

# Determinants of Financial Inclusion in the Republic of Congo

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**How to cite this paper:** Ngakosso, A. (2024). Determinants of Financial Inclusion in the Republic of Congo. *Theoretical Economics Letters*, 14, 1-15. <https://doi.org/10.4236/tel.2024.141001>

**Received:** November 15, 2023

**Accepted:** January 16, 2024

**Published:** January 19, 2024

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## Abstract

The objective pursued in this work is to analyze the determinants of financial inclusion in Congo. To achieve this objective, we used the model based on the model logit. Our results reveal that age is an important determinant of financial inclusion, since its effect on inclusion is positive and significant at the threshold of 5%, and 10% respectively for households aged 35 to 50 years maximum. Of more, the level of education positively impacts the financial inclusion of the population, indicating that the population or the most educated households have more possibilities.

## Keywords

Financial Inclusion, Congo

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## 1. Introduction

The financial sector plays an important role in the economic development process. Indeed, a financial sector that gives populations better access to financial products and services is an essential mechanism for developing economies (Townsend & Robert, 2010). However, the Congolese financial sector remains underperforming as evidenced by the following statistics: only 10% of the adult population have a bank account in formal financial institutions; 56% of the adult population has not used any formal financial product; 36% of adults save and only 4% save in formal financial institutions (INS, 2022).

This being the case, identifying the determinants likely to promote or slow down financial inclusion remains the main focus of this study. The economic literature on the determinants of financial inclusion is abundant, both theoretically and empirically. On a theoretical level, the literature distinguishes two groups of authors: the first refers to the economic determinants of financial in-

clusion. Their point of view is supported by the frontier theory of access opportunities developed by Beck and de la Torres (Beck & de la Torres, 2006), which argues that access to financial services, is a function of the cost of financial services, product diversity and the density of banking infrastructures. And the theory of economic evolution (Schumpeter, 1911), which places technology at the heart of banking.

The second, on the other hand, mobilizes the social determinants of financial inclusion. It is based on the theory of barriers to access developed by Honohan (Honohan, 2004); Chamberlain and Walter (Chamberlain & Walter, 2005) highlight price, information and cultural values as barriers to financial inclusion. Social capital theory (Granovetter, 1973), supports the idea that strong ties can be a determinant of financial inclusion.

On an empirical level, two results stand out in this literature: those who found that economic factors such as interest rate, gross domestic product, etc are at the origin of financial inclusion (Wokabi & Fatok, 2019; Lukman et al., 2017; Nkouka, 2019). The second group, on the other hand, argues that social factors such as individual characteristics and the individual's level of education are central to financial inclusion (Atchi et al., 2021; Badar et al., 2020; Akudugu, 2013).

This review of the literature reveals both theoretical and empirical controversy. This lack of consensus justifies the relevance of the problem. As the aim of this study is to identify the determinants likely to promote or hinder financial inclusion, the main objective of this study is to analyze the determinants of financial inclusion in the Republic of Congo.

Over the past two decades, financial inclusion has become one of the pillars of the international agenda for the growth of developing economies. Today, it is at the heart of the concerns of Central Banks, which have a duty to contribute to the establishment of appropriate rules, mechanisms and tools to improve access to financial services, and to the creation of a healthy environment conducive to the development of the financial sector.

To meet this major challenge, the Congo, like all CEMAC countries, has drawn up a sub-regional strategy aimed at making banking products accessible to the entire population. In addition, governments have been reforming the financial and banking sector since the early 2000s. The main aim of these reforms was to modernize the mechanisms for financing the economy.

These reforms have focused on liberalizing the banking and financial system, overhauling monetary policy instruments and changing the institutional framework, particularly in terms of regulation and supervision of banks and financial establishments.

Despite these reforms, many people still do not have access to the Congolese banking system. Taking this situation into account, the IMF (IMF, 2015) points out that the Congo in particular and the CEMAC, in general, are characterized on average by more stringent loan collateral requirements than in peer countries, this situation, which results from banks' uncertainty about loan repayment

and contract performance, exerts a strong constraint on companies wishing to borrow; a relatively high-interest rate spread resulting from insufficient information on borrowers; the lowest proportion of companies with access to credit; particularly limited access to credit for small and medium-sized enterprises. Thus, our problem revolves around the following question: what are the determinants of financial inclusion in the Republic of Congo? The aim of this article is to analyze the determinants of financial inclusion in the Republic of Congo. The hypothesis is that financial inclusion is explained by the level of education, income and geographical area.

In addition to the introduction and conclusion, the rest of this paper is structured as follows: point II, literature review, point III, methodology and finally point IV, presentation and interpretations of results.

## 2. Literature Review

This section includes the theoretical and empirical literature reviews.

### 2.1. Theoretical Literature Review

The theoretical literature on the determinants of financial inclusion highlights two groups of authors: proponents of the economic determinants approach and supporters of the social determinants approach to financial inclusion.

#### 2.1.1. Economic Determinants Approach

The economic determinants approach to financial inclusion is supported by the following theories:

- The frontier theory of access opportunities developed by Beck and De la Torre (Beck & De la Torre, 2006), which uses the law of supply and demand to identify problems of access to banking and financial services. According to this theory, access to financial services depends on the cost of financial services, the diversity of products offered and the density of the banking infrastructure. The following authors also support this theory: Chidzero et al. (Chidzero et al., 2006); Beck & De la Torre (Beck & De la Torre, 2006); Beck & Demirgüç-Kunt (Beck & Demirgüç-Kunt, 2008); Claessens (Claessens, 2009); Guerinéau & Jacolin (Guerinéau & Jacolin, 2014); Beck & Levine (Beck & Levine, 2009) and Ramji (Ramji, 2009).

- The theory of economic evolution developed by Schumpeter (Schumpeter, 1911), which places technology at the heart of banking activity. According to the theory of economic evolution, technical progress is at the heart of the economy, and innovations emerge. After a major innovation, often a breakthrough innovation due to technical progress (e.g. integrated circuits, computers, the Internet, nanotechnologies), other innovations are driven by these discoveries. We then see industrial cycles where, after a major innovation, the economy enters a growth phase (creating jobs), followed by a depression phase, where innovations drive out “outdated” companies and destroy jobs. Thus, the theory confirms the predominant role of financial development among growth factors, due to bankers’ ability to improve the efficiency of resource allocation. Even when savings are insuffi-

cient, banks can finance entrepreneurs through money creation; this competence explains their fundamental role in economic development processes (Schumpeter, 1911).

- The public goods theory of financial inclusion developed by Ozili (Ozili, 2020) argues that the provision of formal financial services to the entire population, and the assurance of unrestricted access to finance for all, should be treated as a public good for the benefit of all members of the population. According to this theory, all members of the population are beneficiaries of financial inclusion, and no one is left behind.

- Human Capital Theory, developed by Becker (Becker, 1993) and Lucas Jr. (Lucas Jr., 1988). For these theorists, the notion of human capital raises the accumulation of growth and health to the level of investment in education and training. These can increase skills, leading to higher productivity and thus economic growth. In human capital theory, it is widely documented that nations cannot develop without substantial investment in education. Becker (Becker 1993), in fact, emphasizes education as an investment. For this author, human capital encompasses all the productive capacities available to an individual through the accumulation of knowledge and know-how, while taking into account the maintenance of his or her physical state of health. For Lucas Jr. (Lucas Jr., 1988), human capital is a determining factor in economic growth, as the level of production is closely linked to the stock of human capital available to the economy.

- The theory of financial liberalization was developed by McKinnon and Shaw (McKinnon & Shaw, 1973). These two economists presented the liberalization of the financial system as a simple and effective method of stimulating economic growth in developing countries. In many developing countries, there are few or no public or private financial asset markets. As a result, the banking sector is called upon to play a considerable role in the resource allocation process. As such, governments very often regard it as a strategic sector. These controls take a variety of forms: from outright nationalization of the sector to the introduction of procedures such as setting interest rates below their equilibrium level (for sectors considered as priorities), or the constitution of compulsory reserves enabling the state to finance its budget deficit at low cost.

### **2.1.2. The Social Determinants Approach**

The social determinants approach to financial inclusion is based on the theory of barriers to access, the theory of asymmetric information and the theory of social capital.

- Access barrier theory, developed by Honohan (Honohan, 2004) and Chamberlain and Walter (Chamberlain & Walter, 2005), highlights price, information and cultural values as barriers to financial inclusion. Indeed, prices, which are the result of highly restrictive regulations, can have repressive consequences and thus act as a brake on financial inclusion. Regarding the information barrier, which refers to the difficulty of measuring household credit-

worthiness, Honohan (Honohan, 2004) raises the issue of information asymmetry, which constitutes a major obstacle in credit distribution. Indeed, the lack or inadequacy of information on customers' credit history can constitute an additional risk (Beck & De la Torre (Beck & De la Torre 2006); Demirgüç-Kunt & Klapper (Demirgüç-Kunt & Klapper, 2012) and thus be a brake on financial inclusion. Cultural values (specific to certain ethnic groups and religions) have a major influence on banking exclusion. Indeed, certain ethnic groups living in autarky, i.e. in isolation due to discrimination, forbid their nationals any contact with the by-products of globalization, including financial services. Similarly, certain religions (e.g. Islam) are opposed to financial practices that generate interest, such as usury (Collard et al., 2001). They reject the use of credit services or interest-bearing savings products. In addition to these obstacles, factors such as family size, gender and age are considered as criteria for customer selection by financial institutions.

The theory of information asymmetry proposed by Akerlof (Akerlof, 1980) observes that market imperfections or failures may be due to an imbalance between buyers and sellers. This theory explains how financial inclusion efforts fail due to non-disclosure of relevant information leading to mistrust between the public and financial institutions. A lack of transparency about a borrower's circumstances, including income level and employment status, can deter inclusion efforts.

The social capital theory developed by Granovetter (Granovetter, 1973), which supports the idea that strong ties can be a determinant of financial inclusion. Indeed, this distinction essentially refers to a classic article by Mark Granovetter on the strength of weak ties. In his text, Granovetter distinguished between strong and weak ties based on the frequency and intensity of contacts. He insists that it's not necessarily the strongest relationships that are most likely to be usefully mobilized for any purpose. People with whom we are in frequent and fairly intimate contact are less likely to mobilize resources very different from those available to us.

## 2.2. Review of Empirical Literature

Empirically, we can distinguish two groups of findings on the determinants of financial inclusion: firstly, determinants that find that economic factors drive financial inclusion and those that show that social factors are central to financial inclusion.

For economic factors, Demirgüç-Kunt and Klapper's (Demirgüç-Kunt & Klapper, 2013) study on the use of financial services for 148 developed and developing countries is worth mentioning. Using data from the World Bank's Global Findex (Global Findex, 2014) and three main indicators of financial inclusion in the period from 2000 to 2015 (bank account ownership, savings in a bank account and use of bank loans), the authors find that income is a major determinant of financial inclusion.

Davutyan and Öztürkcal (Davutyan & Öztürkcal, 2018) use a representative

survey of the Turkish household sector and investigate the factors that influence saving-borrowing behavior. They run four probit regressions to elucidate 1) the saving decision, 2) the asset choice or portfolio composition for those who save, 3) the bank lending decision and finally 4) the formal versus informal borrowing decision. The results indicate that income, education, marital status and region of the country are strongly correlated with these decisions. In the end, this overview of the literature allows us not only to deduce the lack of unanimity of financial inclusion factors but also to note the fact that these studies are often limited to limiting financial inclusion (access to a bank account), whereas it is a phenomenon that manifests itself in several stages.

Asuming et al. (Asuming et al., 2018) conducted a comparative analysis of financial inclusion in sub-Saharan African countries using data from the global Findex database. They find that while the overall level of financial inclusion increased significantly between 2011 and 2014, there are variations in both the level and rates of improvement between countries. The authors also find that individual-level variables (age, education, gender and wealth) are the significant determinants of financial inclusion.

Wokabi and Fatok (Wokabi & Fatok, 2019) use domestic credit to the private sector by banks as a measure of financial inclusion to analyze these determinants. Results from a fixed-effects model with secondary data collected from the World Bank's World Development Indicators database from 2000 to 2016 reveal that rural population and income are important determinants of financial inclusion, with rural population negatively related to financial inclusion. This means that the higher a country's rural population, the less inclusive its financial system. Unemployment, although statistically insignificant, had a negative relationship with financial inclusion. Interest rates had a positive but insignificant relationship with financial inclusion.

Thus Lukman et al. (Lukman et al., 2017), studied the determinants of financial inclusion in sub-Saharan African countries for the period from 2004 to 2015 using the ARDL model and The results of the study reveal that financial inclusion in the region is significantly influenced by demand-side factors (income level and literacy) and supply side factors (interest rates and proxy for banking innovation through the use of ATMs).

Turning to social factors, Haoudi & Rabhi (Haoudi & Rabhi, 2018) analyze the determinants of financial inclusion in Africa and conclude using a probit model that, on the one hand, education promotes financial inclusion and, on the other, the size of the informal sector and vulnerability associated with employment are barriers to financial inclusion in South Asian countries, using logit for the period 2004 to 2015 with variables such as age, gender, education, financial status, type of work and cell phone use used as independent variables. And the regression results reveal that in South Asian countries educated, male, relatively older, wealthy and regular employees have a better chance of being financially included.

Similarly, Atchi et al. (Atchi et al., 2021), studied the determinants of financial

inclusion in Togo, using a logit model with the variables sex, education, age, income, place of residence, employment status, marital status, household size and degree of confidence in financial inclusion, gender, geographical area and the results obtained from the ordered logit model indicate that financial inclusion in Togo is mainly determined by individual characteristics such as gender, education, age, income, area of residence, professional status, marital status, household size and degree of confidence in financial institutions.

Akudugu (Akudugu, 2013), on the other hand, studied the determinants of financial inclusion in East Africa using the logit model with variables such as the age of individuals, literacy levels, wealth class, and documentation. And the results show that only two out of five adults are included in Ghana's formal financial sector. Age of individuals, literacy level, wealth class, distance to financial institutions, lack of documentation, and lack of trust in formal financial institutions of financial inclusion in Ghana.

All in all, this overview of the literature allows us not only to deduce that there is no unanimity on the factors of financial inclusion but also to point out that recent work on the subject highlights the continuing interest in this area.

### 3. Methodology

This section presents the necessary steps prior to the estimation stage. It presents the mode of investigation adopted, the data sources, the variables selected and the theoretical and empirical models.

#### 3.1. Mode of Investigation

Two modes of investigation were chosen for this study: documentary research and statistical data.

##### 3.1.1. Documentary Research

This consisted of mining the Internet for available documents on the determinants of financial inclusion in general and in the Congo in particular. We identified books, articles, theses, reports, etc. dealing with financial inclusion. The data was extracted from the Congolese household survey for poverty monitoring and evaluation (ECOM, 2011).

##### 3.1.2. Econometric Models

The theoretical model used as a support is the logit model developed by Johnson and Nino-Zarazua (Johnson & Nino-Zarazua, 2009). This model seeks to explain the impact of individual characteristics on financial inclusion. For an individual, therefore, we have a variable  $Y$  that equals 1 if he or she is included in the financial sector and 0 otherwise. In fact,  $Y$  takes modality 1 if the utility that the individual included in the financial sector has is greater than the current utility that may not satisfy him or her. Variable  $Y$  can thus take only two modalities, making it a binary distribution for which the appropriate model is the binary choice model, with a qualitative explained variable.

The utility levels of individuals are therefore not directly observable, as they depend on education level, age, income, etc. This supposes that two parts make up the utility function, the first called deterministic and the second called random. The deterministic component depends on the characteristics of the respondents, while the random component (unobservable variables) in the model leads to reasoning in terms of probabilities. Raffestin states in this regard that a qualitative random variable is described by the probabilities of the different modalities it can take.

Let us consider a sample of  $N$ -indexed individuals  $i = 1, \dots, N$ . For each individual, we check whether the financially included event has occurred. Let  $U_i$  be the observed variable indicating whether the individual is financially included. More precisely,  $U_i$  is 1 if the individual is included financially.

$$\text{Either } U_i = \begin{cases} 1 & \text{if } U_i^* > 0 \text{ (the individual is included financially)} \\ 0 & \text{if not (individual is not included financially)} \end{cases}$$

With

$$U_i^* = \alpha X_i + \varepsilon_i$$

where  $X_i$  represents the vector of explanatory variables (level of education, age, rounp, etc.),  $\alpha$  the vector of parameters to be estimated,  $\varepsilon_i$  the error terms and  $U_i^*$  the latent variable that models the probability of individual  $i$  being financially included. Thus, our model for estimation purposes is as follows:

$$IF = \beta_i X_i + \varepsilon_i$$

where  $X_i$  represents the matrix of explanatory variables,  $\beta_i$  represents the matrix of coefficients associated with the explanatory variables, and  $IF$  represents the variable to be explained (financial inclusion). Estimates of the parameters of the selected logistic models are carried out using the maximization algorithms of a log-likelihood function. The likelihood can be written as:

$$L(\alpha) = \prod_{i=1}^N F(\alpha X_i)^{y_i} (1 - F(\alpha X_i))^{1-y_i}$$

Thus, the log-likelihood is:

$$\begin{aligned} \log L(\alpha) &= \sum_{i=1}^N Y_i \log F(\alpha X_i) + \sum_{i=1}^N (1 - Y_i) \log F(1 - F(\alpha X_i)) \\ &= \sum_{i, y_i=1} \log F(\alpha X_i) + \sum_{i, y_i=0} \log F(1 - F(\alpha X_i)) \end{aligned}$$

### 3.2. Data Source and Variable Definition

The data used in this work come from the Financial Inclusion Survey conducted by the Bank of Central African States (BEAC) in 2015 in Congo. Data were collected from sampled households in Brazzaville, Pointe-Noire, Dolisie, Nkayi, Oyo, Ouessou and Impfondo of which a total of 1957 people were interviewed. In view of the number of individuals surveyed, 1957, compared with the 2303 originally planned, we can say that the sample is statistically representative. The choice of this data source is based on its availability and the quality proxies it



provides on the issue of financial inclusion. In line with our hypothesis, the variables selected are as follows: Financial inclusion, gender, income level, education level, age, marital status and labor market status.

The variable of interest Financial inclusion is a binary variable, taking the value 1 if the individual is financially included and 0 otherwise. Its construction is inspired by Batila Ngouala Kombo (Batila Ngouala Kombo, 2021), who considers two aspects of financial inclusion: access to and use of financial services. These two components are captured by several questions in the section on access to and use of financial services in the questionnaire.

The choice of other variables is justified by theory and authors such as (Honohan & King, 2009), for gender; age (Honohan & King, 2009), income level (Haoudi & Rabhi, 2018), an education level (Zins & Weil, 2016), marital status (Fungacova & Weill, 2015). This being the case, the following Table 1 presents a synthesis of the expected signs of these variables vis-à-vis the financial inclusion variable.

**Table 1.** Expected signs.

Variable	Modality coding	Signs
Sexe	Female	+ or –
	Male	+ or –
Income level	50 - 100 K	–
	100 - 150 K	+
	150 - 200 K	+
	200- and more	+
Marital status	Common-law union	–
	Married	+
	Divorced	–
	Widower	–
Education level	Primary	–
	Secondary I	+
	Secondary II	+
	Superior	+
L'âge	18 to 25 Years old	–
	25 A 35 Years old	+
	35 A 65 Years old	+
Job market situation	occupation	+
	Unemployed as defined by the ILO	+
	Inactive as defined by the ILO	+

Source: Author.

## 4. Presentation and Interpretation of Results (Table 2)

### 4.1. Presentation of Results

After estimating the model, we present our results in **Table 3**.

**Table 2.** Descriptive statistics summarize INCL revm Sm Sex Ag Nr inst.

Variable	Obs	Mean	Std. dev.	Min	Max
INCL	1759	0.1665719	0.3726992	0	1
revm	1912	0.5794979	0.4937688	0	1
Sm	1912	1.88023	1.037137	1	5
Sex	1912	1.506276	0.5000914	1	2
Ag	1912	1.688808	0.7544879	1	3
Nr	1025	1.547317	0.6075334	1	3
inst	1912	3.396444	1.066471	1	5

**Table 3.** Logit model results.

Variables	coefficient	P-value
<b>Sexe</b>		
Female	-0.1576	0.376
Male	/	/
<b>Income level</b>		
50 - 10 K	1.373	0.000
100 - 150 K	2.552	0.000
150 - 200 K	3.212	0.000
200- and more	4.028	0.000
<b>Marital status</b>		
Common-law union	-0.003	0.987
Married	0.640	0.011
Divorced	-0.668	0.122
Widower	0.094	0.860
<b>Education level</b>		
Primary	0.559	0.324
Secondary I	0.414	0.442
Secondary II	1.764	0.001
Supérieur	2.051	0.000
<b>Age group</b>		
18 to 25 years old	/	/
25 to 29 years old	0.516	0.181

**Continued**

25 to 35 years old	0.846	0.018
35 to 65 years old	1.215	0.001
40 to 44 years old	1.099	0.003
45 to 49 years old	0.881	0.025
50 to 54 years old	1.465	0.001
55 to 59 years old	1.030	0.038
60 and more	1.405	0.004
<b>Job market situation</b>		
Occupation	/	/
Unemployed as defined by the ILO	-1.133	0.379
Inactive as defined by the ILO	-0.586	0.253
R <sup>2</sup>	0.37	/
Roc	0.88	/
Stat-wald	580.63	0,0000
Obs	1108	/

**4.2. Model Validation**

Before interpreting the results, it is essential to first validate the model. Logit model validation is carried out through R<sup>2</sup>, Roc and Wald. In our case, the R<sup>2</sup> associated with our results is equal to 37% and Roc is equal to 88%, while the Wald statistic, which follows a chi-square distribution with k degrees of freedom, is 580.63 with probability Prob > chi<sup>2</sup> = 00000, which validates the overall significance of the coefficients. In view of these three statistically significant values, we conclude that our R<sup>2</sup> is good and can be interpreted economically. **Table 4** presents the marginal effects as a prelude to analysis and interpretation.

**4.3. Interpretation of Results**

**Table 4** above shows that age is a positive determinant of financial inclusion, given the significance of most classes from 25 upwards.

Level of education also shows positive and significant coefficients at secondary and higher levels. As for marital status, the married modality showed a positive and significant coefficient, while the divorced modality showed a negative and significant coefficient. As for the income level variable, all associated modalities are positive and significant. These results are in line with those found by Badar et al. (Badar et al., 2020); Batila Ngouala Kombo (Batila Ngouala Kombo, 2021); and are consistent with our hypotheses. From this discussion, one major lesson emerges: individual characteristics are positive factors for financial inclusion on the one hand and negative factors for financial inclusion on the other.

Divorced marital status reduces the individual probability of being financially included.

**Table 4.** Marginal effects.

<b>Variables</b>	<b>coefficient</b>	<b>P-value</b>
<b>Sexe</b>		
Female	-0.038855	0.375
Male	/	/
<b>Income level</b>		
50 - 100 K	0.1897351	0.000
100 - 150 K	0.4678281	0.000
150 - 200 K	0.6196053	0.000
200- and more	0.7569636	0.000
<b>Marital status</b>		
Common-law union	-0.0007672	0.987
Married	0.1587669	0.010
Divorced	-0.149194	0.088
Widower	0.0231346	0.861
<b>Education level</b>		
Primary	0.1044417	0.281
Secondary I	0.0745112	0.397
Secondary II	0.3935985	0.000
Supérieur	0.4604529	0.000
<b>Age group</b>		
18 to 25 years old	0.106659	0.175
25 to 35 years old	0.1846032	0.012
35 to 65 years old	0.276529	0.000
40 to 44 years old	0.2473333	0.001
45 to 49 years old	0.1933068	0.019
50 to 54 years old	0.3383549	0.000
55 to 59 years old	0.2303095	0.039
60 and more	0.3235381	0.003
<b>Job market situation</b>		
Occupation	/	/
Unemployed as defined by the ILO	-0.1372929	0.216
Inactive as defined by the ILO	-0.241617	0.258

## 5. Conclusion and Implications for Economic Policy

Given the low level of financial development facing the Congolese financial sys-

tem, we felt it would be useful to supplement the literature on financial development by analyzing the determinants of financial inclusion in the Republic of Congo. The aim of our study is to analyze the determinants that facilitate the financial inclusion of the population. To achieve this objective, we used a logistic model, estimated by the maximum likelihood method, and survey data from the BEAC. Thus, to further promote financial inclusion in the Congo, financial institutions need to pursue the policy of reducing collateral requirements. In addition, these institutions and the government need to invest in education, which can have a positive long-term effect on financial institutions and on the financing of the economy.

Access to both formal and informal financial products and services helps households and businesses anticipate the financing of short- and long-term projects. For this reason, future studies on financial inclusion should take into account digital financial services (including via mobile telephony).

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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