


The impact of financial inclusion on poverty in the ASEAN-8 countries



 **Trang Thi Thu Nguyen^{1*}**

 **Huong Thi Thu Tran²**

 **Ngoc Bich Nguyen³**

^{1,2,3}Banking Academy of Vietnam, Hanoi, Vietnam.

¹Email: trangtt@hvnh.edu.vn

²Email: huongtran@hvnh.edu.vn

³Email: ngocnb@hvnh.edu.vn



(+ Corresponding author)

ABSTRACT

Article History

Received: 10 August 2024

Revised: 13 December 2024

Accepted: 1 January 2025

Published: 24 January 2025

Keywords

ASEAN

Emerging markets

Financial inclusion

Financial inclusion index

Panel data

Poverty.

JEL Classification:

C23; G29; I32.

One of the effects of financial inclusion in countries and regions is that it plays a significant role in poverty alleviation. This study analyzes the impact of financial inclusion on poverty in ASEAN-8 countries, including Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. The authors employed panel data, which includes macro and micro annual data from 8 countries over 17 years from 2004 to 2020. The authors also do a thorough study of the impacts of different aspects of financial inclusion, such as the quantity of bank accounts, debit cards, credit cards, ATMs, branches, outstanding loans, and bank deposits. Using a random effects model, the study shows that financial inclusion, which is measured by a financial inclusion index, helps reduce poverty in the ASEAN-8 countries. Also, the main things that affect the negative relationship between financial inclusion factors and poverty are the number of bank accounts, the use of debit and credit cards, and the amount of money that people deposit in banks compared to their GDP. In addition, economic growth and government spending on education have negatively impacted poverty in these countries. The findings of this study provide practical implications for poverty reduction in the ASEAN-8 countries.

Contribution/ Originality: The authors provide a comprehensive analysis of the impact of financial inclusion and financial inclusion components on poverty in the ASEAN-8 countries. The research offers valuable insights for reducing poverty in the ASEAN-8 countries, given the scarcity of studies on the impact of financial inclusion components.

1. INTRODUCTION

In recent years, financial inclusion has been a significant policy concern for governments worldwide, including in Vietnam. The World Bank (WB) and Asian Development Bank (ADB) have developed programs and projects to promote financial inclusion in many countries. Specifically, G20 countries have agreed on a set of principles for financial inclusion, which are also the focus of the G20 action plan. Moreover, ASEAN considers financial inclusion as one of the three pillars of the ASEAN Economic Community (AEC) Vision 2025 on financial integration and has established a Working Group on Financial Inclusion to promote financial inclusion in the region. As a result, many countries, especially developing countries such as India, Thailand, and Malaysia, have built national frameworks and financial inclusion strategies that initially achieved positive results. One of the key impacts of financial inclusion in countries and regions is its crucial role in reducing poverty, which has been confirmed in many studies, such as [Robinson \(2001\)](#); [Beck, Asli, and Patrick \(2008\)](#); [Collins \(2009\)](#)

and Hastak and Gaikwad (2015). In particular, Robinson (2001) shows that financial inclusion not only increases income savings and the opportunity to apply for a loan but also prevents young labor and increases agricultural productivity, helping to reduce poverty. Beck et al. (2008) also argue that financial access promotes growth and poverty reduction, income inequality reduction, and welfare improvement. Moreover, by monitoring the 'financial diaries' of people with low incomes in Bangladesh, India, and South Africa, Collins (2009) finds that access to affordable and appropriate financial services helps people experiencing poverty reduce their exposure to economic fluctuations, improve well-being, and, in many cases, increase income. Sharing the same view, Hastak and Gaikwad (2015) confirmed that financial inclusion is essential for many developing countries to enhance their ability to access financial services in low-income regions, thereby contributing to hunger eradication, poverty reduction, and economic development. Research clearly demonstrates the positive impact of financial inclusion on poverty reduction. However, the extent of this impact varies across countries and regions, influenced by numerous factors specific to each country and economy (Park & Mercado, 2018). Several other studies also indicate a positive relationship between financial inclusion and poverty alleviation, including the research by Anthony et al. (2018) in Nigeria, the study by Park and Mercado (2015) in Asia, the research by Ibrahim et al. (2019) across 49 African countries, and the study by Simon (2019) in the Middle East. However, it is evident that these studies are focused on individual countries or specific regions such as the Middle East, Africa, or Asia, and there has yet to be an in-depth study conducted on the ASEAN countries. In Vietnam, poverty reduction is still an essential goal of the Communist Party and a cross-cutting goal in the country's socioeconomic development. In particular, the National Comprehensive Financial Strategic Plan has set specific targets for poor and disadvantaged people in society. Many studies have examined the impact of rural credit programs or microfinance on poverty reduction. Anh, Thu, Tam, and Mai (2011) used survey data on microfinance in Vietnam in 2011 to evaluate and test the impact of microfinance on poverty reduction. Dao (2016) examines the effects of microfinance on the income of poor households in Vietnam using data from the 2012 Residential Living Standard Survey. The results show that factors such as age, household size, dependency ratio, total assets, microcredit, and region affect the income of poor households. However, there is no research on the impact of financial inclusion on poverty reduction in Vietnam. Therefore, this study aims to provide empirical evidence of the effects of financial inclusion on poverty in ASEAN-8 countries, thereby making policy recommendations for Vietnam. The study also wants to look at and rate the current level of full financial inclusion in the ASEAN-8 countries using both component and composite indices. According to an econometric model, the study also looks at how different control variables, like population, government spending, economic growth, and inflation, affect the level of poverty in each ASEAN-8 country.

Here's how we conduct the research: Part 2 provides an overview of the impact of financial inclusion on poverty. Section 3 analyzes the current situation of financial inclusion and poverty in ASEAN-8 countries. Section 4 analyzes the impact of financial inclusion on poverty in ASEAN-8 countries. Finally, Section 5 presents our conclusions.

2. LITERATURE REVIEW

2.1. Financial Inclusion

The World Bank (WB) defines financial inclusion as “individuals and enterprises having access to and using financial products and services—transactions, payments, savings, credit, and insurance—that meet their needs at a reasonable cost and are delivered responsibly and sustainably.” (World Bank Group, 2013). This definition is comprehensive and straightforward. Besides, the Alliance for Financial Inclusion (AFI) expands on this by describing financial inclusion as providing accessible financial services at a reasonable cost, encouraging regular use, and tailoring services to meet user needs. This approach is broader and more multifaceted, emphasizing product quality and addressing the needs of not only those with financial access but also those with limited capacity who want to use financial services. In addition, the Global Partnership for Financial Inclusion (GPII) provides a further perspective: “Financial inclusion is a state in which everyone can effectively access credit, savings, payments, and insurance from financial service providers. Financial inclusion supports individuals who lack formal access or are underbanked in joining the formal financial system, thereby accelerating poverty reduction, job improvement, and social welfare.” Financial inclusion is multidimensional, providing people with beneficial

financial services at their convenience, expanding access to all classes of the population, especially the low-income population, and creating equal opportunities and limiting inequality in the economy.

2.2. Poverty

Poverty is the lack of resources to meet basic life necessities such as food, clean water, shelter, and clothing (MacPherson & Silburn, 2002; Wagle, 2005). However, as society develops, the essential needs continue to expand, encompassing access to healthcare, education, transportation, and financial services. These evolving poverty standards have led to the division of poverty into two thresholds: "absolute poverty" and "relative poverty." Absolute poverty describes individuals whose income significantly falls below the established poverty line in a specific country. In contrast, relative poverty describes those whose income is lower than the average income of a country by a certain percentage. Due to fluctuations in a country's average income influenced by economic conditions, the relative poverty line is also subject to continuous change. In practice, when researching poverty alleviation in ASEAN countries, Mirza et al. (2004) indicated that most studies utilize the absolute poverty threshold to assess poverty conditions in the examined nations. Therefore, this research will approach poverty in ASEAN countries through the lens of absolute poverty.

2.3. The Effects of Financial Inclusion on Poverty

Depending on the study's objectives, various metrics can assess financial inclusion due to its multifaceted approach. In a study of financial inclusion and poverty in Peru in 2008–2010, Schmied and Ana (2016) showed that financial inclusion reduced several poverty indicators. Specifically, the Peruvian National Institute of Statistics and Information has identified three ways to measure poverty: the poverty rate, the poverty gap index, and the poverty reduction index. However, each indicator has its advantages and disadvantages. Firstly, the poverty rate index indicates the percentage of the population that does not earn enough to meet their daily food needs, or those who fall below the poverty line. However, according to Schmied and Ana (2016) the poverty level of each customer is different; therefore, in the case of using only this index to evaluate poverty in Peru, it does not reflect the actual poverty level of the people. As a result, the poverty gap index was created. It is based on the difference between the value of a minimum basket of necessities and people's income in relation to that value. If people's income exceeds the poverty line, they will be removed from the poor. Finally, to be calculated as the average of the squares of the poverty gap index, the poverty reduction rate is preferred over the years, considering inequality in poverty levels among people in this group. More importantly, financial inclusion has a positive impact on both indices, neglecting different measuring methods. Reflecting an increase in the microcredit provision model for individuals who have not previously had access to loans from any formal institution will help reduce the poverty claims in Peru. However, the study was conducted using data solely from Peru over three years from 2008 to 2010; therefore, to draw more general conclusions, it is necessary to expand the scope of both space and time in the research.

Utilizing data gathered from the survey, the analysis aims to examine the impact of financial inclusion on poverty reduction, but with different proxies for both poverty reduction and financial inclusion and other techniques (Partial Least Squares -PLS path model instead of using panel data analysis), Hussaini and Chibuzo (2018) concluded that financial inclusion has a definitive impact on poverty reduction in Nigeria. In particular, financial inclusion is measured by a Likert scale that asks about access to and borrowing capital, sources of credit, the value of credit, how well customers understand financial products and services like credit, savings, insurance, and payment; how easy it is to get to the nearest official financial institution; how far the customer lives from the nearest ATM; how clear their transactions are; and how much better the service is after meeting with them in person. However, the study only includes data from Kebbi State in Nigeria. It does not consider the influence of control variables, such as changes in government and state policies, cultural differences, and the operations of microfinance institutions, on the effectiveness of poverty alleviation efforts. Instead of using a trio of indicators to measure poverty level in a country, such as Schmied and Ana (2016) and Hussaini and Chibuzo (2018) in research conducted by Amadou (2018) the proportion of the population living below the poverty line is utilized as a proxy for assessing the poverty level. The results also identified financial inclusion as one of the most effective methods to reduce

poverty. Specifically, comprehensive finance will help households have more opportunities to access funds to invest in production and business and improve their lives. To prove this assertion, Amadou conducted a combined analysis of data from Bangladesh, Bolivia, and Nigeria with survey data collected in Mali from 235 respondents between 1992 and 2015. The model results show that the ratio of domestic credit provided by the financial sector to Gross Domestic Product (GDP) positively affects poverty reduction in Mali. Also, using the poverty rate as a proxy for the degree of poverty, Ibrahim et al. (2019) expanded the sample to 49 sub-Saharan African countries from 1980 to 2017. The panel data regression results confirm that financial inclusion is an effective tool for poverty reduction in developing countries in sub-Saharan Africa. For example, having access to savings accounts, loans, and ATMs is an example of financial inclusion. These things all have an effect on reducing poverty, with rates of 32.5%, 11.7%, and 27.4%, respectively. An increase in access to financial inclusion means that the poor will have more incentive to use financial products from formal institutions to invest in businesses and raise income. However, to improve the model's accuracy, it is essential to include control variables such as education level, employment rates, and access to healthcare.

Recently, witnessing the rise of technology, Polloni-Silva, da Costa, Morales, and Sacomano Neto (2021) examined the relationship between digital financial institutions, poverty, and inequality in Latin American countries. Using Feasible Generalized Least Squares (FGLS) and Limited Information Maximum Likelihood (LIML) techniques, the results confirmed the effect of financial inclusion on both poverty and inequality reduction. Most importantly, the authors conclude that financial inclusion and technology have a more significant impact. According to Polloni-Silva et al. (2021) investing in technological outreach and digital financial services is necessary. Moreover, increasing financial literacy, which can help people effectively use financial services, is also an urgent mission that needs to be considered by the government. However, future research should broaden the analysis to encompass additional countries outside of Latin America, including those in Africa and Asia, to enhance the generalizability of the findings. A study by Wang and He (2020) using survey data from 1,900 rural households in China also analyzed the impact of digital financial inclusion on poverty, yielding slightly different findings.

They found that digital financial services significantly impact farmers' vulnerability but have minimal effect on poverty reduction. This outcome is partly because digital finance increases credit demand for consumption rather than for production, resulting in little influence on labor productivity and income. Furthermore, Wang and He (2020) demonstrated that digital financial services provided by Information and Communications Technology (ICT) companies are more effective at reducing farmers' vulnerability than those offered by traditional banks. Simon (2019) analyzed financial inclusion and stability across six Middle Eastern countries from 2002 to 2018, finding contrasting results. Using generalized least squares (GLS) estimates for linear models with panel data, the study shows that while comprehensive policies reduce inequality, they have no significant impact on poverty. Similarly, Park and Mercado (2018) found that the positive effect of financial inclusion on poverty reduction is only evident in high- and middle-income countries, not in low- and low-middle-income countries. But stronger statistical methods, like advanced panel data analysis or structural equation modeling (SEM), should be used to better control for possible confounding variables and make these results more reliable. Recently, researchers in Vietnam have increasingly focused on financial inclusion. For example, Chu, Nguyen, Truong, Dao, and Pham (2018) analyzed factors affecting financial inclusion; Pham and Tran (2019) evaluated financial inclusion in the Red River Delta provinces. However, few studies in Vietnam have analyzed the impact of financial inclusion on poverty, and Hoi (2016) is one of the most typical studies. In particular, using data collected from three surveys of household living standards in 2004, 2006, and 2008, Hoi (2016) indicated that access to finance helps people experiencing poverty increase their household income. According to the author, increased access to financial services means that low-income people have more opportunities to invest in education, production, and business. Therefore, it stimulates economic growth and narrows the income gap between the groups of people in society. Anh et al. (2011) and Mai (2008) studied the impact of microfinance on poverty reduction in Vietnam.

3. DATA AND EMPIRICAL METHODOLOGY

3.1. Data

Measuring financial inclusion is a multi-dimensional process, so a multi-dimensional approach would be suitable for building a composite index that measures financial inclusion. The measurement of the financial inclusion index (FII) was inspired by the United Nations Development Programme (UNDP) approach to calculate the human development index (HDI), human poverty index (HPI), and gender development index (GDI). As in these UNDP indices, the FII is calculated by building each component index for each aspect of financial inclusion. The financial inclusion index reflects information about the component of financial inclusion. The index should have a simple, easy-to-implement method to compare financial inclusion across countries. Sarma and Pais (2011) calculated the financial inclusion index, which met these criteria. Specifically, it (i) is used to compare financial institutions across the economies and across states/provinces within countries at a particular time; (ii) the progress of policy initiatives to bring finance into a country can be tracked for a period; and (iii) it helps researchers address empirical questions about the relationship between development and financial institutions.

To measure FII, we used the method of Sarma and Pais (2011) which is based on three fundamental aspects: penetration (or accessibility), convenience (or availability), and financial service usability, as in Table 1. The FII index is composed of seven component indices, as shown in the Table 1.

Table 1. The method used to measure FII.

FII aspects	Components
Accessibility	- Number of credit cards per 1,000 adults - Number of debit cards per 1,000 adults - Number of bank accounts per 1,000 adults
Availability	- Number of ATMs per 100,000 adults - Bank branches over 100,000 adults
Usability	- Ratio of outstanding loans at commercial banks to GDP (%) - Ratio of bank deposits to GDP (%)

Source: Sarma and Pais (2011).

All indices were derived from the World Bank's World Development Indicators database. A total of 184 economies, including those from developing Asia, were collected. We subsequently calculated the dimensional index following Sarma and Pais (2011) specifications.

$$d_i = w_i * \frac{A_i - M_i}{M_i - m_i} \quad (1)$$

In which:

d_i = Dimensional index of component i .

w_i = Proportion of the i^{th} component.

A_i = Actual value of the i^{th} component.

M_i = Maximum value of the i^{th} component.

m_i = Minimum value of the i^{th} component.

i is a component of financial inclusion, ranging from 1 to 7.

Condition: $0 \leq d_i \leq 1$.

With predetermined weights and limits, we calculated the overall financial inclusion ratios for each country and compared each country's success across different dimensions using the following formula:

$$FII_i = 1 - \frac{\sqrt{(1-d_1)^2 + (1-d_2)^2 + \dots + (1-d_i)^2}}{\sqrt{n}} \quad (2)$$

In which:

FII_i = Financial inclusion index of country i .

d_i = Dimensional index of component i .

n = Total number of financial inclusion components, which received a value 7.

After calculating the FII of 184 countries worldwide, we filtered out the countries of the ASEAN region, including eight member countries: Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. (Brunei and Singapore are unavailable because of limited statistical data on poverty rates below the national threshold.). To assess the impact of financial inclusion on poverty in ASEAN-8 countries, a regression model was used in the following form:

$$POR_{i,t} = \beta_0 + \beta_1 FII_{i,t} + \beta_2 EXE_{i,t} + \beta_3 GOV_{i,t} + \beta_4 POP_{i,t} + \beta_5 INF_{i,t} + \beta_6 GPD_{i,t} + \theta_t + \varepsilon_{i,t} \quad (3)$$

Where $POR_{i,t}$ is the poverty of countries by year, measured by the percentage of people living below the national poverty line (%), $FII_{i,t}$ is the financial inclusion index of countries by year. This index was calculated as described in Equation 1. In addition, the model included control variables to increase the explanatory power of the dependent variable. The control variables include government spending on education ($EXE_{i,t}$), government spending ($GOV_{i,t}$), inflation rate ($INF_{i,t}$), population ($POP_{i,t}$), and economic growth ($GPD_{i,t}$). Data, including world development datasets, were collected from the World Bank and ADB. World Development Indicators, Poverty and Equity data, ADB critical indicator data for countries, and official country data. The research period was 17 years, and data were collected annually from 2004 to 2020. a description of the variables in the model is shown in Table 2.

Table 2. Variables used in the model.

Type of variables	Variables	Explain	Code	Expectation	Reference
Dependent variable	Poverty	Percentage of people living below the national poverty line (%)	POR		Sarma and Pais (2011)
Explanatory variable	Financial inclusion	Financial inclusion index	FII	-	Schmied and Ana (2016); Hussaini and Chibuzo (2018); Ibrahim et al. (2019); Anthony et al. (2018); Park and Mercado (2015); Park and Mercado (2018) and Amadou (2018)
Control variables	Government education spending	Government spending on education as a percentage of GDP (%)	EXE	-	Jung and Thorbecke (2003)
	Government spending	Government spending as a percentage of GDP (%)	GOV	-	Benneth (2007); Okulegu (2013) and Mehmood and Sadiq (2010).
	Population	Number of people (Millions of people)	POP	+	Stephan and David (2007) and Aktaş and Sevinç (2020)
	Inflation	Inflation rate	INF	+	Talukdar (2012); Osterling (2007) and Khan and Ssnhadji (2001)
	Economic growth	Per capita GDP	GDP	-	Adams Jr (2003); Mansi, Hysa, Panait, and Voica (2020) and Omar and Inaba (2020)

Considered a dynamic region, ASEAN includes 10 member countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. However, as the poverty data for Brunei and Singapore do not have an official poverty line in either country data or WB data, these two countries are excluded when studying the impact of financial inclusion on poverty in ASEAN countries. Thus, the dataset in this study includes eight ASEAN countries: Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam.

Table 3. Descriptive statistics of variables.

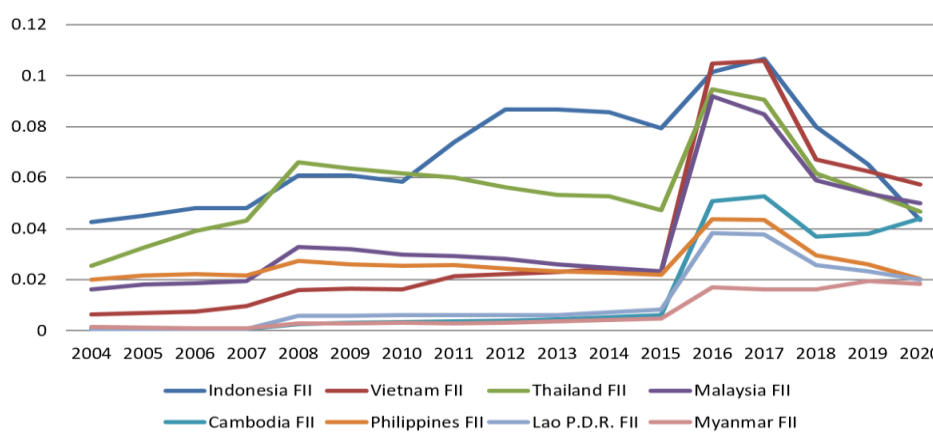
Variables	Observation	Mean	Std. deviation	Minimum	Maximum
Dependent variable					
POR	136	18.864	10.113	1.972	42.211
Explanatory variable					
FII	136	0.032	0.028	0.001	0.107
Control variables					
EXE	136	3.345	2.193	0.495	15.384
GOV	136	10.593	4.311	3,4603	22.185
POP	136	75.111	71.766	5.740	273.520
INF	136	5.052	4.485	-1.100	25.000
GDP	136	3014.449	2774.324	210.000	11230.000

Table 3 shows descriptive statistics of variables included in our study. The mean of the poverty rate is 18.864% with a relatively high standard deviation of 10.113%, and the mean of FII is 0.032 with a relatively high standard deviation of 0.028, suggesting the significant differences between ASEAN-8 countries in poverty and financial inclusion. Besides, the government education spending, government spending, population, inflation, and economic growth variables vary considerably between ASEAN-8 countries with a relatively high standard deviation. In addition, the correlation matrix has been completed (Appendix 1), and it shows that the variables that are not related to each other are only slightly linked. The variable POR and variable FII have the strongest link, with a value of 0.7163. VIF ratios are generated in (Appendix 2) to conclude that there are no multicollinearity problems when including them in our estimations.

4. RESULTS

4.1. Financial Inclusion in ASEAN-8 Countries

After calculating the FII of 184 countries worldwide, we filtered out the countries of the ASEAN region, including eight member countries: Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. (Brunei and Singapore are not available because of limited statistical data).

**Figure 1.** FII of the ASEAN-8 countries in the period of 2005 – 2020.

According to Figure 1, Thailand and Malaysia are the developed economies in the ASEAN region and the countries with the highest aggregate financial inclusion index. This achievement is due to the fact that both Thailand and Malaysia had a comprehensive economic strategy early on. Specifically, the government included the task of financial inclusion in the Law on Central Bank in 2009 and the overall strategy for the development of the financial sector in the period 2011–2020 (Master Plan/Blueprint). Based on this legal document, the Financial Inclusion Framework was developed with a clear vision and specific objectives. Having a legal basis and commitment from the government is an essential factor in determining the success of the financial inclusion strategy. Countries with low aggregate financial inclusion in the region include Laos, Myanmar, Vietnam, and Cambodia. Surprisingly, in the past four years, thanks to the promotion of the development of the financial system, Vietnam has had outstanding results; the financial inclusion index has increased sharply

from 0.006 in 2004 to 0.105 in 2016. In 2017, it ranked among the top countries in the ASEAN region with high financial inclusion rates. However, in 2018, especially in 2019–2020, the financial inclusion ratios of all countries tended to decrease sharply. This is partly attributed to the shift in how banks approach and distribute their products in the context of digital transformation and the effects of the COVID-19 pandemic.

4.2. Poverty

Poverty is defined as the lack of resources to meet the necessities of life, such as food, clean water, accommodation, and clothing. However, as society develops, basic needs are increasing, including access to health care, education, transportation, and even financial services. With these changing poverty standards, poverty is also divided into two thresholds: “absolute poverty” and “relative poverty.” Absolute poverty refers to people whose income is significantly lower than the prescribed poverty line in a given country. The relatively poor are those whose income is below the national average by a certain percentage. Because a country's average income fluctuates with economic conditions, the relative poverty line also changes constantly. When conducting the study on poverty reduction in countries in the ASEAN region, [Mirza et al. \(2004\)](#) have shown that most studies use the absolute poverty line to assess poverty status in the countries under study. Therefore, within the framework of this study, the poverty level of ASEAN countries is also measured from the absolute poverty perspective through the poverty rate indicator (the proportion of the population living below the national poverty line). As a dynamic region, ASEAN includes 10 member countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. However, due to the limited statistical data on the proportion of the population living below the poverty line in Brunei and Singapore, this study focuses on analyzing the poverty data in the remaining eight countries.

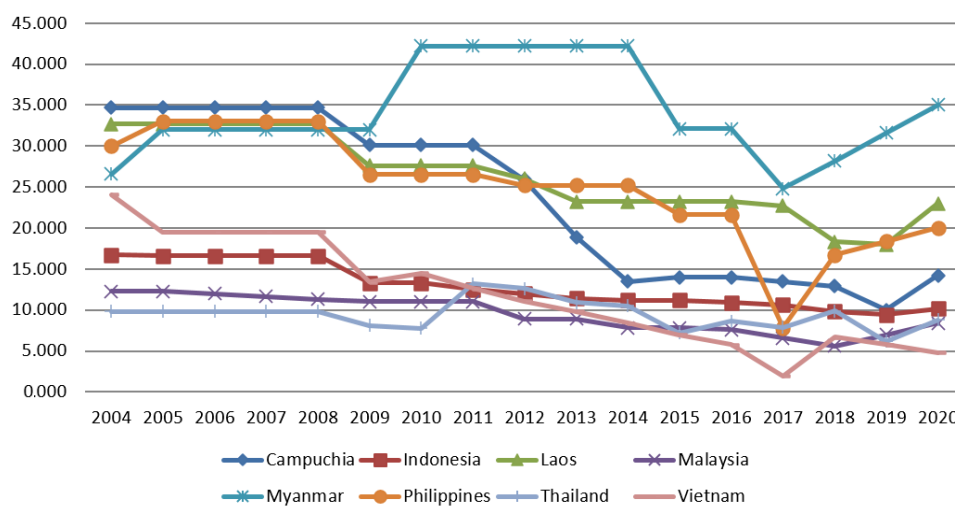


Figure 2. Poverty rate in the ASEAN-8 countries (2004 – 2020) (Unit: %).

The data from [Figure 2](#) shows that among the countries studied in the ASEAN region, the poverty rates were on a downward trend from 2004 to 2017 before the reversal began to increase, especially in the period of 2019–2020. Specifically, Cambodia witnessed an impressive poverty reduction rate; in 2004, it had the highest poverty rate (34.7%), but within 15 years, it decreased by more than 70% to 10% in 2019. Statistics indicate that Vietnam has also attained significant success in hunger eradication and poverty reduction, as evidenced by a poverty rate of 5.8% in 2019, the lowest threshold in the region. Besides, other countries such as Laos, Indonesia, and Malaysia also witnessed a decrease in the poverty rate, but at a lower threshold, hovering at around 70%. By contrast, the poverty rate in Myanmar in 2019 increased to 31.6%—the highest number compared to other countries in the region—and continued to increase to 35% in 2020. The increase in the poverty rate in the period 2019–2020, the beginning of the outbreak of the covid-19 pandemic, was also a common trend in most countries in the region, with a relatively different growth rate between countries. Thailand and Cambodia were the

two most affected countries, with poverty rates increasing to more than 40%. However, because the initial proportions of these countries were relatively low at only 6.2% and 10%, respectively, after increasing, the poverty rates of Thailand and Cambodia were still lower than those of Myanmar and Laos; the two countries had the highest poverty rates in 2020 in the region. Myanmar's poverty rate was highest at 35%, followed by Laos at 23%. Thus, it can be seen that this study's conclusions about the proportion of the population living below the poverty line in the countries of the ASEAN region are completely similar to the analysis results made by the independent researchers and the ASEAN report. Therefore, the data are completely reliable and are a suitable basis for performing the evaluation model analysis steps in the next section.

4.3. The Impacts of Financial Inclusion on Poverty in the Asian-8 Countries

With panel data, this study picks the best least squares model from the ones shown in Table 4. These are the pooled ordinary least squares (POLS), the fixed effects model (FEM), and the random effects model (REM). To select the most suitable model, the study uses the Breusch-Pagan Lagrange test and the Hausman test, resulting in the REM random effects model as the most suitable model.

Table 4. Regression results according to OLS, FEM, and REM.

Models	OLS model (1)	FEM model (2)	REM model (3)
FII	-169.355*** (27.760)	-99.203*** (23.433)	-107.124*** (24.142)
EXE	-0.760*** (0.248)	-0.435** (0.218)	-0.499** (0.224)
GOV	0.554*** (0.128)	-0.008 (0.158)	0.173 (0.151)
POP	-0.038*** (0.01)	-0.119** (0.060)	-0.025 (0.016)
INF	0.258* (0.131)	0.142 (0.112)	0.209* (0.114)
GDP	-0.000*** (0.000)	-0.001 (0.000)	-0.001*** (0.000)
Constant	24.575*** (2.008)	33.855*** (4.647)	26.844*** (2.559)
N	136	136	136
R-square	0.696	0.342	0.663
Prob>F	0.0000	0.000	0.000

Note: The numbers in parentheses represent the standard error of the regression coefficient. The symbols ***, **, * represent the 1%, 5%, and 10% significance levels.

The baseline model shows that the financial inclusion index (FII) has negative and statistically significant effects on poverty. Economic growth, which is measured by Gross Domestic Product (GDP) and government expenditure (EXE), has a negative and statistically significant impact on poverty, whereas inflation (INF) has a positive and statistically significant impact on poverty in ASEAN-8 countries.

To provide a more ambiguous explanation of the impact of financial inclusion on poverty in ASEAN-8 countries, we further decompose the financial inclusion index into seven components (Table 5). The regression results according to the REM model are shown in Table 6.

Table 5. Components of financial inclusion.

Aspects	Components	Variable	Model
Accessibility	Number of bank accounts per 1.000 adults	ACC	Model (4)
	Number of debit cards per 1.000 adults	DEB	Model (5)
	Number of credit cards per 1.000 adults	CRE	Model (6)
Availability	Number of ATMs per 100.000 adults	ATM	Model (7)
	Bank branches over 100.000 adults	BRA	Model (8)
Usability	The ratio of outstanding loans at commercial banks to GDP (%)	LOA	Model (9)
	The ratio of bank deposits to GDP (%)	DEP	Model (10)

With the standard models, the estimated results show that the number of bank accounts (ACC), credit cards (CRE), bank deposits/GDP (DEP), and bank lending/GDP (LOA) all have negative and statistically significant effects on poverty. In addition, the number of debit cards (DEB), number of ATMs (ATM), and number of branches (BRA) had negative but not statistically significant effects on poverty (POR). When looking at how the control variables affect poverty, the results are very similar to the baseline model. In this model, economic growth (GDP) and government spending (EXE) both have statistically significant negative effects on poverty, but inflation (INF) does not. To check the robustness of the results, we repeat our analysis without the control variables (Appendix 3). The structure of the financial inclusion components and the impact and statistical significance of the financial inclusion index are both in line with what the baseline and component models found.

Table 6. Impacts of FII components on poverty in the Asian-8 countries.

Variables	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
ACC	-0.009*** (0.002)						
DEB		-4.03e-08 (2.75e-08)					
CRE			-5.55 e-07*** (1.58 e-07)				
ATM				-2.75e-07 (5.83e-07)			
BRA					-0.000 (0.000)		
DEP						-0.223*** (0.020)	
LOA							-0.238*** (0.020)
EXE	-0.645*** (0.217)	-0.822*** (0.240)	-1.258** (0.268)	-0.647*** (0.222)	-0.643*** (0.643)	-0.234 (0.162)	-0.182 (0.163)
GOV	-0.103 (0.155)	0.251 (0.161)	0.738*** (0.145)	0.114 (0.533)	0.814 (0.163)	0.270** (0.117)	0.086 (0.114)
POP	-0.014 (0.020)	-0.029 (0.018)	-0.018 (0.011)	-0.089** (0.040)	-0.153*** (0.058)	-0.075*** (0.024)	-0.070*** (0.016)
INF	0.135 (0.118)	0.273** (0.128)	0.345** (0.114)	0.254** (0.116)	0.248** (0.114)	-0.014 (0.085)	0.046 (0.083)
GDP	-0.001** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001*** (0.004)	-0.001*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)
Constant	28.8660*** (2.7819)	26.0409*** (2.5468)	22.2343*** (3.8406)	30.0159*** (5.197)	34.2614*** (5.999)	38.0567*** (3.1578)	36.632*** (2.440)
N	136	136	136	136	136	136	136
R-square	0.676	0.615	0.642	0.475	0.376	0.770	0.807
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: **p < 0.05 and ***p < 0.01.

4.4. Discussion

The results indicate a negative relationship between financial inclusion and poverty, and financial inclusion components like the number of bank accounts, credit cards, deposits, and bank loans each have a statistically significant negative effect on poverty. These findings imply that countries with greater access to financial services—demonstrated by increased bank accounts and credit card usage—tend to experience lower poverty rates. This supports existing literature, which argues that broader financial access enables individuals to participate more actively in economic activities, ultimately reducing poverty (Park & Mercado, 2015).

Furthermore, increased access to finance not only facilitates investments and job creation but also enhances societal income levels, leading to a reduction in poverty (Amadou, 2018). This is especially important because better financial representation makes it more appealing for poor people to use financial products from formal institutions, which can encourage them to start their own businesses and make more money (Ibrahim et al., 2019). However, while these results support the notion that financial inclusion is beneficial, critically examining the nuances highlighted in the literature is essential. For instance, some studies argue that merely increasing access to financial products does not guarantee effective usage or positive outcomes (e.g., (Dupas & Robinson, 2013)). Also, financial inclusion may have different effects in different

socioeconomic settings. This means we need a better understanding of how local factors affect the link between financial inclusion and poverty. The analysis of control variables reveals that economic growth, as measured by GDP, has a negative and statistically significant impact on poverty, indicating that it contributes to poverty reduction. This finding aligns with [Omar and Inaba \(2020\)](#) who argue that a developed economy generates greater job demand, raises real income even for low-skilled workers, and ultimately enhances overall quality of life.

Moreover, a well-developed financial system plays a crucial role by enabling individuals and households in poverty to invest and manage financial risks more effectively, further aiding in poverty alleviation. This perspective is supported by [Mansi et al. \(2020\)](#) who also found a negative and statistically significant relationship between GDP per capita and poverty levels. Their research suggests that in developing countries, the influence of GDP per capita on poverty rates is particularly pronounced, as economic growth tends to create more job opportunities and elevate income levels. However, while the evidence supports the notion that economic growth and increased GDP per capita positively impact poverty reduction, it is essential to critically evaluate the nuances presented in the literature. For instance, some studies caution that the benefits of economic growth may not be evenly distributed, potentially leading to increased inequality (e.g., [Piketty, 2014](#)). Additionally, the quality of job creation matters; if economic growth primarily results in low-wage or precarious employment, the anticipated improvements in quality of life may not materialize. The analysis indicates that inflation (INF) has a positive and statistically significant effect on poverty levels. This finding aligns with the conclusions of [Talukdar \(2012\)](#); [Osterling \(2007\)](#) and [Khan and Ssnhadji \(2001\)](#) who suggest that rising inflation diminishes the real value of wage income, thereby impairing the ability of low-income individuals to meet their consumption and savings needs.

To back up this point of view, a thorough study of how inflation affects low-income households in Vietnam during times of inflation shows that these households spend a much larger portion of their income on necessities. Specifically, food and beverage expenditures constitute a substantial portion of total living expenses for low-income groups, with food spending being four times higher than that of higher-income households. Furthermore, studies show that the rate of increase in food prices and services is 1.5 times higher than the overall inflation rate. This evidence underscores rising inflation's challenges for low-income individuals, as it erodes their purchasing power and exacerbates their economic hardships ([Mai, 2008](#)). Government spending on education (EXE) demonstrates a negative and statistically significant impact on poverty, indicating that increased investment in education can effectively reduce poverty levels. This finding is consistent with the conclusions of those who argue that government expenditure on education enhances individuals' skills and employability, leading to more stable jobs and improved income, thereby contributing to poverty alleviation. Similarly, [Jung and Thorbecke \(2003\)](#) provide evidence from their studies in Tanzania and Zambia, reinforcing the notion that strategic educational resource allocation is a powerful tool for reducing poverty. They emphasize that targeted education spending can significantly uplift the economic prospects of marginalized populations, particularly when aligned with the specific needs of local labor markets.

However, while the positive correlation between education spending and poverty reduction is well-documented, it is important to critically examine the broader context. For instance, some researchers caution that merely increasing funding for education does not automatically translate into better outcomes unless accompanied by effective governance, quality teaching, and relevant curricula (e.g., [Laine, 2016](#)). Additionally, disparities in access to educational resources can lead to unequal benefits, potentially exacerbating existing inequalities if not addressed. Government spending (GOV) demonstrates a statistically significant impact on poverty reduction in Models 4 and 6. This finding aligns with previous research on poverty determinants in Nigeria by [Benneth \(2007\)](#) and [Okulegu \(2013\)](#) as well as in Romania by [Mehmood and Sadiq \(2010\)](#). Both Benneth and Okulegu contend that increased government spending stimulates aggregate demand, promoting production and enhancing employment and income levels, and collectively contributing to poverty alleviation. However, while this study also identifies a negative relationship between government spending and poverty rates, the results are not statistically significant. The sample size and heterogeneity of characteristics may account for this lack of significance. Specifically, the studies conducted in Nigeria and Romania focus on national-level data, whereas this analysis encompasses eight countries within the ASEAN region. Each ASEAN nation has distinct fiscal policies and economic

contexts, which can lead to varying effects of government expenditure on poverty. Moreover, fluctuations in government spending across different periods and countries may yield divergent outcomes in poverty rates. For instance, while increased spending might alleviate poverty in one context, it could have limited or adverse effects in another, depending on how effectively those funds are allocated and utilized. In addition, the analysis reveals that the population factor (POP) exhibits a non-statistically significant impact on poverty across ASEAN countries. This finding suggests that we need a deeper understanding of these connections and more research into how changes in population may affect poverty and how fiscal policies may affect it.

5. CONCLUSION

This study analyzes the current situation of financial inclusion (through the financial inclusion index and components) and poverty status in ASEAN-8 countries. The results show that countries in the ASEAN-8 region have different levels of financial inclusion. Countries with the highest levels of financial inclusion include Thailand and Malaysia; Cambodia, Myanmar, and Laos have the lowest financial inclusion indices. In general, all countries have made efforts to enhance financial inclusion; consequently, the financial inclusion index has shown improvement over the years. In addition, this study assesses the impact of financial inclusion and other control variables, such as economic growth, inflation, population, government spending, and education expenditure, on the poverty levels of each country. The study employs an econometric model to examine the ASEAN region. The more financially inclusive countries are, the lower the poverty rate. Such country-level impact research will help policymakers and practitioners promote financial inclusion in poverty reduction. Additionally, countries with high economic growth, low inflation, and high government spending on education have lower poverty rates. While an increase in government spending has not been shown to impact poverty, an increase in government spending on education impacts poverty reduction.

Based on the aforementioned research findings, several recommendations are proposed to enhance financial inclusion as a means to reduce poverty in the ASEAN-8 countries. These include developing a variety of products and financial services and designing loan and deposit products aimed at low-income people. In addition, countries need to stabilize the macroeconomic environment and increase investment in the education system, especially in financial education, to create a favorable environment to help reduce poverty.

Specific solutions that can be highlighted include:

Firstly, it is essential to consider the obstacles faced by vulnerable groups in society to provide them with accessible products. For instance, small loans could be offered at subsidized rates for individuals living in remote areas, or the procedures could be simplified by eliminating collateral requirements for such loans. For customers in rural areas, the primary concern is securing collateral. Therefore, the design of credit products should streamline procedures, ensuring that minimal loans do not require the registration of secured transactions. Additionally, we should develop alternative solutions for customers without land use certificates, allowing them to access formal credit sources.

Secondly, developing lending models based on agricultural value chains is essential, linking production with product consumption. Guidelines specific to each agricultural product should accompany value chain lending products. The lending procedures must include criteria about the size of businesses and participants in the value chain, the types of loans given to different parts of the value chain, how well financial institutions manage risk, the success of the project, and the gains and losses these institutions experiences.

Thirdly, stabilizing the macroeconomic environment provides a foundation for economic development. A developing economy will generate greater demand for employment, raising real incomes for individuals with low and high skill levels and thereby improving the quality of life. However, rising inflation will pose significant challenges to the actual living conditions of low-income groups. All economic entities, including the banking system, require a synchronized macroeconomic management strategy that prioritizes stability and sustainability. To attract investment and achieve long-term growth, a stable economic environment is crucial.

Finally, and importantly, it is essential to enhance financial education for the population. We should view financial education as a lifelong process. When designing financial education programs, this principle must be the foundation. Tailoring approaches to each target group based on their maturity level ensures that the provided knowledge aligns with their needs and decision-making capabilities. In developing financial skills, it is essential to establish fundamental skills and knowledge related to managing expenses relative to income, monitoring personal finances, creating financial plans, anticipating common risks, and seeking advice.

Funding: This research is supported by Banking Academy of Vietnam.

Institutional Review Board Statement: Not applicable.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Data Availability Statement: The corresponding author can provide the supporting data of this study upon a reasonable request.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

REFERENCES

- Adams Jr, R. H. (2003). *Economic growth, inequality, and poverty: Findings from a new data set*. The World Bank. No. 2972.
- Aktaş, M. T., & Sevinç, A. (2020). The determinants of poverty in developing countries: Theoretical and empirical analysis. *Journal of Current Researches on Business and Economics*, 10(2), 225-242.
- Amadou, D. (2018). Financial inclusion and poverty reduction: Selected approaches and implications for Mali's choice. *Academic Journal of Economic Studies*, 4(4), 50-56.
- Anh, N. K., Thu, N. V., Tam, L. T., & Mai, N. T. T. (2011). *Microfinance and poverty reduction in Vietnam – testing and comparison*. Hanoi: Publishing House Statistics Publishing House.
- Anthony, E., Ageme, C. A., Anisiuba, Felix Chukwubuzo Alio, Hillary Chijindu Ezeaku, & J.U.J., O. (2018). Empirical assessment of the effects of financial inclusion on poverty reduction in Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 99(8), 21-30.
- Beck, T., Asli, D.-K., & Patrick, H. (2008). *Finance for all? Policies and pitfalls in expanding access*. Washington, DC: World Bank.
- Benneth, O. O. (2007). *Fiscal policy and poverty alleviation: Some policy options for Nigeria*. Working Papers No. 164, African Economic Research Consortium, Research Department.
- Chu, K. L., Nguyen, M. P., Truong, H. D. H., Dao, B. N., & Pham, M. H. (2018). *Factors influencing financial inclusion: New evidence from panel data analysis*. Research Report No. 18/04. Banking Academy.
- Collins, D. (2009). *Portfolios of the poor: How the world's poor live on \$2 a day*. Princeton, New Jersey: Princeton University Press.
- Dao, M. T. H. (2016). Impact of microfinance to the income of poor households in Vietnam. *Van Hien University Journal of Science*, 4(3), 38-45.
- Dupas, P., & Robinson, J. (2013). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. *American Economic Journal: Applied Economics*, 5(1), 163-192. <https://doi.org/10.1257/app.5.1.163>
- Hastak, A. C., & Gaikwad, A. (2015). Issues relating to financial inclusion and banking sector in India. *The Business & Management Review*, 5(4), 194-203.
- Hoi, C. M. (2016). Impact of financial development on Income inequality in Vietnam. *Journal of Economic Development*, 23(2), 22-37.
- Hussaini, U., & Chibuzo, I. C. (2018). The effects of financial inclusion on poverty reduction: The moderating effects of microfinance. *International Journal of Multidisciplinary Research and Development*, 5(12), 188-198.
- Ibrahim, H., Manu, D., Adamu, I., Jediel, E., Kasima, W., Hajara, B., & Yusrah, I. (2019). An examination of the impact of financial inclusion on poverty reduction: An empirical evidence from Sub-Saharan Africa. *International Journal of Scientific and Research Publications*, 9(1), 239-252. <https://doi.org/10.29322/ijsrp.9.01.2019.p8532>

- Jung, H.-S., & Thorbecke, E. (2003). The impact of public education expenditure on human capital, growth, and poverty in Tanzania and Zambia: A general equilibrium approach. *Journal of Policy Modeling*, 25(8), 701-725. [https://doi.org/10.1016/s0161-8938\(03\)00060-7](https://doi.org/10.1016/s0161-8938(03)00060-7)
- Khan, M. S., & Ssnhadji, A. S. (2001). Threshold effects in the relationship between inflation and growth. *IMF Staff Papers*, 48(1), 1-21. <https://doi.org/10.2307/4621658>
- Laine, J. (2016). Education and poverty: A critical review of the literature. *Education Policy Analysis Archives*, 24(1), 1-18. <https://doi.org/10.14507/epaa.v24.2000>
- MacPherson, S., & Silburn, R. (2002). The meaning and measurement of poverty. In *Poverty*. In (pp. 1-19). London: Routledge.
- Mai, T. T. X. (2008). Impact of inflation on the lives of low-income people in Vietnam today. *VNU Journal of Science: Economics and Business*, 24(2), 102-113.
- Mansi, E., Hysa, E., Panait, M., & Voica, M. C. (2020). Poverty—A challenge for economic development? Evidences from Western Balkan countries and the European union. *Sustainability*, 12(18), 7754. <https://doi.org/10.3390/su12187754>
- Mehmood, R., & Sadiq, S. (2010). The relationship between government expenditure and poverty: A cointegration analysis. *Romanian Journal of Fiscal Policy*, 1(1), 29-37.
- Mirza, H., Giroud, A., Jalilian, H., Weiss, J., Freeman, N., & Than, M. (2004). Regionalisation, foreign direct investment and poverty reduction: The case of ASEAN. In (pp. 43-63). Bradford: University of Bradford, School of Management.
- Okulegu, B. E. (2013). Government spending and poverty reduction in Nigeria's economic growth. *International Journal of Social Sciences and Humanities Reviews*, 4(1), 103-115.
- Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of Economic Structures*, 9(1), 37. <https://doi.org/10.1186/s40008-020-00214-4>
- Osterling, K. L. (2007). Social capital and neighborhood poverty: Toward an ecologically-grounded model of neighborhood effects. *Journal of Human Behavior in the Social Environment*, 16(1-2), 123-147. https://doi.org/10.1300/j137v16n01_09
- Park, C., & Mercado, R. V. (2018). *Financial inclusion: New measurement and cross-country impact assessment*. ADB Economics Working Paper Series No. 539/2018. Manila, Philippines.
- Park, C. Y., & Mercado, R. (2015). *Financial inclusion, poverty, and income inequality in developing Asia*. Asian Development Bank Economics Working Paper Series No. 426.
- Pham, H. A., & Tran, T. T. (2019). Financial inclusion in the Red River Delta provinces. *Journal of Banking Science and Training*, 202, 18-44.
- Piketty, T. (2014). *Capital in the twenty-first century*. Cambridge: Harvard University Press.
- Polloni-Silva, E., da Costa, N., Morales, H. F., & Sacomano Neto, M. (2021). Does financial inclusion diminish poverty and inequality? A panel data analysis for Latin American countries. *Social Indicators Research*, 158(3), 889-925. <https://doi.org/10.1007/s11205-021-02730-7>
- Robinson, M. (2001). *The microfinance revolution: Sustainable finance for the poor*. Washington DC: World Bank Publications. <https://doi.org/10.1596/0-8213-4524-9>.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, 23(5), 613-628.
- Schmied, J., & Ana, M. (2016). Financial inclusion and poverty: The case of Peru. *Regional and Sectoral Economic Studies*, 16(2), 29-40.
- Simon, N. (2019). *Financial inclusion and stability in the MED region: Evision from poverty and inequality*. Femese Research Papers No. FEM44-01.
- Stephan, K., & David, L. (2007). *The impact of population growth on economic growth and poverty reduction in Uganda*. Departmental Discussion Papers No. 133, University of Goettingen, Department of Economics, Revised 25 May 2007.
- Talukdar, S. R. (2012). *The effect of inflation on poverty in developing countries: A panel data analysis*. Doctoral Dissertation.
- Wagle, U. (2005). Multidimensional poverty measurement with economic well-being, capability, and social inclusion: A case from Kathmandu, Nepal. *Journal of Human Development*, 6(3), 301-328. <https://doi.org/10.1080/14649880500287621>

- Wang, X., & He, G. (2020). Digital financial inclusion and farmers' vulnerability to poverty: Evidence from rural China. *Sustainability*, 12(4), 1668. <https://doi.org/10.3390/su12041668>
- World Bank Group. (2013). *Global financial development report 2014: Financial inclusion* (Vol. 2). Washington DC: World Bank Publications.

APPENDIX

Appendix 1. Correlation matrix.

Variables	POR	FII	EXE	GOV	POP	INF	GDP
POR	1.000						
FII	-0.716	1.000					
EXE	-0.390	0.222	1.000				
GOV	-0.044	0.122	0.163	1.000			
POP	-0.307	0.580	-0.137	-0.043	1.000		
INF	0.412	-0.331	-0.265	-0.347	0.067	1.000	
GDP	-0.619	0.446	0.343	0.405	-0.015	-0.463	1.000

Appendix 2. VIF ratios.

Variables	VIF	1/VIF
FII	2.47	0.41
POP	1.96	0.51
GDP	1.76	0.57
INF	1.44	0.70
GOV	1.26	0.79
EXE	1.23	0.82
Mean	1.69	

Appendix 3. Robness check with the regression model (REM effect) (Without control variables).

Variables	Model (11)	Model (12)	Model (13)	Model (14)	Model (15)	Model (16)	Model (17)	Model (18)
FII	-164.258 *** (19.992)							
ACC		-0.0133*** (0.002)						
DEB			-9.96e-08*** (1.92e-08)					
CRE				-7.23e-07*** (1.77e-07)				
ATM					-4.06e-07 (6.28e-07)			
BRA						-0.000*** (0.000)		
DEP							-0.244*** (0.018)	
LOA								-0.267*** (0.000)
Constant	24.147*** (2.132)	28.016*** (1.055)	22.003*** (2.710)	23.340*** (2.738)	18.919*** (2.751)	20.413*** (3.290)	33.070*** (2.454)	32.613*** (2.343)
N	136	136	136	136	136	136	136	136
R-square	0.513	0.595	0.339	0.381	0.031	0.122	0.594	0.620
Prob>F	0.000	0.000	0.000	0.000	0.000	0.0000	0.000	0.000

Note: ***p < 0.01.

Views and opinions expressed in this article are the views and opinions of the author(s). Asian Economic and Financial Review shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.