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FINANCIAL INCLUSION AND POVERTY ALLEVIATION AMONG SMALLHOLDER FARMERS IN ZIMBABWE

David Mhlanga
Corresponding Author: University of Johannesburg, South Africa
Email: dmhlanga67@gmail.com

Steven Henry Dunga
North-West University, South Africa
Email: Steve.Dunga@nwu.ac.za

Tankiso Moloi
University of Johannesburg, South Africa
Email: smoloi@uj.ac.za

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Abstract

The study sought to investigate the impact of financial inclusion on poverty reduction in Zimbabwe among the smallholder farmers. It is alleged that financial inclusion can help in achieving seven of the seventeen sustainable development goals (SDGs), which include poverty eradication in all its forms everywhere, ending hunger, achieving food security, ensuring improved nutrition as well as promoting sustainable agriculture and many others. Using the simple regression method, the study discovered that financial inclusion has a strong impact on poverty reduction among smallholder farmers. The study went on to discover that, for the government to tackle poverty especially among the smallholder farmers, it is important to ensure that farmers do participate in the financial sector through saving, borrowing and taking out insurance among other services. So, it is important for the government of Zimbabwe to fully implement policies that encourage financial inclusion such as making sure that farmers find it easy to access financial institutions and encouraging financial institutions to review transaction costs like bank account opening charges periodically, implementing financial education programs among the farmers because these variables are important in influencing farmers to participate or preventing them from using financial services.

Keywords: Financial Inclusion, Smallholder Farmers, Poverty Alleviation, Zimbabwe

JEL Classifications: G50, G51, O10, O12

1. Introduction

Poverty is among the greatest global challenges affecting the world today, as clearly articulated by House (2018), who went on to state that poverty alleviation is one of the necessary

prerequisites for sustainable development for decades in the world, and the 2030 agenda calls for the eradication of poverty in all its manifestations, that is, all its dimensions and forms. In the same report, it is approximated that 23 per cent of people (1.3 billion) in 105 countries which are home to 77 per cent of the world population are identified as multidimensionally poor (House, 2018). As a result, poverty is viewed to be a worldwide problem (Davids, 2010). However, even though poverty is seen to be a global problem, it is more widespread in developing nations where approximately 80 per cent of the poor people live (WBG, 2018a).

More importantly, many reports indicated that poor people are those who do not benefit fully from economic growth and development (WBG, 2016). Most of these poor people live in underdeveloped and remote rural areas as well as urban slums where they have limited access to productive capital, productive assets, as well as poor and limited access to education, health and social capital (Oxford Poverty and Human Development Initiative, 2018). Poor people are also characterized by their sensitivity to suffering from ill-health or disabilities (Manjengwa *et al.* 2016). In Zimbabwe, the Shona concept of chronic poverty is captured in phrases such as "*nhamo yemadzinza"* which can be translated to mean "poverty passed down across generations" or "*nhamo inokandira mazai"* which means that "poverty that lays eggs".

In the same vein, WBG (2016) also highlighted that the demographic profile of the poor at the US$1.90 poverty line indicates that they are predominately rural who are young, poorly educated and most of them are employed in the agricultural sector. In addition to that, these poor people live in households with more children (WBG, 2016). It is further reported that 80 per cent of the world-wide people in poverty live in the rural districts, 64 per cent worked in agriculture, 44 per cent were 44 years and younger while 39 per cent had no formal education (WBG, 2018a). On the prevalence of poverty across various population groups, the poverty headcount is assumed to be more than three times higher among rural residents compared to urban residents. It is assumed that the poverty headcount for rural people stands at 18.2 per cent versus 5.5 for urban residents. Workers in the agricultural sector are over four times more likely to be poor compared to people employed in other sectors of the economy (WBG, 2016).

Zimbabwe Ministry of Finance (2016) also pointed out that Income Poverty (IP) expressed as the number of people with income less than the Total Consumption Poverty Line (TCPL) remained high in Zimbabwe. The figure is estimated to be almost constant at above 70 per cent since 1995 (Mhlanga, 2020b). The worrying aspect of poverty prevalence in Zimbabwe is the fact that it is widespread in rural districts compared to urban districts. It is alleged that about 92 per cent of the extremely poor population, as well as 91 per cent of the extremely poor households, live in rural districts (Tawodzera and Chigumira, 2018). The proportions of households who are poor in rural areas are also extremely high, estimated to be 78 per cent, while the proportion of the poor population in rural areas is also high estimated to be at around 80 per cent (Zimbabwe Ministry of Finance, 2016).

Moreover, Zimbabwe Ministry of Finance (2016) went on to contests that Zimbabwe is experiencing structural and transient forms of poverty. It is alleged that the structural form of poverty is deeply rooted in the socio-economic-political and cultural institutions of the country. It is further alleged that structural poverty is experienced over a long term period and often moves from one generation to another (Hundal *et al.* 2018). A typical example of structural poverty in Zimbabwe is provided by most of the rural households and individuals with limited access to productive capital, productive land as well as other useful resources (Zimbabwe Ministry of Finance, 2016). The gender dimension of structural poverty is often grounded in a legal and cultural framework which prevents women from accessing productive capital, and other useful resources (Unterhalter, 2009). Also, transient poverty results from cyclical or temporary factors and is usually experienced over shorter spaces of time. Transient poverty is associated with factors such as macro-economic shifts like economic reform programs, recession, natural disasters, inflation and many others (Ravallion, 1998).

Since independence, several blueprints were crafted in Zimbabwe with policies aimed at alleviating poverty and promoting sustainable economic growth. Examples of these blueprints include Growth with Equity (GWE) of 1981, Zimbabwe Economic Development Strategy (ZEDS) 2007-2011 and Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) among others (Nyoni, 2018). The first years of independence in Zimbabwe were marked by

strategies and policies aimed at amending the colonial era imbalances by incorporating previously marginalized people into the mainstream economy (Nyoni, 2018). Some of the marginalized groups included smallholder farmers, youth, woman and the disabled (Mazingi and Kamidza, 2011). Likewise, the Zimbabwean government, to ensure that the marginalized groups participate in the mainstream economy through the developmental policies, gave people land, free education and free health services.

As a result, approximately 7.6 million hectares of land in Zimbabwe is currently occupied by small scale farmers (Rukuni, 2018). However, despite many hectares of land occupied by the people, it is argued poverty levels are still at unacceptable levels in Zimbabwe, specifically in the rural districts where 91 per cent of the rural households are living in extreme poverty (Zimbabwe Ministry of Finance, 2016). There are researches to investigate the causes of poverty in Zimbabwe. For instance, the government of Zimbabwe insinuates that poverty is strongly linked to the under-performance of agriculture and poverty has the face of agriculture in Zimbabwe (Chigumira, 2010).

The world over governments and development partners have been striving to fight poverty in all its manifestations using various methods, instruments and strategies. Some of the strategies of development as highlighted by Foley *et al*. (2018) and Nkum (1998) include, among others, the trickle-down approach and the empowerment approach. The trickle-down approach is founded on the notion that poor people will benefit from the fruits of economic growth rather than involving them much in developmental activities (Nkum, 1998). On the other hand, proponents of the empowerment paradigm have faith in the notion that poor people in the society can get maximum help by involving them in decision making and the implementation of development activities (Mhlanga, 2020a).

The empowerment paradigm is, however, assumed to take center stage in the global development agenda (WBG, 2018a). For instance, the World Bank Group (2018b) contends that empowerment through inclusion in various spheres of the economy, which include access to productive resources like finance, can go a long way in fighting poverty. It is alleged that financial inclusion can help in achieving seven of the seventeen sustainable development goals, (SDGs) which include poverty eradication in all its forms everywhere, ending hunger, achieving food security, ensuring improved nutrition as well as promoting sustainable agriculture and many others (WBG, 2018b). However, WBG (2018a) indicated that more effort is required to research further to establish the magnitude of the impact of financial inclusion in achieving the sustainable development goals mentioned above. Masnita and Triyowati (2019), in their study on the application of financial inclusion in Indonesia, did indicate that financial inclusion can play a critical role in addressing poverty, income distribution and encouraging the growth of the economy. These revelations were supported by Sarma and Pais (2011), who investigated to see the direct and indirect relationship between financial inclusion and economic development through establishing a list of factors related to financial inclusion for individual countries. The investigation concluded that financial inclusion and human development move in the same direction. In the same vein, Lal (2018) examined the impact of financial inclusion through cooperative banks on poverty reduction. Using data gathered from 540 individuals who were using cooperative banks in India, it was concluded that financial inclusion can help to fight poverty, especially when financial inclusion is done through cooperative banks. The research went on to conclude that access to financial products and services by the poor will help them to live decent lives through fighting poverty.

Motivated by these observations, the study considered the small scale agricultural sector in Zimbabwe as a case study to investigate the direct and indirect impact of financial inclusion on poverty. The rest of the document is organized as follows: Section 3 reveals the theoretical framework of the study followed by the empirical literature review in Section 4. The methodology and the discussion of results are in Section 5, the conclusion and policy recommendations on Section 6.

2. Financial inclusion in Zimbabwe

In Zimbabwe financial inclusion is defined as: "the effective use of a wide range of quality, affordable and accessible financial services, provided fairly and transparently through formal or regulated entities to all Zimbabweans" (Reserve Bank of Zimbabwe, 2016, p. 10). The definition of financial inclusion in Zimbabwe is premised on several principles which include effective use of financial services. The Zimbabwean government has the view that usage of financial services must be taken as a way of life for all the people including the youth, women, disabled, small business owners, smallholder farmers and many other groups of people marginally excluded from the use of formal financial services (Masiyandima *et al.* 2017). The other principle underlying the definition of financial inclusion is the provision of a wide range of products and services to everyone which includes banking, insurance, pension capital markets and remittances.

Moreover, the other principle of financial inclusion in Zimbabwe is the provision of quality financial products, suitable for people's needs to improve their welfare (Reserve Bank of Zimbabwe, 2016). Furthermore, the accessibility of financial services is another underlying principle of financial inclusion in Zimbabwe. In this way, the financial access point should be near the intended beneficiaries to promote regular use of the financial services. Moreover, fairness and transparency is another underlying principle of financial inclusion in Zimbabwe. With this principle, financial inclusion should reach the marginalized sections of society so that people will be able to gain access to affordable and appropriate financial products and services without being subjected to exploitation. This will help to increase the level of trust in financial products and services (Reserve Bank of Zimbabwe, 2016).

The other underlying principle is the formalization of the provision of financial services to the marginalized population in Zimbabwe to ensure that exploitation of low-income groups by informal service providers is greatly reduced. When financial services are provided formally, money laundering risks will be easy to manage as well as effective monitoring will be possible. Finally, the sustainability of the financial sector is another underlying principle of financial inclusion which implies that the transaction costs should be reduced and there should be better products and services that meet client needs. Sustainability entails finding new ways to reach the unbanked population of the society (FinScope, 2014). These principles of financial inclusion in Zimbabwe help to shape the objectives or goals of financial inclusion in the country. Some of the strategic goals of financial inclusion in Zimbabwe are explained in the following section.

2.1. Strategic goals of financial inclusion in Zimbabwe

The Zimbabwean government came up with the National Financial Inclusion Strategy (ZINFIS) in 2016 which spelt out the number of strategic goals of financial inclusion. One major goal of financial inclusion in Zimbabwe is to increase the level of financial access so that people will have access to affordable and appropriate financial products and services from 69 per cent in 2014 to at least 90 per cent by 2020 (FinScope, 2014). Also, ZINFIS spelt out that the percentage of banked adults must increase from 30 per cent in 2014 to at least 60 per cent by 2020 (Reserve Bank of Zimbabwe, 2016). While the target of financial inclusion in Zimbabwe is to increase the level of financial inclusion among the adults, there is also a recognition of the needs of special interest groups of women, youth, small businesses, the rural population and the small scale agricultural communities (Chitiga *et al*. 2005).

2.2. The financial sector in Zimbabwe

The financial sector in Zimbabwe has different players who provide a variety of financial services which include insurance, pensions, banking, payment systems, microfinance services and development finance services. Figure 1 shows the evolution of the banking sector in Zimbabwe from 1990 to 2015.

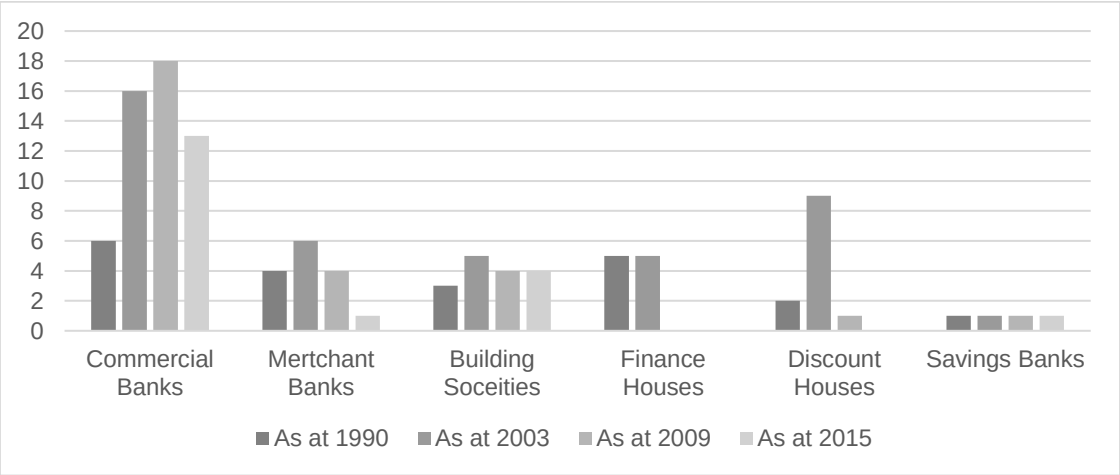

Figure 1. Zimbabwe banking sector evolution (1990-2015)
Source: Authors' analysis

As shown in Figure 1, in 1990 the total number of banking institutions was 21. The number included six commercial banks, four merchant banks, three-building societies, five finance houses, two discount houses and one savings bank. The total number of banks improved in 2003 to reach a figure of forty-two total number of banking institutions before declining to 28 in 2009. In 2015, the number of banking institutions further declined to only 19.

2.3. State of financial inclusion in Zimbabwe

The government of Zimbabwe is putting in a lot of effort to ensure that there is an improvement in the level of financial inclusion in the country as a whole. In 2016, the government came up with a target to achieve a 90 per cent level of financial inclusion in 2020 (Reserve Bank of Zimbabwe, 2016). Although the effort is applied to promote financial inclusion, Reserve Bank of Zimbabwe (2016) indicated that Zimbabwe still needs to put more emphasis on products and services tailor-made to satisfy the needs of women, youth, small businesses, the rural population and the smallholder agricultural farmers. The gravity of the country's financial sector challenges and the degree of financial inclusion becomes clearer when looking at the increase or decline of the banking sector as well as comparing with other African countries. Figure 2 shows the number of bank closures in Zimbabwe.

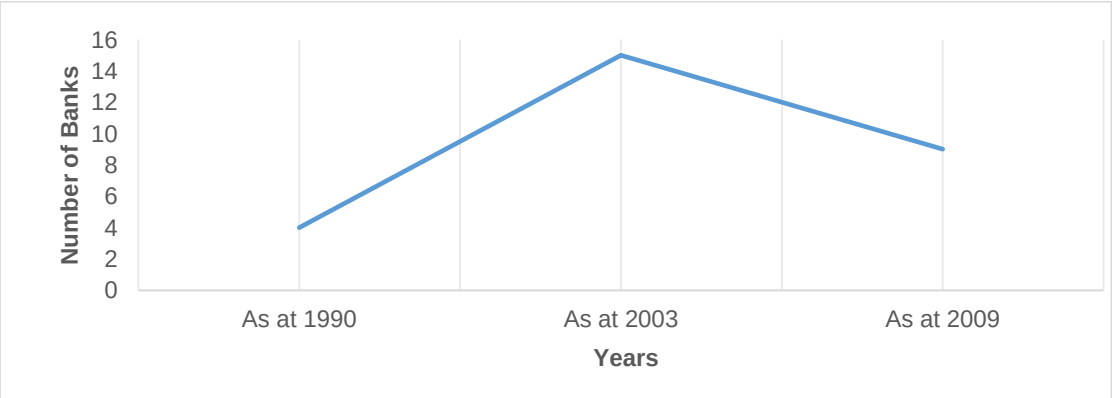

Figure 2. Bank closures in Zimbabwe since 1990
Source: Authors' analysis

Figure 2 shows that Zimbabwe had significant losses in terms of bank closures from 1990 to 2009. As of 2003, there was a significant decline in the number of banks as many were closing.

In 1990, only 4 banks closed and the figure rose to 15 as at 2003 and 10 as of 2009. These bank closures affected the efforts of financial inclusion. This was supported by Finscope (2014), which discovered almost seven million adults of 18 years and above were not active financially. Expressed in percentage terms, the figure was close to fifty per cent of the adult population which was not active financially. According to the survey by FinScope (2014), more than 40 per cent of the adults in Zimbabwe were not financially active.

In 2016, the Reserve Bank of Zimbabwe reiterated that the levels of financial inclusion are very low in Zimbabwe. Also, the Reserve Bank of Zimbabwe (2016) indicated approximately 70 per cent of the total population in Zimbabwe is not active financially, that is, they are excluded from the formal financial services market. Table 1 summarizes the key financial inclusion indicators for 2011 and 2014.

Table 1. Key financial inclusion indicators in Zimbabwe among the adult population

Indicator	2011	2014
Financially excluded	40%	23%
Formally served	38%	69%
Percentage population relying on exclusively informal financial products and services	22%	7.8%
Percentage population relying on exclusively bank products	8%	1%
Percentage population relying on exclusively non-bank products	6%	23%
Number of Banked adults	1.45 million	2.17 million
Cell phone banking adults	40,000	560,000
Number of people registered for cell phone banking		3.15 million

Source: Reserve Bank of Zimbabwe (2016)

Table 1 shows the number of adult people excluded from the formal financial services in 2011 and 2014 in Zimbabwe. In 2011, 40 per cent were financially excluded and in 2014, 23 per cent were financially excluded. The percentage of formally served in 2011 was 38 per cent and in 2014 the figure improved to 69 per cent. The number of banked adults compared to the number of registered for cell phone banking in 2014 was 2.17 million adults banked against 3.15 million adults registered on cell phone banking. This means that, in Zimbabwe, many people were registered on cell phone banking compared to those who banked informal banking institutions.

On the other hand, Finscope (2014) showed that financial inclusion levels are not balanced between rural dwellers and those residing in urban areas. It was recognized that, even though 70 per cent of the population in Zimbabwe is staying in the rural areas, the level of financial inclusion in rural areas is 62 per cent compared to 89 per cent of urban dwellers. It was also revealed that only 14 per cent of micro, small and medium enterprises (MSME) owners are banked. This shows that the majority of MSMEs owners are not using formal financial institutions for banking purposes. Finscope (2014) estimated that 50 per cent of business owners (approximately 1.4 million people) use informal mechanisms to manage their business finances.

3. The theoretical framework

3.1. Definition of financial inclusion

Financial inclusion is defined differently by many authors as reflected in the literature. Firstly, Leeladhar (2005) defines financial inclusion as the process of delivering banking services at an affordable cost to a wide section of disadvantaged groups as well as low-income groups. At the same time, Thorat (2007) defined financial inclusion as the process of providing affordable financial services such as access to payment services, access to remittance facilities, access to savings and access to loans and insurance services by the formal financial system to excluded groups. Also, Sarma (2008, p. 4) also defined financial inclusion as: “the art of ensuring ease of access, availability, and usage of the formal financial system to everyone in the economy”.

Arun and Kamath (2015, p. 6) also added their version to the class of definitions of financial inclusion where they defined it as the situation where: “people who can use financial

products and services have full access to quality financial services, provided at affordable prices, in a convenient manner and with dignity for all the clients".

3.2. The theoretical argument on finance and poverty reduction

The connection between financial market development, economic development and poverty reduction has been a central topic for discussion in economics. Theory to explain the financial inclusion and poverty nexus is there but is not exact and is limited. Most of the arguments put forward by several authors build mainly on the arguments put forward by the Classical economists and the Keynesian economists.

3.3. The classical economics theory

The earliest proponents of the theory of the free market economy were discussed for the first time in the by a well-known economist, Adam Smith (1776). The theory by Adam Smith (1776) was supporting the invisible hand in the economy where the economy operates on its own and the forces of supply and demand interact so that the economy will achieve equilibrium automatically without the involvement of government (O'Brien, 1975). Adam Smith (1776) went on to state that the classical economic theory is based on the notion of a laissez-faire economic market (Skinner and Wilson, 1975). The doctrine of laissez-faire or free-market demands that the government has little to no government intervention in the market operations.

The laissez-faire approach also allows individuals to behave according to their self-interest when economic decisions are concerned (Skinner and Wilson, 1975). This will allow economic resources to be allocated in agreement with the wishes of individuals and firms in the market place (Skinner and Wilson, 1975). Bagehot (1873) stressed the importance of the banking system in economic growth and indicated conditions where the bank can spur innovation and growth through funding productive investments and establishing productive investments. Bagehot (1873) also argued that banks provide important financial services which are essential for economic development and poverty reduction. The services which can be provided include but are not limited to the following; mobilizing savings, evaluating different projects, managing risks and facilitating transactions (Bagehot, 1873). These various services were argued to be instrumental in encouraging innovation economic growth and development.

4. Empirical literature review

Financial inclusion has been one of the important elements in the fight against poverty. Sarma and Pais (2008) stated at one time, the inclusive financial system has many advantages which include facilitating the efficient allocation of resources, reducing the cost of capital. Sarma and Pais (2008) went on to insinuate that with an inclusive financial system, the growth of exploitative informal sources of finance can be constrained. Finally, it is believed that financial inclusion can enhance efficiency and welfare by the provision of avenues for secure and safe saving practices.

The information provided by Sarma and Pais (2008) shows how it can be used as a tool to address economic problems like economic growth, economic development, inequality and poverty. In the same way, Chibba (2009) came up with a study to investigate the impact of financial inclusion on poverty and the achievement of the Millennium Development Goals (MDGs) even though we now have sustainable development goals. The study concluded that the traditional approaches used to fight poverty and the MDGs were not sufficient without coming up with proper policies which embrace financial inclusion as an initiative to address poverty and inequality. The paper argued that financial inclusion in its own right can provide several direct and indirect channels which can help to address developmental issues which will result in poverty reduction.

The investigations by Chibba (2009) also concluded that the persistent increases in the number of financial crises globally require more attention to be applied to policies which increase financial inclusion. Chibba (2009) argued that financial inclusion should be taken as a complement of the traditional policies towards meeting the global developmental challenges like poverty.

Moreover, the study found out that there are four factors which are important in improving the doctrine of financial inclusion and poverty reduction. These factors include the following: financial and non-financial private sector development, scaling up of microfinance support of businesses and finally public support for the business in the financial and non-financial sectors. It is alleged that, when these factors stated above are put in place, financial inclusion can be scaled up leading to poverty reduction.

Mehrotra *et al*. (2009) investigated the relationship between financial inclusion, economic growth and poverty reduction using an index. The index was also used to measure the level of financial inclusion. The arguments they came up with were that when people have access to banking services, it enables them to save their money in banks. The effect of the actions of the people will be more on investment which will lead to high inclusive economic growth through the multiplier effect. In other words, when growth is inclusive, poor people can be uplifted from poverty since they will be able to participate in the mainstream economy (Mehrotra *et al*. 2009).

Mehrotra *et al*. (2009) further assert that services from banks should be seen as a public good which should be accessed by anyone in the economy even though the nature of banking products and services is completely different from typical public goods. Also, Mehrotra *et al*. (2009) went on to argue that financial inclusion can be used as a quasi-public good because it is useful just like access to basic education and water. Again, Bruhn and Love (2009) analyzed the impact of extending financial services to low-income earners to do entrepreneurship activities in Mexico. The research concluded that, when low-income earners access to finance, the economic activity will respond positively, implying that in the long run, the increase in economic activities will influence economic growth, development and poverty reduction.

Lal (2018) examined the impact of financial inclusion through cooperative banks on poverty reduction. Using data gathered from 540 individuals who were using cooperative banks in India, it was concluded that financial inclusion can help to fight poverty, especially when financial inclusion is done through cooperative banks. The research went on to conclude that access to financial products and services by the poor will help them to live decent lives through fighting poverty. It was argued that access to loans, insurance and saving will help these poor to make informed economic decisions which will later influence their income generation and management hence the reduction of poverty.

Similarly, Park and Mercado Jr (2018) examined the effect of an inclusive financial sector on poverty reduction and income inequality for several economies. The research concluded that, when financial inclusion is improved in a significant manner in high and middle-income economies, poverty will decline. They also came forward with the conclusion that high and middle to high-income economies with meaningful financial inclusion levels have low levels of poverty. However, in the middle to low-income economies, there was no such relationship. According to Park and Mercado Jr (2018), it is equally important to choose the right policies of financial inclusion to obtain the right results in terms of growth, development and poverty reduction. In this way, financial inclusion has shown evidence of reducing poverty in high and middle-income economies.

5. Data and methodology

The study used data collected using a structured questionnaire developed and approved by North-West University Education, Management and Economic Sciences, Law, Theology, Engineering and Natural Sciences Research Ethics Committee (NWU-EMELTEN-REC). The ethics clearance number obtained from the university is NWU-00354-19-2A. The study was also cleared by the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement in Zimbabwe. The development of the questionnaire was necessitated by the fact that household data on financial inclusion used macro or country-level data, for instance, Demetriades and Hussein (1996); Beck *et al.* (2009); Beck *et al*. (2007) and Demirguc-Kunt and Klapper (2013). Usually, using country-level data, to investigate the behavior of economic variables at the household level poses risks of omission, generalization and oversimplification of reality. The data comprised of a total of 600 households who were interviewed using the structured questionnaire.

The survey targeted the Manicaland province of Zimbabwe. A total of 405 households who indicated to be in farming were used for the current study.

5.1. Independent variable: Index of Financial Inclusion (IFI)

The study developed a measure of financial inclusion informed by several studies who also attempted to measure financial inclusion using selected dimensions using macro-level data. For example, Arora (2010); Sarma (2008; Demirguc-Kunt and Klapper (2013); Amidzic *et al*. (2014); Camara and Tuesta (2014); Mojica and Mapa (2017); Park and Mercado, Jr (2018); Chattopadhyay (2011) and Kozarevic and Vehabovic (2020). Each dimension has its indicators of financial inclusion. The study measured financial inclusion building on the dimensions and indicators that have been considered so far by various authors which include access, availability, usage, cost and quality dimensions of financial inclusion. The indicators used include but were not limited to the following: number of adults having an account with a formal financial institution, the share of adults who saved and borrowed using a formal account, shares of adults with credit/debit cards, and share of adults who used internet banking and those with insurance. These indicators were captured in the questions asked in the structured questionnaire. The following 11 questions were used to generate different indicators: Do you have a bank account? Can you provide the best reason for opening a bank account? How many members of your household have bank accounts? Have you saved with any of the formal financial service providers? Have you saved with any of the formal financial service providers other than the bank? Have you applied for a loan from a formal financial institution? Do you use internet banking? Do you have an ATM card? Do you have insurance with any formal financial institution? Do you receive remittances through the bank? Do you normally perform financial transactions through bank agents? From the 11 questions, a scale was developed ranging from 0 to 11 where 0 represents weak financial inclusion and 11 represents strong financial inclusion. In the questions, a ‘yes’ represented strong financial inclusion while a ‘no’ represented weak financial inclusion. On the number of members with bank accounts, households with more members more than two attracted a higher score while those without any member attracted a lower score 0 in this case. From the scale, a measure of financial inclusion was developed.

5.2. Dependent variable: Poverty (APL)

One class of the measures of poverty was the money metric approach. The money metric approach for measuring poverty advocates for the poverty line as a measure of poverty. According to Dunga (2014) and Townsend (1979), the absolute poverty line is premised on the amount of money needed to acquire the goods and services that satisfy the stated absolute minimum. On the other hand, Davids (2010) posits that an absolute poverty line is a line which measures the condition of failure to meet the bare essentials of physical existence. In working out a poverty line, the unit of measure must be clearly defined and adjustments are taken into consideration if need be and there are steps to be taken to come up with the line.

The first step is to determine the line and this can be done through calories requirements in terms of the food poverty line, or basic requirements in general (Dunga, 2014; Townsend, 1979). The second step in working out the poverty line through gathering data on characteristics of the household needed to come up with the line. Usually, income and expenditure are the characteristics used when the household is the unit of measure (Dunga, 2014). As argued by Ravallion (1998) the absolute poverty line internationally has been $1 per day. The $ per day was revised to $1.08 per day in 1993, but still, the $1 has been used more widely. However, studies have started to use $2 per day as a feasible absolute poverty line (Dunga, 2014; Ravallion, 1998). In this study, a total consumption line of $175 (in March 2019 prices) per person per month was used as stipulated by ZimStat (2019). The study used the figures for March 2019 because, during

this period, the figures were still valued in US$, the RTGs $[1] used during that time was pegged at 1:0.4 with the US. This line was used to determine the poverty level of the different households in the sample area since the study took the household as a unit of measure.

The common characteristic used in measuring poverty was the income of the household. The information was collected using the structured questionnaire with the question asking the estimated total household income per month inclusive of all sources and the other follow-up question asking households to categorize their monthly income in five categories of $0-100, $101-300, $301-500, $501-1000, $1001-5000. The total income was then divided by the household size to get the individual income. The poverty index was then generated which assumed two values 0 and 1. The index took the value of 1 if the individual income from the survey was above the monthly consumption poverty line of $175 and 0 if the monthly consumption was below the poverty line ($175).

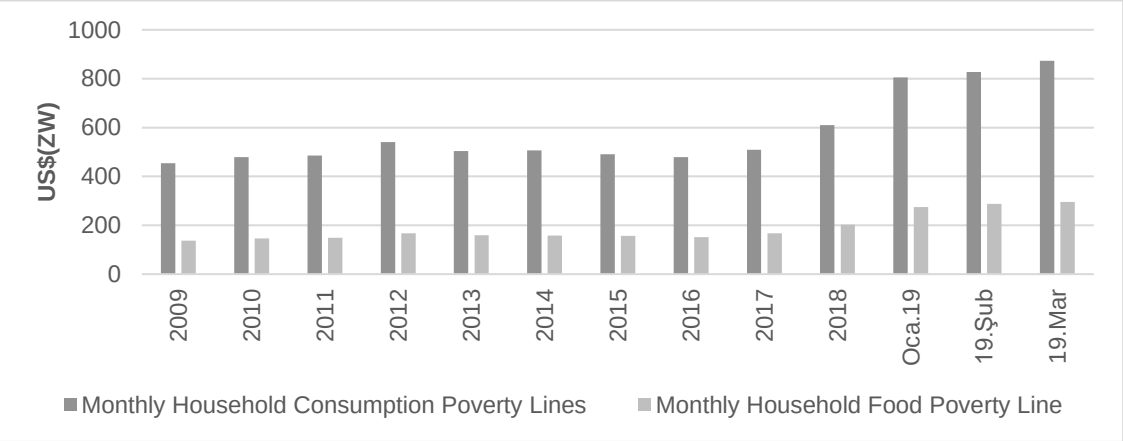

Figure 3. Monthly household food and consumption poverty lines
Source: Authors' analysis based on ZimStat (2019)

Figure 3 shows the monthly household food and consumption lines for Zimbabwe from 2009 to March 2019 for a family of five. In 2009, the monthly household consumption poverty line for a family of five was above US$ 400 while the monthly household food poverty line was below US$ 200. In March 2019, the monthly household consumption poverty line was US$ 175 for an individual was for a family of five was US$ 875.

5.3. Linear regression model

Linear regression models are used for different kinds of uses to solve real-life problems (Green and Silverman, 1993). In econometrics, the OLS method is widely used in the estimation of parameters for a linear regression model (Koutsoyiannis, 1973). When using linear regression OLS to be specific, it is important to know its assumptions which include but not limited to the following: the model is linear in parameters, observations are random sampled, absence of multicollinearity among other assumptions like normal distribution of the errors, homoscedasticity and absence of autocorrelation (Gujarati, 2009).

5.4. The econometric model

The linear regression was used to investigate the determinants of financial inclusion. This model is shown by the equations below.

[1] The RTGS Dollar, nicknamed zollar, is a currency in Zimbabwe which was introduced on 21 February 2019 and came into effect after the February 2019. The currency is made up of bond coins, bond notes and RTGS balances.

$$Y = \beta_0 + \sum_i^n \beta_i X_i + \varepsilon \quad (1)$$

where Y is the dependent variable, in this case, is poverty. Also, β_0 is the intercept term, the value of Y when X is zero. $\beta_{i..n}$ are the slope coefficients for each corresponding experimental variable, $X_{i..n}$ represents the independent variables which in this is financial inclusion. This can also be represented as:

$$APL = \beta_0 + \beta_i IFI_i + Xi + \varepsilon \quad (2)$$

where APL is the dependent variable representing absolute poverty as measured by the absolute poverty line of $175. IFI is the index of financial inclusion. β_i is the slope coefficient. To control individual households characteristics and the precision of our estimates household level control variables Xi were added. Also, in this study, financial inclusion is expected to have a negative influence on poverty. When financial inclusion increases, poverty will respond by declining. The following hypotheses are developed for this study:

H_0*: Financial inclusion does not have an impact on poverty in Zimbabwe.*
H_1*: Financial inclusion has an impact on poverty in Zimbabwe.*

Table 2. Summarized results and discussion on the impact of financial inclusion on poverty using the absolute poverty line

Variable	Coefficients
Financial inlusion(IFI)	-2.083
	0.000****
	(-8.238)
Constant	0.431
	0.000***
	(9.363)
ANOVA	
Regression	13.864
Residual	75.578
Total	89.442
	0.000b***
Observations	404
R	0.594
R Square	0.455
Adjusted R Square	0.453
Fstastic	73.927

Note: Dependent Variable: Poverty, T stastic in parethesisi (significant at 1 percent***, significant at 5 percent**, significant at 10 percent*)
Source: Authors' calculations

The absolute poverty line in this study was the measure of poverty. According to Dunga (2014), the absolute poverty line is based on the total amount of money required to purchase the goods and services that satisfy the prescribed absolute minimum. On the other hand, Davids (2010) posits that an absolute poverty line is a line which measures the condition of failure to meet the bare essentials of physical existence. Using the same reasoning, poverty status for the households was calculated using the absolute poverty line. Table 2 shows the results on the impact of financial inclusion on poverty using the absolute poverty line.

The model summary was such that R was 0.594, which represents a simple correlation. This value shows us that the degree of correlation was not too high which was slightly above 50 per cent. R squared was 0.455 while adjusted R squared was 0.453. The adjusted R squared shows that 45.3 per cent of the variation in the dependent variable was explained by the independent variable. Also, the ANOVA indicates that the regression model predicts the dependent variable (poverty) significantly well since the regression indicates that the model is

statistically significant at 1 per cent level of significance. Here, $p < 0.0005$ which is less than 0.05, indicating that the model is a good fit for the data. The model statistically and significantly predicts the poverty outcome variable.

Finally, the results of the regression equation show that financial inclusion has an impact on poverty reduction. The interesting result from the analysis was that the results were in line with the *a priori* expectation that financial inclusion hurts poverty depending on the value and level of financial inclusion. For instance, a rise in financial inclusion leads to a decline in the level of poverty. In essence, the results show that financial inclusion has a negative significant impact on poverty. A unit change in the level of financial inclusion will lead to a decline in poverty by approximately 2.08 which is a significant impact. These results were supported by quite some scholars who investigated the impact of financial inclusion on poverty before. Sarma and Pais (2008) gave a detailed explanation of how financial inclusion can help to fight poverty.

Sarma and Pais (2008) stated that an inclusive financial system avails many benefits which are not limited to the following, facilitating efficient allocation of productive resources which can end up reducing the cost of capital, improving access to the proper financial, reducing the growth of informal sources of credit which are normally exploitative. In short, Sarma and Pais (2008) believe that an inclusive financial system improves the efficiency and welfare of individuals through offering avenues for secure and safe saving practices. These arguments by Sarma and Pais (2008) indicate how important is financial inclusion in fighting poverty, as well as improving the growth of the economy. Mehrotra *et al*. (2009) supported the arguments by Sarma and Pais (2008) by arguing that when people have access to banking services, it enables them to save their money, leading to more investment, high inclusive economic growth through the multiplier effect and, finally, poverty reduction showing that financial inclusion has an impact on poverty alleviation.

6. Conclusion and policy recommendations

The study sought to investigate the impact of financial inclusion on poverty reduction in Zimbabwe among the smallholder farmers. Using the simple regression method, the study discovered that financial inclusion has a strong impact on poverty reduction among smallholder farmers. The study went on to discover that, for the government to tackle poverty especially among the smallholder farmers, it is important to ensure that farmers do participate in the financial sector through saving, borrowing and taking out insurance among other services. The Startup (2018) insinuated that to achieve the goals of financial inclusion such as poverty reduction, several needs should be met which include saving, transacting, making and receiving payments, receiving credit, and insurance. The other requirement is that products and services should be affordable and useful to the target population to meet the desired goals.

The Startup (2018) indicates that financial inclusion can help to fight poverty. It is also believed that the economic benefits of financial inclusion are not only realized through direct access to or use of financial services but also through indirect yet positive effects that financial inclusion has on low-income households through access to labor markets, consumption smoothening and being cushioned from economic shocks and even natural disasters (Camara and Tuesta, 2014). Empirically, Chibba (2009) argued that traditional approaches used to fight poverty were not sufficient without coming up with proper policies which embrace financial inclusion as an initiative to address poverty and inequality. So, it is important for the government of Zimbabwe to fully implement policies that encourage financial inclusion such as making sure that farmers find it easy to access financial institutions and encouraging financial institutions to review transaction costs like charges periodically, implementing financial education programs among the farmers because these variables are important in influencing farmers to participate or preventing them from using financial services. The other important aspect is continuous availing affordable loans to smallholder farmers as they help to improve their productivity by helping farmers to be able to acquire modern and efficient machines.

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