Educational Administration: Theory and Practice
2024, 30(5), 11763-11773
ISSN: 2148-2403
https://kuey.net/

Research Article

The Moderating Role Of Economic Scale On The Effect Of Financial Inclusion On Multidimensional Poverty: Evidence In Vietnam

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Citation: Hang Thu Pham and Thu Thi Hoai Nguyen (2024), The Moderating Role Of Economic Scale On The Effect Of Financial Inclusion On Multidimensional Poverty: Evidence In Vietnam, *Educational Administration: Theory and Practice*, *30*(5), 11763-11773, Doi: 10.53555/kuey.v30i5.4186

ARTICLE INFO

ABSTRACT

Vietnam has made significant progress in reducing multidimensional poverty and increasing its economic scale over the years. This success can be attributed to the United Nations' implementation of 17 sustainable development goals (SDGs). A key solution to this challenge is financial inclusion. This study examined the impact of financial inclusion on multidimensional poverty in Vietnam from 2016 to 2020 under the moderating role of economic scale per capita. With Fixed Effect (FE) and Random Effect (RE) models and provincial data, the results show that enhancing financial inclusion can effectively alleviate multidimensional poverty in Vietnam, with access to the Internet and quality of public services being significant factors as well. Moreover, our findings reveal that economic scale per capita plays a moderating role in the relationship between financial inclusion and multidimensional poverty. Improving the economic output per capita has the potential to mitigate the impact of financial inclusion on multidimensional poverty. Therefore, it is recommended that areas with low economic scale per capita prioritize strategies to promote financial inclusion, while local governments in other regions should concentrate on implementing effective poverty reduction measures rather than emphasizing financial inclusion.

Keywords: financial inclusion, multidimensional poverty, economic scale

1. Introduction:

The matter of poverty reduction is a topic that captures the attention of numerous countries and socio-economic analysts. Each instance of progress towards reducing poverty is viewed as a step towards social advancement. According to the UN (2015), [1] poverty reduction is the primary goal among the 17 sustainable development objectives that the world must realize by 2030. To ensure that various aspects of human life can be evaluated, poverty is presently assessed in multidimensional poverty by the UN, encompassing income and access to fundamental services. With this comprehensive perspective on measuring multidimensional poverty, finding solutions to poverty reduction has become an even greater challenge. Several investigations have revealed that the development of the financial system plays a crucial role in impacting the aim of poverty reduction (Ravallion and Datt, 2022 [2]; Beck et al., 2007 [3]).

Many academic studies have been conducted to investigate the relationship between financial system development and poverty reduction. Although the existing literature employs diverse methodological approaches, it predominantly suggests that the development of financial inclusion to provide financial services to the poor is a pivotal factor in achieving poverty reduction goals (Pradhan et al., 2016 [4]; Donou-Adonou and Sylwester, 2015 [5]). However, the analysis of general or individual aspects of finance alone does not suffice to attain MP reduction. To comprehensively comprehend the role of financial inclusion in poverty reduction, research must be expanded both in terms of breadth and depth. This entails scrutinizing financial issues and the interconnections between the financial sector and other domains of the economy. As a result, the body of research on this relationship has been steadily expanding and evolving (Ozili, 2020) [6], and has revealed that enhancing any aspect or indicator of the financial factor can have a constructive impact on poverty reduction in a wide range of interactive channels.

The present discourse aims to examine the impact of financial inclusion on multidimensional poverty reduction in Vietnam. This paper begins by elucidating a series of studies that have been conducted in this area, which

have highlighted varying results depending on the economic scales of the countries studied. Notably, the studies conducted by Donou-Adonou and Sylwester (2015) [7], and Boukhatem (2016) [8]are reviewed.
Against this backdrop, it is pertinent to note that Vietnam has made significant strides in poverty reduction, following the adoption of 17 sustainable development goals (SDGs) by the United Nations in 2015, which included goals related to multidimensional poverty reduction. The country has implemented specific strategies, spanning the period of 2016-2020, with a vision for the future extending until 2030. Despite grappling with a plethora of socio-economic challenges, Vietnam's multidimensional poverty rate has declined from 9.9% in 2016 to 4.8% in 2020 (GSO, 2021) [9] Furthermore, notable progress has been made in the development of financial inclusion for the poor.
However, it is yet to be established whether strong FI is a salient factor in the reduction of MP in Vietnam, as it is in several other countries. To address this research gap, the present study is structured around three core components: (i) a literature review; (ii) the model, data, and research methodology; (iii) the results and discussion; and (iv) the conclusion. This discourse adopts a rigorous academic approach to examine the research question and presents findings that contribute to the existing body of knowledge.

2. Literature Review:

2.1. Definition and Measurement of financial inclusion and multidimensional poverty:

a. Definition and measurement of financial inclusion:

Definition of financial inclusion:

Financial inclusion is a concept that has garnered significant attention in recent times. It refers to activities related to the provision of financial services, such as banking and credit services, at affordable costs to a large segment of the population, particularly disadvantaged and low-income people (Dixit & Ghosh, 2013) [10].
However, despite its importance, one of the primary challenges in this field is defining a consistent way to measure financial inclusion. While there are various methods to measure financial inclusion, ranging from simple measurements to more complex composite scales, global unity has not yet been achieved in this regard. As such, reputable international organizations such as the G20 are constantly working to develop a set of indicators to measure financial inclusion more accurately (Park & Mercado, 2015) [11].
However, the results of these efforts are yet to be fully realized, and researchers continue to explore the concept of financial inclusion from various perspectives, including its impact on economic growth and the challenges that must be overcome to achieve it (Honohan, 2008) [12].

Measurement of financial inclusion:

In Vietnam's empirical studies on calculating comprehensive financial indicators, research by Nguyen et al. (2021) [13] proposed a way to calculate the comprehensive financial index. The calculation formula for financial inclusion (FI) is as follows

$$IFI_{jt} = \frac{\sum_{n=1}^{N_{jt}} \sum_{i=1}^{N_q} A_{in}}{N_{jt} \times N_q}$$

Where the index of financial inclusion (IFI_{jt}) represents the ability to use finance in province j in year t, A_{in} represents the answer to i question of the n^{th} household, which is assumed to receive only 0 or 1. N_{jt} represents the number of Vietnam Household Living Standard Survey (VHLSS) in province j and also in year t. N_q is the number of questions described in the questionnaire.

Table 1: Questions from the VHLSS are used in calculating the provincial IFI

Question group	Question content
1. Financial service	
1.1	Do you open a bank account?
1.2	Do you have a savings book in the bank?
1.3	Do you have an ATM card?
2. Get credit	
2.1	Do you have have a credit card?
2.2	Have you borrowed money or goods in the last 12 months?
3. Participate in the financial market	
3.1	Do you have life insurance?
3.2	Do you have non-life insurance?
3.3	Do you have financial assets such as stocks and bonds?

Source: Nguyen et al. (2021) [13]

The results obtained from the questionnaire are binary, represented by 0 or 1. From this, the IFI score for each household can range from 0 to 8. Similarly, the IFI score for each province varies between 0 to 8, with 0 indicating "unbanked" or "underbanked" households, and 8 representing the highest level of financial inclusion. This scoring system is applied to all households surveyed in the sample. The scores are then

aggregated by province and divided by the highest possible score of 8 to calculate the level of financial inclusion achieved. As a result, the IFI score for each province is within the range of 0 to 1. This method is widely used in Vietnam and is popular among researchers due to its reliance on trustworthy data from VHLSS, the largest household living standards survey conducted by the General Statistics Office of Vietnam (GSO).

b. Definition and measurement of multidimensional poverty:

Definition of multidimensional poverty:

To comprehensively research poverty, the concept of multidimensional poverty has officially been introduced and used since 2013 to measure many aspects and be more comprehensive, providing a more complete view of poverty—hunger of individuals or households. To measure poverty, it can be an index that is not related to income level but includes other aspects related to the lack of basic social services (Oxfam & ActionAid, 2010) [14].

Measurement of multidimensional poverty:

Through extensive research, the Multidimensional Poverty Index (MPI) has been developed, consisting of three primary dimensions: health, education, and living conditions. Each country has its methodology for determining its MPI, with Vietnam's approach for the period of 2016-2020 taking into account income and access to basic social services. The poverty line in rural areas is set at 700,000 VND/person/month, while in urban areas it is 900,000 VND/person/month. Similarly, the near-poverty standard is 1,000,000 VND/person/month in rural areas and 1,300,000 VND/person/month in urban areas. Basic social services are defined as health, education, housing, clean water and sanitation, and communication, with ten indicators used to measure the level of shortage in these areas. These include access to health services, health insurance, adult education level, school attendance status of children, housing quality and area per capita, domestic water source, hygienic latrines/latrines, use of telecommunications services, and assets for information access.

2.2. The impact of financial inclusion on multidimensional poverty:

In recent years, poverty research has increasingly focused on the role of finance in improving living conditions. Access to financial products and services is seen as a key factor in creating more favorable conditions for all households, particularly those living in poverty. By utilizing financial services like loans, savings accounts, and electronic transactions, individuals can improve their financial capabilities and effectively manage their finances. Expanding access to financial services to a wider range of individuals and households is expected to further support this positive impact. There is significant evidence to suggest that comprehensive finance can help lift people out of income poverty. However, it remains to be seen whether financial inclusion can play a positive role in reducing multidimensional poverty.

Research has shown that promoting financial inclusion can significantly contribute to reducing multidimensional poverty through two key avenues: by improving income and by enhancing access to social services, including basic insurance services.

(i) The impact of financial inclusion on reducing multidimensional poverty through increasing household income:

Burgess and Pande's (2005) [15] research focused on the expansion of state-owned bank branches in rural India and found that it had a major impact on reducing poverty rates. Honohan's (2008) [12] study, which covered 160 countries, showed that financial access has a significant impact on poverty reduction. Dawood et al. (2019) [16] explored the relationship between financial inclusion and poverty reduction specifically in Indonesia and found that finance helped 300,000 poor households escape absolute poverty. These findings highlight the importance of financial inclusion in reducing poverty and improving economic outcomes for disadvantaged communities.

Numerous studies support the notion that enhancing financial access can significantly alleviate debt burdens among impoverished households. For instance, Kelkar's (2010) [17] findings indicate that bolstering financial resources can considerably reduce indebtedness for impoverished farmers. Similarly, Sethi and Acharya (2018) [18] conducted a study on the positive effects of financial inclusion on living standards across 31 countries, and their results demonstrate that improving access to finance can help rural farmers access capital and mitigate debt for impoverished individuals.

Research has shown that financial inclusion plays a crucial role in promoting happiness and development by reducing poverty (Levine, Demirguc-Kunt, and Beck, 2004 [19] ; Chibba, 2009) [20] . Beck et al (2007a) [3] found that financial inclusion led to an increase in the income of those living on less than 1 USD per day. The long-term benefits of financial inclusion are even more significant, as it increases the income of the poor, improves health, and creates more earning opportunities, leading to sustained poverty reduction (Banerjee et al. 2015) [21] . Additionally, financial inclusion enhances financial system security, helps with cash management, limits consumer spending, and helps the poor save money (Demirguc-Kunt, Klapper, and Singer, 2017) [22] . As poor households save more, these funds can be invested in profitable long-term projects that further promote poverty reduction (Sethi and Acharya, 2018) [18] . Policymakers should, therefore, prioritize promoting financial inclusion as a means to eradicate hunger, reduce poverty, and improve social welfare (Churchill and Marisetty, 2020) [23].

(ii) Financial inclusion has a positive impact on reducing multidimensional poverty through approaching financial services:

Promoting financial inclusion will first increase access to banking services, increasing the likelihood that poor households will use savings accounts as a safe way, from which poor households will also increase investment opportunities to help reduce poverty (Ashraf, Karlan, and Yin, 2010) [24]. In addition to banking services, without access to other formal financial services including loans, savings, insurance, payments, and remittances, individuals are forced to use other financial resources. unofficial main. This leads to potentially high costs and risks for poor groups (Sethi and Acharya, 2018) [18]. Financial inclusion helps low-income households access basic financial services, promoting their financial autonomy, and thereby supporting poverty reduction (Park and Mercardo, 2015) [11]. Furthermore, the poor can access financial capital to establish businesses or invest in production and business activities (Chithra and Selvam, 2013) [25]. Studies on this issue also conducted in developing countries also showed similar results. Researching in the Nigerian context, Umaru and Chibuzo (2018) [26] investigated the relationship that exists between financial inclusion and poverty reduction through the microfinance market. The results show a significant positive impact of financial access on poverty reduction. The study by Omar and Inaba (2020) [27] examined the impact of financial inclusion on poverty reduction and income inequality in emerging economies. The results also show that financial inclusion significantly reduces poverty and income inequality in developing economies.

Hypothesis 01: promoting financial inclusion has a positive impact on multidimensional poverty reduction.

2.3. The impact of financial inclusion on multidimensional poverty under the moderating role of economic size:

While research on the moderating effect of economic size on the relationship between financial inclusion and multidimensional poverty is lacking, various studies have highlighted the differing impact of financial inclusion on multidimensional poverty between developed and developing country groups and rural and urban areas within a country.

(i) At the country level, empirical studies conducted in developing and developed economies indicate that the impact of financial inclusion on multidimensional poverty varies with differences in economic scale.

Jalilian and Kirkpatrick's (2001) [28] study, which included data from 26 countries (18 developing countries), provides further evidence of the relationship between financial development and poverty reduction. The study found that a 1% change in financial development increased the income growth of the poor in developing countries by almost 0.4%, demonstrating a significant impact.

Although financial inclusion is intended to provide significant benefits for the poor, empirical evidence suggests that its impact is limited. However, a study conducted across 35 countries demonstrates that bank account usage, savings, withdrawals, and access to credit can significantly reduce poverty. Furthermore, as per capita income increases in developing countries, the potential for financial inclusion to effectively alleviate poverty is expected to rise (Omar and Inaba, 2020) [27].

(ii) Second, at the regional level, many studies suggest that within a country, in rural and urban areas - where economic scales are different, most empirical results show that this impact is stronger in urban areas than in rural areas.

The study by Gamboa, Barona, and Estrella (2021) [29] also examines the impact of financial inclusion on multidimensional poverty in Ecuadorian provinces over the period 2015–2018 in Ecuador. The use of financial services is not significant because it is related to low financial literacy among Ecuadorians, where 9 out of 10 people have never finance class. However, the negative impact on poverty is clear. Overall it can be said that financial inclusion is a useful tool for economic development and addressing multidimensional poverty in Ecuador.

Koomson, Villano & Hadley (2020) [30] examine the impact of financial inclusion on poverty and poverty vulnerability of Ghanaian households with a data set derived from the results of the United States Living Standards Survey. Ghana in 2016/17. Research results show that financial inclusion reduces poverty and vulnerability in rural areas to a greater extent than in urban areas.

Using rural bank branch data from India, which may better capture the direct impact of access to financial services on poverty, Burgess and Pande (2005) [15] studied the impact of rural bank branches on rural poverty reduction and found that the poverty rate increased by 1%. the number of rural banking locations reduced rural poverty by 0.34% and increased total output by 0.55% by facilitating diversification away from agriculture.

(iii) In the context of household-level studies, it has been observed that the impact of financial inclusion on multidimensional poverty depends on considering income disparities in the economic scale at the household level.

According to Yang and Fu (2019) [31], poverty rates and financial exclusion in China's rural areas are significant contributors to poverty. Their study, based on the China Family Panel survey results from 2010 to 2016, suggests that improving financial inclusion could help reduce poverty in 21 rural provinces. Additionally, their empirical findings indicate that rural populations with lower family burdens are more likely to escape poverty through hard work, whereas those with higher family burdens are more likely to fall into multidimensional poverty.

Meanwhile, Churchill and Marisetty (2020) [23] examined the impact of financial inclusion on multidimensional poverty in India using survey data from 45,000 households. Their study considered the MPI index, which weights health, education, and standard of living equally at 1/3 each. The researchers found that poor and vulnerable households are often excluded and lack coping strategies for income shocks, which exacerbates poverty. However, access to financial inclusion, particularly insurance, can improve their resilience and provide an opportunity to escape poverty.

Credit institutions have played a crucial role in helping farmers break free from poverty, according to recent research. The study examined various factors, such as education, asset ownership, and land ownership, and found that education was the most effective means of lifting poor farming households out of poverty - three times more effective. Additionally, household assets were found to help farmers escape poverty 1.4 times faster. This highlights the importance of not only providing credit but also investing in the human and monetary capital of farming households to eradicate hunger and reduce poverty. Interestingly, land ownership was not found to be a significant factor in escaping multidimensional poverty.

Hypothesis 02: The impact of financial inclusion on multidimensional poverty is moderated by the scale of economic growth.

3. Research Model, Data, and Research Methodology:

3.1. Research Model:

As per the research overview, financial inclusion has been found to have a significant impact on the multidimensional poverty rate. Moreover, numerous empirical studies have demonstrated that various economic factors also have a discernible impact on multidimensional poverty in developing countries. This highlights the importance of not only promoting financial inclusion but also addressing other economic factors to effectively reduce poverty in the developing world. Based on these studies in Table 2, the control variables included in the model are (1) unemployment; (2) education; (3) infrastructure for financial services; (4) welfare; and (5) institutions.

Table 2: Summary of factors affecting multidimensional poverty

Factors	Citations
Employment/ Unemployment	Churchill and Marisetty (2020) [23]
Eduation	Churchill and Marisetty (2020) [23], Nuryitmawan (2021) [32]
Infrastructure for financial services	Khatoon and Ahmed (2019) [33]
Welfare	Balisacan and Fuwa (2004) [34]
Institutions	Behnezhad, Razmi, and Sadati (2021) [35]

Source: Author's compilation

The proposed research models are as follows:

$$MPI_{it} = \beta_0 + \beta_1 * IFI_{it} + \beta_2 * UNEM_{it} + \beta_3 * REDU_{it} + \beta_4 * RINT_{it} + \beta_5 * LWEL_{it} + \beta_6 * PAPI6_{it} + \nu_{it} \quad (1)$$

$$MPI_{it} = \alpha_0 + \alpha_1 * IFI_{it} + \alpha_2 * UNEM_{it} + \alpha_3 * REDU_{it} + \alpha_4 * RINT_{it} + \alpha_5 * LWEL_{it} + \alpha_6 * PAPI6_{it} + \alpha_7 * LGRDP_{it} + \alpha_8 * FI_{it} * LGRDP_{it} + \varepsilon_{it} \quad (2)$$

Where:

MPI_{it}: multidimensional poverty rate in the province i in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020.

$UNEM_{it}$: the rate of unemployed workers among the total number of workers over 15 years old in province I in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020.

$REDU_{it}$: the rate of trained workers in province i in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020.

$RINT_{it}$: the rate of the population using the internet in province i in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020.

$LWEL_{it}$: the scale of local expenditure for welfare activities in province i in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020. The data were processed by taking logs before using in the model.

$PAPI6_{it}$: Public service delivery quality index of province i in year t. This index is evaluated from 4 content axes. Data were collected from The Vietnam Provincial Governance and Public Administration Performance Index.

$LGRDP_{it}$: Scale of GDP per capita in province i in year t. Data were collected through statistical yearbooks of the provinces from 2016 to 2020. The data were processed by taking logs before using in the model.

IFI_{it}: financial inclusion index in province i in year t. Data are calculated according to research by Nguyen et al. (2021) [13] from the provincial level data from 2016 to 2020.

3.2. Data:

The data on IFI was personally calculated by the author through VHLSS conducted in 2016, 2018, and 2020. The methodology used was that of Nguyen et al. (2021) [13], with IFI serving as an indicator of households'

access to financial services. This was determined through responses to eight questions in the VHLSS questionnaire. Representative IFI indices were calculated for each province/city in 2016, 2018, and 2020 based on data published in the corresponding surveys. For 2017 and 2019, IFI data was obtained by taking the average value of adjacent years.

The study on MPI, UNEM, REDU, RINT, LWEL, and LGRDP relied on data gathered from the Provincial Statistical Yearbook, which included survey responses from 63 central provinces/cities. The Provincial Statistical Yearbook conducts surveys based on the System of statistical indicators at the provincial, district, and commune levels, as outlined in Decision No. 54/2016/QD-TTg dated September 19, 2016—December 2016 of the Prime Minister of Vietnam. The data is carefully compiled, processed, and calculated from periodic statistical reports and survey results, following the current methods and regulations of GSO.

The data regarding the Provincial Governance and Public Administration Performance Index (PAPI) for Vietnam has been sourced from the 2020 PAPI report. It is important to note that the report provides a comprehensive assessment of the performance index, reflecting various aspects of governance and public administration (PAPI6). This information serves as a valuable resource for academic research and analysis in the field of public policy and administration, enabling scholars to gain insights into the functioning of public institutions and their impact on governance at the provincial level.

Table 3: Descriptive statistics

Variable	Obs	Mean	S.D	Min	Max
POV	315	10.11559	10.3674	.01	53.9
FI	315	.1264011	.0429577	.052381	.2845528
UNEM	315	2.718286	2.084578	.05	12.21
REDU	315	19.64105	8.640875	8.2	70.2
LGRDP	315	3.521091	.543176	1.763364	5.44436
LWEL	315	18.85244	5.721781	6.73	37.52
RINT	315	38.58898	32.62598	3.087011	175.3683
PAPI6	315	7.13887	.3044665	6.280477	8.027691

Source: Computed by authors

3.3. Research Methodology:

In panel data analysis, the appropriate model is selected among pooled OLS options, such as the fixed effects model (FE) or random effects model (RE), through a series of tests. The first step is to use the OLS method to estimate the model and test for errors, including checking if the functional form is appropriate, identifying omitted variables, and detecting heteroskedasticity and multicollinearity. Biased or inconsistent coefficients may result if the model has errors or if the noise term is correlated with explanatory variables. The study then tests whether the FE or RE model is better than the pooled OLS. If the FE model is selected, the model's errors are further tested and calibrated through GLS (Generalized Least Square) estimation if necessary.

The process for model selection verification involves three steps. First, the correlation between variables is tested to detect multicollinearity errors using the Pearson test and the VIF variance exaggeration index. Second, the F test is conducted to choose between the FE/RE model and the OLS/POLS model. Finally, the Hausman test is used to select the FEM or REM model.

4. Results and Discussions:

4.1. Results of testing hypotheses H1 and H2:

To ensure precise modeling, it is crucial to perform a multicollinearity test. The results of the variance inflation factor (VIF) are presented in Table 2. The highest VIF value recorded is 2.14, while the lowest is 1.15. Notably, all VIF values are insignificantly greater or smaller than 2. Based on these observations, we can conclude that there is no multicollinearity among the independent variables selected in the model.

Table 4: Variance Inflation Factor

Variables	VIF	1/VIF
FI	2.14	0.467434
UNEM	1.96	0.836807
REDU	1.78	0.510919
LGRDP	1.54	0.562634
LWEL	1.43	0.699429
RINT	1.20	0.648416
PAPI6	1.15	0.872710
Mean VIF	1.60	

Source: Computed by authors

a. Results of testing hypothesis H1:

The fixed effects (FE) model is found to be more appropriate than the ordinary least squares (OLS) model, as evidenced by the F test result indicating a probability of less than 0.05. Furthermore, the FE model is deemed to be more suitable than the random effects (RE) model, as indicated by the Hausman test results, which also show a probability of less than 0.05.

Based on the results of the FE model, it appears that hypothesis H1 can be confirmed. Specifically, the analysis suggests that the multidimensional poverty rate is significantly impacted by four variables: FI, LWEL, RINT, and Papi6. Conversely, it seems that two variables, UNEM and REDU, have no significant impact on reducing multidimensional poverty.

According to the results presented in Table 5, improving fiscal decentralization by 1 point leads to a significant decrease of 25.43 percentage points in multidimensional poverty, compared to other factors. Additionally, an increase of 1 percent in Internet penetration has a minor yet noteworthy impact of reducing multidimensional poverty by about 0.036 points. Finally, the quality of public service provision in the province also plays a significant role in poverty reduction, with each point increase resulting in a poverty reduction impact of about 4.08 points.

According to recent research, it has been determined that two variables, namely the unemployment rate and the trained labor rate, do not have any significant impact on reducing poverty. This finding is in contrast to the results of previous experimental studies conducted in other countries. The implications of this research are significant as they provide new insights into poverty reduction strategies that could potentially have a greater impact on the alleviation of poverty in the affected regions. Further research is required to identify other factors that may play a more critical role in reducing poverty and to develop effective policies to address these factors.

Table 5: Regression Results of Model (1)

Dependent Variable: MPI	**FE (SE)**	**RE (SE)**
IFI	-25.43***	-26.70***
	(7.577)	(7.56)
UNEM	-.058	-.117
	(.093)	(.092)
REDU	-.056	-.074
	(.075)	(.066)
LWEL	.16***	.200***
	(.056)	(.055)
RINT	-.036***	-.035***
	(.009)	(.008)
PAPI6	-4.08***	-4.27***
	(.67)	(5.11)
_cons	42.14***	43.37***
	(5.0108)	(5.11)
F(62, 246) = 66.96	Prob>F= 0.0000	
Hausman test	Prob>chi2 = 0.0000	

(***) p<0.01; (**) p<0.05; (*) p <0.1
Source: Computed by authors

b. Results of testing hypothesis H2:

In line with the findings of testing hypothesis H1, the testing of hypothesis H2 has produced some noteworthy results. Specifically, the F test result for prob indicates that the FE model is more suitable than OLS, with similar results obtained for the Hausman test, where the FE model is superior to the RE model. In terms of the impact on multidimensional poverty, the FE model has identified three variables - IFI, LGRDP, INTER, and PAPI6 - that have a significant influence.

Based on the findings of Busenbark et al. (2022) [36], the second model outlines the marginal impact of Financial Inclusion (FI) on multidimensional poverty across diverse economic sizes. This study sheds light on the interplay between financial inclusion and poverty, providing valuable insights for researchers and policymakers alike. The derived equations are given below:

$POV_{it} = \alpha_1 + \alpha_8 * LGRDP_{it}$ (3)

$POV_{it} = (-156.05) + (43.99) * LGRDP_{it}$ (4)

Where $\alpha_1 = -156.05$; $\alpha_8 = 43.99$

When $LGRDP_{it} = 1$; *then* $POV_{it} = (-112.06)$

When $LGRDP_{it} = 2$; *then* $POV_{it} = (-68.07)$

When $LGRDP_{it} = 3$; *then* $POV_{it} = (-24.53)$

Based on the calculation results above, an increase of 1 unit in the IFI results in a poverty reduction effect of approximately 112.06 percentage points when LGRDP is at 1. Equation (3) shows that the presence of LGRDP

can alter the impact of IFI on MPI. Without LGRDP, this effect is represented by α_1, which equals -156.05. However, with LGRDP, the impact is determined by equation (4), with the results being influenced by the value of LGRDP. Therefore, LGRDP plays a clear role in regulating the impact of IFI on MPI.

Table 6: Regression Results of Model (2)

Dependent Variable: MPI	**FE (SE)**	**RE (SE)**
IFI	-165.05***	-176.08***
	(35.056)	(36.25)
LGRDP	-19.723***	-17.48***
	(2.11)	(1.91)
INTER	43.99***	45.81***
	(9.82)	(9.89)
UNEM	-.014	-.038
	(.079)	(.080)
REDU	.021	.010
	(.067)	(.061)
LWEL	.041	.076
	(.050)	(.049)
RINT	-.007	-.011
	(.008)	(.008)
PAPI6	-1.97***	-2.31***
	(.631)	(.636)
_cons	93.506***	88.355***
	(6.97)	(6.66)
F(62, 244) = 78.9	Prob>F = 0.0000	
Hausman test	Prob>chi2 = 0.0000	

(***) p<0.01; (**) p<0.05; (*) p <0.1
Source: Computed by authors

4.2. Discussions:

After analyzing the data in Table 1, it is evident that Hypothesis H1 has been validated. The information gathered indicates that broadening financial access within Vietnam's provinces has a beneficial impact on decreasing poverty. This discovery implies that enhancing financial inclusion can be a valuable tool in mitigating multidimensional poverty in Vietnam from 2016 to 2020. Furthermore, the model illustrates that the positive influence of financial inclusion on reducing multidimensional poverty is noteworthy when compared to other economic variables analyzed in the study. This outcome aligns with prior research referenced in the report (Park and Mercardo, 2015 [11]; Sethi and Acharya, 2018 [18]; Banerjee et al.,2015 [21]; Omar and Inaba, 2020 [27]).

There are a couple of additional factors that can contribute positively to the reduction of multidimensional poverty. Specifically, the proportion of households that have access to the Internet and the quality of public services provided can have a significant impact. This aligns with the current situation in Vietnam. Households must have access to financial services and knowledge about them to reduce poverty. However, it is equally important to ensure that they can maintain long-term use of these services, which can provide ongoing financial access opportunities. By focusing on this, poverty reduction efforts can be effective and sustainable over time.

To maintain consistent access to financial services, households must have a stable and reliable supply of Internet services. It is widely understood that Internet service plays an integral role in daily life, especially for low-income households, as demonstrated by the increasing use of Internet services in various provinces. This regular access to the Internet has a positive impact on poverty reduction efforts and ensures that financial services remain accessible to those who need them most Khatoon and Ahmed (2019) [33]. Furthermore, improved public services can greatly benefit those in need. These findings are consistent with various studies that have been conducted on the topic.

Based on the findings presented in Table 4 and the interpretation of equations (3) and (4), hypothesis H2 is confirmed. The results indicate that average economic size per capita plays a moderating role in the relationship between financial inclusion and multidimensional poverty. Notably, the results also reveal a unique aspect in the case of Vietnam; namely, in provinces with a high economic scale per capita, the influence of financial inclusion on multidimensional poverty appears to be reduced.

In contrast, provinces with lower economic scale per capita tend to experience a greater impact of financial inclusion on poverty reduction. These findings diverge from previous empirical studies under the moderating role of economies of scale of the impact of financial inclusion on multidimensional poverty (Churchill and Marisetty, 2020 [23]; Omar and Inaba, 2020 [27]; Koomson, Villano & Hadley, 2020 [30]).

The study indicates that lack of access to education, training, and employment among the impoverished population contributes to this phenomenon. In provinces with low average GRDP levels, where poverty is particularly severe, increased financial inclusion can effectively support poverty reduction efforts.

With the support provided in accessing financial resources, individuals facing financial hardships can quickly obtain effective loans to improve their income and purchase essential goods and services necessary for sustaining their livelihood. However, in provinces with higher average economic scales, poverty rates tend to be lower, and improving access to financial services alone may not be sufficient for poverty reduction. In provinces with higher living standards, the underlying causes of poverty may be deeply rooted in cultural and societal factors that hinder the improvement of quality of life. In such cases, merely expanding access to financial services may not be a viable solution for individuals to break free from the cycle of poverty.

The aforementioned conclusion serves as a valuable contribution to the academic discourse on poverty reduction strategies at the provincial level in Vietnam. As such, it can inform and guide policy-making processes in the country.

First, to effectively combat poverty in the most economically disadvantaged provinces, a focus on boosting household and provincial economic scales is crucial. This approach will have a significant impact on reducing poverty in these areas. Additionally, promoting financial inclusion is essential for provinces with the lowest economic scale levels to access financial resources and improve their income. With better access to financial resources, they can also access essential services and learn effective savings and financial management strategies. Ultimately, this can lead to the gradual development of investment skills among the impoverished population.

Secondly, to facilitate the upliftment of impoverished households, internal mechanisms may need to be employed within the poor community themselves to achieve a comprehensive and sustainable escape from poverty. While external aid and intervention can play an important role in addressing poverty, it is crucial to recognize that long-term solutions for poverty alleviation must involve the empowerment and mobilization of the poor themselves. This can involve initiatives that promote education and training, skill development, and the cultivation of entrepreneurship and self-reliance. Only by empowering the poor to take charge of their livelihoods and futures can we hope to achieve meaningful and lasting progress in the fight against poverty.

5. Conclusions:

In summary, this study examines the impact of comprehensive finance on multidimensional poverty reduction in Vietnam between 2016 and 2020. The findings indicate that finance plays a crucial role in reducing multidimensional poverty, while factors such as internet usage and quality of public service provision at the provincial level also have a positive impact. However, increased public spending appears to exacerbate multidimensional poverty. Interestingly, education and employment status do not currently have a significant impact on reducing multidimensional poverty at the provincial level in Vietnam.

It has been observed that financial inclusion may not have a uniform regulatory impact across all provinces. In particular, for those provinces with a larger economic scale per capita, the impact of improving financial inclusion may not be as strong as initially expected. This suggests that the relationship between financial inclusion and regulatory outcomes is likely to be mediated by factors such as the local economic context, market conditions, and other contextual factors. Therefore, it is important to consider the specific circumstances of each province when developing regulatory policies aimed at promoting financial inclusion.

This study represents a pioneering effort to evaluate the impact of financial inclusion on the reduction of multidimensional poverty in Vietnam from 2016 to 2020. To the best of the author's knowledge, this is the first empirical demonstration of this problem in Vietnam. The findings of this study contribute to the existing literature on poverty reduction in Vietnam and highlight the importance of financial inclusion policies in achieving sustainable poverty reduction goals.

The research faced several limitations during the implementation process. The primary constraint was that comprehensive financial data was calculated using the VHLSS survey, which is conducted biennially. As a result, odd-year data had to be estimated based on even-year data, which may not accurately reflect financial inclusion in Vietnam. However, given the current circumstances, this approach is the most effective means of collecting comprehensive financial data. Additionally, while the General Statistics Office of Vietnam officially published data on multidimensional poverty, provincial poverty data was determined using poverty standards that had been adjusted according to the living standards of each province. Finally, the control variables used in the model have been gathered from numerous international studies. However, there are relatively few studies conducted in this area for Vietnam, which limits the depth of the analysis and comparison. Nonetheless, the research findings presented here have been carefully produced, and we hope that they will serve as a valuable foundation for the Government of Vietnam to develop effective and well-suited strategies for poverty reduction in the provinces.

References:

1. UN, "Transforming Our World: The 2030 Agenda for Sustainable Development," *Resolution Adopted by the General Assembly,* pp. 1-13, 25 9 2015.
2. M. a. G. D. M. Ravallion, "Why has economic growth been more pro-poor in some states of India than others?," *Journal of Development Economics,* vol. 68, no. 2, pp. 381-400, 2022.

3. D.-K. a. R. L. T. Beck, "Finance, inequality and the poor," *Journal of Economic Growth,* vol. 12, no. 1, pp. 27-49, 2007.
4. A. N. N. M. N. a. J. d. H. R.P. Pradhan, "Insurance penetration and economic growth nexus: cross-country evidence from Asean," *Research in International Business and Finance,* vol. 36, pp. 447-458, 2016.
5. K. S. F. Donou-Adonsou, "Macroeconomic effects of microfinance: evidence from developing countries," *Journal of Economics,* vol. 41, no. 1, pp. 21-35, 2015.
6. P. Ozili, "Social inclusion and financial inclusion: international evidence," *International Journal of Development Issues,* vol. 19, no. 2, pp. 169-186, 2020.
7. K. S. F. Donou-Adonsou, "Macroeconomic effects of microfinance: evidence from developing countries," *Journal of Economics,* vol. 41, no. 1, p. 2015, 2015.
8. Boukhatem, "Assessing the direct effect of financial development on poverty reduction in a panel of low and middle-income countries," *Research in International Business and Finance,* vol. 37, pp. 214-230, 2016.
9. "General Statistic Office of VietNam," 1 5 2024. [Online]. Available: https://www.gso.gov.vn/en/homepage/. [Accessed 1 5 2024].
10. G. R. Dixit, "Financial Inclusion for inclusive growth of India – A Study of Indian States'," *International Journal of Business Management & Research ,* vol. 3, no. 1, pp. 147-156, 2013.
11. P. a. R. Mercado, "Financial inclusion, poverty, and income inequality in developing Asia," *Asian Development Bank Economics,* vol. Series (426), 2015.
12. P. Honohan, "Cross-country variation in household access to financial services," *Journal of Banking & Finance,* vol. 32, no. 11, pp. 2493-2500, 2008.
13. H. N. C. H. a. D. V. N.T. Nguyen, "The convergence of financial inclusion across provinces in Vietnam: A novel approach," *PLoS ONE,* vol. 16, no. 8, 2021.
14. O. &. ActionAid, Oxfam Annual Report, Oxfam, 2010 - 2011.
15. R. P. R. Burgess, "Do Rural Banks Matter? Evidence from the Indian Social Banking," *American Economic Review,* vol. 95, no. 3, pp. 780-795, 2005.
16. H. P. R. M. a. R. E. T.C. Dawood, "Does financial inclusion alleviate household poverty? Empirical evidence from Indonesia," *Economics and Sociology,* vol. 12, no. 2, pp. 235-252, 2019.
17. V. Kelkar, "Financial Inclusion for Inclusive Growth," *ASCI Journal of Management,* vol. 39, no. 1, pp. 55-68, 2010.
18. D. A. D. Sethi, "Financial inclusion and economic growth linkage: some cross country evidence," *Journal of Financial Economic Policy,* vol. 10, no. 3, pp. 369-385, 2018.
19. D.-K. a. T. B. R. Levine, "Finance, inequality, and poverty: Cross-country evidence," in *Policy Research Working Papers*, The World Bank, 2004.
20. M. Chibba, "Financial inclusion, poverty reduction and the millennium development goals," *The European Journal of Development Research,* vol. 21, no. 2, pp. 213-230, 2009.
21. D. R. G. a. C. K. A.Banerjee, "The miracle of microfinance? Evidence from a randomized evaluation," *American Economic Journal: Applied Economics,* vol. 7, no. 1, pp. 22-53, 2015.
22. D. S. A.Demirgüç-Kunt, "Financial inclusion and inclusive growth: A review of recent empirical evidence," in *World Bank Policy Research Working Paper*, World Bank, 2017.
23. V. M. S.A. Churchill, "Financial inclusion and poverty: a tale of forty-five thousand households," *Applied Economics,* vol. 52, no. 16, pp. 1777-1788, 2020.
24. K. a. W. Y. N. Ashraf, "Female Empowerment: Impact of a Commitment Savings Product in the Philippines," *World Development,* vol. 38, no. 3, pp. 333-344, 2010.
25. M. S. N. Chithra, "Determinants of Financial Inclusion: An Empirical Study on the Inter-State Variations in India," *Economics; Social & Political Philosophy eJournal,* 2013.
26. C. U. Hussaini, "The effects of financial inclusion on poverty reduction: The moderating effects of microfinance," *International Multidisciplinary Journal for Research & Development,* vol. 5, pp. 188-198, 2018.
27. K. I. M.A. Omar, "Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis," *Journal of Economic Structures,* vol. 9, p. 37, 2020.
28. C. K. H. Jalilian, "Financial development and poverty reduction in developing countries," *International Journal of Financial Economics,* vol. 7, pp. 97-108, 2001.
29. P. C.-B. a. H. J.-E. J. Álvarez-Gamboa, "Financial inclusion and multidimensional poverty in Ecuador: A spatial approach," *World Development Perspectives,* vol. 22, no. (C), 2021.
30. R. V. a. D. H. I. Koomson, "Effect of financial inclusion on poverty and vulnerability to poverty: Evidence using a multidimensional measure of financial inclusion," *Social Indicators Research,* vol. 149, no. 2, pp. 613-639, 2020.
31. C. F. Y. Yang, "Inclusive financial development and multidimensional poverty reduction: An empirical assessment from rural China," *Sustainability,* vol. 11, no. 7, p. 1900, 2019.
32. T. Nuryitmawan, "The Impact of Credit on Multidimensional Poverty in Rural Areas: A Case Study of the Indonesian Agricultural Sector," *Agriecobis: Journal of Agricultural Socioeconomics and Business,* vol. 4, no. 1, pp. 32-45, 2021.

33. R. Ahmed, "The Impact of Internet Connectivity on Financial Inclusion 1 The Impact of Internet Connectivity on Financial Inclusion: A Panel Study on Asian and Africans Countries by Using GMM," *Econometrics Letters ,* vol. 6, no. 1, 2019.
34. N. F. A.M. Balisacan, "Going beyond Crosscountry Averages: Growth, Inequality and Poverty Reduction in the Philippines," *World Development,* vol. 32, no. 11, pp. 1891-1907, 2004.
35. M. R. a. S. S. S. Behnezhad, "The role of institutional conditions in the impact of economic growth on poverty," *International Journal of Business and Economic Sciences Applied Research,* vol. 14, no. 2, pp. 78-85, 2021.
36. D. S. R. G. J. C. a. E. L. J.R. Busenbark, "A marginal effects approach to interpreting main effects and moderation," *Organizational Research Methods,* vol. 25, pp. 147-69, 2022.

Acknowledgment: The authors gratefully acknowledge the financial support from the Banking Academy of Vietnam.
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