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# Does Financial Inclusion Enhance Indonesia's First Demographic Dividend?

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## Abstract

This study examines whether financial inclusion enhances the first demographic dividend in Indonesia. Using a household-level approach, we measure the first demographic dividend through the economic support ratio and per capita expenditure, while financial inclusion is assessed based on savings account ownership in formal financial institutions. The research utilizes data from the 2022 National Socio-Economic Survey (Susenas) and applies a multiple linear regression model estimated via the Ordinary Least Squares (OLS) method. Empirical findings indicate that financial inclusion and the economic support ratio significantly enhance the first demographic dividend, as reflected in increased per capita expenditure. However, nearly one-third of households still lack access to formal financial institutions, with evidence suggesting a concentration of savings account ownership within specific households. Subsample analysis underscores the need to optimize the demographic dividend through financial inclusion, particularly for households headed by females, those engaged in agriculture and the informal sector, poor households, and those in rural areas and outside Java. Therefore, we recommend that the financial industry expand its services beyond its current target market and proactively tailor financial products to meet the diverse needs of the Indonesian population.



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## INTRODUCTION

The demographic dividend has become a central issue in Indonesia's economic and population policies, driven by the country's large working-age population, which has the potential to increase per capita income and accelerate economic growth. Consequently, achieving the demographic dividend is a priority in the National Medium-Term Development Plan (RPJMN) 2020–2024 and a key strategy for realizing Indonesia's Vision 2045 (Bappenas, 2019; Bappenas, 2023). However, as the demographic dividend is highly dependent on population structure dynamics, its window of opportunity is limited. Mason (2005) and Lee and Mason (2006) define this phase as the first demographic dividend, during which a concentration of the working-age population directly contributes to higher per capita income but remains strongly influenced by birth rates. Mason et al. (2017) predict that Indonesia's first demographic dividend began in 1977 and will end in 2035, spanning 59 yea, leading to an average per capita income increase of 0.44% annually. A more optimistic scenario from Bappenas (2023) extends this window until 2039. Therefore, Indonesia still has the opportunity to reap the maximum economic benefits from this first demographic dividend in the coming years.

Bloom et al. (2003) describe three ways to optimize the first demographic dividend: changes in labor supply, savings, and human capital. From a policy perspective in Indonesia, Bappenas (2023) translates the optimization of the first demographic dividend into five strategies: improving the quality of human capital, creating quality employment, reducing the number of young people who are Not in Education, Employment, or Training (NEET), increasing female participation, and improving financial literacy and investment. With this optimization and maximizing the potential for increasing per capita income, these efforts can extend the demographic dividend period or lead to a second demographic dividend. This second demographic dividend phase no longer depends on changes in population structure or labor quantity but rather on capital accumulation, which can promote a more sustainable increase in per capita income (Mason, 2007; Mason & Kinugasa, 2008). Unsurprisingly, Lee and Mason (2006) explain that the first demographic dividend is only temporary, while the second demographic dividend is long-term and has no time limit.

Financial inclusion becomes essential when considering savings and capital accumulation as strategies to optimize the first demographic dividend and extend it to the second phase. This is because financial inclusion is associated with per capita income, as widely demonstrated in empirical studies such as those by Afonso and Blanco-Arana (2024), Kanga et al. (2022), and Anand and Chhikara (2013). In addition to increasing per capita income, financial inclusion contributes to improving welfare indicators such as poverty reduction, lower inequality, and human development, as identified in studies by Beck et al. (2007), Anand and Chhikara (2013), Kim (2016), Fouejieu et al. (2020), and Erlando et al. (2020). A positive contribution arises from the mechanism through which financial inclusion protects against financial shocks (Moore et al., 2019). Nevertheless, Demirgüç-Kunt et al. (2021) found that approximately 24% of the adult population worldwide lacks a bank account. In Indonesia, this figure is twice as high, with 48% of adults not accessing formal financial institutions. Recently, the Financial Services Authority (OJK) released Indonesia's financial inclusion index 2024 at 75.02%, with financial inclusion among the 18–50 age group ranging from 79.21% to 84.28% (OJK, 2024). The question then arises: Can this level of financial inclusion boost Indonesia's first demographic dividend?

Various studies on financial inclusion and its impact on Indonesia's development have been conducted extensively. At the macro level, Rumbogo et al. (2021) found a positive relationship between financial inclusion and regional economic development in Indonesia. Studies using provincial-level panel data, such as those by Andrian et al. (2021) and Fitriatinnisa and Khoirunurrofik (2021), found that financial

inclusion can reduce poverty and inequality in Indonesia. Further exploration by Aginta et al. (2018) revealed that the impact of financial inclusion on income inequality is only significant in industrial- and mining-based regions but not in agricultural-based ones. Regarding human capital, financial inclusion positively impactshe t Human Development Index (Hidayat & Sari, 2022).

At the micro level, Dawood et al. (2019), using the 2017 National Socioeconomic Survey (Susenas) data, found that financial inclusion successfully reduces the likelihood of households experiencing absolute poverty. Meanwhile, Shrestha and Nursamsu (2021) and Alwahidin et al. (2023) using Indonesian Family Life Survey (IFLS), using Indonesian Family Life Survey (IFLS) data, found that financial inclusion can increase household consumption and savings, especially for households in the lowest quintile. Studies with primary data using a business approach, such as those by Gitaharie et al. (2018) and Riwayati (2017), found that financial inclusion impacts the welfare and success of household businesses and small and medium enterprises.

This research aims to fill a gap in the empirical literature, particularly regarding the impact of financial inclusion on the demographic dividend, which has not yet been studied in Indonesia. Although household-level studies, such as those by Shrestha and Nursamsu (2021) and Alwahidin et al. (2023), use measures that are closely related to the first demographic dividend, namely consumption and savings, they do not specifically employ indicators of the economic support ratio or the proportion of the working-age population in their analysis. Lee and Mason's (2010) formulation of the demographic dividend model can serve as a reference for measuring this first demographic dividend. Meanwhile, Afonso and Blanco-Arana's (2024) macro-level empirical model, which incorporates financial inclusion, can serve as a reference for examining the influence of financial inclusion on the first demographic dividend mechanism at the household level.

Therefore, this study aims to investigate whether financial inclusion can enhance the achievement of the first demographic dividend in Indonesia through a household-level analysis. A household-level analysis enables further exploration of how financial inclusion influences the first demographic dividend while considering various household characteristics. This study's findings are expected to provide more specific policy implications for improving financial industry innovation and the role of the banking sector in Indonesia.

## RESEARCH METHODS

The empirical model in this study is derived from the first demographic dividend model proposed by Lee and Mason (2010), which explains that per capita income is a function of labor wages and the economic support ratio. Meanwhile, the impact of financial inclusion on the first demographic dividend follows the empirical model proposed by Afonso and Blanco-Arana (2024), which suggests that per capita income growth is a function of financial inclusion and financial development.

This study focuses on the economic support ratio and financial inclusion variables; therefore, per capita income is modeled as a function of these two variables, which the following equation can express:

$$y = f(esr, finc) \quad \text{..... (1)}$$

where $y$ represents per capita income, $esr$ represents the economic support ratio, and $finc$ represents financial inclusion.

However, unlike Lee and Mason (2010) and Afonso and Blanco-Arana (2024), who conducted research at the macro level, this study examines the impact of financial inclusion on the first demographic dividend at the micro level, specifically within households. Therefore, we use data from the 2022 National Socioeconomic Survey from BPS-Statistics Indonesia and apply several approaches to the variables under study.

First, we proxy per capita income using per capita expenditure due to data limitations. Additionally, (Friedman, 1957) emphasized that

per capita expenditure can proxy for long-term household economic status. Second, we measure the economic support ratio as the ratio of working household members (effective producers) to total household members (effective consumers), following the formulation by Lee and Mason (2006). Third, we use a dummy variable indicating ownership of a savings account in a formal financial institution (banks and cooperatives) as a proxy for household financial inclusion.

Adopting an elasticity model (log-log model), we construct the following baseline empirical model for this research:

$$log(c_i) = \alpha + \beta log(esr_i) + \gamma finc_i + \varepsilon_i \quad .....(2)$$

where subscript $i$ represents the $i-$th household observation unit, $c$ represents per capita expenditure at the household level, $esr$ is economic support ratio or the ratio of working household members to the total number of household members, and $finc$ is household financial inclusion or ownership of a savings account in a formal financial institution. From the literature review, we formulated two research hypotheses. First, $\beta > 0$ or an increase in the percentage of economic support ratio will increase the percentage of per capita expenditure, a measure of the first demographic dividend. Second, $\gamma > 0$ or household financial inclusion provides an additional boost to the first demographic dividend.

Considering the characteristics of the variables in equation (2), where the dependent variable is continuous and the independent variables have a linear relationship with the dependent variable, we estimate the empirical model using multiple linear regression with Ordinary Least Squares (OLS). This estimation technique requires five Gauss-Markov assumptions to produce a Best Linear Unbiased Estimator (BLUE)(Wooldridge, 2013). The five assumptions are: (1) linear in parameters, (2) random sample from N population, (3) no perfect collinearity, (4) zero conditional mean, and (5) homoskedasticity. We apply robust standard errors as White (1980) and Hayes and Cai (2007) proposed to ensure the homoscedasticity assumption is met and hypothesis validity can be tested.

Although the large sample size and robust standard errors enhance the consistency of the estimation results and allow for hypothesis testing, the possibility of endogeneity due to omitted variable bias in equation (5), which violates the zero conditional mean assumption, cannot be ignored. To address this issue, we include control variables to correct for bias and isolate the impact of financial inclusion on the first demographic dividend.

We consider control variables that focus on individual or household decisions related to employment and access to formal financial institutions, comprising both push and pull factors. Push factors originate from internal household characteristics, such as the head of household's education level, land ownership, electricity access, and internet access. On the other hand, pull factors represent external characteristics, including urban versus rural location, Java/non-Java regions, industrial versus non-industrial areas, and regional minimum wages.

The selection of these control variables is based on data availability at the household and regional levels, their relevance to the demographic dividend and financial inclusion, and alignment with previous studies that employ similar variables, such as Dawood et al. (2019), Alwahidin et al. (2023), and Gitaharie et al. (2018). The empirical model incorporating these control variables can be expressed as follows:

$$log(c_i) = \alpha + \beta log(esr_i) + \gamma finc_i + X_i'\varphi + \varepsilon_i \quad ..... (3)$$

where $X$ is a matrix of control variables consisting of push and/or pull factors. To show the bias correction, we divide equation (6) into three models: a model with only pull factors as controls, a model with only push factors as controls, and a model using both. A more detailed description of the variables and their measurements is provided in Table 1.

To further examine the impact of financial inclusion on the first demographic dividend in Indonesia, we conducted a subsample analysis

based on various household characteristics using the empirical models in equations (2) and (3).

First, we consider measures of inclusivity such as the gender of the household head, agricultural/non-agricultural households, and formal/informal sectors. Second, we analyze welfare levels by examining the household's poverty status based on the district/city poverty line. Finally, we investigated spatial differences by comparing the household's location between urban and rural and between Java and non-Java. Detailed information about the variables for this subsample analysis is presented in Table 1.

**Table 1**. Variables and Data

| Variable | Unit | Description/Measurement | Data Source |
|---|---|---|---|
| **Variable of interest** | | | |
| Per capita expenditure ($c_i$) | IDR/month | Total household monthly expenditure divided by the number of household members | Susenas, BPS |
| Economic support ratio ($esr_i$) | ratio | Number of working household members divided by the total number of household members | Susenas, BPS |
| Financial inclusion ($finc_i$) | dummy (0,1) | Dummy = 1 if at least one household member has a savings account in a formal financial institution (banks and cooperatives). Dummy = 0 if none of the household members have one | Susenas, BPS |
| **Control variables: push factors** | | | |
| Urban/rural area ($X_{11i}$) | dummy (0,1) | Dummy = 1 if the household resides in an urban area, dummy = 0 if in a rural area | Susenas, BPS |
| Java/non-Java region ($X_{12i}$) | dummy (0,1) | Dummy = 1 if the household resides in Java, dummy = 0 if outside Java | Susenas, BPS |
| Industrial/non-industrial area ($X_{13i}$) | dummy (0,1) | Dummy = 1 if the household resides in an industrial area, dummy = 0 if in a non-industrial area. Determination of industrial/non-industrial areas follows the study by Yuliani and Nasrudin (2024), where an area is considered industrial if the share of industry and services in the regional GDP exceeds 50% | Susenas and regional GDP publications, BPS |
| Regional minimum wage ($X_{14i}$) | IDR/month | For districts/cities with a minimum wage policy, the District/City Minimum Wage (UMK) is used. If not, the Provincial Minimum Wage (UMP) is used | BPS and the Ministry of Manpower |
| **Control variables: pull factors** | | | |
| Educational attainment of the household head ($X_{21i}$) | Category (1,2,3,4,5) | Category 1 if the household head has no schooling, 2 for completed elementary school, 3 for completed junior high school, 4 for completed high school, and 5 for completed higher education | Susenas, BPS |
| Land ownership ($X_{22i}$) | dummy (0,1) | Dummy = 1 if the household owns land, dummy = 0 if not | Susenas, BPS |
| Access to electricity ($X_{23i}$) | dummy (0,1) | Dummy = 1 if the household uses metered electricity from PLN, dummy = 0 if using non-metered PLN electricity, non-PLN electricity, or no electricity | Susenas, BPS |
| Access to internet ($X_{24i}$) | dummy (0,1) | Dummy = 1 if the household head uses the internet, dummy = 0 if not | Susenas, BPS |
| **Additional variables for subsample analysis** | | | |
| Gender of household head | dummy (0,1) | Dummy = 1 if the household is headed by a female, dummy = 0 if headed by a male | Susenas, BPS |
| Employment sector of household head | dummy (0,1) | Dummy = 1 if the household head works in the agricultural sector, dummy = 0 if in the non-agricultural sector | Susenas, BPS |
| Employment status of household head | dummy (0,1) | Dummy = 1 if the household head is employed informally (self-employed, assisted by unpaid family workers, casual workers, and unpaid family workers). Dummy = 0 if employed formally (self-employed with permanent employees, salaried employees) | Susenas, BPS |
| Welfare status: poor/non-poor | dummy (0,1) | Dummy = 1 for poor households, dummy = 0 for non-poor households. This status is determined based on the District/City Poverty Line; if a household's per capita expenditure falls below the Poverty Line, they are categorized as a poor household | Susenas and Poverty Line publications, BPS |

## RESULTS AND DISCUSSION

In contrast to the national financial inclusion index, which measures the percentage of adults (aged 15-79) who use formal financial products and services, this study focuses on households as the unit of analysis in making decisions related to financial inclusion as well as income and expenditure management. Although the national financial inclusion index for formal financial institutions was recorded at 85.10% in 2022 (OJK, 2022), our household-level observations revealed a lower figure of 68.52%. This indicates a potential concentration of adults with savings accounts and formal financial services within specific households. In other words, nearly one-third of households (31.48%) in Indonesia still lack savings accounts and access to formal financial services.

The head of the household plays a central role in household decision-making. Therefore, Table 2 presents the distribution of financial inclusion based on the characteristics of the household head. In terms of gender, households headed by males have a higher proportion (72.11%) of access to formal financial institutions compared to those headed by females (63.06%).

**Table 2.** Savings Account Ownership Based on Household Head Characteristics

| Variable | Percentage of households (%) | Banked (%) | Unbanked (%) |
|---|---|---|---|
| **General** | **100.00** | **68.52** | **31.48** |
| **Household head's gender** | | | |
| Male | 87.28 | 72.11 | 27.89 |
| Female | 12.72 | 63.06 | 36.94 |
| **Household head's education** | | | |
| Unschooled | 12.66 | 53.88 | 46.12 |
| Elementary school | 30.38 | 61.13 | 38.87 |
| Junior high school | 17.19 | 71.26 | 28.74 |
| Senior high school | 29.22 | 83.48 | 16.52 |
| University | 10.55 | 95.07 | 4.93 |
| **Household head's job** | | | |
| Agriculture | 37.06 | 59.84 | 40.16 |
| Non agriculture | 62.94 | 78.31 | 21.69 |
| **Household head's job status** | | | |
| Formal | 43.37 | 79.94 | 20.06 |
| Informal | 56.63 | 64.98 | 35.02 |
| **Household head's internet access** | | | |
| Yes | 58.17 | 81.97 | 18.03 |
| No | 41.83 | 55.64 | 44.36 |

Note: the percentage of banked and unbanked is relative to certain characteristics.
Source: Data Processed, 2025

This finding is consistent with the national financial inclusion index, where financial inclusion is higher among males than females despite females having better financial literacy than males (OJK, 2022). Additionally, the higher the education level of the household head, the greater the proportion of households with savings accounts and access to formal financial institutions. For instance, among household heads who did not complete elementary school, only half (53.88%) of the households access financial services. Conversely, among households with heads who completed higher education, 95.07% already have savings accounts with formal financial institutions. This result aligns with the 2016 National Survey on Financial Literacy and Inclusion, where the financial inclusion index for those without formal education was 39.6%, and it steadily increased with higher education levels, reaching 88.0% for those with higher education (OJK, 2022). This pattern is closely related to the increase in financial literacy as a person's level of education rises.

In terms of employment, agricultural households—those where the head of the household works in the agricultural sector—have a lower proportion of savings account ownership

in formal financial institutions compared to non-agricultural households. Among all agricultural households, 40.16% have not yet accessed formal financial institutions. Soekarni et al. (2024) explain that traditionally, farmers prefer to use their own money rather than borrow from banks, which require them to follow complex procedures and provide collateral. Similarly, among households with heads who work in the informal sector, about 35.02% still lack access to formal financial institutions.

Furthermore, the penetration of information technology appears to significantly influence household decisions regarding savings account ownership in formal financial institutions. Among households where the head has been exposed to the internet, 81.97% have access to formal financial institutions. In contrast, among those who have not accessed the internet, nearly half (44.36%) do not have savings accounts or access to formal financial services. The Global Findex Report 2021 indicates that a significant increase in internet access has contributed to the growth of digital financial inclusion and economic development in Indonesia (Demirgüç-Kunt et al., 2021).

Table 3 illustrates the distribution of financial inclusion across various household characteristics. Generally, asset ownership, such as land, tends to influence household investment and access to financial institutions (Cox et al., 2005; Sachin et al., 2018). However, this study reveals that there is no significant difference in savings account ownership in formal financial institutions between households that own land and those that do not. On the other hand, the availability of infrastructure, such as electricity, appears to distinguish household financial inclusion. Households with access to electricity from the National Electricity Company (PLN) are more likely to have access to formal financial services. In contrast, among households without electricity from the PLN, 47.14% do not have a savings account with a formal financial institution. Noerhidajati et al. (2021) explain this transmission process, noting that access to electricity influences the financial differences among households related to account ownership in formal financial institutions. In terms of welfare, nearly half (45.70%) of all poor households have not yet accessed formal financial service

**Table 3.** Savings Account Ownership Based on Household Characteristics

| Variable | Percentage of the Population (%) | Banked (%) | Unbanked (%) |
|---|---|---|---|
| **General** | **100.00** | **68.52** | **31.48** |
| **Household's land ownership** | | | |
| Own | 74.83 | 71.67 | 28.33 |
| Don't have | 25.17 | 68.84 | 31.16 |
| **Household's electricity access** | | | |
| Electricity from PLN | 92.96 | 72.33 | 27.67 |
| Others | 7.04 | 52.86 | 47.14 |
| **Household's poverty status** | | | |
| Poor | 5.87 | 54.30 | 45.70 |
| Non-poor | 94.13 | 72.00 | 28.00 |
| **Household's area: rural/urban** | | | |
| Urban | 57.79 | 76.65 | 23.35 |
| Rural | 42.21 | 63.17 | 36.83 |
| **Household's area: Java/non-Java** | | | |
| Java | 58.02 | 70.85 | 29.15 |
| Non-Java | 41.98 | 71.11 | 28.89 |
| **Household's area: industrial/non-industrial** | | | |
| Industrial area | 97.79 | 71.06 | 28.94 |
| Non-industrial area | 2.21 | 66.38 | 33.62 |

Note: the percentage of banked and unbanked is relative to certain characteristics.
Source: Data Processed, 2025

In terms of location, approximately 76.55% of households living in urban areas have access to formal financial institutions. In contrast, access to formal financial services is slightly lower among households in rural areas, at 63.17%. These findings align with the study by Widyastuti et al. (2023), which indicates that the distance to financial facilities influences financial inclusion in rural areas, whereas in urban areas, where access is better and more modern, the distance to financial facilities are less of an issue. Geographically, financial inclusion between households in Java and those outside Java appears to be relatively balanced. In fact, households outside Java have a slightly higher proportion of access to formal financial services, at 71.11%. Among households in industrial areas, about 71.06% have savings accounts in formal financial institutions, while those in non-industrial areas have a slightly lower proportion of savings account ownership, at 66.38%.

The first demographic dividend heavily relies on the working-age population to boost per capita income. Table 4 presents summary statistics of the two components of the first demographic dividend, where income is proxied by per capita expenditure. On average, monthly per capita expenditure in Indonesia in 2022 was recorded at 1.47 million rupiahs, with an economic support ratio of 0.4498, or 44.98%. This support ratio indicates that, on average, two working individuals support the consumption expenditure of approximately 4-5 people (including themselves) within a household. Households with access to formal financial institutions tend to have a higher per capita expenditure (1.63 million rupiah) compared to those without access to formal financial institutions (1.07 million rupiah). Interestingly, the economic support ratio is higher in households without access to formal financial institutions (0.4596) compared to those with access (0.4458). This suggests that, despite limited economic support, financial inclusion tends to enhance the achievement of a greater first demographic dividend

**Table 4.** Summary of Statistics

| Statistics | Per capita expenditure (Rp 000) | Economic support ratio |
|---|---|---|
| **Banked** | | |
| Mean | 1,633 | 0.4458 |
| Standard deviation | 1,750 | 0.2407 |
| Min. | 139 | 0 |
| Max. | 139,000 | 1 |
| **Unbanked** | | |
| Mean | 1,068 | 0.4596 |
| Standard deviation | 777 | 0.2803 |
| Min. | 141 | 0 |
| Max. | 32,200 | 1 |
| **General** | | |
| Mean | 1,469 | 0.4498 |
| Standard deviation | 1,554 | 0.2529 |
| Min. | 139 | 0 |
| Max. | 139,000 | 1 |

Note: a total of 339,584 households were observed.

Source: Data Processed, 2025

The statistical tests presented in Table 5 validate the impact of financial inclusion on the achievement of the first demographic dividend. By improving the OLS estimation using control variables and considering R-square, Model 4, which incorporates push and pull factors, shows consistent estimation results. The findings indicate that a 1% increase in the economic support ratio significantly boosts per capita expenditure by 0.44%, or, in other words, generates a demographic dividend of 0.44%. This figure corroborates the findings of Mason et al. (2017), who reported an average increase in Indonesia's per capita income of 0.44% throughout the first demographic dividend window of opportunity. Additionally, financial

inclusion, as indicated by ownership of savings accounts in formal financial institutions, appears to have a significant impact on enhancing the first demographic dividend in Indonesia. Households with good financial inclusion achieve a first demographic dividend that is 0.19% higher than those without. The role of financial inclusion in enhancing the first demographic dividend may occur through transmission mechanisms such as protection from financial shocks, increased investment opportunities, access to credit or capital, and ease of financial transactions (Moore et al., 2019; Li, 2018; Alwahidin et al., 2023).

**Table 5.** Financial Inclusion Intervention on the First Demographic Dividend

| Variable dependent: per capita expenditure (first dividend) | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Economic support ratio | 0.346*** | 0.383*** | 0.423*** | 0.439*** |
| | (99.25) | (117.38) | (128.54) | (139.71) |
| Financial inclusion | 0.354*** | 0.312*** | 0.172*** | 0.171*** |
| | (105.56) | (95.4) | (50.91) | (51.52) |
| Constant | 13.97*** | 5.235*** | 13.48*** | 5.855*** |
| | (3621.12) | (51.26) | (1749.51) | (59.58) |
| Obs. | 315,802 | 315,802 | 300,962 | 300,962 |
| R-square | 0.118 | 0.222 | 0.257 | 0.318 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 is a model with pull factors (urban/rural, Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 is a model with push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

Further investigation into household characteristics reveals that financial inclusion has a varied impact on enhancing Indonesia's first demographic dividend. Table 6 illustrates how financial inclusion affects the first demographic dividend for households headed by females and males. Although only 12.72% of households are headed by females and a smaller proportion of these households access formal financial institutions compared to those headed by males (see Table 2), the economic support ratio and financial inclusion have a more significant impact on female-headed households. A 1% increase in the economic support ratio can boost per capita expenditure by 0.51%, and financial inclusion provides an additional demographic dividend of 0.21% for female-headed households. In contrast, for male-headed households, the economic support ratio and financial inclusion increase the first demographic dividend by 0.42% and 0.18%, respectively. This analysis is supported by the decomposition of the national financial literacy and inclusion index by gender in 2022 (OJK, 2022). Despite higher financial inclusion among males, females exhibit better financial literacy, which likely explains why financial inclusion in female-headed households more effectively contributes to increasing Indonesia's first demographic dividend.

**Table 6.** Heterogeneous Effect by Household Head's Gender

| Var. dep.: per capita expenditure (first dividend) | Female household head | | | | Male household head | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| Economic support ratio | 0.449*** | 0.485*** | 0.507*** | 0.527*** | 0.331*** | 0.370*** | 0.400*** | 0.419*** |
| | (40.78) | (47.01) | (48.19) | (52.37) | (88.36) | (105.52) | (114.53) | (125.29) |
| Financial inclusion | 0.388*** | 0.333*** | 0.199*** | 0.190*** | 0.352*** | 0.311*** | 0.168*** | 0.169*** |
| | (37.5) | (34) | (18.23) | (18.22) | (99.07) | (89.5) | (47.43) | (48.3) |
| Constant | 14.04*** | 4.995*** | 13.55*** | 5.559*** | 13.96*** | 5.332*** | 13.45*** | 5.993*** |
| | (1553.1) | (16.89) | (568.85) | (19.07) | (3269.9) | (49.19) | (1641.7) | (57.81) |

| Var. dep.: per capita expenditure (first dividend) | Female household head | | | | Male household head | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 1 | Model 2 | Model 1 | Model 2 | Model 1 | Model 2 |
| Obs. | 38,423 | 38,423 | 34,498 | 34,498 | 277,379 | 277,379 | 266,464 | 266,464 |
| R-square | 0.143 | 0.256 | 0.29 | 0.356 | 0.113 | 0.217 | 0.254 | 0.314 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 is a model with pull factors (urban/rural, Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 is a model with push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

The impact of financial inclusion on the first demographic dividend is more heterogeneous when examining agricultural and non-agricultural households. Table 7 shows that the first demographic dividend achievement in agricultural households is lower than in non-agricultural. A 1% increase in the economic support ratio raises per capita expenditure by 0.38%, with financial inclusion contributing 0.15% to agricultural households. Meanwhile, in non-agricultural households, a 1% increase in the economic support ratio can boost per capita expenditure by 0.47%, with financial inclusion providing a more significant contribution of 0.23%. The disparity in savings account ownership between agricultural and non-agricultural households in formal financial institutions is a major factor driving the differing impacts of financial inclusion on the first demographic dividend. This condition is also explained by Mishra and Bhardwaj (2022), who found that agricultural households have lower access to formal financial institutions compared to non-agricultural households due to factors such as age and the literacy level of the household head.

**Table 7.** Heterogeneous Effect by Agricultural/Non-agricultural Household

| Var. dep.: per capita expenditure (first dividend) | Agricultural household | | | | Non-agricultural household | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| Economic support ratio | 0.275*** | 0.323*** | 0.341*** | 0.376*** | 0.417*** | 0.432*** | 0.459*** | 0.469*** |
| | (63.61) | (76.62) | (78.49) | (88.71) | (89.21) | (97.79) | (105.35) | (112.2) |
| Financial inclusion | 0.213*** | 0.205*** | 0.137*** | 0.136*** | 0.401*** | 0.376*** | 0.202*** | 0.205*** |
| | (48.38) | (47.84) | (31.36) | (31.64) | (85.35) | (81.6) | (41.47) | (42.7) |
| Constant | 13.85*** | 5.734*** | 13.54*** | 5.883*** | 14.10*** | 5.645*** | 13.48*** | 5.852*** |
| | (3025.5) | (32.08) | (1353.2) | (33.79) | (2465.5) | (47.11) | (1158.9) | (50.96) |
| Obs. | 156,485 | 156,485 | 144,064 | 144,064 | 177,347 | 177,347 | 173,615 | 173,615 |
| R-square | 0.074 | 0.154 | 0.160 | 0.226 | 0.145 | 0.230 | 0.266 | 0.326 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 is a model with pull factors (urban/rural, Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 is a model with push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

In line with the findings in agricultural and non-agricultural households, financial inclusion also has varying effects on the first demographic dividend when considering the formal and informal sectors. Table 8 shows how financial inclusion mechanisms impact the first demographic dividend for households where the head works in formal versus informal sectors. For households where the head works formally, a 1% increase in the economic support ratio can raise per capita expenditure by 0.48%, with financial inclusion providing an additional 0.24% to the first demographic dividend. In contrast, for households with heads working in the informal

sector, a 1% increase in the economic support ratio results in a relatively lower dividend of 0.40%, and financial inclusion adds only 0.16%. These findings align with previous research indicating that informal sector households have lower access to financial institutions compared to formal sector households. Moreover, Rothenberg et al. (2016) found that many informal businesses in Indonesia lack the desire to expand or borrow from formal financial sources, noting that reducing registration costs has no impact on this sector. Therefore, Cama et al. (2024) emphasize the importance of financial inclusion in promoting migration from the informal to the formal sector, enabling the country to better optimize the first demographic dividend to enhance welfare.

**Table 8.** Heterogeneous Effect by Household Head's Job Status

| **Var. dep.: per capita expenditure (first dividend)** | **Formal** | | | | **Informal** | | | |
|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Economic support ratio | 0.431*** | 0.452*** | 0.469*** | 0.483*** | 0.316*** | 0.350*** | 0.383*** | 0.400*** |
| | (76.37) | (84.97) | (90.8) | (97.3) | (77.47) | (90.79) | (95.8) | (104.77) |
| Financial inclusion | 0.456*** | 0.411*** | 0.220*** | 0.215*** | 0.250*** | 0.233*** | 0.144*** | 0.146*** |
| | (83.19) | (75.85) | (38.46) | (38.16) | (62.09) | (59.42) | (35.83) | (36.98) |
| Constant | 14.10*** | 5.646*** | 13.47*** | 5.978*** | 13.92*** | 5.614*** | 13.54*** | 5.901*** |
| | (2034.7) | (38.69) | (1061.4) | (43.14) | (3171.1) | (42.6) | (1435.2) | (45.41) |
| Obs. | 131,944 | 131,944 | 128,935 | 128,935 | 201,888 | 201,888 | 188,744 | 188,744 |
| R-square | 0.158 | 0.244 | 0.293 | 0.348 | 0.092 | 0.189 | 0.193 | 0.262 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 is a model with pull factors (urban/rural, Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 is a model with push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

Extreme disparities are evident in the impact of financial inclusion on the first demographic dividend when comparing poor and non-poor households. As shown in Table 9, non-poor households, on average, gain a 0.39% dividend from a 1% increase in the economic support ratio and a 0.17% dividend from financial inclusion, while poor households receive a much lower first demographic dividend. A 1% increase in the economic support ratio for poor households only increases per capita expenditure by 0.06%, while financial inclusion contributes just 0.03% to the increase in per capita expenditure. This condition occurs because nearly half (45.70%) of poor households in Indonesia have not yet accessed formal financial institutions. Interestingly, Johnston Jr and Morduch (2008) found that about 40% of poor households qualify for credit according to the criteria of Indonesia's largest microfinance institutions, but small loans pose practical challenges and strain existing cost structures. On the other hand, loans taken by poor households are not necessarily for irrational consumption, as commonly believed, but for human capital investments such as education and health for their children. Li (2018) describes this as the tunnel effect, where poor households use financial services to improve their livelihoods and escape the poverty trap.

**Table 9.** Heterogeneous Effect on Poor/Non-poor Households

| Var. dep.: per capita expenditure (first dividend) | Poor | | | | Non-poor | | | |
|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Economic support ratio | -0.011** | 0.038*** | 0.027*** | 0.059*** | 0.302*** | 0.337*** | 0.379*** | 0.394*** |
| | (-2.02) | (7.41) | (4.6) | (10.96) | (86.69) | (104.28) | (114.52) | (125.54) |
| Financial inclusion | 0.032*** | 0.039*** | 0.020*** | 0.028*** | 0.325*** | 0.282*** | 0.156*** | 0.154*** |
| | (5.93) | (8.06) | (3.6) | (5.5) | (99.35) | (88.99) | (47.05) | (47.39) |
| Constant | 12.88*** | 8.79*** | 12.85*** | 9.09*** | 14.01*** | 5.46*** | 13.56*** | 6.05*** |
| | (1791.6) | (54.27) | (1098.48) | (54.86) | (3728.2) | (54.7) | (1762.5) | (62.72) |
| Obs. | 20,723 | 20,723 | 18,521 | 18,521 | 295,079 | 295,079 | 282,441 | 282,441 |
| R-square | 0.005 | 0.229 | 0.098 | 0.266 | 0.102 | 0.214 | 0.238 | 0.305 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 is a model with pull factors (urban/rural, Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 is a model with push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

Regional characteristics determine household access to formal financial institutions. Table 10 shows the variations in the impact of financial inclusion on the first demographic dividend when comparing urban and rural areas. For households in urban areas, a 1% increase in the economic support ratio can raise per capita expenditure by 0.48%, with financial inclusion adding 0.24% to the first demographic dividend. This impact is higher than the effect on rural households. On average, those living in rural areas experience a 0.38% increase in per capita expenditure from a 1% increase in the economic support ratio and gain only a 0.12% dividend from savings account ownership or financial inclusion. These results are also confirmed by the 2022 literacy and financial inclusion levels by regional strata, showing that financial literacy and inclusion are still lower in rural areas compared to urban areas (OJK, 2022).

**Table 10.** Heterogeneous Effect by Urban/Rural Location

| Var. dep.: per capita expenditure (first dividend) | Urban | | | | Rural | | | |
|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Economic support ratio | 0.386*** | 0.422*** | 0.459*** | 0.478*** | 0.306*** | 0.327*** | 0.356*** | 0.377*** |
| | (72.75) | (83.89) | (93.73) | (101.92) | (89.16) | (96.62) | (102.34) | (109.83) |
| Financial inclusion | 0.444*** | 0.422*** | 0.214*** | 0.217*** | 0.173*** | 0.189*** | 0.100*** | 0.113*** |
| | (80.77) | (78.72) | (37.68) | (39.26) | (48.79) | (53.98) | (27.35) | (31.34) |
| Constant | 14.05*** | 4.261*** | 13.43*** | 5.240*** | 13.90*** | 8.228*** | 13.66*** | 8.198*** |
| | (2197.4) | (33.1) | (924.74) | (42.34) | (3549.9) | (57.86) | (1771.1) | (57.32) |
| Obs. | 129,763 | 129,763 | 127,330 | 127,330 | 186,039 | 186,039 | 173,632 | 173,632 |
| R-square | 0.138 | 0.223 | 0.285 | 0.342 | 0.089 | 0.120 | 0.155 | 0.185 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 has pull factors (Java/non-Java, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 has push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1%, respectively.

This disparity drives differences in the impact of financial inclusion between urban and rural households. Sachin et al. (2018) and Noerhidajati et al. (2021) also emphasize that regional characteristics, such as household location, urban or rural, differentiate financial inclusion and per capita expenditure patterns. However, this condition also depends on possible anomalies. For example, in rural areas, the threat of crop failure for agricultural households can reduce their expenditure. Similarly, in urban areas, inflation spikes and job instability can have a dominant effect on expenditure despite better financial inclusion.

Despite financial inclusion, measured by savings account ownership in formal financial institutions, being relatively equal between Java and non-Java regions, the intervention of financial inclusion on the first demographic dividend shows slight differences, as presented in Table 11. For households in Java, a 1% increase in the economic support ratio boosts per capita expenditure by 0.45%, with financial inclusion contributing an additional 0.21%. Meanwhile, households outside Java receive a relatively lower first demographic dividend. A 1% increase in the economic support ratio outside Java raises per capita expenditure by 0.42%, with financial inclusion through savings account ownership contributing only 0.15%. The disparity in development between Java and non-Java is thought to be a factor driving these differences in the impact of financial inclusion on the first demographic dividend. Previous studies have still found significant disparities between Java and non-Java in terms of human resource quality, access to education, and infrastructure (such as roads and seaports) (Ananda et al., 2023; Miranti, 2017; Yudhistira & Sofiyandi, 2018; Yamauchi et al., 2011).

**Table 11.** Heterogeneous Effect by Java/Non-Java Location

| **Var. dep.: per capita expenditure (first dividend)** | **Java** | | | | **Non-Java** | | | |
|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Economic support ratio | 0.328*** | 0.385*** | 0.432*** | 0.454*** | 0.372*** | 0.380*** | 0.423*** | 0.421*** |
| | (57.72) | (73.09) | (80.79) | (89.69) | (110.03) | (118.16) | (131.43) | (134.92) |
| Financial inclusion | 0.397*** | 0.357*** | 0.183*** | 0.194*** | 0.296*** | 0.249*** | 0.150*** | 0.136*** |
| | (75.55) | (70.33) | (34.11) | (37.15) | (88.27) | (76.14) | (44.12) | (40.43) |
| Constant | 13.92*** | 4.78*** | 13.37*** | 5.54*** | 14.05*** | 5.68*** | 13.62*** | 6.16*** |
| | (2319.8) | (41.36) | (918.47) | (49.18) | (3544.1) | (33.84) | (1938.2) | (37.61) |
| Obs. | 96,058 | 96,058 | 92,504 | 92,504 | 219,744 | 219,744 | 208,458 | 208,458 |
| R-square | 0.111 | 0.238 | 0.264 | 0.338 | 0.135 | 0.201 | 0.258 | 0.292 |

Note: per capita expenditure and economic support ratio are in logarithmic form. Model 1 is a model without control variables. Model 2 has pull factors (urban/rural, industrial/non-industrial, and regional minimum wage in logarithmic form). Model 3 has push factors (household head's education, land ownership, electricity, and internet access). Model 4 is a model with push and pull factors. Numbers in parentheses are t-statistics. Asterisks (*, **, *) denote significance levels at the 10%, 5%, and 1% levels, respectively.

## CONCLUSION

This study finds that financial inclusion, measured by savings account ownership in formal financial institutions, significantly enhances Indonesia's first demographic dividend. Financial inclusion and the economic support ratio have proven to increase the average household per capita expenditure. However, this study also finds that nearly one-third of households in Indonesia still lack access to formal financial services, and there is a tendency for account ownership to be concentrated in certain households. This study also explores how financial inclusion interventions affect the first demographic dividend across various household characteristics. Economic support ratio and financial inclusion have a more significant impact on increasing per capita expenditure in female-headed households than male-headed households. From the employment perspective,

the first demographic dividend from the economic support ratio and financial inclusion is relatively larger for non-agricultural households than for agricultural households and those working in the formal sector compared to the informal sector. The most extreme case is that poor households benefit very little from the first demographic divided by the economic support ratio and financial inclusion. From a regional perspective, urban households experience greater per capita expenditure from the economic support ratio and financial inclusion than those in rural areas. Similarly, households in Java tend to enjoy a larger first demographic dividend than those outside Java.

Although this study offers a comprehensive analysis of the impact of financial inclusion on Indonesia's first demographic dividend, we acknowledge several limitations. Firstly, due to limitations in micro-level income data, this study uses expenditure as a proxy for income. Future research could explore using income measurements to investigate the effects of financial inclusion. Secondly, this study primarily examines household financial inclusion from the perspective of savings account ownership in formal financial institutions (banks and cooperatives). Future research could extend this exploration to include access to other formal financial institutions such as insurance, pension funds, financing institutions, microfinance, fintech, and capital markets. We also recognize the potential for underbanking when using account ownership as a metric. Therefore, we suggest enriching the analysis by incorporating indicators of usage and engagement with formal financial services to better understand the impact of financial inclusion in future research.

We propose several policy recommendations to optimize the role of the financial industry in Indonesia, especially the banking sector, in maximizing the benefits of Indonesia's first demographic dividend. These recommendations focus on expanding financial services to reach a broader population and offering products tailored to their needs. First, our study focuses on the importance of financial inclusion at the household level and recommends that the National Financial Inclusion Strategy (SNKI) consider households as units of analysis. Second, we emphasize the need to prioritize females, especially female heads of households, in financial inclusion programs. Third, we also highlight the importance of targeting the agricultural and informal sectors for financial inclusion, as these sectors face challenges in accessing financial services. The study recommends providing social assistance incentives and simplifying procedures for these sectors. Fourth, policymakers should encourage the financial industry to reach out to low-income households and offer them financial support through loans and other financial services. Finally, the study focuses on regional equity and suggests targeting rural areas and regions outside Java for financial inclusion.

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