank Enterprise Survey, all provide a database which is based on a survey of individuals and or businesses across different countries. In our own opinion, the Global Findex has been more consistent and detailed with its Meta-and micro data available for analysis. The data is disaggregated along the socio-economic determinant variables which are; gender, age,education level, income and location (rural or urban). Since its inception in 2011, data has been released every three years (i.e 2011, 2014, 2017). Particularly, the Global Findex 2017 includes several indicators for both the individual and the business household. The Enterprise Survey focuses on the financial services access and usage by small, medium and large businesses in emerging markets and developing economies. The database hardly contains indicators for individual household financial needs and usage of financial services. Apart from the call by IMF to isolate impact evaluation of financial inclusion between households and businesses, the mixed and inconsistent effects of financial inclusion reported in financial inclusion studies especially in recent times underscores the need to disaggregate population data on households. This can be done by separating the business households from the non-business households.

The sustainable development goal whichtargets meeting the needs of all individuals cut across countries, places the need for national statistical systems to move towards more and better data disaggregated as against the existing national averages. It is believed that national data masks disparities at the individual, community and sub-national levels. When the national statistical systems are re-engineered for better capabilities in data disaggregation strategies, it makes it possible to engage with diverse partners and also assess trade-offs in cost, coverage and data privacy. Specifically, disaggregated data can allow for more effective anti-poverty and inclusion policies (Avendano, Culey&Balitrand, 2018).

Population data can be disaggregated along different dimensions which includes; demographical, geographical, finance and business. Data disaggregation in the dimensions of income, sex, gender, geography, age and disability have been used for policy formulation and implementation in countries like; China, India, Indonesia, Kenya and Ethiopia.Data disaggregation is also done using different categories under each of the dimensions. For instance, under the dimension of income, categories such as poor or rich are identified. Under the dimension of sex, categories like male or female which leads to further disaggregation like formal/ informal employment, ownership and management of a firm or business are identified (IAEG-SDG 2019).

Data disaggregation in the dimension of finance and business of households is quite new and not common in empirical studies. This study therefore becomes one of the pioneer works in this area of data disaggregation. Our concern is; how will financial inclusion improve the well-being of business households and non-business households. This paper contributes to the population statistics and economic growth literature. Specifically, we seek to contribute to the on-going debate on the relevance of a well-structured national population statistics and the achievement of financial inclusion which is necessary for financial stability and economic growth.The rest of this paper is divided into four sections; section two is the review of literature, section three is the data and methods while section four concludes the work.

2. REVIEW OF LITERATURE

In the traditional economic theory, the objectives and needs of individual households and firms are clearly separated (Mankiw& Ball 2011). Individuals sell their labour resources in the market to earn wages with which consumption is smoothened and the part that is not consumed is saved. In addition, individuals tend to save more when they are young and dis-save when they grow old (Cull, Ehbreck&Holle 2014). Firms/businesses need the savings of individual households for their investible funds. This makes them net users of savings. Both the savers (individuals) and users of funds (firms) meet at the financial market (Mishkin 2004).

The financial market provides the platform and mechanism for efficient allocation of resources. However, most of the savers in the emerging markets or developing

economies operate in the informal economy (Cull, Ehbreck&Holle 2014). In the informal economy, there's hardly a clear cut separation of individual households and individual businesses. Individuals run businesses whose spending decisions are not separated from that of the household. Thus, both the consumption and production decisions are interwoven. They will therefore need a range of financial products and services that will help them achieve both individual and business objectives at the same time. As much as the traditional economic theory is able to make a clear distinction between the objectives of households and firms, achieving the same level of clarity in the separation of the financial needs of individuals from that of the firm has proven difficult (Anderson, Marita, Musiime &Mamadou 2017).

Quite a number of theoretical and empirical works studying the socio-economic impact of financial inclusion have used household data of surveys conducted on the demand side. Studies on the effect of financial inclusion on inclusive growth which basically capture more of the individual have produced growing evidence about its mixed effects among low-income individuals. While some have reported positive results (Demirguc-kunt&Klapper, 2017; Dipasha 2016; Jong-Hee 2015; Demirguc-kunt&Klapper 2012), others have come up with negative, fairly positive or no effect result (Van Rooyen, Stewart & de Wet, 2012; Sivachithappa, 2013; Abdullah & Mohammad, 2015;EBRD 2015).

Theoretically, the relationship between financial inclusion and the expected socio-economic benefit is usually on the premise that households seek to maximize profit other than income (Cull, Ehbreck&Holle 2014). Under this assumption, the objective of a non-business household is to smoothen consumption cycles by first synchronising the income flows. Our study makes use of the household survey which is disaggregated into business and non-business households. This we consider as being necessary in order to test the effect of financial inclusion viewed from the dimension of socio-economic benefit for the two categories. This will help us achieve our aim of contributing to the population statistics and economic growth literature. We also hope to lend our voice to the argument on whether financial inclusion truly has transformative effects as claimed by Duvendack and Mader (2019) and also provide hints on what the policy direction on financial inclusion should be.

3. METHODOLOGY

In line with the position of Demirguc-Kunt and Klapper (2012b), distinguishing between access to and use of financial services and the definition of ACCION (2009) that financial inclusion is the situation that aims to ensure that everyone who wants to use financial services have access to them at affordable prices, provided in a convenient way, we adopt the indicators that directly relates to usage of financial inclusion by Business Households and Non-Business Households.

We collect micro-data for Nigeria from the Global findex 2017. Global findex consists of reports on primary surveys conducted by the World Bank for different countries of the world using indicators relating to the usage of financial services. Responses from each of the respondents were based on the determinant factors of age, gender, education, income and region. Therefore, the population of our study is defined as all business and non-business households that are male or female, rich or poor, educated at either the tertiary, secondary or primary level, resides in the rural or urban area, above 50 years, below 50 but above 25, below 25 but above 15. We also recognize the three major groups of financial inclusion indicators as given by Demirguc-Kunt and Klapper (2012b) that is ownership of formal account, savings behaviour, sources of borrowing and the use of insurance products.

In order to operationalize the variables, we assign weights (0.333; see appendix) to each of the indicators and the values were summed over to derive the financial inclusion index. In line with the position of Sarma and Pais (2011); Sarma (2008), zero indicates the lowest financial inclusion (financial exclusion) while 1 indicates perfect financial inclusion. For the social economic outcomes expected from financial inclusion, we employ the social inclusion indicators following the works of Labonte et al (2011) and the provisions of the Sustainable Development Goal (SDG) section (1) sub-section (4); describing the expected outcome of a properly defined financial system. Thus, income, education, health and health protection were arrived at as the indicators for economic benefits or economic development. Again, weights were assigned to the indicators (0.333; see appendix) and these were summed over to obtain the value of the economic benefit tagged social outcome index. The process was carried out for both the Business and Non- Business Households.

4. RESULTS AND DISCUSSION

Given that the values of our dependent variable i.e social benefits (proxied with the social outcome index) range from 0 to 1, making the values to the right censored and the several explanatory variables including the financial inclusion (proxied with the financial inclusion index), we found the multivariate tobit regression model following the works of Lee (1993); Kamakura and Wedel (2001) relevant for this work. We assume that the decision to use formal financial services will yield a social outcome (proxied with the social outcome index) which is a latent variable Y*. Y* is determined by a set of exogenous variables included in vector X, in such a way that:

$$Y^*_{ik} = X^1_{ik}\ \beta_k + \varepsilon_{ik} \quad (1)$$

Explicitly, the model is given as;

$$Y_{ik} = \alpha X_{ik} + \gamma G_{ik} + \varphi A_i + \ldots\ldots + .\varepsilon_{ik} \ldots\ldots\ldots \quad (2)$$

$$Y_{ik} = Y^*_{ik} \quad \text{if} \quad Y^*_{ik} > 0$$

$$= 0 \quad\quad \text{if} \quad Y^*_{ik} \leq 0$$

Where the subscript *i* represents individuals and $k \in (B, H)$ with H representing non-business households and B representing businesses households. β is a vector of parameters and $.\varepsilon_{k..}$ is a normally distributed error term with mean 0 and variance 1. (*see appendix for description of variables for Business and Non-Business Households*)

The model above is estimated using the maximum likelihood estimation with the function as supported by :

$$L = \prod_0 \left[1 - \phi\left(\beta X / \sigma\right)\right]\prod_1 \sigma^{-1}\vartheta\left[\left(Y_i - \beta X\right)\right]/ \sigma \quad (3)$$

Table 1 contains the regression result which shows the extent of effects of financial inclusion and other determinant factors on the social outcome obtained for Non-Business Household while table 2 contains that of Business Households.

Table 1: Tobit Regression for Non-Business Households

Variable	Asymptotic Standard error	T-ratio	Regression Co-efficient	Elasticity of E(Y)
FI index	0.19135	2.6531	0.22223***	0.1538
Gender	0.02335	2.8992	0.06912***	0.0411
Rural	0.01123	3.1024	-0.21602**	0.1010
Education	0.02205	2.9375	0.01268**	0.0994
Employment	0.06653	2.8842	0.41603**	0.1026
Age	0.01245	2.6624	-0.18653***	0.1120
Age Squared	0.00234	2.8715	0.15567	0.1532
Income Qunitile 1	0.12152	2.6283	0.10234**	0.1546
Income Quintile 2	0.15118	2.8867	0.06124***	0.1076
Income Quintile 3	0.10056	3.1276	0.02317**	0.1267
Income Quintile 4	0.00432	2.9745	-0.00867	0.0221
Constant	0.19245	2.5642	-0.20234**	0.1782

*N.B At mean values of all X(I), E(Y) = 0.5271 Log-likelihood function = 387.35774
Significance values for t-ratio is taken as 1.96= 5%, 2.68= 1% and 1.37 = 10%
***significant at 1%, ** significant at 5%
Source: Authors computation, 2020

In table 1 above, the effect of financial inclusion on the social outcomes for the non-business households is presented. Financial inclusion activities proxied with the financial inclusion index (FII) have a positive and significant effect on expected social outcomes. Gender factor which is a dummy variable has a positive and significant effect. In its quantification, male was scored 1 while female was scored 0.

Therefore, the positive effect implies the male respondent enjoyed more social benefits compared to the female under the non-business category. The rural factor has a negative and significant effect. In the quantification of the rural dummy variable, rural was scored 1 while 0 was for urban. Therefore, the negative effect implies more of the respondents in the urban area enjoyed more social benefits than those in the rural area under the non-business category. Education factor also has a positive and significant effect. In the quantification of the education dummy variable, respondents with secondary school and higher qualifications were scored 1 while those with less were scored 0. Therefore, the positive effect implies, more of the respondents with higher qualifications enjoyed social benefits compared to those with lesser qualifications in the non-business category.

The Employment factor has a positive and significant effect. In its quantification, the independent worker is scored 1 while a dependant is scored 0. Therefore, the positive effect implies that the independent workers enjoyed more of the social benefits accruing from financial inclusion than the dependants in the non-business category.

The Age factor being a continuous variable which is ever increasing was not quantified for respondents. The negative effect observed for the non-business households implies that as the individuals advance in age, the less they enjoy social benefits.

For respondents in the income quintile 1-3 (lowest, second lowest and middle income) the value 1 is used to quantify each that belong to each of the category. The positive and significant effect of the income quintile 1-3 implies respondents in each of this category benefited from social outcomes under the non-business category. For respondents in the income quintile 4 (highest income), the value 1 is used to quantify each that belong to this category. The negative effect implies respondents in this category had negative social outcomes which however is not significant under the non-business category.

Table 2: Tobit Regression for Business Households

Variable	Asymptotic Standard error	T-ratio	Regression Co-efficient	Elasticity of E(Y)
FI index	0.24135	2.6671	0.28211**	0.1012
Gender	0.00664	2.8123	0.18254**	0.0323
Rural	0.01665	2.9672	0.23323**	0.0225
Education	0.16673	2.8864	0.15782***	0.0112
Age	0.10156	2.6723	0.00332***	0.2167
Age Squared	0.00454	2.9765	0.00211	0.2311
Income Quinitile 1	0.10856	2.6661	-0.14412***	0.0823
Income Quintile 2	0.21662	3.0054	0.00856**	0.0236
Income Quintile 3	0.18934	3.0076	0.08871**	0.1025
Income Quintile 4	0.19432	2.9722	0.37867	0.2368
Constant	0.2998	3.0032	-0.10322**	0.1544

*N.B At mean values of all X(I), E(Y) = 0.5271 Log-likelihood function = 387.35774
Significance values for t-ratio is taken as 1.96= 5%, 2.68= 1% and 1.37 = 10%
***significant at 1%, ** significant at 5%
Source: Authors computation, 2020

In table 2 above, the effect of financial inclusion on the social outcomes for the business households is presented. Financial inclusion activities proxied with the financial inclusion index (FII) have a positive and significant effect on expected social outcomes under the business category. Gender factor which is a dummy variable has a positive and significant effect. The positive effect implies the male respondents who are business owners enjoyed more social benefits compared to the

female business owners. The rural factor has a positive and significant effect. The positive effect implies more of the respondents who are business owners in the rural area enjoyed more social benefits than their counterparts in the urban area. Education factor also has a positive and significant effect. The positive effect implies, more of the respondents who are business owners with higher qualifications enjoyed more social benefits compared to their counterparts with lesser qualifications.

The positive effects observed under the age factor for the business households implies that as the business owners advance in age, the more they enjoy social benefits. For respondents in the income quintile 1 (i.e lowest income), the negative and significant effect implies respondents who are business owners in this category hardly benefited from social outcomes. The respondents in the income quintile 2-3 (second lowest to middle income) had positive and significant effects implying business owners in these category enjoyed social benefits. Respondents in quintile 4 (highest income) also had positive effects which is not significant implying that the business owners in this category enjoyed some social benefits however not to a significant extent.

We sought to analyse the effect of financial inclusion on the social and welfare benefits (i.e social outcomes) for both the business and non-business households in Nigeria. Given the determinant factors of gender, age, location, income and education, the results derived from our analysis, firstly; provides some support for previous studies and secondly; provides some insights into the study of welfare impacts of financial inclusion when business and non-business households are isolated. The percentage distribution of business and non-business households' access to formal financial services supports some previous studies and thus provides a good background for the analysis of the separate effects of financial inclusion for the business and non-business households. The result on the effects of financial inclusion given the determinant factors presents us with an opportunity to do a comparison between the non-business and business households. First, it is observed that financial inclusion activities have a positive effect on the social outcomes expected for both business and non-business households. Second, the differences observed lie in the determinant or circumstantial factors for both. Specifically, location (i.e rural or urban), age and certain income levels create different effects on social outcomes for business and non-business households.

5. CONCLUSION AND RECOMMENDATIONS

Our study has confirmed the need to isolate the effects of financial inclusion on business and non-business households. The conflicting results of mixed effects reported by some previous studies can be attributed to the lumping of both the effects for business and non-business households given their circumstantial factors. It is evident from our study that the determinant factors such as location, age and income level could create mixed effects and determine how business and non-business households benefit from financial inclusion. We therefore recommend that for policy considerations: first; the framework and objectives for achieving financial inclusion for business and non-business households should be separated. Second; factors such as location (i.e rural or urban), age and level of income should be considered as the basis for the separation. Third; presently, most developing countries like Nigeria conduct separate studies and give separate reports for enterprise and general activities on financial inclusion. Aside the separate studies and reports, countries should also endeavour to have another survey that incorporates questions for both business and non-business individuals for financial inclusion as is done in the Global financial index report (meta and micro data) sponsored by the World Bank. The local version of the comprehensive financial index survey is expected to have a wider coverage cutting across the communities within the local government areas, states, regions and the entire country. This will make the assessment and measurement of the two lines of financial inclusion leading to an effective comparison possible.

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