



THE IMPACT OF FINANCIAL INCLUSION ON WELL-BEING IN VIETNAM

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ARTICLE INFO	ABSTRACT
DOI: 10.52932/jfmr.v17i1enes.1427 Received: May 06, 2026 Accepted: July 22, 2026 Published: August 08, 2026 Keywords: Financial inclusion, Subjective Well-being, Mediation analysis, Vietnam regions Article classification: Research Paper JEL Classification: B23, D14, I31	Purpose – This study aims to examine the effect of financial inclusion on subjective well-being by utilizing the dataset of 3,000 observations in two main surveys where required data are available. Design/Methodology/Approach – Our study utilizes both Oster's (2019) method and kinky least squares (KLS) techniques to ensure the robustness of the empirical results. The data cover 3,000 observations in two main surveys. Findings – Our findings show that financial inclusion positively influences Vietnamese subjective well-being, with a one-standard-deviation increase in the financial inclusion index leads to a 0.192 unit increase in subjective well-being. Moderation analysis indicates that there is a regional effect in our findings, meaning that financial inclusion improves subjective well-being in all regions including the North region, the Central region, and the South region. However, the effect is smallest in the South region where the North region experiences the largest effect of financial inclusion on well-being. We also explore three mediating channels through which financial inclusion enhances subjective well-being across regions in Vietnam, namely income rank, the possibility of coming up with emergency funds, and educational attainment. Originality/Value – Financial inclusion has generally been considered key pillar in supporting sustainable economy growth and social transformation in Vietnam by 2030. Exploring how financial inclusion influences subjective well-being is particularly important in Vietnam, a country undergoing rapid economic transformation and facing persistent social challenges that may affect the subjective well-being of Vietnamese citizens.

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1. Introduction

Over the past three decades, Vietnam has undergone a remarkable economic transformation, shifting from a centrally planned economy to a dynamic, lower-middle-income market economy. Real GDP expanded from \$56 billion in 1993 to \$430 billion in 2023, while the poverty rate plummeted from 20.7% in 2010 to 4.3% by 2023 (World Bank, 2026). Despite this economic miracle, concerns over welfare distribution and chronic poverty persist. Consumption among wealthier households has grown faster than among poorer ones, widening the inequality gap (World Bank, 2022). Furthermore, a significant portion of the population remains economically vulnerable. Marginalized groups, particularly ethnic minorities, women, and those lacking upper-secondary education, remain concentrated in low-income agriculture and are easily pushed back into poverty by economic instability (World Bank, 2022).

To foster sustainable growth and mitigate inequality, the Vietnamese government, aligned with the ASEAN Vision 2025, has prioritized financial inclusion. By expanding accessible, affordable, and responsible financial services, the state aims to mobilize social resources and curb informal “black credit.” In 2020, the government established the National Steering Committee on Financial Inclusion (NSC) to target rural areas and low-income populations. By 2025, the NSC had successfully met five of its nine core targets, notably increasing adult bank account ownership, expanding non-cash transactions, and boosting credit for small businesses and agricultural development.

While the broader literature has extensively examined the demographic determinants of subjective well-being – such as age, income, and education (Chen et al., 2016; Ferrer-i-Carbonell, 2005) – as well as the macroeconomic benefits of financial inclusion (Van et al., 2021),

empirical evidence connecting the two remains sparse. Specifically, research on how expanding financial access directly impacts individual well-being within Vietnam is severely limited. This paper aims to fill this critical literature gap by providing new empirical evidence on the relationship between financial inclusion and subjective well-being in Vietnam.

The contributions of this research to the existing body of research are outlined below. *First*, this study examines the effect of financial inclusion on subjective well-being in Vietnam, which has largely been neglected in previous studies. Our findings show that the effects are different among the three regions of Vietnam. Particularly, the North region benefits more from increased financial inclusion than the Central region, and the Central region benefits more from increased financial inclusion than the South region. *Second*, using a two-stage approach and structural equation modelling (SEM), we confirm that income, emergency funds, and education attainment serve as mediating channels through which financial inclusion positively influences subjective well-being in Vietnam, contributing to a deeper understanding of the mechanisms underlying this relationship.

Following this introduction, the remainder of this paper is structured as follows. Section 2 reviews the literature on relevant impacts regarding financial inclusion and subjective well-being. Section 3 presents the research methodology and discusses the data. The empirical results are then presented and discussed in section 4. Section 5 provides conclusions and policy implications derived from the findings of this study.

2. Literature review

2.1. Determinants of subjective well-being

Subjective well-being is defined as a person’s evaluation of his or her life (Diener et al.,

1998). In current literature, the term subjective well-being can be used interchangeably with happiness and quality of life (Veenhoven, 2011). Despite the interchangeability, Magyar and Keyes (2019) argue that the use of subjective well-being indicator is more comprehensive due to its ability to capture both emotional well-being (happiness, life satisfaction) and positive functioning (personal growth, purpose in life, autonomy, and positive relationship). Subjective well-being also furnishes important complementary information to objective indicators such as income, employment, and consumption since this term can capture both material and non-material aspects of life (Nikolova, 2016).

Previous studies have explored various demographic factors influencing subjective well-being in different contexts. Currently literature has not reached a consensus on the relationship between age and subjective well-being. Chen et al. (2016), utilizing 360 surveys in China, and Hansson et al. (2005), using over 10,000 observations from Sweden, find that age is positively associated with well-being. Ferrer-i-Carbonell (2005) shows that income positively impacts subjective well-being, with wealthier individuals being more likely to feel happier. Blanchflower and Oswald (2004) find that employed people, regardless of employment status, experience higher well-being outcomes and that separated and widowed individuals are less likely to be satisfied with life. Living in urban areas results in higher life satisfaction compared to living in rural areas (Easterlin et al., 2011). In terms of education level, literature has mixed results on the impacts of education on subjective well-being. The first strand of literature shows a positive relationship between education and well-being. Some studies find that higher education levels are linked with higher subjective well-being (Chen, 2012; Cuñado & De Gracia, 2012), even though individuals with primary or lower educational

levels are associated with lower life satisfaction (Ambrosetti & Paparusso, 2021). The second strand of the literature suggests that there is a neutral relationship between education and subjective well-being (Kristoffersen, 2018). Gender is shown to impact individual well-being, with women being more likely to have better overall well-being (Becchetti & Conzo, 2022; Ambrosetti & Paparusso, 2021; Checa et al., 2019). A household's monetary financial position, such as net wealth, assets, and debt, positively influences overall well-being (Brown & Gray, 2016). Using data from Thailand, Fuller et al. (1996) conclude that objective household crowding, through the mediating role of subjective crowding, leads to detrimental psychological well-being, thus suggesting that household size negatively influences subjective well-being.

2.2. Impacts of financial inclusion

Financial inclusion refers to the available or accessible, affordable, and useful financial services and products to businesses and individuals in a sustainable and responsible way (World Bank, 2020). Empirical literature has various evidence on the benefits of financial inclusion. Dhawan et al. (2024) extend the definition of financial inclusion from process indicators (saving accounts opened, loans obtained) to outcome indicators (debt reduced, goals met) to fully capture the inequality of other economic rights such as freedom of movement, work opportunity, and asset acquisition. Financial inclusion might enhance human capital by benefiting health care services, mental health, and physical health. According to Heyert and Weill (2024), using data from 29 countries, financial inclusion positively affects life. Gyasi et al. (2019) show that financial inclusion positively impacts self-rated health. The impact is more profound in countries that are recently struck by a financial crisis. Financial inclusion, through the mediator

role of enhancing social networks, reduces difficulties in conducting functional health behaviors and promotes physical activities in the aging population, thus might positively impact physical health (Gyasi et al., 2021; Gyasi et al., 2022). In Africa, financial inclusion enhances access to basic drinking water and sanitation (Immurana et al., 2022). Similarly, using data from 33 African countries, Immurana et al. (2021) find that financial inclusion enhances population health. According to Koomson et al. (2021), despite having gender and locational gaps, financial inclusion increases household spending on health expenditures, namely medical products/appliances, outpatient services, and hospital services. Literature has not reached a consensus on the impacts of financial inclusion on mental health. On the one hand, Aguila et al. (2016) show that financial inclusion improves financial security and resilience and reduces stress. Furthermore, according to Ajefu et al. (2020), financial inclusion plays a critical role in boosting health through secured insurance facilities and peace of mind. On the other hand, Dhawan et al. (2024) findings indicate that financial inclusion, such as formal credit, leads to more psychological pressure since debt accumulates and is more likely to harm refugees' financial health due to their unstable and insufficient income level.

Previous studies analyze the link between financial inclusion and economic aspects. Analyzing over 800 branches of Banco Azteca in Mexico, Bruhn and Love (2014) find that targeting saving accounts and loan services to low-income individuals and informal business owners results in an improvement in employment rate, investment in informal business, and income levels. Mehrotra and Yetman (2015) state that the poor, by having more access to proper financial services, are more likely to have equal opportunities for an investment in their education and physical assets, resulting in lower income inequality

and an increase in economic development. Furthermore, financial inclusion, through the indirect channel of income inequality, positively impacts economic growth, especially in low-income and high-fragility countries. Van et al. (2021), measuring financial inclusion at the international level, find a positive relationship between financial inclusion and economic growth. Using a dataset of 3071 banks in the Asian region from 2008 to 2017, Vo et al. (2021) investigate that higher bank resilience results from a higher level of financial inclusion. Finally, Kim (2016) concludes that financial inclusion reduces income inequality in low-income and high-fragility countries, specifically more effective in a country in which the financial system is relatively weak. Overall, financial inclusion enhances various economic aspects.

The relationship between financial inclusion and well-being has been investigated in various regions. Using data from Malaysia in 2010 and 2016, Razak and Asutay (2022) conclude that financial inclusion significantly improves the well-being of clients through micro-balancing and improving financial and socio-economic development. In China, digital financial inclusion enhances household well-being, thus promoting social fairness, particularly among groups with lower education and lower income levels (Du et al., 2023). Similarly, Lei et al. (2023) show that digital financial inclusion positively impacts individual subjective well-being, specifically the effects on mental health, life satisfaction, and self-reported health status. The results are more pronounced in rural areas and among vulnerable groups, including the elderly population and people living in multidimensional poverty. Utilizing data from 45,540 adults from India in 2016, Kamble et al. (2024) find evidence that financial inclusion positively influences financial well-being. In line with all the above literature, we expect a positive relationship between financial

inclusion and individual overall well-being. Even though previous papers find a positive relationship between financial inclusion and well-being, this relationship is only tested in some countries such as Malaysia or China. We extend the previous literature by testing this relationship in Vietnam.

Building and extending the current literature, we examine how financial inclusion affects subjective well-being using data from Vietnam. This will shed more light on the current literature by providing empirical evidence on the role of financial inclusion in emerging countries and thus suggesting ways to improve individuals' well-being.

2.3. The relationship between financial inclusion and subjective well-being

In this sub-section, we theorize the relationship between financial inclusion and subjective well-being. On the one hand, financial inclusion might enhance subjective well-being by directly improving basic life conditions. Financial inclusion, which enhances people's accessibility to adequate financial services and credit, benefits physical health by allowing individuals to have greater accessibility to basic drinking water and sanitation (Immuran et al., 2022). Additionally, financial inclusion positively influences social networks (Gyas et al., 2021; Gyasi et al., 2022) and household spending on health expenditures such as medical products, outpatient services, and hospital services (Koomson et al., 2021), which might lead to higher capacity to achieve better subjective well-being. Furthermore, financial inclusion could create peace of mind and reduce stress (Ajefu et al., 2020; Aguila et al., 2016; Taylor et al., 2009). An improved level of financial inclusion, such as secured savings, smoothened expenditure, and diverse monetary income, equals a higher capacity in spending on healthcare services (Koomson et al., 2021). Therefore, such benefits might

directly enhance individuals' subjective well-being. Furthermore, financial inclusion strengthens individuals' well-being through the improvement of socio-economic conditions. Financial inclusion reduces income inequality in low-income and high-fragility countries (Kim, 2016). Additionally, targeting saving accounts and loan services to low-income individuals and informal business owners results in an improvement in employment rate, investment in informal business, and income levels (Bruhn & Love, 2014). Then, the household's level of net wealth, assets, debt (Brown & Gray, 2016), financial satisfaction, income scale, unemployment, and income inequality (Ngamaba, 2017) are important determinants of subjective well-being. By having higher financial capacity, individuals are more likely to feel secure and are more capable of adapting to urgent economic shocks, thus ensuring good subjective well-being outcomes.

Financial inclusion also improves individuals' well-being by providing financial capacity for people to achieve higher education (Heyert & Weill, 2024). Education might positively impact well-being since higher education leads to higher chances of being employed, enhancing healthier lifestyles, and promoting personal growth. Proper financial services, resulting in equal opportunity for investing in education and assets, lead to lower income inequality and an increase in economic development (Mehrotra & Yetman, 2015). People experiencing poverty, by having more access to proper financial services, are more likely to have equal opportunities for an investment in their education and physical assets, resulting in lower income inequality and an increase in economic development. Thus, these individuals could experience better life outcomes, leading to better well-being. Thus, we propose the following main hypothesis:

Hypothesis H₁: Financial inclusion positively impacts subjective well-being.

Financial inclusion might enhance income rank, thus improving subjective well-being. Financial inclusion plays a pivotal role in enhancing individuals' skills, education, and financial knowledge, which in turn contributes to higher income levels. For instance, Swamy (2014) finds that financial inclusion leads to improved financial literacy and productive capabilities, resulting in increased income. Similarly, Bruhn and Love (2014) and Du et al. (2023) provide empirical evidence that access to financial services raises income by facilitating entrepreneurship and labor productivity. These gains in income not only improve absolute financial well-being but also elevate an individual's income rank within their community – a key determinant of subjective well-being. As shown by Ferrer-i-Carbonell (2005), relative income position – not just absolute income – is significantly associated with increased life satisfaction and happiness. Thus, we propose the following hypothesis:

Hypothesis H_{2a}: Income rank is a mediating channel through which financial inclusion enhances subjective well-being.

Ultimately, access to financial services plays a critical role in enabling individuals to prepare for unforeseen income shocks, such as medical emergencies or sudden unemployment. The availability of emergency savings serves as a vital financial buffer, particularly for low-income households who are more vulnerable to economic instability. Despite their significance in mitigating financial hardship, a substantial proportion of households lack adequate emergency funds. Financial inclusion has been shown to positively influence financial literacy and expand opportunities for economic advancement (Swamy, 2014). Broader access to formal banking services and credit facilities can enhance individuals' capacity to accumulate precautionary savings. Notably, financial inclusion has been linked to improved access

to emergency healthcare financing (Al-Hanawi et al., 2020). In turn, the ability to rely on emergency savings may contribute to greater subjective well-being by fostering a sense of financial security and delivering tangible economic protection. Therefore, financial inclusion might enhance subjective well-being through the mediating role of emergency funds.

Hypothesis H_{2b}: Emergency funds serve as a transmission channel through which financial inclusion improves subjective well-being.

Financial inclusion improves educational attainment, thus, in turn, enhancing subjective well-being. Financial inclusion enhances access to formal financial services, which in turn improves living standards (Swamy, 2014), increases household income, and facilitates the accumulation of durable assets (Koomson et al., 2024). Additionally, individuals with greater financial access experience improved employment outcomes and wage growth (Fonseca & Matray, 2024). These economic benefits may directly support higher educational attainment by easing liquidity constraints and increasing the affordability of schooling (Li & Peng, 2023). Higher levels of education, in turn, could contribute to improved well-being (Du et al., 2023) through enhanced cognitive resources, better employment opportunities, and stronger social integration. From that, we propose the following hypothesis:

Hypothesis H_{2c}: Financial inclusion, through improving educational attainment, positively impacts subjective well-being.

3. Data and Methodology

3.1. Data

Data used in the empirical analysis in this paper are collected by merging information from two datasets: (i) the Global Findex and (ii) the Gallup World Poll (GWP). Since these datasets were conducted jointly by

Gallup, Inc. and the World Bank, they have similar sampling methods and respondents. Thus, we can merge these samples to further investigate the relationship between financial inclusion and subjective well-being. The Global Findex database is one of the world's most comprehensive datasets on how adults save, borrow, make payments, and manage risks. It covers data from more than 140 nations globally and approximately 150,000 observations in 2014 and 2017. It includes indicators on access to and the use of formal and informal financial services, which is financial inclusion. The financial inclusion index is composed of five dimensions. *First*, it captures bank account ownership by asking whether the respondent has an account and usage by asking whether they made any deposits into the account in the past year and whether they withdrew money from it during the same period. *Second*, financial inclusion encompasses debit card ownership and usage by asking whether the respondent has a debit card and, if so, whether they used it in the past year. *Third*, we also measure credit card ownership and usage by asking whether the respondent has a debit card and, if so, whether they used it in the past year. The fourth dimension is formal savings, which is assessed by asking whether the respondents saved their money at a formal financial institution in the past year. Finally, formal borrowing is measured by asking whether respondents borrowed their money at a formal financial institution in the past year. Our study is consistent with previous studies such as Nguyen et al. (2023) and Grohmann et al. (2018).

The dependent variable, *subjective well-being*, is derived from the Life Evaluation Index from the Gallup World Poll. This index evaluates a person's subjective well-being since responders are asked to place the status of their lives on a scale from 0 to 10, with 0 indicating the worst possible life and 10 indicating the best possible life. To collect data on the socio-demographic

characteristics of the respondents, we utilize the Gallup World Poll (GWP) dataset. The GWP is an annual statistical collection of nationally representative data that tracks the most important issues, namely employment, food access, and well-being. From that, we collect information on gender, age, education level, urbanicity, marital status, household income, income rank, emergency funds, and educational attainment. These variables are later used as control variables for our calculation. The explanation for including these control variables has been mentioned in the literature review section. Since this paper focuses on the relationship between financial inclusion and subjective well-being in Vietnam, about 3,000 observations from Vietnam are sorted out for our calculation.

Principal Component Analysis (PCA) is commonly used to aggregate financial inclusion indicators into a single index. Since financial inclusion is composed of various related dimensions, we use principal component analysis (PCA) as a dimensionality reduction technique and rescale the financial inclusion to a 0–1 range for better interpretability, with a higher index indicating better financial inclusion. In order to examine if our dataset is suitable for PCA, we employ Cronbach's Alpha, Bartlett's Test of Sphericity, and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy. *First*, the result of the Cronbach's Alpha test is 0.8355, which exceeds the threshold of 0.6. This indicates that the items forming the index are highly correlated and cohesively reflect a single construct. *Second*, Bartlett's Test of Sphericity's result is statistically significant at the 1% level, which allows us to affirm the presence of significant inter-variable correlations. *Third*, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy index is 0.8185, which exceeds the minimum acceptable threshold of 0.5, implying that the dataset is suitable for PCA. These results confirm that

principal component analysis (PCA) is suitable for the financial inclusion index (see Appendix 1 online).

An analysis of the descriptive statistics highlights notable variation in both the key dependent variable, subjective well-being, and the principal independent variable, financial inclusion. Subjective well-being has a mean of 5.46 on a scale of 0 to 10, with a standard deviation of 1.79 and the full possible range represented in the sample. This indicates substantial diversity in self-reported well-being, suggesting that individuals in the sample experience very different levels of subjective well-being. Meanwhile, financial inclusion, measured on a 0–1 scale, has a mean of 0.13 and a standard deviation of 0.20. This distribution points to considerable inequality in access to financial products and services, with most individuals having low levels of financial inclusion but a minority being fully included. The large standard deviations and wide ranges for both variables underscore significant heterogeneity across respondents, which is essential for capturing the nuanced relationship between financial inclusion and well-being in the analysis (see Appendix 2 online).

3.2. Methodology

To examine the impact of financial inclusion on the subjective well-being of citizens of Vietnam, we conduct our main econometric model as equation (1).

$$\text{Subjective Well-being} = \beta_0 + \beta_1 \text{Financial inclusion}_i + \beta_2 X_i + \beta_3 Y_i + u_i \quad (1)$$

where i represents a given individual. *Subjective Well-being_i* is the Life Evaluation Index of the respondent i . *Financial inclusion_i* denotes whether the individual i in which we discussed above. X_i is a vector of control variables, including gender, income, marital status, employment status, age, urban residence, household size, educational level, and whether they have emergency funds. Y_i is a vector of country dummies. u_i is the error term.

Oster's (2019) stability test

While our study applied the region-fixed and year-fixed effects to indicate the relationship between financial inclusion and subjective well-being, the result should be analyzed with more caution since the omission of some key variables could create bias in the results. Therefore, to perform a coefficient stability test to examine the question of unobserved factors, we adopt Oster (2019) techniques, a method that is used by previous research (Jawadi et al., 2025; Rahman, 2024). To be specific, the Oster (2019) technique alleviates the concern of omitted variable bias in the main results by taking the proportionality coefficient, also known as delta (δ), into account in the fitted coefficient β_1^* . δ measures the correlation between financial inclusion and unobserved variables versus that between financial inclusion and observed variables. Oster (2019) argued that when the proportionality coefficient is greater than one, the estimation results are less influenced by unobserved factors. Additionally, if the observed estimated coefficient of financial inclusion (β_1) and the corresponding β_1^* statistics fail to preclude the possibility of a zero effect, it indicates that our results are robust from omitted variables bias. This approach proves the reliability of our estimated results and enhances the robustness of our findings.

Kinky least squares (KLS)

Our study employs the Kinky Least Squares (KLS) to test the robustness of our result. The Kinky Least Squares approach (Kiviet, 2020) accounts for potential residual correlation in the estimation of static regression models with unknown parameters. By leveraging the presumed non-correlation of disturbances, it identifies instrumental variables through non-orthogonal moment conditions within multi-segment regression settings. This technique circumvents the rigid assumption of zero correlation and mitigates issues stemming from

weak or inefficient instruments. It demonstrates strong robustness to endogeneity, with its asymptotic validity and empirical accuracy confirmed through simulation studies. Furthermore, KLS facilitates sensitivity analysis and enables empirical testing of exclusion restrictions for external instruments, which were traditionally regarded as untestable.

4. Empirical results

4.1. Baseline results

We first examine whether our models suffer from multicollinearity. Appendix 2 reports the correlation matrix between our variables, while Appendix 3 shows the variance inflation factor (VIF) of variables. As shown in Appendix 3 (*see Appendix 3 online*), the correlations among the regressors are not excessively high. In Appendix 3, the mean VIF is only 1.49, which is below the threshold of 5. Thus, the results indicate that multicollinearity is not a severe problem in our model.

Next, the empirical results regarding the impact of financial inclusion on subjective well-being are reported in Appendix 4 (*see Appendix 4 online*). We incorporate socio-demographic factors, including age, education, employment status, gender, income rank, emergency funds, and educational attainment into all models. *First*, using OLS estimation, we find that financial inclusion positively impacts subjective well-being (Column 1). The slope coefficient of financial literacy is statistically significant at the 1 percent level. Other demographic and socio-economic factors play a significant role in impacting subjective well-being. In particular, income level, being female, being single, household size, and higher educational level enhance subjective well-being, while age is negatively associated with subjective well-being. *Secondly*, unobserved factors such as time-varying (such as financial technology) and time-invariant

(such as culture and family background) could affect both financial inclusion and respondents' subjective well-being. The omission of these variables could result in biased estimates. Thus, we adopt region-fixed effects and year-fixed effects into our OLS model. As shown in Column 2, financial inclusion positively influences subjective well-being at the 1 percent significance level. A one-standard-deviation increase in the financial inclusion index (0.199) leads to a 0.192 (0.965×0.199) unit increase in subjective well-being (Column 2). Finally, since the dependent variable, subjective well-being, ranges from 0 to 10, we employ ordered probit estimation to check whether the positive impact of financial inclusion on subjective well-being remains robust. The results are shown in Column 3 and 4, which are consistent with the previous findings regarding the positive influence of financial inclusion on subjective well-being. A one-standard deviation increase in financial inclusion now corresponds to a 0.075-point ($=0.199 \times 0.631$) increase in the Life Evaluation Index. Overall, the results indicate that financial inclusion is positively associated with subjective well-being, supporting the main Hypothesis.

4.2. Endogeneity treatment

In order to examine whether omitted variable bias is a severe problem in our model. We use Oster's (2019) approach to further investigate the impact of financial inclusion on subjective well-being and present the results in Appendix 6 (*see Appendix 6 online*). As shown in Column 1, the omitted variable bias-corrected estimates of the impact of financial inclusion on subjective well-being, which is denoted as β^* , is positive ($\beta^* = 0.661$) and statistically significant at the 1% level. The standard error is [0.219], which means the estimate is precise and still significantly different from zero. Next, Oster (2019) suggests that if the necessary importance of omitted variables to invalid

causal inferences, denoted as δ , is larger than 1, the OLS estimation is robust against omitted variable bias. Column 2 reports that the δ is 2.470, which is higher than 1, suggesting that the unobserved controls would have to be 2.470 times as important as the observed controls to explain away the positive influence of financial inclusion on subjective well-being. Thus, our model repression passes the Oster (2019) test and is robust against omitted variable bias.

Appendix 7 (*see Appendix 7 online*) presents the results of Kinky Least Squares (KLS) mode. Given that the Kinky Least Squares (KLS) method requires the specification of a postulated endogeneity range, this range must be grounded in empirical evidence rather than arbitrary assumptions. In our analysis, we rely on the results of the coefficient stability test proposed by Oster (2019) to inform this range. Specifically, Oster's delta (δ) statistic offers insight into the extent to which unobserved variables may bias the estimated relationship between financial inclusion and subjective well-being. When δ exceeds 1, it suggests that selection on unobservables would need to be stronger than on observables to overturn the main result, thereby supporting the robustness of the estimated effect. We use these findings to define the endogeneity interval applied in the KLS framework, illustrated on the X-axis of Appendix 10 (*see Appendix 10 online*) as ranging from -0.5 to 0 . This interval reflects plausible levels of residual correlation, bounded by the Oster-derived delta and consistent with the degree of omitted variable bias deemed acceptable in robustness testing. Notably, a value of zero on this axis corresponds to the classical Ordinary Least Squares (OLS) estimation, implying no endogeneity. As the degree of assumed endogeneity increases within this range, the KLS estimator adjusts accordingly, offering a flexible and theoretically sound approach to addressing endogeneity without relying on conventional instruments.

By anchoring the assumed endogeneity range in Oster's methodology, we enhance the credibility and empirical justification of the KLS implementation in our study. The results presented in Appendix 7 imply that financial inclusion positively impacts subjective well-being in Vietnam, which is consistent with previous estimations. The result is statistically significant at 1 percent level.

4.3. Mediation analysis

As demonstrated in the previous sections, financial inclusion has a positive and significant effect on subjective well-being. In this section, we examine the potential mechanisms through which financial inclusion influences subjective well-being. We identify three key mediating channels: income rank, emergency funds, and educational attainment. To empirically test whether income rank, emergency funds, and educational attainment mediate the relationship between financial inclusion and subjective well-being, we follow the procedure outlined in Barkat et al. (2023). This procedure requires two conditions to be met for a variable to be considered a valid mediator. *First*, financial inclusion must be positively associated with the mediating variables (i.e., income rank, emergency funds, and educational attainment). *Second*, when the mediating variables are included in the model, the effect size of financial inclusion on subjective well-being must decrease, indicating that part of the effect is transmitted through these mediators.

We measure income rank using income quintiles ranging from 1 to 5, with 1 representing the 20 percent poorest, 2 representing second 20 percent, 3 representing middle 20 percent, 4 representing fourth 20 percent, and 5 representing the 20 percent richest. The decision to use income ranking is grounded in the extensive literature on subjective well-being, particularly the relative income hypothesis. According to this hypothesis, individuals

derive greater satisfaction not merely from the absolute amount of income they earn but from how their income compares to others in their reference group or community (Clark et al., 2008; Luttmer, 2005). In other words, a person's happiness is influenced by their perceived social status, which is often reflected through their relative income position. Research has consistently shown that income rank – one's position in the income distribution – has a stronger correlation with happiness and life satisfaction than income level alone (Boyce et al., 2010). For example, an individual earning \$50,000 may report higher well-being if most peers earn less, while someone earning \$70,000 in a wealthier environment may feel less satisfied if they rank lower in their peer group. Next, emergency funds are measured as the dummy variables equal to 1 if the individual has the possibility of coming up with emergency funds within 30 days and 0 if not possible. Lastly, educational attainment is measured as a categorical variable with three levels: 1 if the respondent finished primary school or less, 2 if the respondent finished secondary school, and

3 if the respondent attained tertiary or higher education.

Appendix 4 (*see Appendix 4 online*) presents the results for the first condition. Financial inclusion is positively and significantly associated with income rank, emergency funds, and educational attainment, which is satisfying the first requirement for mediation.

Table 1 presents the results examining the second condition. When income rank is included in the model, the effect size of financial inclusion on subjective well-being decreases from 0.965 to 0.637 (Columns 1-2). When emergency funds are included, the effect size further decreases to 0.727 (Column 4). Lastly, when educational attainment is added into the model, the effect size of financial inclusion on health respectively decreases to 0.644 (Column 6). These reductions indicate that income rank, emergency funds, and educational attainment income serve as potential mediators, confirming that financial inclusion improves subjective well-being outcomes partly by increasing income rank, enhancing educational attainment, and increasing emergency funds.

Table 1. OLS estimation

Dependent variable: Subjective well-being						
	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion	0.965*** (0.171)	0.637*** (0.173)	0.941*** (0.171)	0.727*** (0.170)	0.965*** (0.171)	0.644*** (0.176)
Income rank		0.208*** (0.026)				
Emergency funds				0.577*** (0.078)		
Educational attainment						0.353*** (0.060)
Age	-0.041*** (0.014)	-0.037*** (0.013)	-0.047*** (0.014)	-0.053*** (0.014)	-0.041*** (0.014)	-0.034** (0.014)
Age squared	0.000** (0.000)	0.000** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.000** (0.000)	0.000** (0.000)

Dependent variable: Subjective well-being						
	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Urban	0.021 (0.065)	-0.085 (0.066)	0.049 (0.065)	0.003 (0.065)	0.021 (0.065)	-0.018 (0.065)
Female	0.055 (0.063)	0.043 (0.062)	0.074 (0.063)	0.090 (0.063)	0.055 (0.063)	0.074 (0.063)
Employed full-time	0.110 (0.099)	0.023 (0.098)	0.145 (0.098)	0.035 (0.100)	0.110 (0.099)	0.048 (0.099)
Employed part-time	-0.080 (0.112)	-0.090 (0.109)	-0.066 (0.115)	-0.117 (0.113)	-0.080 (0.112)	-0.092 (0.110)
Self-employed	-0.111 (0.084)	-0.158* (0.084)	-0.106 (0.086)	-0.185** (0.086)	-0.111 (0.084)	-0.118 (0.084)
Single	0.129 (0.105)	0.126 (0.105)	0.118 (0.106)	0.172 (0.106)	0.129 (0.105)	0.148 (0.105)
Separated or divorced	-0.342 (0.216)	-0.270 (0.215)	-0.227 (0.206)	-0.154 (0.207)	-0.342 (0.216)	-0.295 (0.214)
Widowed	0.027 (0.194)	0.142 (0.194)	-0.008 (0.196)	0.083 (0.191)	0.027 (0.194)	0.077 (0.195)
Household size (log)	0.197*** (0.073)	0.426*** (0.077)	0.171** (0.074)	0.173** (0.073)	0.197*** (0.073)	0.209*** (0.073)
Constant	5.473*** (0.325)	4.558*** (0.338)	5.584*** (0.329)	5.287*** (0.326)	5.473*** (0.325)	4.627*** (0.354)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,824	2,824	2,709	2,709	2,824	2,824
R-squared	0.128	0.148	0.137	0.156	0.128	0.140

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.4. Regional analysis

Appendix 8 (see Appendix 8 online) presents the evolution of financial inclusion and subjective well-being across regions in Vietnam in 2014, 2017, and 2022. Appendix 9 (see Appendix 9a online) illustrates a consistent upward trend in financial inclusion nationwide, with the national financial inclusion index rising from 0.116 in 2017 to 0.184 in 2022. Regionally, Central Vietnam exhibited the most substantial increase, reaching 0.207 by 2022, followed by the North,

which rose sharply from the lowest baseline of 0.076 to 0.190. The South showed a more moderate rise from 0.108 to 0.162. Appendix 9 (see Appendix 9b online) shows a similar positive trend in subjective well-being. At the national level, the average life satisfaction score improved from 5.14 to 6.19. The North experienced the largest gain, from 4.98 to 6.25, while the Central and Southern regions also saw steady increases. The parallel growth in financial inclusion and subjective well-being across regions and years

suggests a positive association between improved access to financial services and higher subjective well-being.

Since the influence of financial inclusion on subjective well-being may vary by region, we split our sample base on three regions of Vietnam, namely North, Central, and South region, to fully capture the differences in the influence of financial inclusion and to serve as a robustness check of the potential measurement bias. The results of the regional analysis using OLS and ordered probit estimations are shown in Table 2. The results of the regional analysis

are mostly consistent with previous estimates of our baseline regression, that financial inclusion positively impacts subjective well-being. Particularly, in both OLS estimations (Column 1, 2, and 3) and ordered probit estimations (Column 4, 5, and 6), the North, Central, and South regions benefit from higher financial inclusion. Additionally, the magnitude for the North region is larger compared to the Central region, and the magnitude for the Central region is larger compared to the South region. The differences in the magnitudes of the estimated coefficients could be explained due to differences in region-specific characteristics.

Table 2. Structural equation modelling (SEM)

Dependent variable: Subjective well-being	(1) Income rank	(2) Emergency funds	(3) Educational attainment
Direct effect	0.637*** (0.172)	0.727*** (0.169)	0.644*** (0.176)
Indirect effect	0.328*** (0.049)	0.214*** (0.038)	0.320*** (0.058)
Total effect	0.965*** (0.171)	0.941*** (0.171)	0.965*** (0.171)

Notes: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In order to check the robustness of our results, we employ structural equation modeling (SEM) to formally estimate the indirect effects of income rank, emergency funds, and education attainment in the relationship between financial inclusion and subjective well-being. The findings in Table 3 indicate that both the direct and indirect effects are consistently positive and statistically significant, further supporting the robustness of our earlier results. Overall, our analysis provides strong evidence that three mechanisms namely income rank, emergency funds, and education attainment are key pathways through which financial inclusion enhances subjective well-being outcomes, which is consistent with hypothesis 2a, 2b, and 2c.

Table 3. Regional analysis - OLS and ordered probit estimations

Dependent variable: Subjective well-being	OLS	OLS	OLS	Ordered probit	Ordered probit	Ordered probit
	North	Central	South	North	Central	South
	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion	1.337*** (0.282)	1.155*** (0.330)	0.698** (0.280)	0.905*** (0.199)	0.785*** (0.223)	0.454*** (0.166)

Dependent variable: <i>Subjective well-being</i>	OLS	OLS	OLS	Ordered probit	Ordered probit	Ordered probit
	North	Central	South	North	Central	South
	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.080*** (0.021)	-0.039 (0.031)	-0.001 (0.022)	-0.054*** (0.014)	-0.028 (0.020)	-0.004 (0.013)
Age squared	0.001*** (0.000)	0.000 (0.000)	-0.000 (0.000)	0.001*** (0.000)	0.000 (0.000)	-0.000 (0.000)
Urban	0.295*** (0.099)	0.331*** (0.127)	-0.400*** (0.113)	0.197*** (0.066)	0.211** (0.083)	-0.250*** (0.066)
Female	0.176* (0.097)	-0.122 (0.125)	0.021 (0.106)	0.112* (0.064)	-0.082 (0.080)	0.004 (0.062)
Employed full-time	0.101 (0.147)	-0.086 (0.199)	0.175 (0.174)	0.060 (0.099)	-0.042 (0.129)	0.117 (0.102)
Employed part-time	0.092 (0.188)	-0.373 (0.260)	-0.189 (0.166)	0.043 (0.132)	-0.239 (0.168)	-0.120 (0.099)
Self-employed	-0.100 (0.129)	-0.118 (0.195)	-0.162 (0.137)	-0.063 (0.084)	-0.072 (0.123)	-0.081 (0.080)
Single	0.054 (0.190)	0.106 (0.218)	0.266* (0.160)	0.031 (0.125)	0.054 (0.137)	0.152 (0.095)
Separated or divorced	-0.245 (0.378)	0.124 (0.448)	-0.585** (0.293)	-0.162 (0.244)	0.052 (0.277)	-0.347** (0.175)
Widowed	-0.661** (0.281)	0.605* (0.364)	0.314 (0.332)	-0.411** (0.180)	0.376 (0.239)	0.204 (0.187)
Household size (log)	0.143 (0.113)	0.043 (0.160)	0.248** (0.118)	0.095 (0.073)	0.062 (0.101)	0.133* (0.069)
Observations	1,026	678	1,120	1,026	678	1,120

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5. Conclusions and policy implications

Given the importance of improving well-being and analyzing the impacts of financial inclusion in Vietnam, we examine the relationship between financial inclusion and subjective well-being in Vietnam and the underlying mechanism. By employing Oster's (2019) stability test, Kinky least squares (KLS), as well as a two-stage approach method, we utilize data of 3,000 observations from Vietnam in 2014 and 2017 from the Global Findex and the Gallup World Poll (GWP) in 2014 and 2017.

Key findings from our study are summarized as follows. We find that financial inclusion positively influences subjective well-being in Vietnam and that a one-standard-deviation increase in the financial inclusion index leads to a 0.192 unit increase in subjective well-being (Column 2). This result is consistent even after accounting for time-invariant and time-variant unobserved factors and remains robust across different estimation techniques, including ordered probit estimation and Kinky least squares (KLS) estimation. Additionally, while

financial inclusion benefits every region of Vietnam, the North region benefits more from increased financial inclusion than the Central region, and the Central region benefits more from increased financial inclusion than the South region. Using the two-stage approach, we find that income rank, emergency funds, and educational attainment serve as mechanisms through which financial inclusion impacts subjective well-being.

Based on our findings, several crucial policy implications for Vietnam could be drawn. In order to enhance subjective well-being, the government could incentivize commercial banks to open more branches and transaction offices in rural cities to increase bank presence, which facilitates access to financial services. Except for the Vietnam Bank for Agriculture and Rural Development (Agribank), which has about 939 branches in the country, other state-owned and private commercial banks have significantly lower numbers of branches and offices in the country, specifically in rural locations. An improved presence in rural cities might boost residents' understanding and participation in financial inclusion programs, thus enhancing subjective well-being. Bank offices' centralization into big cities might limit vulnerable groups from updated and adequate financial programs, thus worsening their subjective well-being. Furthermore, along with

digitalization and the growth of the Internet, banks could expand their digital banking platforms and programs, enabling rural customers to access more financial services remotely. Furthermore, non-governmental organizations and governments should actively address legal loopholes in financial programs to meet the specific needs of individuals. Regarding student loans, the government and Vietnam Bank for Social Policies (VBSP) should adjust the loans to fit better with current living standards and tuition fees, extend the principal and interest payment, and reduce the interest rate to zero. Regarding housing loans, the government should simplify administrative procedures, reduce inconsistency in the implementation of housing loans, extend the principal and interest repayment period, and lower the interest rates.

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Data Availability

Data unavailable due to confidentiality or provider restrictions.

AI Usage Statement

The authors declared no generative AI tools were used in research or writing.

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