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THE DETERMINANTS OF FINANCIAL EXCLUSION IN CENTRAL AFRICAN REPUBLIC

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Abstract

The aim of this study is to investigate the factors that explain financial exclusion in order to contribute to a broader understanding of the mechanisms of financial exclusion in Central African Republic. Specifically, the aim is to identify the factors that explain the population's financial exclusion. To address our concerns, we use a simple Logit model. The data for the study come from a household survey of a sample of 478 individuals in three towns in the country, taking into account both urban and rural households. The dependent variable is latent and captures the fact of not using financial services. The main findings of the study were that difficult access to the Internet is one of the causes of financial exclusion in the country, despite the development of the mobile money system. In addition, the low levels of education and income of the population also explain their difficulties in accessing financial services. Finally, the area in which people live, in other words living in rural areas, is also a cause of exclusion from financial services. The results of the study suggest interventions aimed at improving access to financial education, deploying mobile phone services and opening up rural areas through Internet access.

Key words: Financial exclusion, Financial inclusion, Access to finance, Logit, Central African Republic.

Résumé

L'objectif de cette étude est de rechercher les facteurs explicatifs de l'exclusion financière afin de contribuer à la compréhension plus large des mécanismes de l'exclusion financière en République Centrafricaine. Il s'agit spécifiquement d'identifier les facteurs explicatifs de

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l'exclusion financière de la population. Pour répondre à notre préoccupation, nous faisons usage du modèle Logit simple. Les données de l'étude proviennent d'une enquête ménage auprès d'un échantillon de 478 individus répartis dans trois villes du pays, prenant en compte à la fois les ménages des milieux urbain et rural. La variable dépendante est latente et capte le fait de ne pas utiliser les services financiers. Comme principaux résultats, l'étude a montré que le difficile accès à l'Internet est l'une des causes de l'exclusion financière dans le pays, malgré le développement du système de mobile money. En outre, les faibles niveaux d'éducation et de revenu des populations expliquent également leurs difficultés d'accéder aux services financiers. Enfin la zone d'habitation, autrement dit le fait de résider en milieu rural est également une cause d'être exclu des services financiers. Les résultats de l'étude suggèrent des interventions visant à améliorer l'accès à l'éducation financière, le déploiement des services de téléphonie mobile et le désenclavement des milieux ruraux par l'accès à l'Internet.
Mots clés : Exclusion Financière, Inclusion financière, Accès à la finance, Logit, RCA.

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I. Introduction

Access to and use of financial services are essential to ensure the economic and social integration of citizens in today's society. It is also a condition for employment, economic growth, poverty reduction and social inclusion. This recognition justifies the interest shown by governments and international institutions in the phenomenon of financial inclusion as one of the key factors in economic and social development and well-being. The aim of financial inclusion is to broaden access to affordable banking and financial products and services for populations excluded from the traditional banking circuit (Osei-Assibey, 2009, Kabakova and Plaksenkov 2018 and Demircguc-Kunt et al. 2018).

The issue of financial exclusion is a major concern in every economy in the world. However, many people around the world, and particularly in sub-Saharan Africa, lack access to basic financial services, current accounts and deposits, savings, credit, insurance and more (World Bank, 2015).

Worldwide, around 1.7 billion people still do not have access to a formal financial system (Global Findex, 2017). This problem particularly affects low-income populations in emerging and developing countries, where almost 80% of poor people do not have access to these services (AfDB, 2015). Yet integrating them into the formal economy is vital if we are to reduce poverty, fight inequality and promote inclusive growth.

According to Bayot and Jerusalmy (2011), financial exclusion by definition is a 'process whereby a person encounters difficulties in accessing and/or using financial services and products offered by "mainstream" providers, adapted to their needs and enabling them to lead a normal social life in the society to which they belong'. However, it should be stressed that the concept of financial exclusion is at the heart of a fairly complex phenomenon. It is seen as one of the consequences of social exclusion.

Access to finance cannot be the privilege of the few, but must be open to all[2]. It is a means of reducing inequalities, particularly for the most vulnerable, rural populations, women and young people. Access to financial services also plays a major role in the ability of businesses to invest, recruit and grow. . It is therefore an essential component of inclusive growth, given the direct links between the domestic savings rate and long-term economic growth (UNDP, 2015).

The CAR, one of the least developed countries, has been marked by repeated crises over the last three decades, with the mutinies of the mid-1990s, the attempted coups of 2001 and 2002, the coup of 2003, the rebellion in the north of the country in 2006 and the coup of 2013, which caused a serious humanitarian crisis without precedent in the country and shook all the structures of Central African society (Binoua, 2005 and Marchal, 2016). The country experienced a record economic recession of -36% of GDP in 2013, and is classified as a least developed country with a GDP per capita of US$522 in 2021. The poverty rate is estimated at 71% of the population in 2020[3]. This alarming situation is largely the result of the serious crisis which reached its climax in 2013 and which continues to plague certain parts of the country. Despite all the above, financial inclusion could be one of the country's priorities, and a way out, because it would not only enable the country to achieve a desirable level of economic growth that could help facilitate and encourage economic activities, promote income-generating activities, increase investment and create jobs, but also reduce poverty and promote the financial stability needed to formalise businesses (Osei-Assibey, 2009).

In the past, as part of the drive to achieve the Millennium Development Goals (MDGs) by 2015, laudable initiatives to promote financial inclusion and tackle poverty have been taken by the government in conjunction with development partners. This was the case with the Support Programme for the Emergence of Inclusive Financial Sector (SPE/IFS). During this period, financial inclusion increased considerably in the country, with the number of bank account holders rising from 3% of the active population in 2011 to 14% in 2017 (Global Findex, 2021). On the other hand, the proportion of credit to the private sector as a percentage of GDP rose from 6.89% in 2005 to 11.71% in 2020 (World Bank, 2020). The objective was to contribute to a sustainable improvement in the socio-economic situation of the population through a viable and sustainable supply of financial products and services.

Despite this, the objective has not been achieved for two fundamental reasons: repeated crises and poor geographical coverage by financial services. In other words, the CAR has not yet risen to the challenge of financial exclusion. It is ranked among the countries in the world where the phenomenon of financial exclusion is most widespread. Some 86% of the country's adult population does not have a bank account. The situation is even worse in rural areas, where only around 7% of the working population has an account with formal financial institutions (Global Findex, 2017).

[2] United Nations Development Programme (UNDP), Annual Report on Financial Inclusion in Developing Countries, 2015.

[3] World Bank (2020), Overview, Central African Republic.

Within the Central African population, the situation may appear more dramatic for women and young people. Women, who account for 70% of the workforce in the agricultural sector, and where 84.6% of households headed by them in rural areas are poor, compared with 74% for those headed by men[4]. According to the 2019 quarterly bulletin of business creation statistics, out of 369 economic units created, 74 were created by women, i.e. around 20%. In addition to being less represented in economic activities, women experience even greater difficulties in terms of access to bank credit. While 18% of working men have a bank account, the rate for women in the same category is 10%, despite the creation of a group of women entrepreneurs and the government's initiative, in conjunction with partners, to set up a fund called the 'Bêkou Fund' to help them overcome poverty.

As far as young people are concerned, more than 78% of the Central African population is under 35. However, the number of underemployed young people reached almost 31% in 2020, and almost 80% of young people live on less than US$1.9 a day. More than 47% of the country's working population is unemployed, and the dependency rate in 2020 will be close to 80%, reflecting the heavy weight of young people and the unemployed on the workforce. Only 11% of young people have access to financial services, particularly bank accounts (Kadre, 2021). This shows the extent to which a large proportion of those involved in economic and social life are excluded from the financial or banking system in CAR.

Despite all the above, it has to be said that the phenomenon of financial exclusion remains widespread in CAR, despite the efforts made by the State and international institutions to reduce it. It remains one of the major concerns for economic and social development. There are many reasons why people have little access to affordable financial services, such as the lack of economic diversification, the predominance of the informal sector, and the administrative costs of accessing financial services. In CAR, the lending rate remains one of the highest in the CEMAC sub-region, at 16.26%, compared with a sub-regional average of 8,84% in 2019 (BEAC, 2019), the precariousness and inadequacy of incomes, especially among women and young people, and the geographical remoteness of financial institutions, where the banks established in the country are branches of large foreign banks and are concentrated in the capital Bangui, with very little representation in the country's other towns.

The Central African financial sector remains small and is concentrated in the capital Bangui, with four (4) commercial banks and three (3) micro finance institutions for a population of more than 5 million inhabitants. The rise of Fintech, which should be an alternative to traditional finance, is struggling to take off in the CAR due to constraints linked to insecurity in certain regions of the country and the low level of access to information and communication technologies. Between 2016 and 2020, the country recorded a small increase in the share of Mobile Money payment accounts in the CEMAC area, where it rose from 0.01% to 0.4%, i.e. from 764 active accounts to 52,922, while for the sub-region as a whole the number of active accounts rose from 2.74 million to 11.9 million (BEAC, 2020). Faced with this situation, it is more than necessary to consider ways of reducing the scale of the phenomenon. This must involve research and identification of the factors responsible for financial exclusion in the

[4] UNFPA, CAF, 2014.

country. Hence the following research question: what are the determinants of financial exclusion in Central African Republic? In other words, what are the factors explaining the financial exclusion of the majority of the Central African population from financial services?

The aim of this study is to investigate the socio-economic factors of financial exclusion in order to contribute to a broader understanding of the mechanisms of financial exclusion in the Central African Republic.

The rest of the paper is organised as follows: the literature review is presented in section 2, section 3 is devoted to the study methodology, section 4 presents the results and discussion and the conclusion is made in the last section.

II. Literature review

Since Smith and Ricardo, it has been argued that competition triggered by a 'laissez faire' policy will bring benefits and eradicate all the ills that an economy is likely to face. This advocated competition should promote the inclusion of the entire financial sector. However, this laissez-faire approach to finance does not necessarily promote the desired inclusion, and on the contrary exacerbates the phenomenon of exclusion (Kumar and Philip, 2011).

Deregulation of the financial sector has, to some extent, exacerbated the process of financial exclusion. It has been observed that whenever there is a financial crisis, there is a kind of 'flight to quality' and an emphasis on risk reduction by the financial sector. The result is often 'abandonment and withdrawal to a richer customer base'. This also applies to particular geographical locations. This is known as the process of 'financial desertification'.

Approaching financial desertification in much the same way, Beck and Torre (2006) consider that the 'access problem' to financial services should instead be analysed by identifying different demand and supply constraints.

Determinants related to the supply of financial services

On the supply side, the concept of the frontier of access possibilities for savings and payment services is used to distinguish between cases where a financial system settles below the constrained optimum and cases where this constrained optimum is too low. This manifests itself in the fact that each bank has a two-stage decision-making process: the first concerns the number of branches to open and the second, in which communities to place them Calcagnini et al (1999).

Geographical exclusion or the decision of banks to open or close a bank in a rural community is strongly associated with existing state variables such as: market size, physical infrastructure, available technology, the contractual and informational framework and the general level of security in the area. The bank will open a branch in a community and reach new customers if and only if the expected incremental benefit is greater than or equal to the expected incremental cost.

Again from the perspective of geographical exclusion, some economic literature sees financial exclusion as reflecting a wider problem of social exclusion. In developing economies, financial

institutions are more likely to cluster in the region of high value transactions, rather they will simply stay in the cities where they can easily make profits by targeting the larger firms and wealthier households and would therefore have little or no incentive to reach out to smaller communities, smaller firms and poorer households. This is confirmed by Findex's 2017 global report, which found that developing countries still have the lowest levels of financial inclusion compared to the rest of the world.

Finally, being willing and able to hold an account is not enough to guarantee it. The financial institution must also be available. The longer the distance to a bank, the higher the transaction cost of holding an account. Thus, high transaction costs involving travel to a particular delivery service or lack of banking opportunities alone may discourage someone from owning a bank account (Osei-Assibey, 2009 and Kumar and Philip, 2011).

The work of Haoudi and Rabhi (2018) on the determinants of financial inclusion in Africa, with evidence based on the holding of a current account, highlights that costs in any sector play a key role in the choice of using any service, so the costs associated with the use of a financial service are part of it.

Determinants related to the demand for financial services

On the demand side, as people's incomes rise, so does the need for a secure place for safekeeping. In addition to the market or economic forces that stimulate demand, there are other non-market factors that reduce demand for financial services, such as socio-cultural, religious and financial illiteracy, gender and poverty. These factors often lead to self-exclusion due to the inability of these people to recognise the benefits of having a bank account or to hold negative beliefs about the use of financial services Fareed (2020).

The level of education or schooling of individuals has been identified by some studies as one of the determinants of financial exclusion. In fact, there is a close relationship between the level of education and financial knowledge. Without sufficient financial knowledge, households can be trapped in a cycle of poverty and exclusion or suffer from inappropriate product choice, expensive credit or, in some cases, illegal lending Hayton et al. (2007). Thus, financial education is one of the important elements affecting financial inclusion, because when people are financially literate, they can make better financial decisions, get a better, more appropriate product at a better price (Zins and Weill, 2016). However, ‘when they have no financial knowledge, they do not use financial services because they are unable to understand them’ (Andrianaivo, Mihasonirina, and Kangni Kpodar. 2011).

Financial inclusion and poverty

Other Findex and FinScop reports between 2015 and 2019 show that the constraints in developing countries that limit access to and use of financial services are linked to the

characteristics and financial behaviour of poor and low-income people. Thus, financial exclusion affects some groups of people more than others. Consequently, people's financial situation in terms of lack of income or money makes them unable or reluctant to access financial products.

Demirguc-Kunt et al. (2012) show that in most regions of the world, certain categories of people who do not earn enough money and/or do not have enough income to open an account find themselves excluded from the system because of the high cost of opening an account. Sinsha and Subramanian (2007) explain that the main reason for financial exclusion is the lack of a stable income, which means that people are not encouraged to open a savings account and are unlikely to qualify for a loan. Compared to the rich, studies by Fungáčová and Weill (2016), Weill and Zinsa (2016) found that being in the richest income quintile, increases the likelihood of having a formal account at a financial institution.

As far as gender is concerned, there is a large gap between men and women when it comes to accessing and using financial services in terms of opening and owning an account, savings and formal credit. According to Global Findex, being a woman increases the likelihood of being financially excluded, which has a negative impact on their well-being. In support of this idea, Fungácová and Weill (2015), Hallward-Driemeier and Hasan (2012), found that 'lack of account ownership prevents women from accessing self-employment opportunities. Moreover, 'a woman without an account has fewer opportunities to realise her ambitious entrepreneurial and educational plans'. In addition, socio-cultural burdens, discrimination related to customs and religion prevent women from developing their capacity and accessing financial products and services (Cull, Robert, Tilman Ehrbeck, and Nina Holle. 2014). However, Fungáčová and Weill (2015), found that 'gender does not influence the use of formal accounts and the use of formal savings in most of the countries studied'.

Other social factors also explain the exclusion of certain people from financial services. The ability to use or maintain an active account depends not only on the actual demand function, but also on responsibility, the age of the head of household, the dependency ratio, employment status and physical conditions (Osei-Assibey, 2009). In other words, financial inclusion is also linked to economic growth, while an increase in the poverty rate in situations of armed conflict and political instability would have the opposite effect, namely financial exclusion. Conflict also leads to the destruction of the financial sector, which can include the destruction and looting of financial institutions (Addison et al. 2005). In a study on the financial exclusion of households in the Euro zone, Coffinet and Jadeau (2017), showed that the oldest, unemployed, lowest income, least educated and least wealthy households in the Euro zone are less likely to have a current account.

Internet and financial inclusion

Fintechs have been developed to tackle financial exclusion in order to improve financial health, and their services should reach those that traditional financial services cannot: excluded and under served customers. Gabor and Brooks (2017) examined the growing importance of digital-based financial inclusion. According to these authors, the digital revolution is adding new layers to the material cultures of financial inclusion, offering the state new ways to extend the

inclusion of the 'readable', and global finance new forms of 'profiling' poor households into generators of financial assets.

According to a Scale to Save analysis, the adoption of mobile money in most sub-Saharan African countries has boosted financial inclusion. Mobile money would contribute to gender equality. The COVID-19 pandemic acted as an accelerator for the pre-existing growth of mobile digital financial services. While the containment measures hampered economic activity, they did encourage an explosion in mobile money transactions. While containment measures have hampered economic activity, they have encouraged an explosion in mobile money transactions. In examining the influence of the penetration of financial intermediaries in the countries of the West African Economic and Monetary Union (WAEMU), Coulibaly (2020) notes that the characteristics of individuals who only hold mobile money accounts are comparable to the characteristics of individuals who hold official bank accounts and also to the characteristics of individuals who use both types of account simultaneously.

While these services can have beneficial effects on customers' ability to manage their money and use financial services, there is also a harder-to-reach or harder-to-include segment that may still be excluded by technology-enabled services. Indeed, the growth of internet banking has led to an increase in online financial services. While this has made banking more convenient and accessible for some, others face negative effects such as the disappearance of face-to-face banking services in favour of digital platforms. Digital exclusion can affect those who are excluded from digital services due to high costs, capacity issues or geographical access to digital, non-internet users are likely to miss out on competitive online offers. In addition to older people and other categories are also concerned about using modern technology to manage their finances, such as internet banking, due to fear of loss linked to poorly secured online identity or other types of fraud such as internet hacking (House of Lords, 2017).

This review of the literature has enabled us to identify a diversity of determinants of financial exclusion between countries, sometimes with a specificity of determinants per study. Such specificity by study raises the question of the need for a study for each country or region. It should be noted that in the Central African Republic, a post-conflict country, this issue has not yet been addressed in a specific study to investigate the causes of the phenomenon. In addition to the fact that such a study has not yet been carried out in this country, the focus on rural and urban areas, gender and Internet access will be another specific feature of this study.

III. Methodology

1. The sample

The data for this study comes from a household survey. This choice was justified by the fact that neither the Central African Institute for Statistics and Economic and Social Studies (ICASEES) nor Findex had a microeconomic database that could serve as a basis for the model used in this study. The survey was carried out on a sample of 550 individuals[5], based on a

[5] The survey was carried out between February and March 2022.

questionnaire[6], in three towns in Central African Republic. The approach used was stratified random sampling. These strata take into account rural and urban areas, gender, age, profession, etc. Within each gender, we tried to ensure that the different age groups were representative. Also, within each stratum, individuals were selected at random, in order to facilitate better stratification and representativeness of the different strata of the population. The table below shows the distribution of individuals in the sample.

Table 1: Breakdown of individuals in the sample by city and place of residence

Town	Urban	Rural	Total
Bangui	288	46	334
Boali	15	92	107
M'baïki	10	99	109
Size of the sample	**313**	**237**	**550**

Source: Data from our survey

The choice of towns in this study takes into account the rural/urban split. Bangui is the capital of the CAR, and its choice is justified by the fact that it is the country's main city and accounts for more than 25% of its population. The characteristics of the city's population would be representative of the country's other urban areas. Boali, for its part, is classed as one of the least developed towns in the country. Despite its strategic position some one hundred kilometres from Bangui and the fact that it is home to the country's only hydro-electric power station, Boali is still predominantly rural. Its proximity to Bangui and the predominance of the rural environment in most of its communes justify its choice for comparison with the population of Bangui. Finally, the town of M'baïki, which is located on the southern outskirts of the country, is very rural. Economic activities are less developed in this area and the only main activity is timber harvesting. This lack of development of economic activities in the area presages a less monetised society and is likely to exclude a large majority of the population from formal financial services. Overall, banking and micro finance institutions are virtually non-existent in these towns, and the only remaining option for financial inclusion is mobile money, hence their choice.

Of the 550 individuals surveyed, after processing the sample was reduced to 478 individuals due to insufficient information and aberrant responses, including 277 individuals from urban areas and 201 individuals from rural areas.

2. Model and variables of the study

Our aim in this study is to identify the factors that explain financial exclusion. Financial exclusion is considered the dependent variable of the study and is qualitative.

- ***Theoretical specification of the model***

Given that the dependent variable is qualitative (being excluded from financial services) and is unique, with only two modalities, we can use neither multinomial models nor the Tobit model.

[6] The questionnaire can be found in the appendix to this document.

The choice remains between a Logit or Probit model. The Logit model has the advantage that the distribution of the error term follows a logistic.

The mathematical expression of the binary Logit model depending on several explanatory variables where we are looking for a function $P(X)$ with $X = (X_1, X_2, \dots, X_k)$ as a model for the conditional probability:

$$P(E = 1|X_1, X_2, \dots, X_3)$$

The Logit model uses the function

$$P(E = 1 \left| X_1, X_2, \dots, X_3) = \frac{1}{1 + exp[-(\alpha + \sum_{i=1}^{k} \beta_i X_i)]} \right.$$

where E denotes the probability of being excluded from financial services

The previous equation can still be written as follows:

$$logit\ P(X) = \alpha + \sum_{i=1}^{k} \beta_i X_i$$

- ***Empirical specification of the model***

Drawing on studies mentioned in the empirical review such as Ren et al, (2018) and Coffinet and Jadeau (2017), we will estimate a simple Logit model. Because the dependent variable is qualitative.

Our model is specified as follows:

$$\boldsymbol{Y_t = \alpha_0 + \alpha_1 genr + \alpha_2 Educ + \alpha_3 prof + \alpha_4 Rev + \alpha_5 Net + \alpha_6 Phone + \alpha_7 Mil + \alpha_8 rélig + \varepsilon_t}$$

- **Model variables**

The dependent variable $\boldsymbol{Y_t}$ is a binary variable which takes the value 1 if the individual is excluded from financial services and 0 if not, in reference to the definition of Bayot and Jerusalmy (2011), according to which financial exclusion is a *'process by which a person encounters difficulties in accessing and/or using financial services and products offered by "classic" providers, adapted to their needs and enabling them to lead a normal social life in the society to which they belong'.*

The explanatory variables are:

- **Gender** ($\boldsymbol{Genr}$) which is a binary variable, it takes the value 1 for man and 0 for woman. The aim is to capture the effect of gender on financial exclusion, in other words, to see whether being a woman is a reason for being excluded from financial services more than men, or vice versa;
- ***Level of education*** ($\boldsymbol{Educ}$), aimed at capturing the effect of being educated or not on being excluded from financial services. This variable has four modalities, with 0 for no education,

1 for primary education, 2 for secondary education and 3 for tertiary education, with the last level as the reference;

- ***Profession*** ($Prof$) is a binary variable with 1 for salaried employment and 0 for self-employment. It seeks to evaluate the fact of being professionally employed or not on the fact of being excluded from financial services or not. In fact, the fact of being an employee or of being professionally occupied can justify the fact of being financially included or not;
- **A*verage monthly income*** (Rev) is quantitative and measured in CFA francs[7] It is used to determine whether or not the level of income justifies financial exclusion or inclusion. This variable was coded and segmented with a value of 1 for those with an income of between 0 and 100, 000 F, for the range 100,001 to 250, 000F, 3 for the range 250, 001 to 500, 000F and 4 for the range 500, 001 and more. Since there are fewer people in the sample with an income of more than 500,000 CFA francs, individuals in this bracket are included in the modality n.3.
- ***Access to mobile phone services*** ($phone$) The particularity of this variable is that access to telephone service remains limited in CAR, particularly in rural areas, even though the country's major cities are connected by the telephone network, but the villages between these cities are not always connected, even those close to Bangui, the capital. The aim is to assess the effect of this isolation from the telephone network on access to financial services. This variable is binary, with 0 for non-users and 1 for users;
- ***Living environment*** (mil)**,** the objective here is to capture the disparity between urban and rural areas in terms of access to financial services. This variable is also binary, with 1 for rural areas and 0 for urban areas;
- ***Access to Internet*** (Net) Considering Internet access as one of the infrastructures for accessing financial services, the fact of having access to it could facilitate financial inclusion. It is captured as a binary variable with 0 for non-users and 1 for users.

3. Some statistical analyses

The dependent variable of the model is binary and takes the value 1 for those excluded from the financial system and 0 if the individual has a bank account, in a micro finance institution and/or a mobile money account. Based on a sample of 478 individuals, the distribution is shown in the table below:

[7] 1 Euro = 655,5 CFA francs, or 1$ equals to about 555 CFA francs.

Table 2: Descriptive analysis of model variables.

Variable	Modalities	Number	Frequency (%)
Dependent access or not to financial services	0	283	59.21
	1	195	40.79
	Total	**478**	**100**
Gender	0	239	50
	1	239	50
	Total	**478**	**100**
Living area	0	201	57.95
	1	277	42.05
	Total	**478**	**100**
Education	1	24	5,02
	2	149	31.17
	3	201	42.05
	4	104	21.76
	Total	**478**	**100**
Income	1	400	83.68
	2	67	14.02
	3	7	1.46
	4	4	0.84
	Total	**100**	**100**
Mobile phone	0	76	15.90
	1	402	84.10
	Total	**478**	**100**
Access to Internet	0	310	64.85
	1	168	35.15
	Total	**478**	**100**
Profession	0	103	21,55
	1	375	78.45
	Total	**478**	**100**

Source: Data from our survey

In our sample, 195 individuals are excluded from the financial system, compared with 283 who have an account with a bank, an MFI or a mobile money account. 84 individuals out of the 283 excluded from the financial system hold a mobile money account exclusively, which means that without this new financial service, the number of those excluded from the financial system should increase.

With regard to gender, the sample was made up of 50% women and 50% men, which made it possible to assess the influence of this variable on the dependent variable.

The level of education variable has four modalities. From the total sample, 5.02% had no education, i.e. they had never attended school, 31.17% had primary education, 42.05% had secondary education and 21.76% had higher education.

From the total sample, 83.68% of individuals fall into the first income bracket, i.e. 0 to 100,000FCFA, compared with 14.02% of individuals in the second bracket, and the last bracket, which is considered the reference, represents 2.30% of individuals.

In order to take into account the geographical disparity, the survey covered both urban and rural areas. Out of a total of 478 individuals, 57.95% came from urban areas, compared with 42.05% from rural areas.

Considering cell phone ownership as a means of accessing new technology and possibly financial services, 84.1% of the individuals in the sample own a cell phone, compared with 15.9% who do not.

Finally, with regard to access to the Internet, a tool that facilitates access to financial services, 35.15% of the individuals in the sample have Internet access, compared with 64.85% who do not.

Furthermore, by cross-tabulating the dependent variable with the model's independent variables, the table below presents the trends identified.

Table 3: Descriptive analysis of the cross-tabulation of the independent variables with the dependent one

		Dependent variable: financial exclusion	
Variables	Modalities	**0**	**1**
Gender	0	125	114
	1	158	81
Age	0		
	1		
Education	1	11	13
	2	70	79
	3	111	90
	4	91	13
Profession	0	44	59
	1	239	136
Income	1	211	189
	2	62	5
	3	10	1
Mobile phone	0	26	50
	1	257	145
Internet	0	132	178
	1	151	17
Living area	0	161	116
	1	122	79

Source: Data from our survey

- Between financial exclusion and gender, out of 195 individuals excluded from financial services, we count 114 women and 81 men, while 158 men use financial services, only 125 women do. This shows that women have less access to financial services than men in the study area, even though the sample was made up of 50% men and 50% women.
- Between financial exclusion and income, the majority of those excluded from financial services are individuals with an income level of between 0 and 100, 000 FCFA, numbering 189 out of 195.
- Between financial exclusion and Internet access, 178 of the 195 people excluded from financial services have no access to the Internet. Only 17 people with Internet access do not have access to financial services.
- Between financial exclusion and place of residence, 116 out of a total of 195 people excluded from financial services come from rural areas, compared with 79 from urban areas.
- Finally, between gender and the Internet, out of 310 individuals without Internet access, 171 are women and 139 are men. Disparity between men and women remains valid when it comes to access to information and communication technology.

IV. Results and discussion

We estimated a simple Logit model, given that the dependent variable in our model is qualitative and binary. Estimation was performed using STATA software, and the results are presented in the following table:

Table 4: Econometric estimation results

	Logit model		**Marginal effects**		
Fin_Exclu	**Coef.**	**Std. Err.**	**dy/dx**	**Std. Err.**	**X**
Gender	-.1964023 (0.406)	.2361187	-.0429048 (0.405)	.05148	.501062
Educ21	1.100251 (0.086)*	.6409563	.2645488 (0.089)*	.15557	.050955
Educ22	1.370675 (0.003)***	.4673912	.3133789 (0.003)***	.10547	.309979
Educ23	1.443314 (0.001)***	.4273697	.3170536 (0.000)***	.09016	.424628
Educ24	(omitted)				
Prof.	-1.473717 (0.000)***	.3470429	-.3444792 (0.000)***	.07905	.781316
Rev21	.1025661 (0.937)	1.29434	.0221234 (0.936)	.27541	.849257
Rev22	-1.685536 (0.237)	1.426068	-.2762165 (0.077)*	.15615	.142251
Rev23	(omitted)				
Phone	-.4282306 (0.178)	.317935	-.0977895 (0.195)	.07553	.838641
Net	-2.483664 (0.000)***	.3360576	-.4445196 (0.000)***	.04402	.348195

Milieu	-.62875 (0.015)***	.259699	-.134083 (0.014)***	.05453	.414013
Cons.	1.051316 (0.458)	1.417818			
Number of obs = 471 Wald chi2(10) = 99.20			Marginal effects after logit y = Pr(excl_fin) (predict) = .3226494		
Prob > chi2 = 0.0000 Log pseudolikelihood = -228.89718 Pseudo R2 = 0.2835			(*) dy/dx is for discrete change of dummy variable from 0 to 1		

(.) Values in brackets represent the p-values of the coefficients of the variables

Given the particularity of this model, the interpretation will focus on the signs of the marginal effects of the coefficients of the explanatory variables.

As the variables education and income are categorical variables, we have dichotomized them in the model. The level of education variable was generated in four dummies, and the Educ24 was taken as the reference. The income level variable was generated in three dummies after merging Rev23 and Rev24, given the very insignificant number of individuals in Rev24. Rev23 variable was taken as the reference.

Out of a total of 10 dependent variables without the constant, the coefficients of three variables are not significant at the 10% level. These are the variables gender, rev21, which is the first income bracket, and cell phone ownership.

However, the coefficients of the variables level of education, occupation of the respondent, income level for the Rev22 bracket, Internet access and living environment are all significant at the 1%, 5% and 10% thresholds.

The coefficients of the level of education variables are positive and significant at 10% for Educ21 and at 1% for Educ22 and Educ23 in reference to Educ24. This means that being uneducated and having only primary and secondary education, compared to those who have attained higher education, increases the probability of being excluded from the financial system. This result confirms the theoretical prediction, as well as other empirical findings, that low levels of education could justify ignorance or low enthusiasm for financial services, thereby explaining the exclusion of a category of the population from formal financial services.

The profession variable is qualitative and binary. It takes the value 1 for salaried and operational employment at the time of the survey, and 0 for self-employment, which includes invalids, pensioners, pupils and students. Note that the survey takes into account people aged 20 and over. The coefficient of the occupation variable is significant at 1% and negative. Thus, being active reduces the probability of being excluded from the financial system. The result seems obvious, since the banking policy developed in the country since the end of the 2000s is still implemented where public and private sector employees should hold a bank account for salary payments. In addition, the development of mobile money in the country would facilitate

transactions in all sectors of activity, including the informal sector, which explains the sign an significance of the coefficient of this variable.

Considered as a categorical variable, income level is segmented into three categories. The coefficient of the first Rev21 is not significant, while the second is significant with the negative sign. This means that having an income of 100,001 CFA francs or more reduces the probability of being excluded from the financial system. Such a result corroborates the theoretical prediction and empirical verification of other studies. In fact, having a high enough income would make it worthwhile to carry out transactions through financial services, which would promote financial inclusion and not the other way round.

Internet access is also a qualitative and binary variable, with the modality 1 for individuals with Internet assess and 0 if it's not the case. The variable coefficient has a negative sign and is significant at 1%. Thus, access to Internet reduces the probability of being excluded from the financial system. Of course, Internet access does not necessarily guarantee access to financial services, but it does demonstrate a preference for information and communication technologies, which are now a key tool for accessing and using financial services. Despite the fact that in Central African Republic in particular, the rate of access to the Internet remains low compared with other developing countries, a small segment of the population with access to this service can also use it to access financial services.

Finally, the living area, which is a binary variable, takes the value 1 if the respondent lives in an urban area and 0 if in a rural area. The coefficient of this variable is negative and significant at 1%. This result shows that living in an urban area reduces the probability of being excluded from financial services. Such a result reflects the reality of the context studied, since in CAR, the four commercial banks operating in the country, as well as the microfinance institutions, are all concentrated in the capital Bangui, and are poorly represented in the country's other towns, communes and rural areas, whereas Bangui, the capital, represents only around 20% of the country's total population. This proximity to the urban environment increases the likelihood of urban residents having access to financial services, while rural residents remain deprived of such access. This result seems highly unusual given the existing literature. It is justified by the fact that rural CAR is doubly penalized in terms of access to financial services. On the one hand, it is rare, if not impossible, to find bank or MFI branches or representative offices in this environment, and on the other, it is also isolated from access to ICTs, which in principle should encourage the spread of mobile money with Orange-money and Pata-paye in the country.

V. Conclusion

Access to financial services is seen as a factor of social integration, economic development and economic growth. In the CAR, this inclusion is struggling to take account of a large majority of the active population, including women and young people, compared with other countries in the Central African sub-region in particular, and developing countries in general.

To identify the explanatory factors of financial exclusion in the CAR, this study used the Logit model, given the nature of the data, and came to the conclusion that financial exclusion in the study area is explained by level of education, income, occupation (i.e. self-employment),

inaccessibility to the Internet and rural residence. Furthermore, the coefficient of the gender variable is not significant, which shows that the issue of financial exclusion in CAR is not necessarily linked to gender, but could be a concern that affects both men and women. The same applies to the age variable, which was ultimately removed from the model.

In view of these results, it would be advisable to promote access to education in general, and to financial education in particular, through radio broadcasts and awareness-raising campaigns among tradespeople on the advantages and benefits of access to formal financial services. This could encourage a considerable proportion of the population to take up financial services.

Other measures to facilitate financial inclusion in the country could involve the deployment of economic activities in different parts of the country and the promotion of entrepreneurial training to encourage unemployed graduates to take charge of their own income from a permanent source. In this way, the beneficiaries of jobs created by the deployment of economic activities or by entrepreneurship could refer to financial services for their transactions. Furthermore, setting up a fund to support entrepreneurship could help VSEs and SMEs gain access to the financial system, since one of the conditions for receiving funds would be to open an account in a bank or microfinance institution.

Finally, it would be necessary to open up the country's other towns and rural areas in terms of access to Internet. Despite the deployment of 3G and even 4G in the country, a certain number of towns in CAR are not equipped with Internet service, and in some where this access is possible, the quality of the speed does not augur well for better consumption. To this end, a policy encouraging the provision of Internet and telephone services to these areas could promote access to financial services via mobile money, in a context of insecurity in the country where it is too risky to transport large sums of money over long distances.

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