Journal of **economics studies and researches in renewables energies (JoeRRe)**
ISSN 3292-5353/E-ISSN 2661-7528
Vol.: 10; Nu.: 01, Year: 2023, p.p. 457- 480

The role of financial inclusion in reducing poverty and inequality in the select Arab countries in period (2004-2020)

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Reception: 01/08/ 2022 Acceptation: 02/01/2023

Abstract: To promote access to bank accounts and formal financial services, Arab governments are trying to reinforce financial inclusion. This may lead to mortgage accumulation of debt or default, and other loans or even cases of insolvency and bankruptcy; if people do not have the financial skills and abilities availables. Within the Arab region of the world ,financial inclusion has reached its lowest level .As statistics show the percentage of adult in Arab countries do not have access to formal financial services . It reached around 70 % (168 million people), and this percentage stands at 76 % among women, and 93 % of poor and low-income classes . In 2014, just 29% of the population of the country had accounts with financial institutions .well- functioning insurance, payment items, credit, risk management and are likely to support the vulnerable. Those that have broad access to adequate financial Arab governments are seeking to strengthen financial inclusion to facilitate access to bank for vulnerable individuals and groups are inclusive financial structures; For exemple, acess to structured savings and credit systems and investment in productive activities, such as education or entrepreneurship, can be facilitated .Without such access, people rely on their limited informal economies to invest in their education. Financial inclusion has also been recognized by the G20, particularly as it relates to financial sector regulation and supervision as a result of financial reforms. The group considered it to be of the fundamental elements of financial stability following the 2008 global crisis; it has a major effect on optimizing the production of financial transactions for dependent countries by attaching to their flows an official character.This article explores the role of financial inclusion in reducing income inequality and poverty in the Arab region .By testing from 2004 to 2020,the relationship between the index financial inclusion, and the Gini coefficient, and the ratio of poverty in the select Arab countries. Using of a panel data the cross-sectional linear regression model. The key finding is that the relationship between financial inclusion and the Gini coefficient, and poverty negative and important, suggesting that financial inclusion in selecte countries studied decreases income inequality and poverty.

Keywords: Financial Inclusion, Income inequality, poverty, panel data, Arab Countries
JEL classifications codes: G18 ; O11 ; O16 ; F30

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I- Introduction:

Recently the Arab region is experiencing a state of class inequality within a single society. The problem of economic and social justice is due to the similar situations therein and from there .It had to hold a prominent role in political and social Arab economic thinking. Especially after what the Arab arena witnessed during the Arab spring. There are classes that have little because of the inequality in the distribution of revenue, which contributed to the internal division into classes, and other affluent groups that dominate the economy and world. A solution is required to solve the issue provide accurate information to understand the magnitude of the disparity between of single group. With the recognition of the groups affected and how to target them (Dawood, 2017).Building on that this paper aims to examine the degree to which financial inclusion has contributed to reducing Income inequality and poverty, in the 2004-2020 period in select Arab countries. We are formulating the following sub-questions to answer this issue:

The question of the study:

1-How is the relationship between financial inclusion and poverty different in the selected Arab countries?

2- How does financial inclusion affect inequalities income in selected Arab countries?

Hypothesis:

H_1: Financial inclusion has a negative correlation with poverty, as the more access to financial services increases for the poor, their income increases, and the level of the poverty in the selected Arab countries decreases throughout the time (2004-2020).

H_2: Financial inclusion is inversely related to income inequality since, during the time ,the higher the income of families, the lower inequality in the selected Arab countries during the period (2004-2020).

The Objectif of the study:

This article reviews the contribution of the financial inclusion to reduction of Income inequality and poverty in the Arab region. Examining

the relationship between the indices of financial inclusion and poverty in certain Arab countries can be calculated; using an observational analysis of the Gini coefficient, and poverty (population ratio) as independent variable the financial inclusion index .Based on panel data and individual fixed and random effects test, using the linear regression model. We will present the most significant previous studies on our subject in the second part of this article. The theoretical sense of financial inclusion, and its links with Income inequality and poverty, will be discussed in section 2.We will present the methodology of the research in fourth section, which focuses on the study model and data. We will examine the most relevant outcomes in section 3. Finally, the review analysis and its viewpoints will be emphasized in conclusion.

II- **Background of the study:**

1-Studied literature

Financial inclusion has become a recent phenomenon in Indonesia within the global financial system. This often coincides with poverty. The impact of financial inclusion on poverty in the face geographical issues is calculated, according to a study by (AnasIswanto, Paulus, Indraswati, & Abdi, 2016) .For period 2005-2013, they used panel data for 3 provinces of Indonesia. The results have show that the total investment and development funding, has a positive effect as well as a negative and significant impact on poverty, but does not have a substantial impact on economic growth. While the methods and solution chosen to tackle poverty and the other Millennium Development Goals are beneficial and relevant ,they are not adequate to address the challenge in order to reduce poverty .Financial inclusion provides alternative and complementary solutions to reduce poverty promote sustainable growth and achievement of the Millennium Development Goals.

Financial inclusion is one of the main pillars of Colombia's multi-year development strategy, according to a survey (Izabela, 2014). Where fiscal inclusion policies aim to channel microcredit to the poor, there is mainstream use of the formal banking system. Encourage the adoption of e-payments, and make financial services accessible open to everyone. The researcher used the general model equilibrium that could identify the most restrictive

frictions in the financial sector. This excludes corporate and addresses the inequality. The study shows that stronger growth is ensured by low guarantee constraints while inequalities, are best by measures to financially minimize participation fees.

(DavideFurceri, 2017) studied the distributive effect capital account reforms and the relationship between financial liberalization, inequality and financial inclusion in low-income countries. For 29 low income countries , using panel data between 1970 and 2010. They found that capital account liberalization reforms short and medium-term were linked to a statistically significant increase in income inequality. The degree of financial growth plays an an important role in determining the response of inequality to liberalization, with capital account liberalization having a greater impact on inequality in countries where the credit system is less developed for development and financial inclusion .

In its research on entrepreneurs and microfinance conditions of extreme, the usage (Chikweche, 2013) is a realistic case of a microfinance poverty (challenges and opportunities, in the case of Zimbabwe).For finance by al inclusion ,this country a relies on Zimbabwe which is a very poor country. The researcher had information about entrepreneurship. In this environment through data from an African market where microfinance grown dramatically ,microfinance focuses on the essence challenges facing entrepreneurs and potential solutions to these challenges .Description of an alternative solution to addressing the problems faced by microfinance that entrepreneurs can apply in environments facing similar challenges. Trillions at the bottom of the list who live on a abstract earnings of less than two dollars a day.

According to (Simon, 2018)who used the model (GLS) of eight MENA countries during the period 2002-2015, to examine the impact of financial inclusion on income inequality, poverty, and financial stability. Empirical results have shown that while financial inclusion reduces income inequality rises in population size and that poverty is not affect by financial inclusion, poverty increase in terms population ,inflation and trade openness to trade.

The study (Unal & Yener, 2016) focused at whether the banks and stock markets development in developing countries is contributing to the reduction

income inequality and poverty. Using dynamic panel methods with revised dataset for the period 1987-2011, the funding relation between inequality and poverty is assessed .It takes account of the distinct and concurrent impacts of banks and capital markets. The contradictory findings from a study indicate that while economic growth is driven by financial development , low-income people in emerging markets do not necessarily favour it. Far as poverty –finance collaborations are concerned , they find that neither banks nor capital markets play an important role in poverty reduction.

The links between poverty, inequality, and growth in Algeria were studies by (Hichem, 2016)and the ARDL method was used for the period 1970-2013 to investigate the relationship between per capita consumption measured poverty and measured inequality. As a tail index and growth indicator of GDP per capita. The study attempted to deal the following questions: Is there a complementary relationship between growth, poverty, and inequality? How do the long and short-term relationships between the three variables? The results show that poverty, inequality and growth are complementary and that the relationship between poverty and growth is negative; the relationship between poverty and inequality is positive in the short or long term.

The research by (Michael, 2009) included identification, based on the association between poverty reduction and economic inclusion, of the main pillars of financial inclusion .With the assistance of field-relevant research and literature. In providing illustrative models for the financial broker to draw on lessons learned ,many foreign cases were discussed. Currently, given the global financial crisis, the need to increase financial inclusion efforts is more urgent than at any other time in recent history .Strengthening the links for planning , policy making , and programming between Millennium Goals, financial inclusion, and global poverty reduction. Through a special feature of microfinance, credit, the notion that small amounts of short-term capital will benefit the poor in the informal world was introduced .Engage to put the economy into productive activities out of poverty (CGAP Report, 2013).Early successes in micro-credit, in particularly the concept that financial services can be provided to the poor in

sustainable way through developments such as community guarantees, but in the late 2000s,in many countries, the sector, which centered on short-term loans, reached market saturation in many markets..

2. Theoretical framework

2.1-Definition of financial inclusion

Financial inclusion ensures that financial services can be accessed and used effectively by adult .Financial inclusion starts with providing a bank or other financial institution with a deposit or transaction account .Financial inclusion ensures that individuals and organizations have access to valuable and accessible financial goods and services that meet their needs .such as financial sales .saving payment ,credit and insurance, so that they are presented in a responsible and sustainable manner (Asli, Leora, & Dorothe, 2017, p. 2)

2.3-Income inequality in the Arab region

After the eruption of the Arab Spring Revolutions, in the sense of independence and democracy, Arab countries still face a challenge as to how to achieve social justice, during the1950s and 1960s, peoples traded political freedom for social and economic justice. As they suffered in the last century from the duality of economic and social justice and the lack of democracy and freedom (Dawood, 2017).

3-Financial inclusion and inequality in the Middle East and North Africa region

In its thid year-long update , The Global Financial Inclusion Index survey (2011, 2014, 2017).It was Found that the area Middle East, and North Africa is experiencing its lowest levels in the world. In developed nations The average of those who have bank accounts in developing countries is 63 percent. In the area 52 percent of men and 35 percent of women have a bank account. Which implies that out250 million adults, 145 million do not deal with banks. In addition, although 80 percent of non-bankers own a cell mobile phone, the percentage of on mobile phones accounts in the area does not exceed 7 percent, with just 33 percent of adults in the region or receiving digital payments in 2017.In other developed

nations, compared to 44 percent, and in high income countries , 91 percent. Cash is still the preferred mode of payment ,as 51 percent of adults pay (cash on delivery) for e-commerce transactions ,such as markets in the UAE, Saudi Arabia and Egypt ,where e-commerce is gaining traction (The World Bank, 2018).

Increasing financial inclusion in the MENA region, particularly among women, is a huge opportunity .Where52 percent of men currently hold compared to just 35 percent of women, which is the largest gender difference compared to other regions in the world, and where cell phone ownership is relatively high, there is potential to increase financial inclusion among people without bank accounts, where 86 percent of men own mobile phones and women 75 percent women. Adults, who do not have bank accounts in the area submit or receive cash or local transfer .A counter of around service of the $20 million, including $7 million in Egypt. The emphasis must be put be put on using bank accounts in order to close the remaining distance .Since these nations need to concentrate on expanding . Access to finance intended of the population, such as women, the young and rural people. According to the Global Financial Inclusion index numbers, they about half of the people who do not deal with banks. In disadvantaged families, they reside or workforce (El Batrawy, 2018).

3 -Poverty and financial inclusion in the Arab region

Public spending has remained the engine of development in the Middle East and North Africa region throughout history, reaching its limits, and it can no longer absorb the increasing numbers of university graduates, and then the region is facing at this time one of the highest rates of youth unemployment in the world. This leads to a brain drain in the world, with educated youth emigrating in search of opportunities abroad. One of the main reasons is that governments are not encouraged to innovate, and some countries fear automation, that is, automation, resulting in job losses.

The reason for the decline of the private sector is due to a social contract that has passed for more than 50 years, according to which the state undertakes to provide jobs in the public sector with comprehensive support to obtain political calm and the absence of accountability. To rid citizens of

the risks of economic life, this decade has stifled entrepreneurship and innovation, reduces the level of public services, and increases mistrust in the government. These developments in human capital have not increased the pace of economic growth. Also, all countries in the region lack a vibrant private sector, and this is due to the lack of capacity to rely on the latest technology innovations. This prevented the continuation of productivity growth, without which it is impossible for these countries to maintain improvement in living standards in general. The quality of financial services is currently lagging in this region compared to other countries in the world. Except the Gulf Arab countries where payment systems have become, relatively advanced there are countries of the Gulf Cooperation Council, which are available. Unless banking improvements, in particular, take place, the enormous human capital potential in the region will not be realized (The World Bank, 2018).

Financial inclusion creates new job opportunities, which contributes to reducing unemployment and poverty rates, by improving income distribution. That leads to an increase in the standard of living in Arab countries, which recorded the highest unemployment rates in the world, in 2017 especially among young people. Despite the improvement witnessed by Arab countries in the financial inclusion index in recent years, but it is still less than. The required level compared with the countries of the world, which is what required of Arab governments. Especially central banks, to take all measures to expand financial access to all members of society, and in coordination with local economic collaborators for both, the public sector, and the private sector, and civil society institutions (Yasser, Ramy, & atiya, 2019)**.**

4-Measure the financial inclusion index

We adopt the (Sarma M. , 2012)approach measured the financial inclusion index a three dimensional indicator of financial inclusion calculated and includes:

1.1 The first dimension of distributed banks

A complete financial system must have the largest number of users, in that a complete financial system must penetrate widely among its users. The

size of the "banker" population means that the proportion of people with a bank account is a measure of the penetration of the banking system. Thus, if each person has a bank account in an economy, the value of this measure will be one. However, data on the number of "bankers" are not readily available. In the absence of such data, the number of bank deposit accounts per 1,000 adults has used as an alternative to the number of adult bankers to measure this dimension.

1.2 Second dimension availability of banking services

The availability of services by the number of ATMs (per 1,000 inhabitants) and / or the number of ATMs per 1,000 inhabitants is the current banking system in many countries. ATMs play an important role, in addition to providing customers with bank details, depositing and withdrawing cash and checks (traditional teller machines) to measure the extent of availability. Use data on the number of bank branches and the number of ATMs per 100,000.

1.3 The third dimension is the use of the banking system

This dimension is motivated by the idea of marginal bankers "underfunded" or "passive" (Kempson, A, & O, 2004), noting that "in some countries that appear to have many banking services, a number of people with bank account do not benefit much from the services provided. "These people are described as" unconnected "or" poorly certified ". People who lack banking services, despite their access to official finance services, unable to use financial services, for reasons such as the size for banks, unsustainable financial services or simply because of negative experiences with the financial services. Service provider, these factors negatively reflect the financial system in general and, therefore, the mere existence of a bank account is not sufficient for a complete financial system; It is also necessary that the banking services used can take many forms: credit, deposits, payments, remittances, etc. Therefore, after use, they must include measures for all these different forms. However, the comparative data between countries on payments, remittances e to date are not available, and by integrating use after use into this indicator, we take into account two basic services of the banking system (credit and deposit) to measure this

dimension. Use the volume of credit and deposits in the private sector. The private sector as a percentage of the country's GDP.

These dimensions depend largely on the availability of relevant and consistent data for the country in question and for the calculation of IFIs. The financial inclusion index calculated from three dimensions is between 0 and 1, with 0 indicating complete financial exclusion and 1 being full financial inclusion. As a result, the following weightings are provided: 1 for the banking penetration index, 0.5 for the availability index and 0.5 for the utilization index. Given this weight, we can represent the state K with a point (pk, ak, uk) in a three-dimensional space, so that0 = <ak <= 0.5, 0 <= uk <= 0.5, where pk, ak and uk are the dimension indicators for country k calculated using formula (1). In three-dimensional space, this point (0,0,0) will indicate the worst case (total financial exclusion) and the point (1,0,5,0,5) will indicate the ideal case or the ideal situation (inclusion financial situation) in the current context. MeasuredIFIK from the country k From the simple average of the Euclidean values, the distance between the point (pk, ak, uk) and the point (0,0,0) and the standard Euclidean inverse is the ideal distance (1, 0,5, 0.5). The annual indicator for each country calculated as follows (Sarma M. , 2012):

$$IFI_k = \frac{1}{2}\left[\frac{\sqrt{p_k^2+a_k^2.+u_k^2}}{\sqrt{1.5}} + \left(1 - \frac{\sqrt{(1-p_k)^2+(0.5-a_k)^2+(0.5-u_k)^2}}{\sqrt{1.5}}\right)\right] \ldots\ldots(01)$$

II- The empirical methodology

1- Estimating the relationship of financial inclusion to income inequality.

1.1 Data and methodology

To study the relationship between financial inclusion and income inequality data was used (Solt, 2016), The Standardized World Income Inequality 2018, SWIID Version 7.1, Database) .For the variable Gini coefficient (GINI), and the financial inclusion index calculated (IFI).

1.2 Econometric model

To estimate the relationship between financial inclusion and income inequality, we use panel models (fixed, random) and to compare them (Hausman) test. We use the least squares (OLS) test method panel data. The study covers the period (2004-2020) for ten selected Arab countries(Algeria, Egypt, Kuwait, Lebanon, Yemen, Mauritania, Tunisia, Djibouti,Qatar and Comoros) Based on the study (Cyn-Young & Rogelio, 2017), the model takes the following form:

$$lnifi_{it} = \alpha + \beta_0 lngini_{it+}\varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (02).$$

$lnifi_{it}$:the natural logarithm of the calculated financial inclusion index, for country i for period t

$lngini_{it}$:the natural logarithm of the Gini coefficient,of state i for period t

ε_{it} :The random limit is assumed to be a symmetric and independent distribution

1.3 The null hypothesis and the alternative are as follows:

H0: The random effects model is the appropriate model.

H1: The fixed effects model is the appropriate model.

1.4 Results

The results of the evaluation of the relationship between the financial inclusion index and poverty

Table 1. The study of the relationship between financial inclusion and Poverty

R-sq		FE	0.102093		RE
Variable	Coef	t	p>|t|	Coef	t
$lngini_{it}$	-0.101027	-1.245697	0.2148	-0.159658	-3.869340
Cons	-1.656520	-9.068208	0.0000	.-1.536322	-1.35368
Ftest=	1.0099	Prob>F=	0.450753	Ftest=16.32073	Prob > chi

	37		
Test Hausman	Chi2 1	.	Prob>. Chi2 0.4010

Source: Authors.

(p) Prob; * significant at1% level; ** significant at 5% level; *** significant at10% level; ns: not significant.

Table 1 shows the results of estimating the relationship between financial inclusion and income inequality in the selected Arab countries .Using the simple linear regression model, the least squares method in light of the Panel data. Where the probability of chi-squared was estimated by Prob> chi2 = 0.4010 which is greater than 5%, and therefore we accept the null hypothesis H0 and reject the alternative hypothesis. H1, i.e. the model for random effects (Re) Random Effects Model is the best model. Through our analysis of this model, we find the determination factor, is estimated to be more than 8% and it is weak. As for the variable, the gini index has a negative coefficient, therefore it has an inverse relationship with the dependent variable gini, the statistical probability t, is estimated at 0.000, i.e. less than 5%, and therefore this variable has a statistical significance in interpreting the dependent variable ifi. The probability of F-statistic was estimated, at 0.000, which is less than 5%, and thus had a statistical significance model.

2 Estimating the relationship of financial inclusion to poverty

2.1 Data and methodology

The World Bank (PovCalNet) data, was used for the poverty variable pov.Through the data of the Center for Statistical Research, Economic, Social, and Training Report for Islamic Countries.For the year 2015 (Organization of Islamic Cooperation, 2015). For some selected countries (Algeria, Tunisia, Egypt, Djibouti, Comoros, Lebanon, Yemen, Mauritania), for their availability of data and the calculated financial inclusion index (IFI).

2.2 Econometric model

The model was estimated, using the OLS method the statistical program (Eviwes6) we use panel models (fixed, random) and to compare them

(Hausman) test. In our experimental analysis, we look at the models in which the percentage of poverty enumeration and financial inclusion are for 8 selected countries for the Arab region, which are (Algeria, Egypt, Kuwait, Lebanon, Yemen, Mauritania, Tunisia and Djibouti).

The poverty index (Poverty headcount ratio at $1.90 a day, 2011 PPP, as a percentage of the population);world bank data Sustainable Development Goals database it covers the period (2004-2020) based on the study (Ikrima, Zia, & Eko, 2018)and the study (Md Abdullah & Kazuo, 2020)the model takes the following form:

$$lnpov_{it} = \alpha + \beta_0 lngifi_{it+}\varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots(03)$$

Where:

$lnpov_{it}$: the natural logarithm of the poverty population ratio, for country i for period t.

$lnifi_{it}$:the natural logarithm of the financial inclusion index ;for country i for period t.

ε_{it}:random error,

2.3 **The null hypothesis and the alternative are as follows**:

H0: The random effects model is the appropriate model.

H1: The fixed effects model is the appropriate model.

2.3 Results

Table 2. The study of the relationship between financial inclusion and poverty

R-sq:		**FE**	**0.238119**		**RE**	**0.042303**	
Variable	Coef	t	p>|t|		Coef	t	*p>|t|*
$lnifi_{it}$	-0.189183	-2.261825	0.0259		-0.181690	-2.235251	*0.0273*

cons	-0.175792	-0.902305	0.3691		-0.159453	-0.803265	*0.4235*
F test=	1.801710		Prob>F=0 .038240		**Ftest**=5.035 563	Prob>F	*0.026763=*
Test Hausman				Chi2 1	.	Prob>. Chi2	0.7040

Source: Authors.

(p) Prob; * significant at1% level; ** significant at 5% level; *** significant at10% level; ns: not significant

Table 2 shows the results of estimating the relationship between financial inclusion and poverty, for the selected Arab countries. Using the simple linear regression model, the least squares method in light of the Panel data showed that there is a statistically significant relationship between the study variables, as the results of the Hausman test were shown that the probability of chi-squared is equal to Prob> chi2 = 0.7040, which is greater than 5%, .And therefore we accept the null hypothesis H0 and we reject the alternative hypothesis H1. The Random Effects Model (Re) which is the best model. Through our analysis of this model, we find that. The determination coefficient, is estimated to be more than 4 percent and it is weak., for the variable the financial inclusion index ifi is a negative coefficient, thus it has an inverse relationship with the dependent variable pov, and the statistical probability t is estimated at 0.0267, i.e. less than 5%. and has a statistical significance the model is good.

III- Results and discussion:

In examining the relationship between financial inclusion and poverty, relationship estimation results, indicate an inverse relationship between income inequality and financial inclusion.Which shows a significant negative association between the two. The result is consistent with the research (Honohan, 2007), which emphasized that there is some economic evidence indicating that better financing, for households may be associated with lower inequality according to the Gini coefficient. Our results were consistent with the research (Park & Mercado, 2018) that demonstrated that increasing

financial inclusion helps reduce income inequality, as more people in the lower-income group will have access to financial services, and be able to climb the income ladder as well. (Honohan, 2007),and (Sarma M. , 2008).Combine our results with research. Which have demonstrated that expanding financial inclusion helps reduce income inequality, especially among low-income households that are highly indebted .

Conclusion:

The results of assessing the relationship of financial inclusion to poverty indicate a negative relationship, and therefore financial inclusion has a negative impact on poverty in this group of Arab countries.The more inclusive the outreach to the poor, the lower the poverty level. That is, countries with higher financial inclusion tend to have lower poverty rates. The result was also consistent with the research (Ikrima, Zia, & Eko, 2018), and research (Park & Mercado, 2018)which emphasized that there is a strong and important relationship between financial inclusion and poverty. The result is also supported by (Rakhmindyarto & Syaifullah, 2014)which showed that financial inclusion is capable of excluding society from poverty. Improving access to financial services can help people smooth their consumption pattern, improve their financial planning and engage in productive activities. This will help marginal and low-income society increase their income to accumulate wealth, manage risks and seek out of poverty. The result confirms that the effect of financial inclusion is beneficial to a low-income society .In order to be easily connected to access economic opportunities and to facilitate transactions so that the poor participate in economic activities. In addition, increased economic activity can increase income and reduce poverty. The company becomes more enthusiastic about saving and the financial expenditures are better controlled. They can also easily manage their finances, feel secure to save money, and increase the financial liquidity of the family.With more confidence because they can get effective and efficient financial services. Moreover, by saving, they can improve their social and cultural status. This means that it can reduce poverty. The result is in agreement with Nurkse's theory, which states that one of the reasons why a country suffers from poverty is low capital formation. Capital formation is determined by the incentive to demand

capital as well as by providing capital in savings rates. The theory, which means that with financial inclusion, and poverty can be reduced by increasing savings. With an increase in savings, investments will increase, and this leads to an increase in capital formation.

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Appendices

Poverty fixed

Dependent Variable: LNPOV
Method: Panel Least Squares
Date: 07/05/22 Time: 20:41
Sample: 2004 2020
Periods included: 17
Cross-sections included: 7
Total panel (unbalanced) observations: 116

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.175792	0.194826	-0.902305	0.3691
LNIFI	-0.189183	0.083642	-2.261825	0.0259

Effects Specification

Period fixed (dummy variables)

R-squared	0.238119	Mean dependent var	0.237022
Adjusted R-squared	0.105956	S.D. dependent var	0.776395
S.E. of regression	0.734112	Akaike info criterion	2.361411
Sum squared resid	52.81414	Schwarz criterion	2.788692
Log likelihood	-118.9618	Hannan-Quinn criter.	2.534862
F-statistic	1.801710	Durbin-Watson stat	1.900987
Prob(F-statistic)	0.038240		

Povrety random

Dependent Variable: LNPOV
Method: Panel EGLS (Period random effects)
Date: 07/05/22 Time: 20:50
Sample: 2004 2020
Periods included: 17
Cross-sections included: 7
Total panel (unbalanced) observations: 116
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.159453	0.198505	-0.803268	0.4235
LNIFI	-0.181690	0.081284	-2.235251	0.0273

Effects Specification	S.D.	Rho
Period random	0.235064	0.0930
Idiosyncratic random	0.734112	0.9070

Weighted Statistics

R-squared	0.042303	Mean dependent var	0.181744
Adjusted R-squared	0.033902	S.D. dependent var	0.743991
S.E. of regression	0.731247	Sum squared resid	60.95838
F-statistic	5.035563	Durbin-Watson stat	1.938801
Prob(F-statistic)	0.026763		

Unweighted Statistics

R-squared	0.037962	Mean dependent var	0.237022
Sum squared resid	66.68922	Durbin-Watson stat	1.963468

Poverty test Hausman

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	0.144381	1	0.7040

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LNIFI	-0.189183	-0.181690	0.000389	0.7040

Period random effects test equation:
Dependent Variable: LNPOV
Method: Panel Least Squares
Date: 07/05/22 Time: 20:51
Sample: 2004 2020
Periods included: 17
Cross-sections included: 7
Total panel (unbalanced) observations: 116

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.175792	0.194826	-0.902305	0.3691
LNIFI	-0.189183	0.083642	-2.261825	0.0259

Effects Specification

Period fixed (dummy variables)

R-squared	0.238119	Mean dependent var	0.237022
Adjusted R-squared	0.105956	S.D. dependent var	0.776395
S.E. of regression	0.734112	Akaike info criterion	2.361411
Sum squared resid	52.81414	Schwarz criterion	2.788692
Log likelihood	-118.9618	Hannan-Quinn criter.	2.534862
F-statistic	1.801710	Durbin-Watson stat	1.900987
Prob(F-statistic)	0.038240		

Gini fixed

Dependent Variable: LNIFI
Method: Panel Least Squares
Date: 07/06/22 Time: 00:28
Sample: 2004 2020
Periods included: 17
Cross-sections included: 10
Total panel (unbalanced) observations: 169

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.656520	0.182673	-9.068208	0.0000
LNGINI	-0.101027	0.081101	-1.245697	0.2148

Effects Specification

Period fixed (dummy variables)

R-squared	0.102093	Mean dependent var	-1.863633
Adjusted R-squared	0.001005	S.D. dependent var	0.984229
S.E. of regression	0.983734	Akaike info criterion	2.905477
Sum squared resid	146.1277	Schwarz criterion	3.238839
Log likelihood	-227.5128	Hannan-Quinn criter.	3.040762
F-statistic	1.009937	Durbin-Watson stat	0.359035
Prob(F-statistic)	0.450753		

Gini Random

Dependent Variable: LNIFI
Method: Panel EGLS (Period random effects)
Date: 07/06/22 Time: 00:29
Sample: 2004 2020
Periods included: 17
Cross-sections included: 10
Total panel (unbalanced) observations: 169
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.536322	0.113498	-13.53608	0.0000
LNGINI	-0.159658	0.041262	-3.869340	0.0002

Effects Specification	S.D.	Rho
Period random	0.000000	0.0000
Idiosyncratic random	0.983734	1.0000

Weighted Statistics

R-squared	0.089028	Mean dependent var	-1.863633
Adjusted R-squared	0.083573	S.D. dependent var	0.984229
S.E. of regression	0.942204	Sum squared resid	148.2540
F-statistic	16.32073	Durbin-Watson stat	0.385544
Prob(F-statistic)	0.000081		

Unweighted Statistics

R-squared	0.089028	Mean dependent var	-1.863633
Sum squared resid	148.2540	Durbin-Watson stat	0.385544

Gini test Hausman

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	0.705183	1	0.4010

** WARNING: estimated period random effects variance is zero.

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LNGINI	-0.101027	-0.159658	0.004875	0.4010

Period random effects test equation:
Dependent Variable: LNIFI
Method: Panel Least Squares
Date: 07/06/22 Time: 00:30
Sample: 2004 2020
Periods included: 17
Cross-sections included: 10
Total panel (unbalanced) observations: 169

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.656520	0.182673	-9.068208	0.0000
LNGINI	-0.101027	0.081101	-1.245697	0.2148

Effects Specification

Period fixed (dummy variables)

R-squared	0.102093	Mean dependent var	-1.863633
Adjusted R-squared	0.001005	S.D. dependent var	0.984229
S.E. of regression	0.983734	Akaike info criterion	2.905477
Sum squared resid	146.1277	Schwarz criterion	3.238839
Log likelihood	-227.5128	Hannan-Quinn criter.	3.040762
F-statistic	1.009937	Durbin-Watson stat	0.359035
Prob(F-statistic)	0.450753		