Impact of access to credit on Household welfare in Nigeria

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Abstract: Despite the fact that improving household welfare is critical to achieving many of the United Nations Sustainable Development Goals (SDGs), developing countries such as Nigeria have made little progress in improving household welfare and boosting prosperity, with the majority of the country's population still struggling to meet a basic standard of living. Adopting a quantitative research method, the study utilized Findex (2017) to investigate the impact of access to credit on household welfare. The estimation technique employed in addressing the research objectives was conditional mixed process (CMP). The study found that access to credit has a significant effect on household welfare and a higher marginal effect on women and youths. The study recommended among others that through education, policy makers should give priority to programs such as mass literacy program that will encourage poor households to be educated in order to improve the individual welfare and household access to credit. The CBN should also promote linkages between microfinance banks (MFBs) and deposit money banks (DMBs) to obtain wholesale funds for on lending. This linkage can also enable the Microfinance banks to provide Deposit financial services to its clients on behalf of the Deposit money banks.

Keywords: Access to credit, Household welfare, Nigeria

1. INTRODUCTION

Household welfare is a measure of a household's economic well-being, which can be determined by its ability or access to means of subsistence (Grootaert, 2013). The capability of households to access fundamental and basic means of subsistence as well as other requirements for livability over their lifespan has been a prevalent method in the study of household welfare (Haughton & Khandker, 2009). Household welfare is concerned with the micro-level and how individual members of the household might maximize their utility by making decisions. It is one of the most focused goals of all governments around the world, according to Dimova and Adebowale (2018). Income, poverty, high inequality and health are only a few examples of the indicators (Dimova & Adebowale, 2018). Because Africa is home to seven of the world's ten most unequal countries, the continent's continuance of poverty and high levels of inequality is particularly concerning (World Bank, 2016). As a result, Africa is second only to Latin America in terms of global inequality (Klasen, 2016). Furthermore, Africa's poverty problem is well-known, with nearly a third of the world's impoverished residing there. Accordingly, high levels of inequality and poverty persist in Africa despite being one of the most dynamic regions of the last decade (United Nations Development Programme, 2016; Asongu & le Roux, 2018). Nigeria's welfare indicators, like those of Africa, have been startling. For example, Nigeria's poverty has persisted for decades, dating back to the late 1980s. National poverty reached 66.9% in 1996, up from 28.1 percent in 1980, and then fell to 54.4 percent in 2004, before reaching a high of 69 percent in 2010 (Adeaga, Adelakun & Oyekunle, 2020). Furthermore, with a Human Development Index (HDI) of 0.532, Nigeria ranked 157th out of 187 countries in the Human Development Report, showing a poor level of life expectancy, education, and income (UNDP, 2018). According to a 2018 report by World Poverty Clock, Nigeria has surpassed India as the world's poverty capital, with 91.6 million people (46.5 percent of the population) living on less than one dollar per day. Similarly, the Gini coefficient, which is a measure of income inequality, has averaged around 0.49 over the last five years. According to the nation's income distributive share by income quintile, the poorest 20% of the population earned only 5% of the nation's total revenue, while the richest 20% received 49%. (World Bank, 2019).Most importantly, financial inclusion is expected to lead to increase in access to credit or reduction in credit constraints to households. Although this is not the only expression of financial inclusion, there are expectations that increase in access to credit could have implication for household welfare. Access to credit has the capacity to transform the poor through acquiring productive capital, which improve their capacity to generate income, savings and investment for better welfare. Navajas et al (2015) pointed out that access to credit is necessary to finance working capital and fixed-capital

investment, especially for households that do not have considerable savings. In an environment where revenues are prone to large seasonal swings, credit is a key tool for smoothing consumption. Incomplete markets and inaccurate information are seen as a severe obstacle to the functioning of the credit market in emerging economies like Nigeria. Nigeria's financial system consists of the formal and informal sub-sectors, with the central bank assuming the regulatory and supervisory roles on the 26 players in the formal segment (i.e. twenty-two commercial banks, five merchant banks and two interest-free bank). On the other hand, the informal sector that is dominated by the local money lenders, self-help groups, and rotating savings and credit associations (ROSCAs) substantially covers a wide range of market activities within the traditional sector in which earning opportunities are limited (CBN, 2012; Ibrahim, 2014). While the formal financial market provides services to about 38% of the economically active population, the remaining 62% excluded populace are either accessing finance from the informal financial sector or have no current access to finance at all (CBN, 2017).

1.1 Statement of problem

Poverty alleviation and improved household wellbeing are two of the most important goals of economic growth. Nonetheless, Nigeria has made little headway in improving household welfare and expanding prosperity, with a huge section of the population still struggling to meet a basic living standard (Adebowale & Dimova, 2017). Improving household well-being is critical to achieving a number of United Nations Sustainable Development Goals (SDGs).

Concerns about inadequate household welfare in Nigeria and the need to improve it have led to the development and implementation of several programs by various Nigerian administrations. Examples are Operation Feed the Nation (OFN), the Green Revolution, the establishment of the People's Bank of Nigeria (PBN),Directorate of Food Roads and Rural Infrastructure (DIFFRI), National Directorate of Employment (NDE), Family Economic Advancement Programme (FEAP), Better Life for Rural Women, Family Support Programme (FSP), National Poverty Eradication Programme (NAPEP), National Social Investment Programme among others (Alfa, Otaida & Audu, 2014; Abbas, 2016; Adeaga, Adelakun & Oyekunle, 2020). In 2012, the CBN launched its Financial Inclusion Strategy with a target to reducing the percentage of adults excluded from financial services from 46.3% in 2010 to 20% in 2020 in order to bring individuals out of poverty. It was later reviewed to 5% exclusion by 2024 (CBN, 2018; CBN, 2020).

However, given the rate of growth of financial institutions, access to credit, and services, it is reasonable to assume that the poor would have been integrated in order to meet the 2024 goal of universal inclusion. World Development Indicator, WDI (2020) shows that household welfare measured by per capita income has not improved significantly in the last decade. For example, the growth in per capita income declined progressively from 9.80% in 2011 to 9.5%, 8.7% and 4.6% in 2012, 2013 and 2014 respectively. The per capita income growth also recorded negative growth of -13.3%, -19.0% and -9.5% in 2015, 2016 and 2017 respectively. Although, there is a pick-up in 2018 and 2019 (3% and 10% respectively), the per capita income growth declined to 1% in 2020. Egger1, Poggi and Rufrancos (2021) also affirmed that household welfare in Nigeria has continued to worsen.

1.2 Research Objectives

1. To examine the impact of access to credit on household welfare in Nigeria

2. REVIEW OF LITERATURE

2.1. Basic Theories

(a) Bergson–Samuelson Social Welfare (BSSW) Theory

The Bergson–Samuelson social welfare function was first introduced in 1938 by Abram Bergson and subsequently developed by Paul Samuelson in his 1947 Foundations of Economic Analysis. In the article, Bergson develops a function he calls the "economic welfare function" which aims at defining social welfare from the set of resources available in the society. He then defines different groups of value propositions currently used in the welfare literature at that time to determine the conditions for a welfare maximum and examines how their derivations constrain the shape of the economic welfare function and thus the maximum position. He made clear that "the

number of sets (of value propositions) is infinite, and in any particular case the selection of one of them must be determined by its compatibility with the values prevailing in the community the welfare of which is being studied" (Bergson 1938), but with no attempt to derive these values from individual preferences. When turning his 1940 PhD dissertation into the Foundations of Economic Analysis (1947), Samuelson added a whole chapter on welfare economics (Backhouse 2015) and further developed Bergson's seminal insights. He promptly introduced the concept of an individualistic social welfare function, ordinarily defined, which aims at ordering in a transitive way the different states of the world and at reflecting "some ethical belief - that of a benevolent despot, or a complete egotist, or 'all men of good will', a misanthrope, the state, race, or group mind, God, etc." (Samuelson 1947). One of its main assumptions is that "individuals' preferences are to 'count," i.e. "if any movement leaves an individual on the same indifference curve, then the social welfare function is unchanged, and similarly for an increase or decrease" . Then, Samuelson shows that a set of optimality conditions, as later coined Pareto optimality by Little (1950), are necessary to obtain an optimum, but they are not sufficient: further ethical judgments are required to frame a complete ordering. Concretely, a BSSW "ethically orders the various states of the world" and "lets 'individual tastes count,' in the sense of agreeing with individuals' orderings when those orderings are unanimous and resolving them ethically when they are not unanimous" (Samuelson 1981).

However, the very existence of the social welfare function was called into question by Arrow's (1951) landmark impossibility theorem, which states that under a set of reasonable conditions, the social welfare function can be shown not to exist. Yet social welfare functions are today still widely used in a range of fields to formulate policy ends. It thus seems that the use of such functions has flourished independently of the theoretical debate about their existence. However, Bergson–Samuelson social welfare theory has enjoyed wide applicability in welfare studies (Rasmussen, 2006; Grootaert, 2013). It is a flexible framework that enables an assessor to aggregate individual welfare functions into a socially representative functions characterized by the behavior of those individual functions that generates it. In other words, to understand the welfare of a country, we will start by understanding the welfare of its citizens or households.

(b) Pareto Optimality Welfare Theory

Pareto efficiency, named after the Italian economist and political scientist Vilfredo Pareto (1848-1923), is a major pillar of welfare economics. The theory assumes that resources are allocated in the most economically efficient manner, but does not imply equality or fairness. An economy is said to be in a Pareto optimum state when no economic changes can make one individual better off without making at least one other individual worse off. Similarly, an allocation is considered Pareto optimal if no alternative allocation could make someone better off without making someone else worse off. The concept of Pareto optimality has occupied a major part in the discussion of welfare economics. Many theorems and optimality conditions are formulated with reference to Pareto optimality. This is so because the Pareto principle as a value judgement is widely accepted, while other judgements involving interpersonal comparison of utility are more controversial. However, this does not mean that welfare economics has to be based on and only on the Pareto principle. Theorems and analysis which are not based on the Pareto principle or which are based on 'extra-Paretian' principles are possible and have been developed. Nevertheless, Pareto optimality has been and will continue to be one of the most important concepts in welfare economics and hence the justification for its inclusion in this study.

2.2 REVIEW OF EMPIRICAL LITERATURE

On examining the impact of access to credit on household welfare. Quach and Mullineux (2007) utilized the 1997/1998 Vietnam Living Standards Survey as well as the Tobit regression technique and found that access to credit has a positive effect on household welfare as represented by per capita expenditure (food/nonfood). Saad and Duasa (2009) conducted a study to assess Malaysian microfinance institutions, using the OLS model to evaluate the economic performance of clients participating in the microcredit programmes of Amanah Ikhtiar Malaysia (AIM). Their results showed that economic performance, as measured by per capita income and the spending ratio of income and assets are correlated and significant to the loan amount of AIM clients. The empirical results from the study correspond with previous research conducted in Bangladesh by Khandker, Samad and Khan (1998) that documented that microcredit programmes (such as Grameen Bank, BRAC and the RD-12 microcredit programme) have brought about desirable impacts in terms of income, employment and production in the non-farming sector at the village level in Bangladesh. More importantly, microcredit disbursements to rural households have increased the average household income level by 29% (Grameen Bank), 33% (BRAC) and 21%

(RD-12).

Li, Gan and Hu (2011) evaluated the impact of microcredit on household welfare outcomes such as income and consumption in rural China using the difference-in-difference approach and the study found that belonging to microcredit programme helps improve households' welfare such as income and consumption. The results further show that the total amounts of microloans obtained by the households have a positive and significant impact on both welfare outcomes investigated, suggesting that the households will benefit more as they become more involved in the microcredit programme. Ugwuanyi (2012) focused on the effect of credit access on household welfare using the ordinary least squares regression method and the study found that access to credit has a positive impact on household welfare. Also, Amoako and Awuah (2014) tested the impact of small loans provided to rural women in Ghana, using ordered logistic regression. They found that women who have access to microcredit had improved their well-being as measured by the following four indicators: the ability to afford quality healthcare, children education, daily meals and access to comfortable accommodation.

Amendola, Boccia, Mele and Sensini (2016) investigated the relationship between financial access and household welfare in Mauritania. The study used micro-level data from a 2014 household survey and the ordinary least squares technique was employed as the analytical tool. The results show that household headed by the aged, educated people and residents in urban areas is associated with better access to financial services which in turn improves welfare. In a related study, using cross-sectional data from the General Household Surveys for Nigeria as well as the probit model, Adebowale and Dimova (2017) found that access to finance improves household welfare, but increases income inequality

Ampah, Ambrose, Omagwa and Frimpong (2017) sought to determine the effect of access to credit and financial services on poverty reduction in the Central Region of Ghana. Four variables were used to measure poverty reduction namely increase in consumption expenditure, income growth, ability to educate children and acquisition of business assets. Using descriptive statistics and ANOVA, the study found that access to credit and financial services had a fairly weak positive effect on growth in income, an increase in consumption expenditure and acquisition of business assets. The study however found access to credit and financial services to have a significant effect on the ability to educate children.

Amendola, Boccia, Mele and Sensini (2017) investigated the linkage between access to finance and welfare in Mauritania. Results showed that households with older and more educated heads are more likely to access financial services as well as households living in urban areas. Additionally, greater financial access is associated with reduced dependence on household production and increased investment in human capital or household welfare. Khaki and Sangmi (2017) investigated the effect of access to credit on household poverty in India. The study sampled 271 respondents covering all the regions of Kashmir Valley India and the study found that access to credit leads to an increase in the standard of living thereby reducing multidimensional poverty in India.

Bocher, Alemu and Kelbore (2017) employed the endogenous regime-switching regression and the 2009 Ethiopian Rural Household Survey conducted to assess the impact of credit access on household welfare in Ethiopia. The household welfare was captured by food security status, represented by the number of meals consumed per day per adult member of a household and the found that access to credit has a positive impact on food security in Ethiopia. Quach (2017) utilized the 1993 and 1998 Vietnam living standards surveys to investigate the impact of access to credit on household welfare in Vietnam and the study found that access to credit has a positive and significant long-term impact on household welfare in terms of per capita expenditure, per capita food expenditure and per capita non-food expenditure. The study also found that although both formal and informal credit contributes to household welfare, formal credit has a relatively higher impact than its informal counterpart.
Hafiz, Abbas and Fatima (2017) examined the impact of Islamic microfinance on the household welfare of the target clients by observing its impact on health, education, income, expenditures and assets of the poor who took a loan from Islamic Microfinance institutions (IMFIs). They found that borrowing from Islamic microfinance institutions significantly raised monthly income; expenditures on food, education and health and increased households' assets. Jawara (2020) investigated the impact of ownership on formal savings accounts on household welfare in The Gambia using a representative household survey (Gambia's third Integrated Household Survey) and propensity score matching technique. The study revealed that access to formal means of savings by households causes an increase in household welfare. Specifically, household ownership of a formal savings product leads to an increase in total household spending by about 25%. It also increases the annual education

spending of a household by about 73% as well as food expenditure spending by about 25%, and household ownership of durable assets by 21%.

Santoso, Gan, Revindo and Massie (2020) investigated the welfare impact of microfinance on rural households in Indonesia. The research was conducted by collecting primary data and administering a structured questionnaire to rural households in Bantul District and Yogyakarta Provinces of Indonesia. They employed the logistic model to measure the welfare impacts of microcredit borrowers and the study revealed a positive welfare effect of microcredit in Indonesia.

2.3 Justification and contribution to Knowledge

There is hardly any study that examined the impact of credit access on household welfare in Nigeria using the FINDEX (2017) data. However, as earlier noted, earlier studies on impact of credit access face two major limitations. First, most studies estimated the outcome variable based on information from only one side of the credit market (the demand side). However, as argued by Nguyen and Nguyen (2019), credit access is an equilibrium condition that requires both the demand and supply sides. Second, given the phenomenon of unobserved factors, models of impact of credit access usually suffer from endogeneity problem (Maddala, 2001). To sidestep these shortcomings, we adopt conditional mixed process, which is a two-stage equilibrium modeling with instrumental variable

Another interesting contribution to knowledge is the refutability of the view held by many theorists that savings is welfare enhancing for households in the current period. We found that except saving - households have access to credit, they will witness decline in welfare, at least, in the current period. This contribution has a theoretical implication. The Keynesian theory of saving emphasized in its short run analysis that saving is a "private virtue but a public vice". However, our finding indicates that saving could be a private virtue only in the long run. That is, to the extent that saving gives households welfare capabilities in the future in the form of future consumption, investment funding and insurance buffers, saving may be a private virtue in the long run, but not in the short run. In the short run, saving maybe a private vice: it reduces household welfare.

3. Research method and Procedure

This study uses a quasi-experimental research design due to the nature of the objectives set out. A quasi-experimental research design is one that is used to conduct an empirical (interventional) study in order to evaluate the causal influence of an intervention or socioeconomic situation on the target population without the need for random assignment. The research method used in this study is quantitative. The choice of quantitative research method is that it aligns with the research design. The civilian, non-institutionalized population of 15 years and older is the target group for this study. In other words, this study solely studied households. The report does not include Borno, Yobe, or Adamawa, which together make up around 7% of the population, according to Findex (2018). The three states were also excluded due to a high level of insecurity in those areas, making surveying problematic. Findex adopted probability sampling techniques. Particularly, Findex utilized both stratified and simple random sampling procedures. Findex applied stratified sampling technique by stratifying households by population size, geography, or both, and clustering is achieved through one or more stages of sampling. Further, sample selection is based on probabilities proportional to population size. In identifying each individual household within a stratum, simple random sampling is used. Random route procedures are used to select sampled households. In Findex survey of 2017, random selection of respondents is achieved by using either the latest birthday or household enumeration method. In all, about 1000 households or individuals were sampled in the Findex survey of 2017. The whole sample of 1000 is adopted in this study without any adjustment. The questionnaire used in Findex 2017 survey was designed by the World Bank, in conjunction with a Technical Advisory Board composed of leading academics, practitioners, and policy makers in the field of financial inclusion. To ensure reliability and validity of the instrument, the questionnaire was piloted in multiple countries, using focus groups, cognitive interviews, and field testing. Also, to ensure understandability and inclusion, the questionnaire was designed in English, Hausa, Yoruba, Igbo, and Pigin English. Data collection was carried out by Gallups Inc.. The data collection exercise was implemented between 4th April, 2017 and 28th April, 2017.

4. ESTMATION AND PRESENTATION OF DATA

4.1 TEST OF EXOGENEITY AND INSTRUMENTS

The utilization of the conditional mixed process (CMP) procedure requires the use of instruments to control for the unobserved effects on one hand, and endogeneity on the other hand. Similar to the two-stage least square, the conditional mixed process is a two-step estimation that requires the use of instruments. Since access to credit is endogenous in the system of equations, we first estimate the equilibrium equation of credit access using instruments and other explanatory variables. Second, we estimate the model of impact of credit access on household welfare using the outcome of the first estimation. However, it is required that the instruments to use must be uncorrelated with the error term but strongly correlated with the explanatory variables. To test for the fulfillment of this criterion, we shall carry out the unadjusted variance-covariance error (VCE) test and the Durbin Watson statistics and Wu–Hausman statistics (Jiang et al. 2014). The result is reported below.

Table 4.10: Endogeneity Test

Null: Variables are exogenous		
	Score/coefficient	p-value
Durbin, χ^2	4.6441	0.0233
Wu-Hausman, F-stat	4.8356	0.0221
Robust score, χ^2	5.0030	0.0193
Robust regression, F-stat	3.7609	0.0495

Researchers Estimation (2021)

The consistency of the result is checked with the VCE and if the test statistics is significant, the variable is treated as being endogenous. Given that the null hypothesis cannot be accepted in all cases, we reject the null hypothesis of exogeneity and conclude that there is endogeneity problem.

Table 4.11: Test of Instrument

	5%	10%	20%	30%
Relative bias	13.476	8.797	6.259	5.222
Nominal 5% Wald test (size)-2SLS	24.071	13.849	10.298	8.527
Nominal 5% Wald test (size)-LIML	7.556	5.099	4.316	3.883
Overall F-statistics	2356.0987 (p = 0.0000)			
Test of Over identifying Restriction				

	χ^2	Prob (χ^2)
Sargan test-	0.094	0.691
Basmann test	0.087	0.750

Source: Researchers Estimation (2021)

To control for endogeneity, we introduce availability of funds as instrument. The choice of instrument is theoretically justified based on Nguyen and Nguyen (2019) insight. A theoretical requirement for the instruments to be used for credit access is that it shall relate to the attribute of the financial institutions who supply credit rather than that of households who demands credit. Thus, availability of fund was adopted as instrument. However, this requirement is not sufficient in itself. It is also required that the instrument must satisfy certain econometric criteria. In the household welfare equation, access to credit is an endogenous regressor. We employed the Stock and Yogo (2005) test in ascertaining the validity of the instruments. Using the Wald test of significance, the null hypothesis of weak instrument could be rejected if the test statistics is greater than the critical value.

As shown on Table 4.11, the overall F-statistics is 2356.0987 with prob (F) as 0.0000. This indicates that the null hypothesis cannot be accepted at 5% significance level. To further confirm our results, we carried out over identifying restriction test. The Sargan χ^2 and Basmann χ^2 are also reported. An instrument could be adjudged

invalid if the Sargan χ^2 and Basmann χ^2 is statistically significant. Given that neither Sargan χ^2 nor Basmann χ^2 is significant, we conclude that the chosen instruments are not weak.

4.2 The Control Mix Process Estimation (CMP)

The CMP estimation involves two-stage estimations. Note that since access to credit is jointly determined by both demand and supply conditions, the true value to be used in the model of household welfare is the equilibrium value. Given the endogeneity problem earlier established, an instrumental variable (IV) is used in the estimation of equilibrium credit access.

From the result shown on Table 4.20, the instrument, availability of fund, is statistically significant. This implies that availability of fund is critical in accessing credit by households. If there is more fund by financial institutions, there is higher likelihood that households would access credit. Other variables explored include Ownership of accounts, age of head of household, years of education, and employment status of the head of household, ownership of mobile phone/internet, government work, farm work, general business and trade, cost of banking and difficulty of documentation. The results show that the coefficients of employment status, ownership of mobile phone/internet, general business and trade are not statistically significant while other coefficients are statistically significant at 5% and 1%.

Table 4.20 First Stage Estimation of Impact of Credit Access on Household Welfare

Variables	Symbol	Coefficients	Standard errors
Availability of fund++	Fund	0.054**	0.024
Ownership of account	Owner_account	0.044***	0.015
Age of head of household	Age_hh	0.161***	0.038
Years of education	Age_hh2	0.017***	0.007
Employment status of the head of household	Employment_hh	0.038	0.022
Ownership of Mobile Phone/internet	Mobile_Phone	0.082	0.048
Nature of work: government	Work_govt	0.062***	0.023
Nature of work: farm	Work_farm	-0.071***	0.013
Nature of work: business	Work_bus	0.523	0.139
Cost of Banking	Cost_banking	-0.519**	0.250
Difficulty of Documentation	Documentation	0.195***	0.023
Control for State differences		Yes	
Control for spatial location (Rural/Urban)		Yes	
Obs		1000	

*,**,*** *refers to 10%, 5% and 1% significance respectively.*
++ Instrument
Source: Researcher's estimations (2021)

For the second estimations, the predicted values of household credit that are obtained from the first stage estimations are, then, used, instead of actual values, in the second stage to correct for the problem of endogeneity of credit. To estimate the outcome equations and the conditional equations simultaneously, the conditional mixed process (CMP) estimation as developed by Roodman (2011) and utilized by Chowdhury et al (2016) was employed. The multi-equation multivariate model is designed in such a manner that the net effect of access to credit by households on household welfare is isolated. Two CMP models are estimated, namely model with interaction and model without interaction. The standard errors are included in the bracket.

Table 4.21: Impact of access to credit on Household Welfare

Variable	Symbol	Model without interaction variables	Model with interaction variables
access to credit	Credit	0.0076 (0.0007)***	0.068 (0.0139) ***
gender: male	gender_male	0.0254 (0.0095) ***	0.0255 (0.0107) ***
Gender: female	Gender_female	-0.0036(0.002) *	-0.0896 (0.0141) ***
Age (15-34)	Age_hh1	0.0402 (0.005) ***	0.087 (0.0087) ***
Age (34 and above)	Age_hh2	0.0722 (0.0136) ***	0.0592 (0.009) ***
Primary education	Edu_hh1	-0.0503 (0.0169) ***	-0.0301 (0.0029) ***
Secondary education	Edu_hh2	0.0181 (0.0085) **	0.0521 (0.0064) ***
Tertiary education	Edu_hh3	0.0624(0.0116) ***	0.0621 (0.0933) ***
unemployed head of household	uneployment_hh	-0.0201(0.0057) ***	-0.0114 (0.0057) ***
employed head of household	employment_hh	0.0362 (0.0102) ***	0.0539 (0.0158)
Receipt: Government transfers	Receipt_Transfer	0.0043 (0.0038)	0.0174 (0.0026))
receipt of remittance	Receipt_Remit	0.0355 (0.0122) ***	0.028 (0.0033) ***
Savings	Savings	-0.0524 (0.0074) ***	-0.0352 (0.0038) ***
access to credit x primary education	credit_prim		0.0271 (0.0059) ***
access to credit x secondary education	credit_second		0.0114 (0.0036) ***
access to credit x tertiary education	credit_tert		0.0568 (0.0243) **
access to credit x unemployment	credit_unemp		0.1338 (0.0207) ***
access to credit and employment	credit_employ		0.0759(0.0078) ***
access to credit x female heeded household	credit_female		0.009 (0.0043) **
access to credit x male headed household	credit_male		0.0011 (0.0007) ***
access to credit x savings	credit_saving		0.0224(0.0032) ***
Control for State differences		Yes	Yes
Control for spatial location (Rural/Urban)		Yes	Yes
Obs		1000	1000

*,**,*** refers to 10%, 5% and 1% significance respectively.
Source: Researcher's estimations (2021)

The result shown on Table 4.21 shows that the coefficient for access to credit are 0.0076 and 0.068 for model 1 and model 2 respectively. This suggests that the impact of credit access on household welfare ranges from 0.76% to 6.8%. In other words, raising credit access by one percent could raise household welfare by at least 0.76% and as much as 6.8%. Other covariates also seem to exert significant effect on household welfare. For example, the coefficients of being a female, having primary school education and being unemployed in model 1 and model 2 are -0.0036, -0.0503 and -0.0202 and -0.0896, -0.0301 and -0.0114 respectively. This suggests that being a female head of household reduces household welfare by at least 0.36% and as much as 8.96%. In the same vein, being unemployed reduces household welfare by at least 1.14% and as much as 2.01%. Also, the coefficients of saving are -0.0524 and -0.0352 respectively for model 1 and model 2. This suggests that saving in the current period

could reduce household welfare in the current period by at least 3.52% and as much as 5.24%.

On the other, having secondary and tertiary education could increase household welfare by at least 1.81% and 6.21% and as much as 5.21% and 6.24% respectively. Also, being employed increases household welfare by a factor ranging between 3.62% and 5.39% respectively. The result obtained also show that the impact of government transfer on household welfare appears to be negligible. Also from the interaction variables, the coefficient of credit_prim is 0.0271. This indicate that there is substantial improvement in the welfare of primary school certificate holder when they are able to access credit. Notice that without access to credit, they experience decline in welfare. However, with access to credit, this category of households experience welfare improvement of about 2.71%. Another very important finding is that when the unemployed access credit they experience significant welfare improvement. The coefficient for credit_unemp is 0.1338. Although unemployment leads to decline in welfare, however, access to credit by the unemployed leads to welfare improvement of about 13.38%. In the same, the coefficients for credit female and credit saving are 0.009 and 0.0224 respectively. This suggest that when female heads of households with worsening welfare access credit they could experience welfare improvement of about 0.90%. Although saving in the current period could reduce welfare in the current period, making credits accessible by savers could raise welfare by 2.24%

5. CONCLUSION AND RECOMMENDATION

Important finding of this study is that access to credit is critical for household welfare improvement. This finding corroborates Khandker and Samad (2013) and Akotey and Adjasi (2016). As noted by Khandker and Samad (2013), credit improves savings, asset accumulation, health, food security, nutrition, education, women's empowerment, housing, job creation, reduce poverty incidence, and enhance social cohesion. Moreover, Akotey and Adjasi (2016) also affirms that access to credit has an indirect effect on household welfare. It is established that access to credit increases the capacity of farmers to purchase improved agricultural inputs such as fertilizer, improved seed, and agrochemicals, which increase agricultural productivity. Access to credit is believed to increase household welfare by enabling households to adopt agricultural technology through involvement in investment opportunities in non-agricultural enterprises, which in turn increase the source of income, reduce the risk of hunger, improves the household food security, and smooth consumptions in times of shocks. Khandker and Samad (2013) also demonstrated how access to credit could enhance petty businesses own by households thereby enhancing multi-income streams which in turn enhances household welfare.

Access to credit has the capacity to transform the poor through acquiring productive capital, which improve their capacity to generate income, savings and investment for better welfare. Particularly, Navajas et al (2015) noted that access to credit is required to finance working capital and investment in fixed capital, particularly among households too poor to accumulate much saving. Credit is an important instrument for smoothing consumption, in a context where incomes typically experience large seasonal fluctuations. Incomplete market and imperfect information is considered in literature as a serious challenge for the functioning of the credit market in developing economies like Nigeria.

We also estimated a CMP model for impact of credit access on household welfare. The results obtained show that credit access increases household welfare. Other insightful results show that although women experience reduced welfare, there is significant likelihood that their welfare will improve when they access credit. Similarly, being unemployed reduces the welfare of household, but access to credit by the unemployed engenders welfare improvement. Also, although saving in the current period reduces household welfare, access to credit by savers engender welfare improvement. We recommend the following:

 The CBN should also promote linkages between microfinance banks (MFBs) and deposit money banks (DMBs) to obtain wholesale funds for on lending. This linkage can also enable the MFBs to provide DMBs financial services to its clients on behalf of the DMBs. In a similar consideration, the CBN should develop guidelines for DMBs to be operating mini-branches. This will increase access of FSPs to the people thereby increasing financial access

Through Education, policy makers should give priority to programs such as mass literacy program that will encourage poor households to be educated in order to improve the individual welfare and household access to credit.

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