

Promoting financial inclusion for growth and development in Algeria: empirical analysis

Zenasni Soumia¹

MECAS Research Laboratory / Associate Professor /Tlemcen Higher
School of Management
s.zenasni@esm-tlemcen.dz

Kitouni Imen

Assistant Professor /University of Batna
iman.kitouni@univ-batna.dz

Received date : 31-03-2024, Accepted date : 05-05-2024, Publication date:02-06-2024

Abstract :

This study examines the impact of financial inclusion on economic growth and development in Algeria over the period 1990-2020 using the multiple regression method. On the basis of financial inclusion indicators, results found that the availability dimension of financial inclusion significantly affects economic growth, while the use dimension of financial inclusion does not improve growth. In addition, deposit accounts and outstanding credit disadvantage economic growth.

Keywords: financial inclusion, growth, economic development, multiple regression, Algeria.

Jel Classification Codes: G21, O47, O10, C3

Introduction :

In recent years, microfinance has become an important mechanism for stimulating financial inclusion and economic development. In fact, microfinance institutions have become credible and important sources of financing for low-income households and microenterprises. The allocation of resources allows maximizing their benefits. That is, the total funding resources raised by these institutions show a great dynamism. Efficient resources allocation is essential for a well-functioning financial sector, as it enables a higher productivity, a greater investment and higher levels of economic growth. This is particularly critical in Algeria, where years of political instability and violence have hampered the development of the financial sector. Similarly, a significant number of people having access to formal financial services -including credit, savings and insurance services- is essential to improve household well-being and stimulate economic growth by helping the country manage economic crises. As a result, financial inclusion has a positive impact on the country's macroeconomic stability.

In addition, this process increases employment opportunities, expands investment and makes a significant contribution to stimulate economic growth. It can contribute

¹ Corresponding Author.

then to smoothing consumption, preserving savings and insuring unbanked and underbanked adults against financial risks (Honohan, 2004; Demircuc-Kunt & Klapper, 2012; Sahay et al., 2015; Corrado & Corrado, 2017; Yah and Chamberlain, 2018; Afolabi, 2020; Adedokun & Ağa, 2021). As a result, this inclusivity promotes overall economic growth, reduces the income inequality gap and ensures a reduction in poverty.

In this context, the aim of this paper is to empirically examine the effects of financial inclusion on the growth of the Algerian economy by addressing the following problematic: does the promotion of financial inclusion significantly boost the rate of Algerian economic growth? Our study is based on time-series econometrics for the period 1990-2020. The estimation results show that financial inclusion significantly affects economic growth.

The rest of this research paper is organized as follows. Section 1 presents the literature review. Section 2 describes the characteristics of financial systems and the reality of financial inclusion in Algeria. Section 3 describes the study's methodology and variables. Section 4 reports and discusses the empirical results.

1-Literature review :

Financial inclusion has increasingly become an extremely important research topic these last years for stakeholders, researchers and policymakers in both development and developing countries. However, a significant proportion of the population in these countries has no access to financial services, and only the minority of population saves through formal financial institutions (Pazarbasioglu et al., 2020). Financial inclusion begins with adults owning an account which can be used to save money and send and receive payments. For low-income individuals and households, owning bank accounts involves inconvenience and high transaction costs (Demircuc-Kunt et al., 2018).

Moreover, the important role of financial inclusion is widely recognized by policymakers in many countries where inclusion is becoming a political priority. Financial exclusion is not singularly faced by one country, but by all countries around the world. Global statistics show that more than 2.5 billion of the adult population do not enjoy the benefits offered by banking services because, poor people have limited access to formal financial institutions and generally rely on informal sources to save or borrow money (Global Financial Development Report, 2014). It has been observed that even "well-developed" financial systems have failed to be "inclusive, in full", and some sections of the population remain outside formal financial systems.

A significant body of research has demonstrated that financial inclusion has many potential benefits for development. The benefits of financial inclusion can be very varied. Its importance in promoting economic growth is recognized both theoretically and empirically. These works have addressed this link and shown that inclusive finance facilitates positive wealth creation and sustainable economic growth (Inoue & Hamori, 2016; Sharma, 2016; Kim et al., 2017; Lenka & Sharma, 2017; Sethi & Acharya, 2018; Dahiya & Kumar, 2020). Beck et al, (2007a, 2007b) found that increasing the number of bank branches increases bank efficiency as well as growth rates. According to these authors, financial inclusion is, therefore, the means of using low-cost, affordable financial services to reduce informal accounts (Gwalani & Parkhi, 2014).

On the other hand, the spread and use of the Internet and smartphones has played a significant role in improving financial inclusion by offering the population the possibility of accessing banking services via mobile devices and by bridging the existing financial infrastructure gap. This technological revolution has attracted the underserved and financially excluded (the unbanked) to the formal financial system (Mas & Radcliffe, 2011; Chatterjee, 2020). Besides, Balach & al (2016) examine the impact of financial inclusion on the promotion of financial development using the GMM estimator on a panel of 97 countries during the period 2004-2012. The empirical results suggest that financial inclusion is a statistically significant determinant of financial development. The authors of this study found that GDP per capita has a positive and significant relationship with financial and economic development. In addition, the study elaborated by Kim & al (2017), on 55 Islamic countries during the period 1990-2013, showed a positive relationship between financial inclusion and growth. The results of this study affirmed that a high level of financial inclusion is an essential factor in generating economic growth.

In addition, Sethi and Acharyaa (2018) assessed the dynamic impact of financial inclusion on economic growth. They used panel data on 31 developed and developing countries estimating the country fixed effect, random effect and time fixed effect regressions as well as causality testing to find the direction of causality between the studied variables. The empirical results reveal that there is a positive long-term relationship between financial inclusion and economic growth in all studied countries. Furthermore, the panel causality test shows bidirectional causality between financial inclusion and economic growth. Thus, the study confirms that financial inclusion is one of the main drivers of economic growth. In the same vein, Ali & al (2021) analyzed the determinants of financial inclusion and proposed an instrument for measuring it in the countries of the West African Economic and Monetary Union. These countries do not have a reliable synthetic index to measure their level of financial inclusion. Using panel regressions, estimation results reveal that real GDP, cell phone penetration and literacy rate have a positive effect on financial inclusion. However, the weight of the rural population and that of interbank credit are negatively associated with the level of financial inclusion.

2- Growth and economic development:

Economic growth refers to the long-term increase in production, measured by the rise in gross domestic product (GDP). The "thirty glorious years" experienced a period of unprecedented growth, which has slowed down since 1973 with the succession of economic crises. Today, economies face the major challenge of getting back on the growth track. Growth is the increase in the size of an economic unit, from the simple to the complex, achieved through changes in structures and possibly systems, and accompanied by variable technical progress. It is the continuous increase in real income in the long term, and increases in income are considered economic growth (Mohamed, M.M.A.; Liu, P.; Nie, G.; 2021). However, the notion of economic development is a highly complex phenomenon. The concept of development is broader than that of economic growth, which only reflects a country's capacity to create more wealth every year. In other words, economic growth is only one component of development. Development is a long-term process, partly quantitative, but above all qualitative. Indeed, the two notions are linked: development accompanies growth, and in turn fosters it.

Hence, growth is a sustained rise in a dimensional indicator over one or more long periods, accompanied by structural changes (technical, institutional) but not defined by these changes. Development, on the other hand, leads to social structures, institutions and habits of mind that are not indebted to the current forms of micro and macroeconomic equilibrium; development encompasses and supports growth. This contrasts a partial, quantitative notion (growth) with a global, synthetic notion that is both quantitative and qualitative (development). Growth is seen as purely economic, while development is a process that combines economic and financial transformations with psychological, social, political and institutional ones (Milena B. & Max K., 2019).

Economic development concerns the positive structural changes in a geographical area: demographic, political, technical, industrial, health, cultural and social changes. Development is the combination of mental and social changes in a population that enables it to achieve a cumulative and lasting increase in its overall real product, such changes leading to a significant improvement in living conditions and well-being. Finally, development is reflected in higher per capita income or better access to health and education services. Compared with growth, development therefore covers qualitative changes that are difficult to measure (Pratlong, 2013).

2- The Cambridge equation:

The neoclassical economic model assumes perfect rationality and perfect information. In such environment, individuals have no need to hold money; That is, they have no preference for liquidity. Therefore, individuals tend to use their savings for investment, not hoarding. In this framework, the only important reason for money demand is to finance transactions; people's money balances serve to cover the interval between the receipt of income and its use. This means that the demand for money is an increasing function of the price of transactions and therefore the price of production, giving rise to the following equation:

$$M_d = f(P, Y)$$

Where

M_d : represents the demand for money

P : represents the general price level

Y : represents the volume of production

The demand for money is therefore an increasing function of prices and the volume of production, but a decreasing function of the velocity of money circulation. In the past, the quantity of money in circulation was a function of the quantity of gold; since gold has been demonetized, it has depended on central bank policy.

In equilibrium, the supply of money (the quantity of money in circulation designated by M) is equal to the demand for money:

$$M = M_d \implies$$

$$M = k \times P \times Y \implies$$

Where,

$$M = 1/V \times P \times Y \implies$$

Hence,

$$M \times V = P \times Y$$

V : represents the velocity of money circulation.

This equation, known as the "Cambridge equation", offers a similar result to Fisher's equation. Money is neutral: any variation in the quantity of money is offset by a change in prices, but has no influence on the real level of transactions and

production. The causes of inflation are therefore monetary; as Milton Friedman put it, “inflation is always and everywhere a monetary phenomenon”, it has no influence on the real economy (King M., 2021).

3- The reality of financial inclusion in Algeria:

3.1. Characteristics of the Algerian economy

The Algerian economy is characterized by the fact that the oil industry alone accounts for 97.5% of Algeria's economic revenues. This is a real economic feat, undertaken by series of institutional, economic and financial reforms. In addition, liberalization and privatization reforms implemented in the various economic sectors since the early 90s have allowed achieving higher levels of economic growth these recent years. The following table shows the volatility of economic growth from 2010 to 2020. Over this period, hydrocarbons accounted on average for 93% of the country's exports, 43% of tax revenues and 21% of GDP.

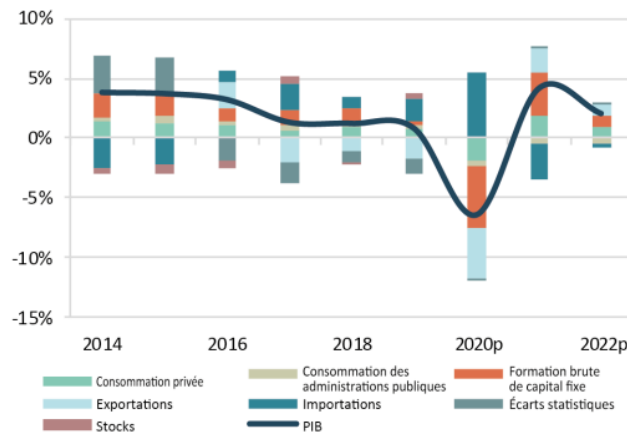
Table 1. Growth volatility in Algeria

Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GDP growth	3,6	2,9	3,4	2,8	3,8	3,7	3,2	1,3	1,1	0,8	-4, 9
Non-hydrocarbon growth	8	6,1	6,3	7,2	6,2	5,4	3,9	2,0	2,5	2,0	-3,09

Source: World Bank data

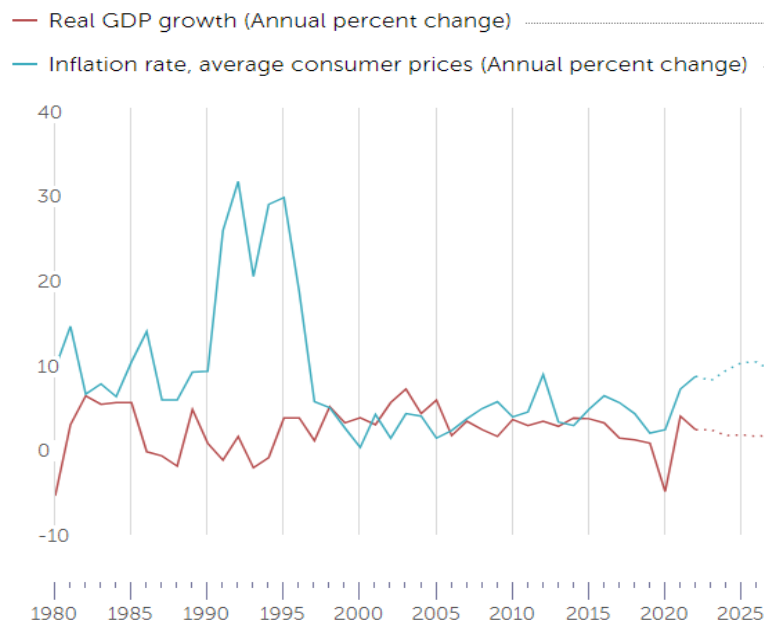
Growth volatility has been marked by a sharp decline in recent years. Two main factors have contributed to this drop in the growth rate: the shutdown of capacity due to technical incidents, which has slowed down the physical production of hydrocarbons, and the failure to achieve the expected growth rate in the services sector due to the significant drop in imports. In Algeria, non-hydrocarbon growth remains weak due to a lack of economic diversification; therefore, high-paying jobs still dependent on this diversification. In the first quarter of 2020, a sharp drop in hydrocarbon production, generated by the COVID-19 pandemic, exacerbated economic difficulties. The hydrocarbon sector was down 13.4% on the first quarter of 2019. Non-hydrocarbon GDP regressed with a sharp slowdown in investment and a moderate decline in private and public consumption, as shown in Figure 1. Similarly, the hydrocarbon industry, which accounted for 20% of GDP, 41% of tax revenues and 94% of export revenues in 2019, is experiencing a structural decline. The decline in the volume of hydrocarbon production over the same period caused a sharp contraction in the volume of exports, offset by a remarkable fall in imports, which reduced the current account deficit despite lower oil prices with a low inflation rate estimated at 2.4% in the first half of 2020 (see, figure 2), (World Bank Data, November 2021).

Figure 1. Algeria's real GDP growth and contribution to real GDP growth



Source: Algerian authorities, World Bank estimates

Figure 2. Real GDP growth and inflation rate



Source : IMF Data, April 2022

As far as the financial system is concerned, Algeria has made courageous attempts over recent decades to modernize its financial system. However, loans granted by state-owned banks to state-owned companies still dominate financial intermediation. The Algerian financial system appears stable because the state provides borrowers and lenders with subsidies and aid essentially financed by oil rents, although this stability generates high costs and distorts risk pricing and governance (Hacini & Dahou, 2018). In fact, bank lending to state-owned enterprises increased by 14.4% in 2019, compared with 4.2% to the private sector, suggesting a

crowding-out of private investment. Overall value added in the real sector is essentially generated by the private sector at 64%. However, loans to the private sector accounted for only 48% of all bank loans, compared with 50.1% for loans to state-owned companies. The Bank of Algeria began the monetary financing program in September 2017, which ended in March 2019, with 4726 billion dinars injected into the economy (23% of 2019 GDP) out of a total of 6556 billion dinars. With the closure of this program, bank liquidity fell in 2019 (Economic Outlook for Algeria, 2020).

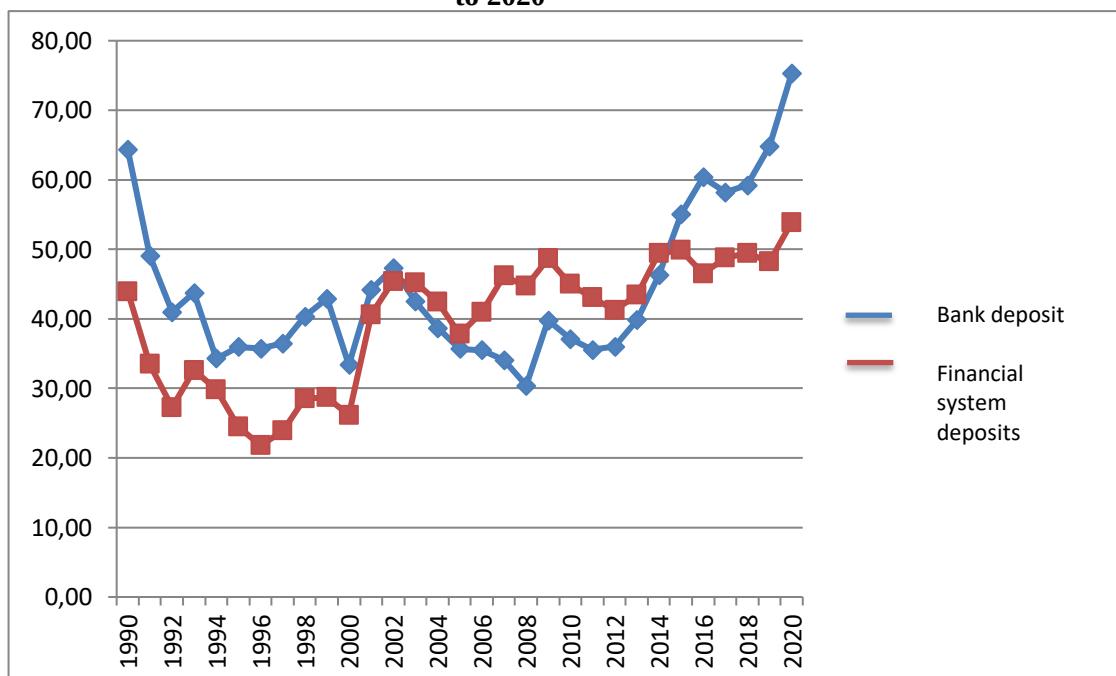
3.2. Financial inclusion in Algeria

A financial system can be defined as the set of markets, intermediaries and infrastructures through which households, businesses and governments can finance their activities or invest their savings. The performance of a financial system has two basic dimensions: efficiency and stability (Attou, 2011, p. 225).

In particular, financial inclusion refers to the ability of individuals and businesses to access a range of financial products and services (transactions, payments, savings, credit, insurance) that are acceptable, useful, adapted to their needs and offered by reliable and responsible providers.

Financial inclusion has made remarkable progress over the past decade: 1.2 billion adults worldwide were able to open a current account between 2011 and 2017, bringing the global account ownership rate to 69%. Digital financial services (including via cell phones) are now available in more than 80 countries and widely used in a number of them (The World Bank, 2022).

Figure 3. Bank deposits and financial system deposits in Algeria from 1990 to 2020



Source: Compiled by the authors on the basis of World Bank data

We observe that bank deposits show an increase from the years 1994 to 2000, but the most remarkable increase is from the year 2015 especially in the last years 2019 and 2020 with a rate 64.81% and 75.30%, which can be explained by the impact of the COVID-19 pandemic on the population which was in full confinement.

On the other hand, deposits in the financial system follow the same pattern as bank deposits, except that from 2012 onwards, there is a slow increase to 53.88% in 2020.

4- Empirical analysis:

4.1. The first model

This study is based on the Cambridge equation, which reflects the importance of the quantity of money in circulation (bank deposits or financial system deposits) and its impact on the volume of production (gross domestic product), taking inflation into consideration. Our study has developed two models based on those equations, which can be explained as follows:

$$Y = a + b_1 \text{ MoD} + b_2 I$$

Where:

Y: annual GDP per capita

MoD: financial system deposits (relative to GDP)

I: inflation rate

4.2. The second model

Based on the previous model, we have assigned the exchange rate as an independent variable resulting from the velocity of money circulation, in order to evaluate the contribution of the three independent variables on annual GDP per capita, on which the equation of the second model is presented as follows:

$$Y = a + b_1 \text{ MoD} + b_2 I + b_3 \text{ RER}$$

Where:

Y: annual GDP per capita

MoD: financial system deposits (relative to GDP)

I: inflation rate

RER: exchange rate

5- Presentation and discussion of results:

Applying the multiple linear regression method and based on the two previous models, we present the following results:

5.1. The first model

By linking the independent variable (GDP per capita) to the independent variables (financial system deposits and inflation rate) using the SPSS-20 program, we present the following equation:

$$Y = 4.794 - 0.083 \text{ MoD} - 0.077 I$$

Table 2. First model coefficients

Model	Non-standardized coefficients		Standardized coefficients	t
	A	Erreur standard	Bêta	

1	(Constant)	4,794	2,711		1,768
	Financial system deposits to				
	GDP (%)	-0,083	0,060	-0,287	-1,381
	Inflation	-0,077	0,042	-0,379	-1,825

Source: Developed by the authors from SPSS-20

The first model presents the relationship between annual gross domestic product per capita with deposits in the financial system and the inflation rate, where an explanatory relationship is inscribed with a correlation coefficient of almost 33%, and we note that the independent values have a negative impact on the dependent variable,

This impact can be seen in the lack of access to financial services, which leads to the conclusion that current transactions by individuals or companies are carried out in cash, and inflation is merely an economic consequence.

5.2. The second model

The second model relates the independent variable (GDP per capita) to the independent variables (deposits in the financial system, inflation rate and exchange rate) using the SPSS-20 program:

$$Y = 8.628 - 0.104 \text{ MoD} - 0.059 \text{ I} - 0.028 \text{ RER}$$

Table 3. Second model coefficients

Modèle	Non-standardized coefficients		Standardized coefficients	t	
	A	Erreur standard	Bêta		
1	(Constant)	8,628	3,956	2,181	
	Financial system deposits to GDP (%)	-0,104	0,062	-0,358	-1,689
	RER	-0,028	0,021	-0,270	-1,316
	Inflation	-0,059	0,044	-0,290	-1,345

Source: Developed by the authors from SPSS-20

The second model shows a negative explanatory relationship between the dependent value (GDP per capita) and the independent values (deposits in the financial system, inflation and exchange rate), with a correlation coefficient of 40%.

The result of this model corresponds to the first, which means that the rate of account ownership is not high, which is why the country needs to undertake strategies and initiatives to develop adequate financial inclusion.

Conclusion:

The challenges facing Algeria revolve around the establishment of a new financial system and a modern capital market, in line with international standards, with strong supervisory regulations that enable it to catch up with international

markets, and with credibility, transparency and clear rules for market operation. Without this, these markets would be inefficient, not able to attract foreign investors and weakening economic growth (Attou, 2011, p. 230).

Financial inclusion is one of the programs that can improve the financial system and increase economic growth. Our study used multiple linear regression over the period 1990-2020. The results are as follows:

- 1- The availability dimension of financial inclusion significantly affects economic growth, which confirms the results found by (Cicchello & al., 2021). While the utilization dimension of financial inclusion does not improve growth.
- 2- The Algerian population is less financially inclusive. This causes a low rate of financial inclusion that reduces Algerian economic growth levels.
- 3- The percentage of financial inclusion is still below the required level in light of the comparison with international rates or with those achieved by Arab countries, as well as the comparison of the number of credit accounts to the number of the adult population. This puts members of the population at a disadvantage for not borrowing from banks due to high interest rates.
- 4- Economic growth showed no causal effect on financial inclusion, indicating the presence of other elements and dimensions not included in the model tested.

Based on the strategies established by the World Bank to promote access to financial services and improve financial inclusion, and taking into consideration the Algerian financial system and on the obtained results, we suggest some recommendations which can be summarized as follows:

- Implementing a national policy on financial inclusion by providing technical assistance and mobilizing digital financial services, with the design of information infrastructures and measurement systems.
- Designing financial products and service providers for underserved segments, extending the range of products to the population and to micro, small and medium-sized enterprises.
- Protect consumers of financial products by proposing: monitoring of practices, data protection.
- Finance micro, small and medium-sized enterprises (MSMEs), by monitoring data on available credit supply.
- Consider policies that improve literacy, eliminate gender inequalities and increase wage equality.

References :

- Ali M. A., & al.,** (2021), « L'inclusion financière améliore-t-elle la croissance économique ? Preuves empiriques des pays membres de la BID », *Revue internationale de finance et d'économie*, octobre.
- Attou, A.** (2011), « Un nouveau système financier pour un meilleur développement économique. Le développement économique de l'Algérie », pp. 216-231.
- Balach A., Loi, S-H.,** (2016), « The Role of Financial Inclusion in Financial Development: International Evidence », *Abasyn Journal des sciences sociales*, 9 (2), January.
- Banque Mondiale,** (2022) « Inclusion financière », Aout, Consulté le 2022, sur La banque mondiale: <https://www.banquemonddiale.org/fr/topic/financialinclusion/overview#1>.
- Cicchello, A., Kazemikha, A., Monferrá, S., Girón, A.,** (2021), « Financial inclusion and development in the least developed countries in Asia and Africa. *Journal of Innovation and Entrepreneurship*, 10 (49).

Review MECAS

V°20 / N°1 / June 2024

- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., Hess, J.,** (2018), « Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution », Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>.
- Gwalani, H., Parkhi, S.,** (2014), « Inclusion financière – Construire un modèle de réussite dans le contexte indien », *Procedia - Sciences sociales et comportementales*, mai, pages 372-378.
- Hacini, I., Dahou, K.,** (2018), « Comparison on Efficiency of Foreign and Domestic Banks Evidence from Algeria », *Journal of Banking and Financial Economics*, 2018, vol. 2, issue 10, 106-119.
- Kim, J-H., & al.,** (2017), « Staying focused on non treatment seekers », *Addiction*, 112(5), 828–829.
- King, M.,** (2021), « A conceptual framework for financial inclusion and recent evidence for sub-Saharan Africa », *Socio Economic Challenges*, No. 5 (2). P. 70-80.
- Note de conjoncture de l'Algérie** (2020), « Traverser la pandémie de COVID-19, engager les réformes structurelles », Banque Mondiale.
- Milena, B., Max, K.,** (2019), « Cross-country variation in financial inclusion: a global perspective », *European Journal of Finance* 26(4), November, pages 1-22.
- Mohamed, M.M.A., Liu, P., Nie, G.,** (2021), « Are Technological Innovation and Foreign Direct Investment a Way to Boost Economic Growth? An Egyptian Case Study Using the Autoregressive Distributed Lag (ARDL) Model », *Sustainability*, 13 (6), 3265.
- Montoussé, M.** (2013), « Théories économiques ». Dijon-Quetigny: Bréal.
- Norel, P.** (1997), « Problèmes du développement économique ». Paris: Seuil.
- Pazarbasioglu, C., & al.,** (2020), « Digital Financial Services », World Bank Report, April.
- Pratlong, M. B.** (2013), « Economie, Sociologie et histoire du monde contemporain », France: Ellipses.
- Sethi, D., Acharyaa, D.,** (2018), « Financial inclusion and economic growth linkage: some cross country evidence », *Journal of Financial Economic Policy*, Vol. 10, Issue 3, June.

Appendices

Annexe 1 : The first model

Introduced/deleted variables^a

Model	Introduced variables	Deleted variables	Method
1	Inflation, Financial system deposits to GDP (%) ^b	.	Entered

a. Dependent variable : GDP per capita (annual)

b. All required variables entered

Model summary

Modèle	R	R-deux	R-deux ajusté	Standard error estimation
1	0,337 ^a	0,114	0,050	2,61237

a. Predicted values: (constants), Inflation, Financial system deposits to GDP (%)

ANOVA^a

Model	Sum of squares	Square	Mean of squares	D	Sig.
-------	----------------	--------	-----------------	---	------

Review MECAS

V°20 / N°1 / June 2024

1	Regression	24,511	2	12,255	1,796	0,185 ^b
	Residual	191,085	28	6,824		
	Total	215,596	30			

a. Dependent variable : GDP per capita (annual)

b. Predicted values: (constants), Inflation, Financial system deposits to GDP (%)

Annexe 2 : Le modèle n° 02

Introduced/deleted variables^a

Model	Introduced variables	Deleted variables	Method
1	Inflation, RER, Financial system deposits to GDP (%) ^b		Entered

a. Dependent variable : GDP per capita (annual)

b. All required variables entered

Model summary

T	R	R-deux	R-deux ajusté	Standard error estimation
1	0,409 ^a	0,167	0,075	2,57889

a. Predicted values: (constants), Inflation, RER, Financial system deposits to GDP (%)

ANOVA^a

Model	Sum of squares	Square	Mean of squares	D	Sig.
1 Regression	36,028	3	12,009	1,806	0,170 ^b
Residual	179,568	27	6,651		
Total	215,596	30			

a. Dependent variable : GDP per capita (annual)

b. Predicted values: (constants), Inflation, RER, Financial system deposits to GDP (%)