Decision Science Letters 14 (2025) 531–538

Contents lists available at GrowingScience

Decision Science Letters

homepage: www.GrowingScience.com/dsl

Is microfinance better compared to other financial institutions? Analyzing the impact of various financial access on household welfare in Indonesia

Noer Fajrieansyah[a*], Andy Fefta Wijaya[a], Imam Hanafia[a], Wike Wike[a], Farida Nurani[a], Fadillah Amin[a] and Muhammad Saifi[a]

[a]*Faculty of Administrative Sciences, Brawijaya University, Malang, Indonesia*

C H R O N I C L E

Article history:
Received: February 14, 2025
Received in revised format: March 2, 2025
Accepted: May 25 2025
Available online: May 25 2025

Keywords:
Financial access
Financial institution welfare
Indonesia

A B S T R A C T

This study examines how access to different types of financial services influences household welfare in Indonesia. Using data from a large sample of 331,068 households, the research applies Ordinary Least Squares (OLS) regression to evaluate the impact of financial institutions on household income, which serves as a proxy for welfare. The findings reveal that access to microfinance and commercial banks significantly improves household income, highlighting the critical role these institutions play in enhancing welfare. Conversely, households relying on informal financial institutions tend to have lower incomes, indicating a negative effect on welfare. Further analysis reveals important variations based on gender and geographic location. Microfinance and cooperatives are particularly beneficial for female-headed households and those in rural areas, underscoring their importance in supporting underserved populations. On the other hand, access to commercial banks benefits both male and female headed households but has a stronger impact in urban areas where formal banking services are more readily available. While informal financial institutions negatively affect urban households, they provide modest advantages for female-headed and rural households, serving as an alternative in areas lacking formal financial services. These findings underscore the need for targeted financial inclusion policies that address gender and regional disparities. Such policies should prioritize expanding access to microfinance and cooperatives for rural and female-headed households while also improving access to formal banking services in urban areas to enhance overall welfare.

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1. Introduction

Public administration goals, which include the enhancement of economic stability, the alleviation of poverty, and the promotion of the well-being of households, especially those in low-income and developing areas, cannot be achieved without financial resources (Adam & Kulmie, 2024; Omar & Inaba, 2020; Ouechtati, 2020). Therefore, initiatives for financial inclusion and equal access to credit are of paramount importance to further social equity and public welfare (Al-Shami et al., 2014). Credit is a vital financial instrument, as it allows households to channel resources to critical sectors such as education, health, and small businesses, which in effect improves the general quality of life and decreases dependence on government welfare systems (Atkinson & Messy, 2013). However, in most developing countries, large population segments remain unbanked owing to barriers such as collateral, the stringent conditions set by lenders, and geographical inaccessibility (Maîtrot & Niño-Zarazúa, 2017; Martha & Sakwa, 2017). MFIs have become one of the vital parts of public policy frameworks, granting access to credit to the unserved communities while bypassing the strict requirements by the formal banking systems (Marconatto et al., 2016). These organizations have important

* Corresponding author.
E-mail address noerfajri83@gmail.com (N. Fajrieansyah)

ISSN 1929-5812 (Online) - ISSN 1929-5804 (Print)
© 2025 by the authors; licensee Growing Science, Canada.
doi: 10.5267/j.dsl.2025.5.006

roles in the servicing of economic inclusion among marginal groups of people, such as women and rural families, who often find themselves excluded from formal financial systems (Koomson et al., 2020; Swamy, 2014). Although microfinance has been widely propagated as a panacea for poverty reduction and improvement in household welfare, controversies surrounding its impacts persist (Das, 2023). Despite the fact that a good number of studies have stressed the critical advantages of microfinance, which include increased income, improved access to education and health, and generally an enhanced life quality (Hasan et al., 2022), other scholars argue that credit alone cannot help poor households move out of poverty (Ahmed, 2009). In some cases, microfinance has been found to create debt traps for poor households who cannot generate sustainable income to service the loan taken (Eggertsson & Krugman, 2012; Ganong & Noel, 2020; Bhuiyan & Ivlevs, 2019).

The mixed outcomes of microfinance programs in different geographical regions, demographic groups, and socio-economic settings raise important questions about their effectiveness. For example, although microfinance has spread rapidly in regions such as South Asia, Sub-Saharan Africa, and Latin America, its impact has turned out to be inconsistent (Ameh, 2022; Matzanke, 2014; Nawaz, 2019). This variability points to the need for more detailed research into the conditions under which there are positive outcomes and the determinants that limit the effectiveness of microfinance. To fill these gaps, this study will examine the impact of access to microfinance on household welfare with particular attention to differences by gender, geographical location (urban/rural), and income level (Garikipati et al., 2017; Hassan & Saleem, 2017; Hassan & Islam, 2019).

While the provision of credit via microfinance institutions (MFIs) is broadly acknowledged as a means to empower economically disadvantaged households, the empirical findings regarding its enduring effects remain inconclusive. A primary obstacle involves assessing whether microfinance contributes to sustainable economic stability or simply offers transient assistance that fails to tackle the root causes of structural poverty (Chikwira et al., 2022; Koveos & Randhawa, 2004). Moreover, differences in outcomes mediated by gender, education levels, and rural-urban dynamics add to the complexity of the issue. This study tries to unpack these nuances through the following research questions: (1) How does microfinance participation affect household welfare? (2) Which gender-based differences influence microfinance outcomes? (3) How do urban and rural households differently experience the benefits and challenges of microfinance? The research investigates these questions with a view to giving a more holistic understanding of the relationship between microfinance and household welfare.

The paper makes three important contributions. First, it disaggregates the analysis by gender and geographic region to show inequalities in the impact of access to finance and to identify the areas where policy interventions are most needed. This provides empirical evidence to inform the design of more inclusive and targeted microfinance programs, contributing to the ongoing debate on the effectiveness of microfinance in reducing poverty (Toindepi, 2016). Finally, the study applies a multidimensional framework that offers practical recommendations for policymakers, development professionals, and financial institutions seeking to build the economic resilience of low-income households. These findings are expected to contribute to the broader debate on financial inclusion, poverty alleviation, and sustainable development, especially in the context of developing economies.

2. Research Method

2.1. Research data

This study uses data from the Indonesian National Socio-Economic Survey, SUSENAS, which is a large and representative data set that gives detailed insight into the socio-economic conditions of households in Indonesia (Johar et al., 2019). The SUSENAS, conducted every year by the Indonesian Central Bureau of Statistics (BPS), is an important tool for policymakers, researchers, and development practitioners in analyzing key dimensions such as household welfare, income inequality, financial inclusion, education, and regional disparity. This study uses a data set that encompasses wide categories of variables, such as household income, access to financial services, education level, and demographic characteristics, which position it as a reliable tool for the investigation of socio-economic interplays across the diversified regions of Indonesia. Since 1963, SUSENAS has been releasing a nationally representative sample for all provinces and districts, sufficiently capturing the populations of urban and rural areas. This study uses data from over 300,000 households, thus offering a large and diverse sample size that covers a wide range of demographic, geographic, and socio-economic categories. This large dataset allows for the analysis of complex interrelations between household income, financial accessibility, educational attainment, and other factors that influence household welfare. Moreover, the longitudinal nature of SUSENAS data allows trends and patterns to be traced over time, yielding meaningful information on long-term socio-economic changes in Indonesia (Johar et al., 2019). The main variables analyzed in this study include household income, access to financial services, educational attainment, and demographic variables. Household income, measured in Indonesian rupiah per month, is the sum of all earnings from various sources, such as wages, business activities, transfers, and remittances. This measure provides a thorough understanding of the economic state of households and its interrelation with financial inclusion and educational outcomes. Access to financial services is represented through dummy variables, which express whether households make use of formal institutions like banks, cooperatives, and microfinance institutions or rely on informal financial sources. This variable will be important to test the effect of financial inclusion on enhancing the welfare of households and their economic

opportunities. The other important variable is education, measured as the highest level of formal schooling completed by the head of the household in years. Education is very instrumental in decision-making, income generation, and overall household welfare; higher levels of education are often a prelude to better economic outcomes. Analyzing the relationship between education and income, this study seeks to underscore the transformative role that education plays in improving socio-economic conditions. The demographic variables, including the age, gender, and marital status of the head of the household, are considered along with the number of family members. In this way, it can be explained how household composition and characteristics may affect income levels and accessibility to financial services. For example, it can be examined whether male-headed and female-headed households have different income profiles and financial access patterns, which this study does for Indonesia. In capturing geographic disparities, households are grouped by region: Sumatra, Java, Bali and Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua. This regional breakdown enables more detailed analysis of income, education, and financial inclusion, which essentially points to large differences between the more developed regions in Java and Sumatra compared to the less developed regions of Maluku and Papua.

Analysis

Before analysis, data were cleaned and preprocessed to remove. Absent data points were handled through the deletion of records or imputation of values, while outliers, especially in the case of income and household size, were treated to prevent any possible distortion of results. Categorical variables, such as access to financial services, were converted into dummy variables to enable regression analysis, and continuous variables like income and education were normalized to correct skewness in their distributions. The preprocessing steps implemented ensured that the dataset truly represented typical household settings and was fit for strict statistical analysis.

2.2. Estimation strategy

In this study, we employ an Ordinary Least Squares (OLS) regression model to estimate the impact of access to various financial institutions on household income. The dependent variable, household income, is log-transformed to ln (Income) in order to address potential non-linearity and heteroskedasticity, and to provide more interpretable percentage change effects for the key independent variables. The primary independent variables of interest are access to microfinance, cooperatives, informal financial institutions, and banks. These variables are represented as dummy variables, where a value of 1 indicates that the household has access to a particular financial institution, and 0 otherwise. In addition to the key independent variables, the model includes several control variables that account for other factors potentially influencing household income. These control variables include the age of the household head (measured in years), the household head's education level (measured in years of schooling), gender (dummy variable, 1 if the household head is male), marital status (dummy variable, 1 if the household head is married), and family size (measured as the number of family members). Geographic location is also controlled for using dummy variables representing the major regions of Indonesia: Sumatra, Java, Bali and Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua. The full OLS model is specified in Eq. (1).

$$ln(Income) = \beta_0 + \beta_1(Microfinance) + \beta_2(Cooperative) + \beta_3(Informal\ Financial\ Institution) + \beta_4(Bank) + \gamma(X) + \delta(Location) + e \quad (1)$$

where β_0 is constant, β_1 to β_4, γ and δ are parameter to be estimated, and e is error term for Eq. (1)

3. Results and Discussion

3.1 Descriptive statistics

Table 1 is a summary of the main variables used in the analysis, and it gives a clear overview of the socio-economic characteristics of the households covered by the dataset. The mean monthly household income comes out to be almost 4,325,452 rupiah, which is the standard earnings of the households covered in the sample. Even though this indicator provides a useful benchmark, it remains important to understand disparities in income distribution among the population. Regarding access to financial services, the data indicates that there is a low level of financial inclusion among the households. Only 6.7% of the households reported using microfinance services, 4.1% have ever used cooperatives, and only 1.3% have used informal financial institutions. The findings highlight the relatively low access to alternative sources of finance among the sample population. Access to formal banking services is marginally higher, with 5.6% of households reporting bank use, but this is still a relatively modest number, suggesting that there are substantial barriers to financial inclusion in terms of geographic isolation, lack of financial literacy, or socio-economic constraints. Demographic characteristics of the sample show that, on average, the head of the household is 49.1 years old. Therefore, most decision-makers are in the prime of their lives. Households' heads have education levels of 8.17 years on average, meaning that most have completed some secondary education but may lack higher education qualifications. This level of education shall likely have a bearing on both income-earning potential and the possibility of engaging with financial services

and broader economic opportunities. The sample also shows a strong gender disparity, with 84.1% of the households being male-headed, reflecting the persistence of traditional gender roles in household leadership. In addition, 79.5% of household heads are married; this could be a factor that may contribute to income stability and social support, as married households often have pooled resources and shared responsibilities. The average family size is 3.77 members, indicating relatively small households. Family size is one of the important factors that determine household welfare because larger households may need more resources but might also have multiple income earners. The geographic distribution found within the dataset underlines the heterogeneity of the regions in Indonesia. Java holds the largest share of households, making up 30.7% of the sample, followed by Sumatra at 26.6%. Other regions, such as Bali and Nusa Tenggara (7.7%), Kalimantan (9.8%), Sulawesi (14%), Maluku (3.3%), and Papua (5.8%), are well represented, hence showing a broad view of the geographic diversity within the country. Analysis of these regional variables is important to understand income and access inequality, as households located in more developed regions—for example, Java—may face very different economic opportunities and challenges from those located in less developed or remote areas, such as Maluku and Papua.

Table 1
Descriptive statistics

Variable	Measurement	Mean	Std. Dev.
Income	Household income in rupiah per month	4,325,452	3,826,139
Microfinance	Dummy, 1 if the household accessed microfinance; 0 otherwise	0.067	0.250
Cooperative	Dummy, 1 if the household accessed a cooperative; 0 otherwise	0.041	0.197
Informal Financial Institution	Dummy, 1 if the household accessed an informal financial institution; 0 otherwise	0.013	0.113
Commercial banks	Dummy, 1 if the household accessed commercial banks; 0 otherwise	0.056	0.230
Age	Age of household head in years	49.101	13.497
Education	Household head education level in years	8.172	4.388
Gender	Dummy, 1 for male; 0 otherwise	0.841	0.365
Marital Status	Dummy, 1 if the respondent is married; 0 otherwise	0.795	0.404
Family Size	Number of family members	3.766	1.710
Sumatra	Dummy, 1 if the household lives in Sumatra Island; 0 otherwise	0.266	0.442
Java	Dummy, 1 if the household lives in Java Island; 0 otherwise	0.307	0.461
Bali and Nusa Tenggara	Dummy, 1 if the household lives in Bali & Nusa Tenggara Islands; 0 otherwise	0.077	0.266
Kalimantan	Dummy, 1 if the household lives in Kalimantan Island; 0 otherwise	0.098	0.297
Sulawesi	Dummy, 1 if the household lives in Sulawesi Island; 0 otherwise	0.140	0.347
Maluku	Dummy, 1 if the household lives in Maluku Island; 0 otherwise	0.033	0.180
Papua	Dummy, 1 if the household lives in Papua Island; 0 otherwise	0.058	0.234

3.2. The impact of various types of financial access on household welfare

Table 2 presents the results of the Ordinary Least Squares (OLS) regression, offering valuable insights into the role of financial institutions in shaping household income. The coefficient for microfinance participation (0.123) indicates a positive and statistically significant impact, suggesting that households with access to microfinance experience, on average, a 12.3% increase in income. This finding aligns with existing literature, which consistently emphasizes the positive role of microfinance in enabling low-income households to access credit, invest in income-generating activities, and enhance financial stability. Microfinance has been shown to help households diversify income sources, reduce poverty, and cushion against economic shocks by smoothing both consumption and investment patterns (Chikwira et al., 2022). In contrast, the coefficient for cooperative access (-0.003) is not statistically significant, with a p-value of 0.587. This suggests that, within this sample, access to cooperatives does not have a measurable impact on household income. This finding could reflect the possibility that cooperatives may be less effective at increasing income directly or that their benefits are realized in non-monetary forms or over longer time horizons.

Interestingly, informal financial institutions are associated with a negative coefficient (-0.047), indicating that households relying on these services experience, on average, a 4.7% reduction in income. This result aligns with the broader literature, which highlights the challenges posed by informal financial systems. These services often charge higher interest rates and lack regulatory oversight, leading to greater financial strain on borrowers (Ayyagari et al., 2008). Moreover, households engaging with informal lenders are at higher risk of falling into debt cycles, further suppressing income levels. Studies suggest that while informal financial systems offer accessibility, their unfavorable lending terms can exacerbate poverty and hinder income growth. Access to commercial banks, however, demonstrates a strong positive impact on household income, with a coefficient of 0.286 and a highly significant p-value of 0.000. This implies that households with access to formal banking services experience, on average, a 28.6% increase in income compared to those without access. This underscores the critical role of formal banking systems in improving economic outcomes for households (Mohammed et al., 2020). Banking services, including access to credit, savings products, and financial management tools, enable households to make more informed financial decisions, invest in productive activities, and better manage risks. These factors collectively contribute to higher income levels (Gloukoviezoff, 2007).

Table 2
The impact of various types of financial access on household welfare.

Variables	Household income		
	Coef.	Std. Err.	P-value
Microfinance	0.123	0.004	0.000***
Cooperative	-0.003	0.005	0.587
Informal Financial Institution	-0.047	0.008	0.000***
Commercial banks	0.286	0.004	0.000***
Age	0.001	0.000	0.000***
Education	0.053	0.000	0.000***
Gender	0.077	0.004	0.000***
Marital Status	0.056	0.004	0.000***
Family Size	0.133	0.001	0.000***
Sumatra	0.011	0.007	0.109
Java	-0.041	0.007	0.000***
Bali and Nusa Tenggara	-0.113	0.008	0.000***
Kalimantan	0.186	0.007	0.000***
Sulawesi	-0.118	0.007	0.000***
Maluku	-0.003	0.009	0.698
Papua	0.089	0.008	0.000***
_cons	13.934	0.009	0.000
F(17, 331050)	9544.230		
Prob > F	0.000		
R-squared	0.316		
Adj R-squared	0.316		
Root MSE	0.551		
Observation	331,068		

In addition to financial access, this study incorporates demographic and geographic control variables into the OLS estimation, providing deeper insights into the determinants of household income. Age has a small but statistically significant positive effect, with each additional year of the household head's age associated with a slight increase in income. This likely reflects the accumulation of experience, skills, and social capital over time. Education emerges as a critical factor, with a coefficient of 0.053 indicating that each additional year of schooling increases household income by 5.3%. This finding underscores the transformative role of education in enhancing earning potential, consistent with established theories of human capital and income growth. Gender differences are pronounced, with male-headed households earning 7.7% more than female-headed households, highlighting persistent gender income disparities. These disparities may stem from structural labor market inequalities, differing employment opportunities, and entrenched societal norms. Marital status also plays a significant role, as married household heads earn 5.6% more on average, likely due to pooled economic resources and the stability that marriage often provides (Piao, 2021). Family size has a notable impact, with larger families tending to report higher household incomes. This may reflect the contributions of additional income earners within the household, although it could also indicate increased economic pressures due to a larger number of dependents (Stewart et al., 2023). Geographic disparities are significant, revealing the uneven distribution of income across Indonesia. Households in Kalimantan and Papua earn substantially more—18.6% and 8.9% higher incomes, respectively, likely driven by resource-based economic activities prevalent in these regions. Conversely, households in Bali and Nusa Tenggara, as well as Sulawesi, report lower incomes by 11.3% and 11.8%, respectively, reflecting the challenges of economic underdevelopment in these areas. These regional patterns align with existing research on spatial inequality and income distribution, which emphasize the persistent economic divides between Indonesia's more and less developed regions (Chikwira et al., 2022).

3.3. Disaggregated estimation based on gender differences

The disaggregated OLS regression results, presented in Table 3, reveal significant gender differences in the impact of financial access on household income. Overall, the findings indicate that microfinance and cooperatives exert a stronger positive influence on income for female-headed households compared to male-headed households. Informal financial institutions show benefits exclusively for female-headed households, while access to banks improves income similarly for both genders. Microfinance demonstrates a positive and significant effect for both male- and female-headed households; however, the impact is greater for women, with an income increase of 10.9%, compared to 7.7% for men. This aligns with existing literature that highlights the targeted nature of microfinance programs towards women, which helps them access resources that enhance income and financial independence (Chikwira et al., 2022). Similarly, access to cooperatives yields a stronger positive effect for female-headed households, leading to a 5.1% increase in income compared to a 2.2% increase for male-headed households. This may reflect the role of cooperatives in providing women with opportunities for collective action and tailored financial products that support income generation (Chikwira et al., 2022). For informal financial institutions, the results show no significant effect for male-headed households, whereas female-headed households experience a 3.6% income increase. This suggests that informal credit networks may serve as an important financial alternative for women, particularly in regions where formal financial services are limited

(Ezzahid & Elouaourti, 2021). Finally, access to banks results in a similar positive income effect for both genders, with an increase of approximately 9.5%, underscoring the critical role of formal banking systems in improving household welfare. These disaggregated results by gender underscore key differences in how financial access affects household income (Sakyi-Nyarko et al., 2022). Female-headed households benefit more from access to microfinance and cooperatives than their male counterparts, highlighting the potential of these institutions to address gender disparities in financial inclusion (Alemayehu, 2020). Additionally, the positive impact of informal financial institutions for women, contrasted with the lack of significant effects for men, suggests that informal networks act as vital lifelines for women in areas with limited access to formal financial services. The consistently positive effect of bank access on income for both genders emphasize the importance of formal financial inclusion in enhancing household welfare across demographic groups.

Table 3
Disaggregated estimation based on gender differences

Variables	Male			Female		
	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value
Microfinance	0.077	0.002	0.000***	0.109	0.010	0.000***
Cooperative	0.022	0.003	0.000***	0.051	0.010	0.000***
Informal Financial Institution	-0.009	0.005	0.079*	0.036	0.016	0.026**
Commercial banks	0.096	0.003	0.000***	0.094	0.010	0.000***
Control variables		Yes			Yes	
Location		Yes			Yes	

3.4 Disaggregated estimation based on urban-rural differences

Table 4 presents the disaggregated OLS regression results, comparing the impact of financial access on household income between urban and rural households. Overall, the findings indicate that microfinance and cooperatives have a stronger positive effect on income in rural areas, while bank access is more beneficial for urban households. Informal financial institutions negatively affect household income in urban areas but have a slight positive impact in rural settings. Access to microfinance significantly increases household income in both urban and rural areas, with a stronger effect observed in rural households (7.0%) compared to urban households (5.2%). This finding aligns with existing literature suggesting that microfinance programs are particularly impactful in rural areas where formal financial institutions are less accessible, making microfinance a critical tool for income generation. Similarly, access to cooperatives shows a significant positive effect on rural income, increasing it by 4.3%, while the effect in urban areas is statistically insignificant (p-value 0.266). This disparity likely reflects the role of cooperatives in rural communities, where they provide essential credit and market access that can enhance household income. For informal financial institutions, the results reveal contrasting effects between urban and rural areas. In urban settings, reliance on informal financial services is associated with a significant 3.1% reduction in income, likely due to high interest rates and unfavorable lending terms. Conversely, rural households experience a modest 1.4% income increase from informal financial access, which may reflect their dependence on informal networks in the absence of formal financial services. Access to banking services significantly boosts income in both urban and rural areas, though the effect is more pronounced in urban households (8.4%) compared to rural households (5.4%). This result underscores the pivotal role of formal banking systems in enhancing household welfare, particularly in urban areas where these services are more accessible and integrated into the local economy.

Table 4
Disaggregated estimation based on urban-rural differences

Variables	Urban			Rural		
	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value
Microfinance	0.052	0.004	0.000***	0.070	0.003	0.000***
Cooperative	-0.005	0.005	0.266	0.043	0.003	0.000***
Informal Financial Institution	-0.031	0.008	0.000***	0.014	0.006	0.018**
Bank	0.084	0.004	0.000***	0.054	0.003	0.000***
Control variables						
Location						

4. Conclusion and Policy Implication

This study examines the impact of various financial institutions microfinance, cooperatives, informal financial institutions, and commercial banks on household welfare in Indonesia. Using data from over 331,000 households and employing Ordinary Least Squares (OLS) regression, the research investigates how access to these financial services influence's household income, a key measure of welfare. The findings indicate that access to microfinance and commercial banks significantly enhances household

welfare, with microfinance increasing income by 12.3% and commercial banks by 28.6%. Conversely, informal financial institutions negatively affect household income, resulting in a 4.7% reduction, underscoring their potential to exacerbate financial vulnerability. The results also reveal that microfinance and cooperatives have a particularly strong positive effect on female-headed and rural households, highlighting their critical role in supporting marginalized communities. Meanwhile, commercial banks provide more substantial benefits in urban areas, positively impacting both male- and female-headed households, where access to formal banking services is more prevalent.

These findings underscore the need to expand microfinance and cooperative services, particularly in rural areas and for female-headed households, to enhance financial inclusion and improve income levels. Government programs should prioritize supporting these institutions through training and financial literacy initiatives tailored to marginalized groups. Additionally, efforts should focus on regulating informal financial services to mitigate debt cycles and providing alternative credit options in areas where formal banking is unavailable. Expanding commercial banking services in urban areas potentially through digital platforms could further improve accessibility and drive economic growth among underserved populations. Such measures would help reduce income disparities and enhance overall household welfare in Indonesia.

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