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# Financial Accessibility and Private Investment in Developing Countries

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**Abstract: -This paper is an attempt to estimate the effect of the indicators of financial access expressed in relation with private investment in developing countriesfrom 2004 to 2016. Empirically, we try to analyse the impact of the indicators of financial accessibility on private investment by using a panel database of International Monetary Fund (IMF) and World Development Indicator (WDI) which include 63 developing countries. The modelbeing used is the flexible accelerator, known as the "partial investment adjustment model", proposed by: Goodwin (1951), Chenery (1952), Lucas (1967) and Treadway (1974) with the technical estimator 'Between and within' of generalize method of moments (GMM) on a dynamic panel. The dependent variable of the model used is private investment with the variables explained as GDP, interest rate, bank agencies, bank deposits, lendings, and using Mobile Money and Automated Teller Machine (ATM), etc.**

***Keywords:*** *-Financial accessibility, private investment, developing countries, GMM.*

## I. INTRODUCTION

The image of many developing countries and particularly that of Africa is generally associated with epidemic diseases, civil wars, or famines. In contrast to this vision, the emergence of the continent cannot be contested, as the development of mobile financial services proves. 12% of the sub-Saharan population manages their bank account with their smartphone as compared to 2% in the rest of the world (the world, 2018)[1].

In most developing and low income countries, especially those in sub-Saharan Africa,only 20% of households have a bank account. The realities in terms of financial accessibility can be very different from one region of the continent to another. Thus the Maghreb countries have a banking rate of around 50% while the ECSCA[2] countries are still stagnating at 7%. According to the analysis, the low level of access of the populations to banking and financial services constitutes a major economic obstacle to the development of the countries concerned (World Bank, 2017). It is in this perspective that the lack of access of many of the working population to the formal financial sector is a real concern of global politics (as evidenced by the G20 Pittsburgh Summit in 2009 and the Alliance for Inclusion Declaration in 2011).

The World Bank defines financial accessibility as "the proportion of people or enterprises that use financial services and products in a formal institution" and the growing recognition that access to financial services plays a fundamental role in "reducing extreme poverty, promoting prosperity for all and contributing to inclusive and sustainable development". Financial inaccessibility (or alternatively financial exclusion) has been defined in a context of social inclusion (or exclusion) difficulties in a society. Leyshon and Thrift (1995) defined financial exclusion asprocesses that prevent certain social groups and individuals from accessing the formal financial system. According to Sinclair (2001), financial exclusion means the inability to access necessary financial services in an appropriate form. Exclusion may therefore result from problems such as access, conditions, pricing, marketing or self-exclusion in response to negative experiences or perceptions.

According to Claessens (2006), "financial access" or "accessibility" is seen as the distinction between accessibility and use, within a supply and demand framework. "Access" is the availability or provision of quality financial services at a reasonable cost while use is the actual consumption of financial services. Thus, access represents supply and use is the intersection of supply and demand World Bank (2008). Similarly, Beck, Demirgüç-Kunt and Martinez Peria (2007) explain that access is the possibility of using financial services while use is the actual utilization of services. Similarly, Morvant-Roux and Servet (2007) agree that the availability of a reasonable quality and affordable offer (access) is distinct from the actual use of services.

Morduch (1999) noted four dimensions of financial accessibility: reliability, convenience, continuity and flexibility. First, "reliability" refers to the availability of resources when they are needed. Second, "convenience" refers to the ease with which clients have access to financial services. Continuity" refers to continuous or sustained

[1] https://www.lemonde.fr/televisions-radio/article/2018/07/31/tv-l-afrique-terre-promise-du numerique_5337950_1655027.html
[2] Economic Community of the States of Central Africa

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availability, that is, accessibility on multiple occasions. Finally, "flexibility" refers to the fact that the product must be adapted to the real needs of the customer. Similarly, Claessens (2006) raises three dimensions of access. He supports the importance of "availability," as Morduch (1999) did with the factors of reliability and continuity. It also insists on the "range", "type" and "quality" of financial products, which reminds us of the criteria of convenience and flexibility. To this, Claessens (2006) adds "cost", to emphasise the financial aspect and the importance of adaptation to the population's resources. Kumar et al (2007) also mention three dimensions of access: physical access, affordability and eligibility. Physical access refers to the number and convenience of service points. Financial accessibility refers to the costs associated with using the services. Eligibility refers to the conditions required to obtain financial services. With respect to cost, Honohan (2005) argues that poor households should want to pay based on what the services are worth to them. His vision is similar to that of Morduch (2000) and Cull et al (2009). In their view, high prices do not reduce demand for financial services because people are asking for "access" to credit, not "affordable" borrowing. However, the World Bank agrees that "improving access then means improving the extent to which financial services are available to all at an equitable price" World Bank (2008). Moreover, the cost of financial services is often a constraint for low-income individuals. Since the cost must be adapted according to the needs of the clientele, financial accessibility can fit into the flexibility dimension suggested by Morduch (1999). Starting from these definitions, we can understand that financial accessibility is a determining factor of investment, particularly private investment in developing countries in the sense that it allows the lower class population to have access to bank credits to finance their income-generating activities.

Several developing countries, particularly those in Africa, experienced a decline in investment in 2016, with little prospect of improvement in 2017. While South Africa remains the largest recipient of portfolio inflows, it experienced its largest decline in 2016, to an estimated USD 3.4 billion, down from an estimated USD 8.3 billion in 2015, a trend that is continued in 2017, at USD 2.9 billion. In the DRC, inflows have been halved, reaching negative values in 2016 (USD -1.2 billion), a trend which worsened in 2017 to 3.4 billion. Despite a slight increase of 30%in 2016 in 2016 of 30% to USD 1.1 billion, Nigeria's portfolio inflows fail to return to their 2009-14 average level of USD 6.5 billion (IMF, 2016), penalized by currency shortages, capital controls and problems in oil facilities. These contributions amounted to 0.3 billion in 2017. According to the IMF, the combined effect of this drop in inflows to the DRC, Nigeria and South Africa have justified the negative outlook for the entire continent in 2017, although in the first quarter of 2017 Nigeria issued a new euro bond equivalent to approximately USD 1 billion.

From a macroeconomic perspective, the availability of financial services appears to follow the geography of economic development: developing countries experience the greatest banking exclusion. It should be noted that the problem of access to financial services and products does not automatically lead to poverty, but can increase its incidence and intensity by preventing the excluded from taking advantage of economic opportunities Demirgüç-Kunt and Levine(2008). It is then possible that banking exclusion may in the long run lead to economic and social exclusion of those who are already marginalised because of their poverty and their inability to participate in income generating activities. However, banking exclusion is not exclusive to poor countries only. To varying degrees, part of the population in developed countries is also excluded from the use of banking financial services, making their social integration problematic.

Indeed, while financial accessibility can contribute to increased private investment, economic growth in developing countries, the individual must still have access to financial services and products and be able to use them efficiently. Thus, there is a need to consider the factors or indicators of financial accessibility that contribute to increased private investment in developing countries. To do so, we will seek to answer the main question: which indicators of financial accessibility contribute most to the growth of private investment in developing countries? With a view to capturing the main thread of this intellectual exercise and highlighting our analytical research process, we have set ourselves the objective of analysing the financial inclusion indicators that contribute most to private investment in developing countries.

The study continues as follows: first, a presentation of the literature review between the indicators of financial accessibility and private investment. The methodology and estimation method are then presented. The presentation of the results and their interpretation are the subject of the last part of this paper.

## II. LITERATURE REVIEW

The literature review focuses on the theoretical review of financial exclusion or non-banking and the empirical review of financial accessibility.

### *A. Access to financial services theories*

It is appropriate at the outset to highlight the phenomenon of non-banking, which is taking on disproportionate proportions given the number of people with bank accounts.

For this purpose, some authors Geach, (2007); Caskey, (2002); Kempson et al. (2000) define non-banking as "a situation where potential consumers do not have access to basic financial services, such as bank accounts, chequing accounts or savings accounts, and cannot access credit at the normal rate". Worldwide, more than 2.455 billion adults lack access to traditional financial services Chaia et al. (2009). Developing countries are home to the majority of these unbanked people.

According to a study conducted by the United Nations Capital Development Fund in 2014 on "Mobile Money for the Poor (MM4P) in Senegal" in partnership with The

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Mastercard Foundation, 4.3 million Senegalese do not have access to the services of microfinance institutions. Indeed, microfinance is characterized by the fact that it gives access to financial services to people who are excluded from the traditional banking and financial system Djamchid and Cudi (2011). However, despite the continued development of microfinance, the number of non-banked remains high; almost 2.5 billion non-banked and only 750 million for microfinance Chaia et al. (2009). Following these figures, multiple studies have been published by researchers to demonstrate the explanatory factors of financial exclusion. The table below highlights the authors and highlighted points.

| Factors | Authors |
|---|---|
| Accessibility to bank accounts | Caskey, 1997 and 2002 ; Anderson, 2006 ; Beshouri and al. 2010 ; De Sousa, 2010 ; Lyons and al. 2004 ; Kempson and al. 1999 |
| High costs of services | Beshouri and al. 2010 ; De Sousa, 2010 ; Lyons and al. 2004 |
| Distance, proximity to agencies | Beshouri and al. 2010 ; De Sousa, 2010 ; Chaia and al. 2010 ; Lyons and al. 2004 Beshouri and al. 2010 ; De Sousa, 2010 ; Lyons and al. 2004 |
| Incomelevel | Moran K., 2006 ; Djankov and al. 2008 ; Lyons and al. 2004 ; De Sousa, 2010 ; Anderson, 2006 ; Caskey, 1997, 2002 |
| Bank Phobia | Beshouri and al. 2010 ; Moran K., 2006; De Sousa, 2010 ; Lyons and al. 2004 ; Djankov and al. 2008 |
| Auto exclusion | Djankov and al. 2008 ; Caskey, 1997 and 2002 |
| Lack of financial literacy | Carbo and al. 2007 |
| Non-adapted services | Kempson and al. 1999 ; Beshouri and al. 2010 ; De Sousa, 2010 ; Lyons and al. 2004 ; Caskey, 1997 and 2002 |
| Lack of confidence | Anderson, 2006 ; Caskey, 1997 and 2002 ; Beshouri and al. 2010 |

Table 1. Financial exclusion factors

Source*: Authors, based on research.*

In this table, the financial exclusion is explained by the difficulties of access to banks and bank accounts (proximity or branch closure), the very high cost of basic services, as well as the low level of income that does not allow bank fees to be covered. In addition, some potential consumers feel that the services offered would not be suited to their needs and that these banks are developing strategies that target only the most profitable customers. Then there is the lack of confidence among non-bank clients, which is most often explained by a lack of culture in the banking environment. And finally the self-exclusion of some individuals who prefer to keep their money confidential through informal networks.

According to the World Bank, worldwide 59% of adults without accounts cite lack of money as a sign that financial services remain too expensive or are not suitable for low income users. In Senegal for example, many efforts have been made by the national and monetary authorities to improve the banking rate, but access to a bank account is still limited to a large segment of the population[3]. Indeed, according to the survey report on capacity and financial inclusion in Senegal in 2016, about 6 million adults are financially excluded, i.e. they do not use any formal financial products or services.

Yet, as noted in the World Financial Development Report 2014 World Bank (2014), lack of use of financial products does not necessarily mean lack of access. While some people may access financial services at affordable prices and subsequently decide not to use them, others may not have access due to constraints such as excessively high costs, distance from financial institutions, non-possession of documents needed to open an account, mistrust of financial service providers and religion.

At the same time, there is a witness of an explosion in the number of mobile phone subscribers, or 68% ITU (2009) of the world population. According to the GSMA, 2.5 billion people in the world in 2017 did not have access to financial services, while 1.7 billion of this population own a mobile phone. The mobile represents a growth opportunity for financial inclusion.

Mary Amiti and David Weinstein (2013) examined the impact of credit supply shocks on aggregate investment rates to capture the importance of these shocks in GDP fluctuations. The authors observe credit dynamics in Japan between 1990 and 2010. The high degree of concentration among financial institutions means that individual banks are relatively large to the size of the economy. Observation of lending activity in Japan suggests that credit supply shocks are a major determinant of investment by credit-dependent firms, particularly listed firms, i.e. those with access to market financing. Shocks specifically affecting large financial institutions can profoundly affect lending and investment. Indeed, the study suggests that 40% of the fluctuations in these variables can be explained by these "granular" shocks. The destinies of large financial institutions ultimately appear to be an important determinant of investment and real economic activity.

The latest Global Findex report also highlights the benefits of financial accessibility on investment and economic growth, especially for women, conferred by access to mobile money. According to a study cited in the

[3]Analysis Report: National Survey of Non-Banked Populations (NBPNS-2011)

World Bank report by Tavneet Suri of MIT and William Jack of Georgetown University, mobile accounts have allowed 185,000 Kenyan women to leave agriculture to start small businesses and more profitable retail activities. More generally, access to mobile money has supported a 20% increase in savings by women-headed households in Kenya. And, as the Global Findex report shows data from India, the leakage of funds when paying pensions decreases sharply when payment is made with smart cards instead of money.

Following the work already developed in the 1990s by Aghion and Bolton (1997), Banerjee and Newman (1993) or Galor and Zeira (1993) World Bank (2014), financial inclusion basically refers to the fact that a person has an account in a formal financial institution Demirgüc¸ Kunt and Klapper (2012). Such an account allows you to save and borrow money formally, take out insurance or use payment services. Being financially included therefore leads to economic benefits. This could enable disadvantaged and poor people to increase their incomes and the probability of being employed Bruhn (2014). Indeed, in the lack of inclusive financial systems, poverty traps can emerge and hinder economic development since access to financial tools enables economic agents to invest in education, finance projects and become entrepreneurs, etc.

## III. METHODOLOGY

The methodology is divided into three main parts: first, the presentation of the model, second, the presentation of the variables and the data source, and finally, analyses of the results.

### *A. Presentation of the model*

To examine the impact of financial accessibility on private investment in developing countries, the study uses the flexible accelerator model of Maurice Clark (1917) and Koyck (1954), known as the "partial investment adjustment model". This model specifically modifies the flexible accelerator in terms of data availability to capture certain characteristics of developing countries. The model used in the study can be specified in general form as follows:

$$I_{it} = \delta_i + \beta_i X_{it} + \mathcal{E}_{it} \quad (1)$$

With i =1,..., N and t=2,..., T and $I_{it}$ is private investment, $\delta_i$ are the characteristics of unobserved countries that are constant over time and influence private investment, $\mathcal{E}_{it}$is the stochastic error term with constant variance and usual properties,revise thei and t indices indicate country and time respectively. $X_i$represents the vector of financial inclusion indicator variables or explanatory variables that influence domestic investment.

$X_{it}$= (Credit, deposit, lending, credit card, Mobile Money, bank branch).
(2)

With Cred: private credit, Agen: bank branch, Mob: use of mobile Money, Lend: loan, ATM: use of bank card, Depot: deposits.

### *B. The Generalized Moment Method (GMM) estimator*

We use the Generalised Method of Moments (GMM) developed for dynamic panel models by Holtz-Eakin et al (1988), Arellano and Bond (1991), and Arellano and Bover (1995). The empirical model used can be presented as follows:

$$I_{i,t} - I_{i,t-1} = (\alpha - 1)I_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (3)$$

With $I_{it}$, theinvestment rate, $X_{it}$ represents the set of explanatory variables (other than the lagged investment rate), η is the unobserved effect of specific countries, $\varepsilon$ is the error term, and indices i and t represent countries and time period respectively. The dynamic form of the above equation is written as follows:

$$I_{i,t} = \alpha I_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (4)$$

The previous equation can be rewritten as follows:

$$I_{i,t} - I_{i,t-1} = \eta_0 + \eta_i + (\alpha - 1)I_{i,t-1} + \beta' x_{i,t} + \varepsilon_{i,t} \quad (5)$$

Dynamic models are characterised by the presence of one or more lagged values of the endogenous variable among the explanatory variables. In this model, the presence of the delayed dependent variable does not allow the use of standard econometric techniques. Estimation of dynamic models by conventional methods (OLS and within) gives biased and non-convergent estimators because of the correlation between the delayed endogenous variable$\boldsymbol{I_{i,t-1}}$ and $\boldsymbol{\varepsilon_{i,t}}$ when the error terms are autoregressive. To do this, the study proposes two alternative estimation methods: Arellano and Bond (1991) and Blundell and Bond (1998).

### *C. Model validity tests*

Arellano and Bond (1991) and Arellano and Bover (1995) proposed two specification tests to test the validity of lagged variables as regression instruments. Hansen's test of over-identification of restrictions analyses the analogue sample of the moment conditions used to test the overall validity of the instruments Chong & Gradstein (2007). This test is very useful in determining whether the instruments selected are independent of the error term Gujarati (2003). Not rejecting the null hypothesis indicates that the instruments are not correlated with the error term and, therefore, estimates of instrumental variables based on the selected instruments are valid Gujarati (2003). The second specification test examines whether the differentiated error term is in first- or second-order serial correlation. In general, the presence of a first-order serial correlation is very likely, even in cases where the error term in the levels is not correlated, "unless it follows a random walk" Chong and Gradstein (2007).

### *A. Presentation of variables and data source*

- *The variables*

| Variables | Definition | Source |
|---|---|---|
| Private Investment "Inv" | Private investment is considered here as the dependent variable. It represents acquisitions (net of disposals) of fixed assets by resident producers. It should be noted that the acquisition is not necessarily a purchase, it may be the result of a production for own final use. | World Development Indicator |
| Interest Rate "tx" | The interest rate affects the bad debt provision ratio precisely for variable rate loans. According to the existing empirical literature, the link between the interest rate and bad debts is positive. Bofondi and Ropele (2011) show that an increase in the interest rate has the immediate effect of increasing the debt burden, which will generate higher growth in non-performing loans. | World Development Indicator |
| GDP per capita "GDP" | GDP divided by total population in constant dollars from 2004 to 2016 | World Development Indicator |
| Inflation "Inf" | It is measured by the World Development Indicator consumer price index | World Development Indicator |
| Foreign direct investment per capita "FDI" | FDI flows received by country i from the rest of the world. | World Development Indicator |
| Public expenditure "Depub" | The rate of public expenditure as a percentage of GDP is included as an indicator of macroeconomic stability. A negative relationship is expected between investment and public spending (Fischer, 1993). | World Development Indicator |
| Human Capital Stock "KH". | It is difficult to obtain a satisfactory indicator of human capital stock and to have a measurable indicator of its quality. The human capital indicator used in the empirical literature is the gross secondary school enrolment rate, the latter being defined as the ratio between the number of children enrolled in secondary education and the population in the 12-17 age group. The second indicator used is the average number of years of schooling of the population (Dessus, 2000). Following the work of Mankiw & al (1992) and Broensztein& al (1998), the gross secondary school enrolment rate as a proxy for human capital was used | World Development Indicator |
| Population "Pop" | This variable measures the size of the population in a country i. | Worldwide Governance Indicator |
| Deposits "Dep" | There are generally two types of deposits: sight deposits and time deposits. The bank deposit incentive is the remuneration offered by the bank (credit interest rate) to savers. Deposits generally come from individuals, public or private companies, public, private and international organizations. In our work, we use the ratio of bank deposits to GDP as an indicator measuring financial inclusion. | International Monetary Fund |
| Credit granted to the private sector "Cred" | Ratio between the total credits granted by banks and microfinance institutions to GDP to the private sector. This variable will be our indicator of financial development. | International Monetary Fund |
| Agencies "agen" | This variable represents the distribution points of a financial institution's financial products and services. | International Monetary Fund |
| Bank card "ATM" | The bank card is the most dematerialised instrument. During payment, the payer's bank details are entered by reading a magnetic strip on his card. They allow you to automatically debit your account and credit the beneficiary immediately or later depending on the type of contract between the bank and the cardholder. | International Monetary Fund |
| Mobile Money "Mob" | This variable represents all inputs and outputs of mobile money users. According to Donovan (2012), Mobile Banking is the production of financial services via mobile devices. This definition covers a wide range of financial services such as mobile payment (transfer of funds), mobile banking (account inquiries, transactions and information) and mobile finance (credit, insurance or savings). | International Monetary Fund |
| Lending "loan" | This variable represents the total lending of clients from formal and informal financial institutions. | International Monetary Fund |

Table 2. Presentation and definition of variables.

*Source: authors, based on IMF, WDI and WGI database.*

- *Data Source*

On the one hand, the data come from the Financial Access Services (FAS) Survey of the International Monetary Fund (IMF), which disseminates annual data on financial services indicators for about 150 respondent countries, from which the study extracted the database of all financial inclusion indicator variables that is variables of interest. The control variables come from the world development indicator (WDI) database. The database is distributed from 2004 to 2016 across 63 developing countries around the world. The majority of these countries are in Sub-Saharan Africa, Asia and South America.

- *The results*

The results of the study consist of descriptive statistics and econometric results.

*Descriptive statistics*

| Variables | Obs | Average | Stand | Min | Max |
|---|---|---|---|---|---|
| Private Investment | 710 | 23.02887 | 7.545325 | 2.000441 | 76.03363 |
| Current GDP | 799 | 6039.222 | 8854.077 | 278.4768 | 84793.65 |
| Gross enrolment ratio in tertiary education | 562 | 79.20963 | 19.08653 | 24.16974 | 126.054 |
| Public expenditure | 626 | 2.88e+10 | 6.57e+10 | 6.67e+07 | 4.49e+11 |
| Interest rates | 700 | 5.836303 | 3.714653 | .5891666 | 26.58382 |
| Inflation | 800 | 39.19755 | 863.8065 | -10.06749 | 24411.03 |
| Population | 819 | 5.10e+07 | 1.58e+08 | 28866 | 1.32e+09 |
| FDI | 765 | 2.012366 | .1819405 | -.3993856 | 3.207219 |
| Deposits | 562 | 3.73e+07 | 1.40 e+08 | 12305 | 1.65 e+09 |
| PrivateCredit | 771 | 4507.844 | 14254.41 | 8 | 133491 |
| Lending | 472 | 1.17e+07 | 4.32e+07 | 1063 | 4.67e+08 |
| Agencies | 458 | 4.498239 | 1.408278 | -4.003384 | 6.966683 |
| Using of bankcard | 740 | 9328.22 | 27187.84 | 0 | 201913 |
| Mobile Banking (Cellular) | 816 | 3.42e+07 | 9.78e+07 | 16000 | 1.13e+09 |

Table 3. Results of descriptive statistics.

*Source: Authors, based on World Bank, IMF and WGI data.*

The results of descriptive statistics reveal that the average private investment of the sample over the period of 2004 to 2016 was 22.02887 with a standard deviation of 7.545325. The minimum and maximum private investments are 2.000441 and 76.03363 respectively. This shows that the distribution of private investment in developing countries is very heterogeneous. With regard to financial accessibility indicators, financial accessibility improved significantly over 2004-2016 period in all developing countries surveyed. All financial accessibility indicators have a positive average score. Lending, FDI, mobile money transactions, and deposits have the lowest average score with 1.17e+07, 2.012366 3.42e+07 and 3.73 e+07 respectively while the variable bank card use has the highest average score with 9328.22 by the other five indicators of financial accessibility. Indonesia has the highest score in terms of bank deposits. This is demonstrated on the evolution curve of affordability indicators. Brazil has the highest score in terms of lending to individuals. This means that the authorities' financial accessibility and inclusion policies are oriented in favour of the lower class populations in order to enable them to invest.

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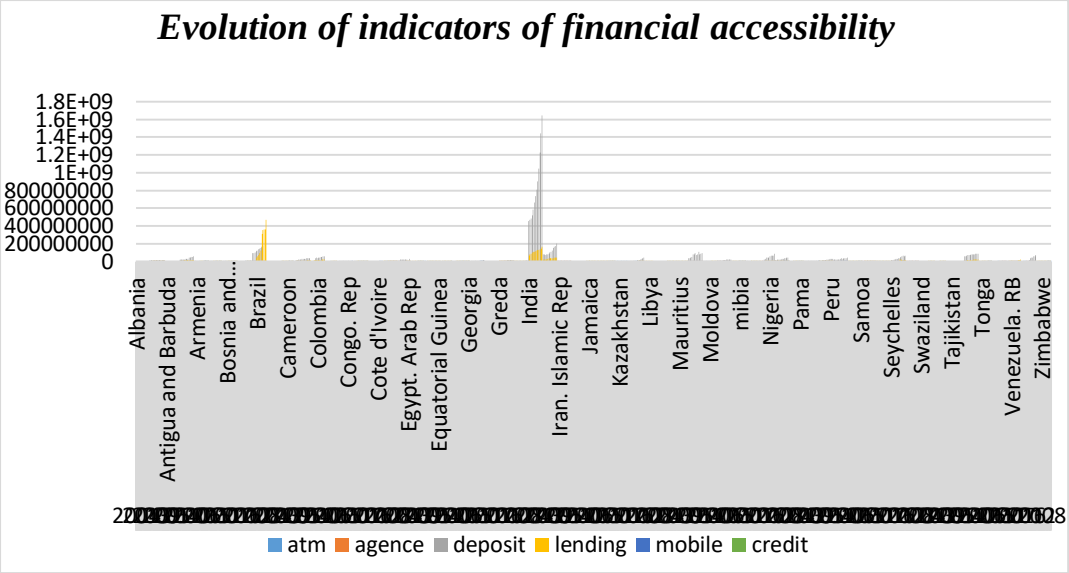


*Source: authors, based on the database*

- *Econometric results*

The results of econometric estimates using the generalised method of moments are presented in the table below. The dependent variable is the logarithm of private investment. As a bonus on board, the study notes that the results are satisfactory both econometrically and theoretically. Theoretically, most of the coefficients of the study variables have the expected signs according to theory. As far as econometric validation is concerned, the use of MMG requires the validity of the instruments. As regards to the validity of the instruments, the Sargan test leads to the non-reject of the null hypothesis of validity of the instruments. Indeed, the p-value for all estimates are above the threshold of 1%, 5% and 10%.

| VARIABLES | L.linv | L.linv | L.linv | L.linv | L.linv | L.linv | L.linv |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| lpibg | -0.251 | 0.422 | -2.285 | -2.282*** | -0.0918 | -0.00638 | -0.599* |
| | (0.457) | (0.416) | (1.423) | (0.658) | (0.476) | (0.542) | (0.308) |
| lscolsec | 0.945** | -0.486 | 1.632 | -0.0248 | -0.558 | 0.0464 | 0.725 |
| | (0.389) | (0.476) | (1.065) | (0.410) | (0.520) | (0.394) | (0.458) |
| ldepub | 0.464** | -0.268* | 0.359 | 0.0737 | -0.314 | 0.0250 | 0.234* |
| | (0.169) | (0.138) | (0.341) | (0.0774) | (0.196) | (0.128) | (0.130) |
| ltx | -0.0696 | -0.0455 | 0.111 | -0.128* | -0.0866 | 0.0632 | -0.0629 |
| | (0.110) | (0.0641) | (0.218) | (0.0737) | (0.0909) | (0.111) | (0.0934) |
| linfcpi | -0.150 | -0.278 | 0.248 | 0.278** | 0.0333 | -0.122 | 0.0175 |
| | (0.122) | (0.179) | (0.348) | (0.123) | (0.125) | (0.150) | (0.121) |
| lpop | -0.121 | -0.247* | -0.522 | -0.132 | -0.530* | -0.346** | -0.108 |
| | (0.114) | (0.138) | (0.373) | (0.0771) | (0.286) | (0.170) | (0.164) |
| lfdi | 0.146* | | | | | | |
| | (0.082) | | | | | | |
| depot | | 0.494** | | | | | |
| | | (0.215) | | | | | |
| lprivcred | | | -2.134* | | | | |
| | | | (1.244) | | | | |
| llending | | | | 0.129*** | | | |
| | | | | (0.0283) | | | |
| lagencies | | | | | 0.789* | | |
| | | | | | (0.439) | | |
| lcellular | | | | | | 0.426*** | |
| | | | | | | (0.144) | |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| latm | | | | | | | -0.242** |
| | | | | | | | (0.0978) |
| Constant | -5.437 | 6.646** | 12.58 | 12.66*** | 16.30** | 1.447 | 0.836 |
| | (4.427) | (3.144) | (7.807) | (3.064) | (7.350) | (3.310) | (3.915) |
| | | | | | | | |
| Observations | 111 | 275 | 340 | 61 | 342 | 351 | 327 |
| Number of code | 119 | 37 | 43 | 19 | 44 | 44 | 43 |
| Sargan | 1298.52 | 1248.03 | 179.04 | 218.18 | 1644.88 | 1934.96 | 2316.32 |
| P-Value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| AR(1) | 1.67 (0.095) | 1.80 (0.072) | 1.72 (0.085) | -2.55 (0.011) | 1.86 (0.063) | 1.85 (0.065) | 2.13 (0.033) |
| AR(2) | -1.02 (0.306) | -1.25 (0.222) | -1.32 (0.188) | -1.55 (0.121) | -0.01 (0.995) | -0.13 (0.896) | -1.41 (0.160) |

Table 4. Results of regressions

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*I; II; III; IV; V; VI: the dependent variable is the total amount of domestic investment in constant 2004-2016 dollars in low- and middle-income countries.
*Source: Authors, based on World Bank, IMF and WGI data.*

The results of the estimates show that the model used does not suffer from any econometric problems. Indeed, the AR (1) and AR (2) tests on the residues obtained are verified since the calculated values confirm the existence of negative second order autocorrelation and the absence of first order autocorrelation of the residues. In addition, the Sargan test validates the choice of instruments. In order to control for potential simultaneity biases between affordability indicators and private investment, the legal origin indicator was used to instrument the investment[4] dependent variable. The estimation methodology is that of generalize method of moments (GMM).

All indicators of financial accessibility are statistically and economically significant with a positive and negative effect on private investment, as well as some control variables related to private investment. While the variables of granting private credit and using bank cards are negative and significant at 1% and 5%, the other four indicators of financial accessibility are positive and significant at 1%, 5% and 10%.

As proposed by Aghion and Bolton (1997), Banerjee and Newman (1993) Galor and Zeira (1993), affordability basically refers to the fact that a person has an account in a formal financial institution Demirgüc¸ Kunt and Klapper (2012). Such an account allows you to save and borrow money formally, take out insurance or use payment services. Accessibility therefore leads to economic benefits. This could enable disadvantaged and poor people to increase their income, investment and the likelihood of being employed Bruhn (2014). Indeed, in the absence of inclusive financial systems, poverty traps can emerge and hinder economic development since access to financial tools enables economic agents to invest in education, finance projects and become entrepreneurs, etc. The results also show that most of the defined financial accessibility indicators are strongly linked to private investment. This explains private investment in developed countries, which depends on affordability.

[4] An identical approach has been adopted by Levine et al (2000) and Beck et al (2000).

## IV. CONCLUSION

The objective of this paper was to highlight the impact of financial accessibility indicators on private investment in the 63 developing countries. In view of the development of the economic literature, but especially on the results obtained from the database, it is therefore argued that affordability is important for increasing private investment and thus for ensuring a structural transformation of the economies of developing countries. Indeed, the findings suggest that governments and independent financial institutions in developing countries need to improve indicators of financial accessibility in order to promote private investment through access to credit and banking services and to boost private investment and economic growth. The indicators most concerned being by order: the bank deposit, the granting of bank loans, the existence of bank branches, the use of Mobile Money and the bank card. Beyond that, the authorities must pursue versus inflationary monetary policies and inject a large volume of investment to boost productivity growth in developing countries.

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*Annexes:*

| NO | Countries |
|---|---|
| 1 | Albania |
| 2 | Algeria |
| 3 | Antigua and Barbuda |
| 4 | Argenti |
| 5 | Armenia |
| 6 | Bolivia |
| 7 | Bosnia and Herzegovi |
| 8 | Botswa |
| 9 | Brazil |
| 10 | Cabo Verde |
| 11 | Cameroon |
| 12 | Chile |
| 13 | Colombia |
| 14 | Congo. DemRep |
| 15 | Congo. Rep |
| 16 | Costa Rica |
| 17 | Cote d'Ivoire |
| 18 | Ecuador |
| 19 | Egypt. ArabRep |

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| | |
|---|---|
| 20 | El Salvador |
| 21 | Equatorial Guinea |
| 22 | Gabon |
| 23 | Georgia |
| 24 | Ghana |
| 25 | Grenada |
| 26 | Guatemala |
| 27 | Guyana |
| 28 | India |
| 29 | Indonesia |
| 30 | Iran. IslamicRep |
| 31 | Iraq |
| 32 | Jamaica |
| 33 | Jordan |
| 34 | Kazakhstan |
| 35 | Kenya |
| 36 | Libya |
| 37 | Maldives |
| 38 | Mauritius |
| 39 | Mexico |
| 40 | Moldova |
| 41 | Morocco |
| 42 | Namibia |
| 43 | Nicaragua |
| 44 | Nigeria |
| 45 | Pakistan |
| 46 | Panama |
| 47 | Paraguay |
| 48 | Peru |
| 49 | Philippines |
| 50 | Samoa |
| 51 | San Marino |
| 52 | Seychelles |
| 53 | South Africa |
| 54 | Sri Lanka |
| 55 | Swaziland |
| 56 | SyrianArabRepublic |
| 57 | Tajikistan |
| 58 | Thailand |
| 59 | Tonga |
| 60 | Tunisia |
| 61 | Venezuela. RB |
| 62 | Vietnam |
| 63 | Zimbabwe |

Table 5. List of 63 developing countries.

*Source: Authors, based on World Bank, IMF and WGI data.*