

Financial Inclusion and Poverty Reduction: Selected Approaches and Implications for Mali's Choice

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Abstract Today, it is recognized that financial inclusion is one of the most effective ways to significantly reduce poverty, through its easy access to means of payment, financial products and money transfer. Financial inclusion is an essential factor in the economic and financial development of a country. At the household level, it makes it possible to invest, to save, or to borrow for a better improvement of living conditions, as for companies, financial inclusion makes it possible to increase the productivity, to favor the entrepreneurship, and to contribute to job creation. Its success has been proven in several continents such as America, Asia, Europe and very little in Africa. In this study, we will see if financial inclusion will have the same impacts in Mali. To do this, we conducted a comparative study between three countries from different continents, Bangladesh (South Asia), Bolivia (South America) and Nigeria (South-Sahara) plus Mali. In addition to the comparative study, we used a questionnaire to identify the causes of poverty in Mali and to highlight the needs and demands of the poor and the vulnerable population. The results of the comparative analysis carried out with the Eviews 9 and those of the descriptive analysis of the SPSS software of the questionnaire used for the Mali case allowed us to highlight the causes of poverty in Mali and to make some recommendations. The main conclusions we drew from this three countries is; for the agricultural sector to promote credits for the purchase of agricultural machinery and inputs; to sensitize and encourage the population to subscribe loans for agricultural activities, to inculcate financial education for the poor; and to encourage financial institutions to finance agricultural projects. As for the agricultural sector, it is necessary to increase the area for the agricultural land; to promote and encourage the import of agricultural machinery; to facilitate the export of agricultural products; and encourage the processing of agricultural products; finally, in the education sector, it is crucial to promote inclusive education; to promote technical and vocational education; and to increase the number of schools in rural areas.

Key words Financial inclusion, poverty reduction

JEL Codes: G17, G21

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1. Introduction

Mali is the 8th largest country in Africa and 25th in the world, about 1,241,238 km² and an estimated population of 17,995 million (World Bank, 2016). A landlocked country with a predominantly illiterate population, Mali ranks 176th out of 188 countries according to the United Nations (UN) ranking established in 2015. In Mali, about 28 percent of the population under 5 years is malnourished, 73 percent of the population lives in rural areas, and about 80 percent of employment is in the informal sector. In addition to this, war and drought have significantly increased the incidence of poverty. Some 40 companies pay 80 percent of all salaries in the private sector. These enterprises operate in mining (gold), ginning cotton, financial system (banking), power generation, telecommunications and sugar manufacturing (PID, 2016). Financial inclusion, recognized by international organizations (G20, World Bank and MFIs) as a means of achieving sustainable development goals, is defined as a process to make accessible financial services accessible, loans, savings, insurance, payments and transfers.

It is possible that, to achieve financial inclusion goals, more bank accounts can be opened. However, opening a bank account in itself is not enough yet this process can greatly affect the behavior and well-being of poor people (Dev, 2006, Dasgupta, 2009, Mor and Ananth, 2007). In the case of Mali, we ask ourselves the following questions: Can financial inclusion contribute to improving the living conditions of farmers in Mali? What financial inclusion can it serve for the Malian population? How can poor people use financial inclusion to increase their income? To answer its various questions, we will study the approach of some countries, namely: Bangladesh, Bolivia and Nigeria.

2. Literature review

The results of the Hariharant and Marktanner (2012) studies have shown a positive correlation between financial inclusion and production factors. The macro econometric and micro econometric results of the Sahay *et al.* (2015) financial inclusion and GDP growth have had a positive impact on GDP growth and this must be combined with financial development.

Some authors argue that the lack of a developed financial infrastructure limits economic growth. Many researchers at financial inclusion have a positive impact on poverty reduction. According to Porter *et al.* (1966), the level of development of financial institutions is the best indicator of global economic development. The authors argue that the lack of a financial infrastructure has limited economic growth. To ensure that this does not happen, the policy should at all times ensure that the financial system operates effectively so that the real sector receives the necessary support. For the World Bank (2008), access to direct financial services for the poor may not be the most effective way to reduce poverty.

For them, the most important quantitative effect is the labor market indirect. These theorists suggest that various policies should be put in place to encourage, promote and stimulate the activities of financial institutions in this regard. This provoked the theory of financial repression, the best known of which are Mckinnon (1973) and Shaw (1973). In developing countries it is well recognized that the participation of workers of all professions in the growth of global productivity and the social protection of the poor is well recognized not only for poverty alleviation but also for strengthening the dynamics of markets interiors. A UNCTAD survey reports a comprehensive income policy linking wage growth and productivity, including minimum legal wages and a narrow social safety net for the poorest families, encouraging investment dynamics and stability monetary situation in the country. For an effective delivery of social security benefits, the policy could be linked to financial inclusion (UNCTAD, 2012). India is a welfare state and its two objectives are growth and social justice, as stated in the policy directive. Achieving these goals leads to inclusive growth that calls for reducing inequalities in the equal participation of all in the process of growth.

Financial inclusion is an essential tool for inclusive growth. Inclusive growth can be seen as a target and financial inclusion as a tool. In the transnational regressions, the development of Beck, Demirguc-Kunt and Levine alleviates poverty and reduces income inequality (Beck, Demirg and Levine 2004). The development of the financial sector is crucial for inclusive growth Lanchovichina and Lundstrom (2009). Kaul, R.C. (2011) notes that the growth of the Indian economy in recent years is quite good by standards and signals the beginning of a new phase of growth. The said progress does not seem to have resulted in commensurate growth in manufacturing employment leading to doubts about the inclusive nature of this growth. People are affected by their behavior and attitudes, this is by access to even minor goods. For Sen (1999), freedom is equated with an individual's ability to make meaningful choices that influence his or her lifestyle and are perceived as important. Within the framework of what Sen (1999) described as a "capabilities" approach, the goal of development is "the promotion and expansion of capacities", this is capacities that can be exercised by (Corbridge, 2002, Prendergast, 2004, United Nations Development Program 2000, 2004), and the influence of this perspective on the advancement of theory and practice of social and economic development.

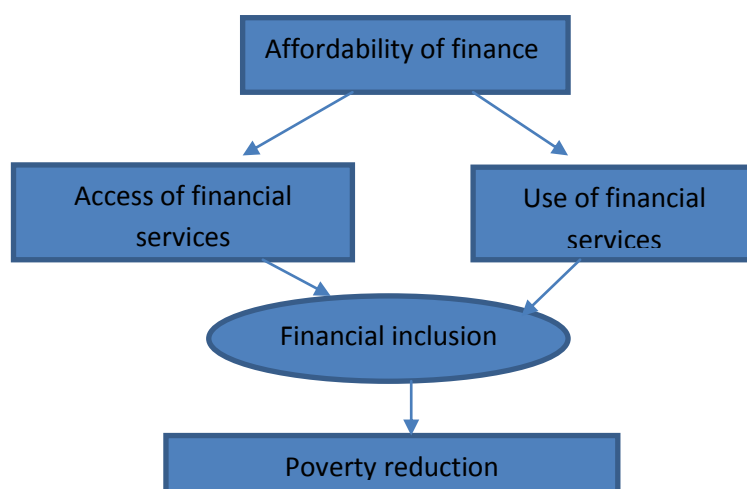
Agricultural and rural finance is an important component of the development strategies adopted by the South since the late 1950s (Yaron *et al.*, 1998). The development of agricultural and rural areas is seen as a means of reducing poverty in sub-Saharan Africa, particularly in Mali. This is justified by the importance of agricultural and rural areas in different economies. In sub-Saharan Africa, these regions shelter three quarters of the population, generate 70 to 80% of the employment, 40-60% of the GNP, 80-90% of the export earnings and 80-90% of the food supplies of the GDP (World Bank, 1998). The need for financial services in agricultural and rural areas may be justified by the argument of a relationship between economic development and financial development Anson Wong (2011). From a review by Lapenu (2001), it is necessary to distinguish these needs in two main categories. Our research is centered on the first category, since in the case of Mali, the second is a foreseeable consequence of the agricultural liberalization policies undertaken since 2005 and whose impact cannot yet be assessed. The first category consists of "traditional" needs of family farming, which can be subdivided into five main types.

These are short-term needs, medium- and long-term needs, non-productive needs, saving needs, and insurance needs. In addition to these needs enumerated by Lapenu (2001) emphasizes the importance of infrastructure and support service's needs. The absence of these services and infrastructures severely limits the effect of other measures to support agricultural activity (Binswanger, 1989, quoted by World Bank, 2008). Given the low level of geographical coverage in financial services, rural credit opportunities in Mali are limited Bédécarrats *et al.*, (2013). Therefore, one could postulate that the rural financial market is characterized by a credit constraint. Figure 1 shows that if vulnerable people had easy access to affordable financial services, they would be encouraged to save in a financial institution by simply opening an account while at the same time benefiting from other facilities in the financial account saving.

In addition, they can benefit from insurance to prevent unforeseen shocks that reduce vulnerability and minimize their need for certain coping strategies, such as selling assets that could hinder the long-term income prospects of the poor. Financial inclusion has an indirect impact on poverty through its positive impact on productive growth and more directly to the extent that financial inclusion can expand access to financial services for the poor and the low-income.

This reduction in poverty can be explained by the improvement of the standard of living, access to loans at a lower interest rate, transfer of funds at low cost, etc. However, financial inclusion cannot directly increase the net assets of the poor, but it can enable them to engage in small income-generating activities with small investments. Apart from these types of services, it may be difficult for the poor to realize their economic potential Odell (2010). It is worthwhile to note that access to financial services and the actual use thereof are two distinct concepts. Some individuals may have access but decide not to use it because of religious, cultural or other reasons. This is called voluntary financial exclusion and may occur as a result of indirect usage through a family member or lack of demand for financial services.

Conversely, some individuals may have the need for financial services but face serious physical barriers to access and, as such, are involuntarily excluded. Involuntary financial exclusion is a problem and can be caused by one of the followings: (i) remoteness of the places where households live, (ii) unfavorable conditions attached to financial products, (iii) the prices of the products offered are not affordable, (iv) lack of knowledge of available financial products due to a lack of marketing, and (v) self-exclusion for fear of rejection (Kempson and Whyley, 1999).



3. Methodology of research

We have chosen a very simple methodology in our study. The aim is to highlight the causes of Mali's poverty and to formulate some initial solutions to significantly reduce poverty.

3.1. Data

This study used questionnaires to conduct a survey in one of the most agricultural regions of Mali (Sikasso). A total of 235 respondents were surveyed for this analysis. The questionnaire part aimed to establish poverty situation in Mali. In order to make a comparative analysis, the study used three countries namely Bangladesh, Bolivia, and Nigeria. These countries together with Mali provided a panel data analysis for the period from 1992 to 2015 with data from World Bank. For the panel data, per capita consumption expenditure was used as a proxy variable for poverty.

3.2. Model

The Solow model focuses on four variables: output (Y), capital (K), labor (L), and 'knowledge' or the 'effectiveness of labor' (A). At any time, the economy has some amount of capital; labor and knowledge are combined to produce output (Romer 2006). The production function takes the form:

$$Y(t) = F(K(t), A(t)L(t)) \tag{1}$$

According to economist and politician Paul Douglass and Mathematician Charles Cobb, the production function depends on capital (K) and labor (L). One of the properties of this theory is that the share of production paid to capital is always equal to a constant β , independent of the quantities of capital and labor used (Badel and Huggett, 2016). This production function is written as follows:

$$Y = AK^\beta L^{1-\beta}$$

Where $0 < \beta < 1$ and $A > 0$ (2)

Let's apply log in the formula

$$\log Y = \log [A K(t)^\beta L(t)^{1-\beta}] \quad (3)$$

$$\log Y = \log A + \log [K(t)^\beta L(t)^{1-\beta}] \quad (4)$$

$$\log Y = \log A + \log K(t)^\beta + \log L(t)^{1-\beta} \quad (5)$$

We consider $A_i = \exp(\beta_0 + \beta Z_i + \varepsilon_i)$ (6)

$$\log Y = \log [\exp(\beta_0 + \beta Z_i + \mu)] + \log K(t)^\beta + \log L(t)^{1-\beta} \quad (7)$$

Our equation will be:

$$\log Y_i(t) = (\beta_0 + \beta Z_i + \mu) + \beta \log K(t) + (1 - \beta) \log L(t) \quad (8)$$

$$\log Y_i(t) = \beta_0 + \beta Z_i + \beta \log K_i(t) + (1 - \beta) \log L_i(t) + \mu \quad (9)$$

$$Pov_{it} = f(y, \mu) \quad (10)$$

Where μ represents other factors that influence poverty other than from this equation it is assumed that all variables that influence economic growth are likely to influence the level of poverty.

Variables explanations

Poverty (dependent variable): We use household per capita final consumption expenditure (in constant dollars) as a proxy for poverty reduction because consumer spending of the poor is generally more reliable and stable than income (Datt and Ravallion, 1992, Quatey, 2005, Odhiambo, 2009). This measure is in line with the World Bank definition of poverty as "the inability to achieve a minimum standard of living" measured in terms of basic consumption needs (World Bank, 1990). The other explanatory variables are described as follows: Arable land combined with agricultural machinery, reflects the production capacities of individual households and increases productivity and household returns, which, as a result of the sale of the crops, generate income to enhance their social well-being and can even invest in other income-generating activities.

Domestic loans granted by financial institutions play a very important role in the activities of households, especially agricultural activities. These credits enable them not only to carry out income-generating activities, but also to obtain agricultural inputs that remain a necessary condition for farmers' productivity. The last variable of our model (education); plays a multiple role in the lives of households. This variable is very important to the extent that it can affect the welfare of households in different ways (economic, health, fertility, productivity in agriculture). So our econometric model will be:

$$Pov_{it} = \beta_0 + \beta_1 L_{it} + \beta_2 Z_{it} + \beta_3 Cr_{it} + \beta_4 Educ_{it} + \mu_{it} \quad (11)$$

Where: $\mu_{it} = \sigma_i + \varepsilon_{it}$

Definition of the variables

The data used in this study were sourced from the World Bank. The data was for the period 1992 – 2016.

Pov (dependent variable) is the proportion of people living below the poverty line. In this study, it is measured by household final consumption expenditure per capita (in constant dollars) as a proxy for poverty reduction.

L (Agricultural Land (% by area)) is the arable land that represents land defined by FAO, that is land used for temporary crops, temporary meadows for mowing or pasture, cultivated land gardening or vegetable gardens, land fallow short, land intended for cultivation.

Z (Agricultural machinery, tractors per 100 sq. Km of arable land): Represents agricultural machinery designating the number of wheeled and crawler tractors except those used for gardens intended for agriculture in a calendar year or year first quarter of the following year.

Cr (Domestic credit provided by the financial sector (% of GDP): These represent domestic credits provided by financial institutions with the exception of credit provided by central government.

Educ: Literacy rate, adult total (% of people ages 15 and above): These are adults who have reached the age of 15 or older who are able to read or write even a short text.

4. Findings and discussions

The regression analysis by country gives the results as in Table 1. From the table, the results are mixed. Since consumption expenditure is used as a proxy variable for poverty, it seems that land increase poverty. Before running the regression analysis and other estimates, the study finds it important to explore the behavior of the variables. Apparently, all variables have a positive impact on poverty as shown in the following table.

Table 1. Regression analysis by country

Variable	Bangladesh	Bolivia	Nigeria	Mali
Constant				
Land	-1.729***(-2.906)	0.190 (0.075)	0.799 (0.822)	-4.400*** (-4.392)
Machinery	5.606*** (3.977)	1.467*** (4.508)	0.375 (0.141)	-1.674**(-2.1)
Credit	0.08 (1.070)	0.313*** (4.063)	0.140 (0.652)	0.432* (1.942)
Education	-0.138**(-2.459)	0.305 (1.006)	2.287 (1.181)	-0.096 (-0.351)

Note: ***, **, and * represent significance levels at 1, 5, and 10 percent respectively, t-statistics are in parenthesis

Table 2. Fixed effect model

Redundant Fixed Effects Tests

Pool: POOL

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.638426	(3,80)	0.0552

The null hypothesis is rejected at 10 % level therefore the use of fixed effect is reasonable.

From the cross-sectional analysis, we find that in Bangladesh, a 1 percent increase in farmland increases poverty by 1.73 percent. This seems contrary to our tradition where we expect land size to reduce poverty. But, intuitively increasing land means increasing management cost. So with poor farm implements, large land size leads into inefficiency. The effect is statistically significant at all levels of significance. This is the case in Mali, although the impact of the increase in agricultural land is very high compared to that of Bangladesh because a 1 percent increase in agricultural land increases poverty by 4.4 percent and this effect is statistically very significant. However, in Bolivia and Nigeria, agricultural land has no significant impact and even the sign is central to what is expected.

In the case of agricultural machinery, in Bangladesh and Bolivia, it is normal to note that a 1 percentage increase in machinery reduces poverty by 5.61 and 1.47 percent respectively, and the effect is statistically very significant. In Nigeria, the impact is insignificant, even if it is positive. This could be explained by the fact that a large number of people are withdrawn from agriculture and that over time, few people remain in agriculture, which means that the increase in machinery does not mean get people out of poverty. However, this requires additional research to understand the factors behind this effect. But the case of Mali is different because a 1 percentage increase in agricultural machinery increases poverty by 1.67 percent and the effect is economically and statistically significant at 5 percent levels of significance. This is very surprising and very serious in the long run because most people are involved in agriculture.

Credit does not seem to have the effect of reducing poverty in all countries. However, the impact of credit is significant in only two countries, namely Bolivia and Mali. According to the analysis, it appears that a 1 percentage credit increase reduces poverty by 0.31 percent in Bolivia and is statistically significant at all levels of significance. A 1 percent credit increase in Mali reduces poverty by 0.43 percent and is statistically significant at 10 percent. This is an indication that access to credit improves the lives of the poor. It is also interesting to see that education increases poverty in Bangladesh, although the effect of education is insignificant in other countries. A 1 percentage increase in education increases poverty by 0.14 percent and the effect is statistically significant at 5 percent. This tells us that in order to reduce poverty in the country, policymakers should not plan how to increase the population in education but to improve the quality of education. With quality education, people become skilled so that they can master their environment and use it for their own benefit.

Education helps to empower people on technical skills but also to know how to read and it is a tool to obtain technical information necessary for agricultural production for example, inseminate and be able to apply the technology. Therefore, education must be given a high priority to any society that focuses on poverty reduction and the adoption of sustainable development even if the results tell us something else.

5. Conclusions

Financial inclusion at a multiple of benefit, at the micro level, financial inclusion can fund projects, whether they are personal or professional. The recipient of financial services can invest in projects such as education or the purchase of real estate, which ultimately benefits the entire economy. At the level of a company, financial inclusion facilitates activities and procedures, such as payment of wages or payment of suppliers. At the state level, financial inclusion allows the control and regulation of economic activities and facilitates the payment of taxes or the payment of subsidies. The light of the experiences of the countries studied, Bangladesh, Bolivia and Nigeria; Mali can reduce poverty by helping people easily facilitate a bank account, as it helps to save money for future investments.

The Bangladeshi model of opening a bank account with only 12 USD can benefit many citizens because they can easily afford to have a bank account and enjoy as many benefits as having a bank account. The interest rate for Bolivia is about 9.9 percent which allow credit access to many people. Malian bank can reduce the interest rate to allow many people to borrow money for their investment as a way of fighting poverty. In Mali, the microfinance is less used and the government needs to change the system like Grameen Bank, that is, to go door-to-door to offer their financial services to families. This is a good model for Mali because it allows people to know different financial products and also to subscribe for the purpose of creating income generating activities. The model that Bangladesh and Nigeria used grants people to get loan by group is a good way for the Malian people to get money. It allows a lot people to get loan from the microfinance. Mali is Islamic country; it can use the zakat like Bangladesh to alleviate poverty. Mali can borrow Bolivia approach to give loan to people. That approach called mobile trucks.

It can reach the rural population easily and serve the population in a convenient manner. The women have the problem to get loan in Mali, using the Bangladesh approach to reduce the interest rate can contribute a lot to reduce poverty because women play a important role in Malian society. Like Nigeria, Malian authorities can encourage the bank and microfinance to open branches in rural area to allow rural people access financial services without traveling long distances. The results of the descriptive survey carried out to fight against poverty have shown that arable land, the financing of the acquisition of agricultural tools, fertilizers and seeds are variables that allow the population to benefit from the benefits of their land. Activity are insufficient because the causes of poverty do not only depend on individuals, but also on the Malian state; education, health, housing, financial institutions and roads also contribute to the well-being of the population. Add to the results of the regression of the four countries, shows us that to eradicate poverty; in particular, Mali must pursue policies to increase agricultural land while encouraging the use of agricultural machinery. This will enable people to achieve food self-sufficiency and increase their income. This income will enable them to pay their children's school fees, buy clean water, have access to good health care, have good housing and lead a better life.

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