

The Financial Inclusion Gender Gap: A Case Study of Households in Indonesia

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Abstract

The financial inclusion gender gap is an important issue that has become a global concern, as financial inclusion can enhance women's empowerment in various aspects. Using the Fairlie Decomposition method, this study aims to describe whether there is financial inclusion gender gap in Indonesia and analyze what factors contribute significantly to the gap. This study represents one of the earliest analyses of the household financial inclusion gender gap, using the decomposition method, which is considered the most suitable for quantifying the contribution of the factors to the gap. The findings reveal that female-headed households have less access to financial inclusion. The biggest contributions of this gap are explained by differences in socioeconomic characteristics among genders, such as the limitations of the female-headed household in owning a mobile phone, the lower participation in the formal labor market, and the lower level of education. Thus, policies that focus solely on removing financial inclusion barriers from the supply side are insufficiently effective, as differences in gender characteristics or demand-side factors have become the primary causes of the financial inclusion gender gap.

Keywords: *Financial Inclusion, Gender Gap, Decomposition*

JEL Classification: G20, J16, O16

INTRODUCTION

The financial inclusion gap is a big issue in today's economy. One of the factors that impede the level of financial inclusion is the financial inclusion inequality among genders. Survey data from The Global Findex Database 2017, representing around 150,000 adults in more than 140 countries, informs that the percentage of men who have an account is 72%, while women are only 65%. In other words, there is a gender gap in financial inclusion by 7 percentage points. In developing countries, the gap reaches 9 percentage points (Demirguc-Kunt et al., 2018). This difference may not seem too significant but compared with the previous Global Findex Database Survey in 2011 and 2014, the gap in account ownership among genders remained stagnant by 7 percentage points globally and 9 percentage points for developing countries even though account ownership generally increased (Demirguc-Kunt et al., 2015). This result indicates that the financial inclusion gender gap persists over time.

The financial inclusion gender gap also occurs in Indonesia. Based on the survey results conducted by the Financial Services Authority (OJK) in 2019, the financial inclusion index for men is higher than for women (77.24% and 75.15%, respectively). In 2017, the Ministry of National Development Planning / National Development Planning Agency (Bappenas) conducted the Survey on Financial Inclusion and Access (SOFIA) in four provinces: East Java, West Nusa Tenggara, East Nusa Tenggara, and South Sulawesi. The survey results indicated that 45% of men used banking services, while only 42% of women did so. The survey also explained that women prefer to use informal financial services compared to formal financial services.

To address the issue of the financial inclusion gender gap, the Indonesian government established a Indonesia's National Women's Financial Inclusion Strategy (*SNKI Perempuan*) in 2020. The strategy includes seven priority areas, namely increasing education and financial literacy, providing support for Women's Micro, Small, and Medium Enterprises (MSMEs), promoting digital financial services for women, expanding access to insurance and pension funds, ensuring consumer protection, providing comprehensive support and empowerment for women caregivers, and collecting gender-disaggregated data. However, most of the priority areas of *SNKI Perempuan* are addressed to eliminate the supply barriers of access to formal financial services. In fact, currently, the demand barriers of access to formal financial services contribute more to women's low financial inclusion (Aterido et al., 2013).

The financial inclusion gender gap is important to be discussed for at least 3 reasons. First, this issue is one of the priority agendas of the G20 Presidency of Indonesia 2022 to achieve economic inclusiveness, especially on equality for women. Enhancing women's financial inclusion is crucial, as low levels of financial inclusion can prevent women from participating fully in the modern economic market (Demirguc-Kunt et al., 2013). Second, financial inclusion is also a proxy for achieving 7 of the 17 Sustainable Development Goals (SDGs) (World Bank, 2022). Third, higher women's financial inclusion will increase their empowerment and quality of life (Swamy, 2014). With higher financial inclusion, poor female-headed households can make the best financial allocation strategy to get a higher education or increase productivity so they have opportunities to get out of the poverty trap (Dawood et al., 2019).

Female-headed households also tend to allocate their resources to their child needs so the children's welfare increases (Bose-Duker et al., 2021). Women with access to formal financial services tend to save for their children's future education and improve their nutrition (Prina, 2015; Buvinić & Gupta, 1997). Moreover, higher digital financial inclusion can help female-headed households manage economic risks and protect the household from unexpected shocks (Hess et al., 2021; Jack & Suri, 2014).

Given this background, this study aims to describe whether the financial inclusion gender gap exists in Indonesia and determine the factors that have the biggest contribution to that gap, especially on the explained characteristic factors using the non-linear decomposition technique developed by Fairlie (2005). The Fairlie non-linear decomposition method is applied when the outcome is binary. This method was an extension of the commonly used decomposition method, the

Blinder-Oaxaca decomposition, since using the standard linear Blinder-Oaxaca decomposition may lead to misleading.

This study is expected to contribute to two things. First, it complements the previous literature, which studies the relationship between financial inclusion and the gender gap. To the best of our knowledge, this is one of the earliest studies in Indonesia to comprehensively analyze the household financial inclusion gender gap and its underlying causes. Most of the previous studies analyzed the determinant factors that affect financial inclusion but did not specifically discuss gender (Kaligis et al., 2018; Ali et al., 2020; Nugroho & Purwanti, 2018). Additionally, a number of earlier studies that examined access to financial services relied only on savings indicators (Maftuhin & Kusumawardani, 2022) or loan indicators (Gitaharie et al., 2018), thus not reflecting overall financial inclusion. Second, this study is supposed to be a reference for policymakers to formulate the best strategy to achieve financial inclusion equality. This research stands out from other studies in that it not only examines the association between gender and financial inclusion but also identifies the factors that contribute most to the financial inclusion gender gap using the decomposition method. The decomposition method has not been widely used to measure the contribution of explained variations to the financial inclusion gender gap in Indonesia. However, this approach is considered the most effective for identifying and quantifying the contributions of each factor related to the gender gap in financial inclusion. The decomposition method previously was more widely used to measure the gender pay gap or disparities in socioeconomic characteristic factors (Nakajima et al., 2020; Anas & Damayanti, 2020; Sohn, 2015).

This study analyzes the gender gap by focusing on the gender of household heads for two main reasons. First, female-headed households are one of the groups targeted by *SNKI Perempuan*. Second, according to The National Socio-Economic Survey (Susenas) data, the number of female-headed households in Indonesia continued to grow from 2009 to 2020. Therefore, if financial inclusion levels among female-headed households remain low, this issue may persist over time and hinder growth. (Sahay & Cihak, 2018; Demircuc-Kunt et al., 2013). Susenas data is used due to its inclusion of details concerning the gender of the head of the household. Besides, beginning from 2015, data pertaining to multidimensional indicators of financial inclusion has also been available.

The remainder of this study is organized into four sections. The second section is a literature review. The third section discusses the research method, including empirical data and models. The fourth section is the results and discussion. The fifth section is the conclusion.

LITERATURE REVIEW

The low level of women's financial inclusion can be caused by barriers on the supply side or barriers on the demand side for access to formal financial services (Aterido et al., 2013). Supply-side barriers to financial services are usually caused by taste discrimination from financial service providers who target male customers more than women. On the other hand, demand-side barriers to financial services are usually caused by statistical discrimination, which is influenced by women's socioeconomic characteristics that are generally lower

than men's, such as education and employment status. These different characteristics can impede access to formal financial services.

To minimize the gap in financial services, the government typically addresses supply-side barriers by improving financial infrastructure and providing credit facilities for women-owned micro, small, and medium enterprises (MSMEs), among other measures. However, this approach has not successfully increased financial inclusion for women, as the more significant issues stem from demand factors, particularly the statistical discrimination arising from differences in characteristics between genders. (Aterido et al., 2013).

Within the household sphere, financial inclusion is heavily influenced by decision-makers within the family. Each spouse has diverse preferences within a cooperative bargaining framework, but those with more influence at home are more likely to make financial decisions (Bertocchi et al., 2014). Women's influence can grow as their resources increase, such as higher education and employment (Friedberg & Webb, 2006). However, men usually play an important role as decision-makers because they are the head of the household, while women only play a role as decision-makers in everyday family life (Bartley et al., 2005; Posel, 2001). When a woman becomes the head of the household, the woman is not dependent on her husband, and the woman herself carries out the decision-making as the head of the household. Even so, based on previous research, women's decision-making is still influenced by individual characteristics such as their education and employment (Ghosh & Vinod, 2017). It might be brought on by the fact that highly educated women who are also the heads of households are more likely to be employed, make money, and manage household finances (Sipayung et al., 2022).

Higher education levels and women's participation in the formal labor market can reduce women's financial inclusion gaps in two ways, increase financial literacy and facilitate risk management in the use of financial services (Wagner & Walstad, 2023). Gender equality in education and labor force participation also increases women's opportunities to earn higher income so that income inequality can be reduced (Badriah & Istiqomah, 2022). Women with higher education levels usually tend to have better numerical abilities and financial literacy. They will make financial decisions by considering various financial information, such as the yield on savings or interest rates on loans (Banks & Oldfield, 2007). Women with higher education also tend to have fewer children, so women's opportunities to work and earn income will be higher (Schultz, 1997). This allows women to allocate their income for savings, investments, or loans according to their risk appetite (Klasen, 2002). Particularly in developing economies, women who are less educated are also disproportionately involved in the informal sector, where employers are subject to fewer laws and workers are more exposed to lower earnings and job losses (Dabla-Norris & Kochhar, 2019). Meanwhile, low-income individuals and adults who are unemployed cannot afford the costs associated with using formal financial services, leaving them out of the financial system (Cole et al., 2011).

Based on the study by Claessens & Rojas-Suárez (2020), low income is also one of the constraints to the demand for digital financial services. Digital financial services can keep women's assets safe, and women can easily manage their finances, such as making household expenses to prepare for the future of

their children (Duflo, 2012). However, in a previous study, there was a gap in the use of cellular phones among poor individuals, which impacted the digital financial inclusion gap (Abor et al., 2018). Low-income households often only have one mobile phone and are often held by their husbands or children for study activities (Handforth, 2019). In addition, research in Indonesia regarding cellular phone usage shows that although cellular phones have become the main device for accessing the internet, most of their use is for social media and other entertainment activities. Meanwhile, business-oriented activities, such as email, news, and banking, are less popular (Puspitasari & Ishii, 2016).

Based on the description of the literature review above, the hypotheses put forward in this study are:

H1: Female-headed households have lower access to formal financial services, indicating that female-headed households' financial inclusion is lower than male-headed households.

H2: Characteristics of women that can influence the financial inclusion gender gap are through the education of the head of the household, participation in the labor market, and ownership of a mobile phone.

METHOD

Data

The data used to estimate the model in this research is The National Socio-Economic Survey (Susenas) performed by BPS - Statistics Indonesia. Susenas is a household survey with an estimated level down to the district/city level. Susenas data is used since information regarding the gender of the head of the household is available. Starting in 2015, information related to multidimensional financial inclusion indicators is also available. The year 2019 was selected as the research period to avoid the impact of the extraordinary events related to the Covid-19 pandemic, which could lead to abnormal patterns. There were 315,672 household respondents in the 2019 Susenas observations.

Empirical Models

This study uses three indicators to determine the level of household financial inclusion: access to formal savings, access to formal loans, and access to e-banking. These indicators are used to generate the multidimensional financial inclusion index developed by Churchill & Marisetty (2020) by calculating the deprivation score experienced by households.

The financial inclusion deprivation score is calculated as follows:

$$d_i = w_1I_1 + w_2I_2 + w_3I_3 \quad (1)$$

where d_i is the deprivation score of i -household financial inclusion. Financial inclusion deprivation is a condition in which households do not have access to formal financial services. n , which represents the numbers 1, 2, and 3, shows each indicator of financial inclusion, namely formal savings, formal loans, and e-banking. I_n reflects a binary value with a value of 1 if the household experiences deprivation and 0 if the household does not experience deprivation of each financial inclusion indicator. w_n is the deprivation weight of each indicator where the sum will be equal to 1. The weight for each financial inclusion indicator is 1/3

because the indicators are equally important and can complement each other (Churchill & Marisetty, 2020). Finally, the deprivation score of household financial inclusion (d_i) will have a range of values between 0 to 1.

The financial inclusion deprivation score can be divided into two groups with a cut-off value of 0.5 to determine the amount of household inclusion (Churchill & Marisetty, 2020; Zhang & Posso, 2019). A household will be categorized as financially inclusive if the financial inclusion deprivation score is less than the 0.5 score cut-off. Otherwise, a household will be categorized as financially non-inclusive if the financial inclusion deprivation score exceeds the 0.5 score cut-off. Therefore, the deprivation score has an inverse relationship with the financial inclusion level. This calculation can be denoted as follows:

$$\text{Household Financial Inclusion } (FI_{ij}) \begin{cases} 1 \text{ if } d_i \leq 0.5 \\ 0 \text{ if } d_i > 0.5 \end{cases} \quad (2)$$

To achieve the objectives of this study, the decomposition method is used. Specifically, the decomposition method can determine the greatest factors influencing the financial inclusion gender gap. This method also divides how much the financial inclusion gap between genders is influenced by explained characteristics variation and how much the financial inclusion gap between genders is influenced by unexplained variation. Overall, the decomposition method is an analysis technique developed by Blinder (1973) and Oaxaca (1973). However, because the outcome variable in this study is binary, the Blinder-Oaxaca decomposition cannot be used directly. So we use the decomposition method with the non-linear Logit estimation model developed by Fairlie (2005). This method has previously been used in research by Aterido et al. (2013), Ghosh & Chaudhury (2019), and Ndoya & Tsala (2021), which also estimate the financial inclusion gender gap.

The decomposition model using linear equation regression developed by Blinder-Oaxaca is as follows:

$$\bar{Y}^M - \bar{Y}^F = [(\bar{X}^M - \bar{X}^F)\hat{\beta}^M] + [\bar{X}^F(\hat{\beta}^M - \hat{\beta}^F)] \quad (3)$$

where \bar{Y}^g is the average probability of the difference in financial inclusion between two gender groups, M for males and F for females. \bar{X}^g is the vector of the average value of the characteristic variables for the two gender group categories and $\hat{\beta}^g$ is the vector of the estimated coefficients for the two gender group categories. The left side equation $[(\bar{X}^M - \bar{X}^F)\hat{\beta}^M]$ shows the financial inclusion gender gap due to differences in characteristics among gender (explained variation), while the right side equation $[\bar{X}^F(\hat{\beta}^M - \hat{\beta}^F)]$ shows the financial inclusion gap and gender gap due to differences in the coefficients as a result of unexplained variation.

Meanwhile, the estimation of non-linear decomposition developed by Fairlie (2005) is a decomposition model using the Logit distribution. By using the equation $Y = F(X\hat{\beta})$, the decomposition analysis model is as follows:

$$\bar{Y}^M - \bar{Y}^F = \left[\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^M)}{N^M} - \sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^M)}{N^F} \right] + \left[\sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^M)}{N^F} - \sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^F)}{N^F} \right] \quad (4)$$

where N^g is the number of observations for the two head of household gender groups, M for male and F for female. \bar{Y}^g is the average probability of the difference in financial inclusion between two gender groups. X_i^g is the vector of the average value of the characteristic variables for the two gender group categories, $\hat{\beta}^g$ is the vector of the estimated coefficient for two categories of gender groups, and F is the cumulative distribution function of the Logit distribution. The left side equation shows the financial inclusion gender gap occurs due to differences in characteristics among gender (explained variation). In contrast, the right side equation shows the financial inclusion gender gap occurs due to differences in the coefficients as a result of unexplained variation. In the left side equation, the estimated coefficient of the male-headed household ($\hat{\beta}^M$) is used as the weight, while in the right side equation, the distribution of characteristics of the female-headed household (X_i^F) is used as the weight.

According to Fairlie (2005), equation (4) should give the same expression as the equation:

$$\bar{Y}^M - \bar{Y}^F = \left[\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^F)}{N^M} - \sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^F)}{N^F} \right] + \left[\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^M)}{N^M} - \sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^M)}{N^F} \right] \quad (5)$$

where the estimated coefficient of female-headed households ($\hat{\beta}^F$) is used as the weight of the left side equation and the distribution of characteristics of the male-headed household (X_i^M) is used as the weight of the right side equation. However, the results given may differ. The alternative way is to weigh the equation using the estimated coefficient from a pooled sample of two gender groups, according to research by Oaxaca & Ransom (1994). Assuming that X consists of two characteristic variables X_1 and X_2 , the decomposition equation using coefficient from a pooled sample of men and women for the contributions of X_1 and X_2 to the financial inclusion gender gap is as follows:

$$\frac{1}{N^F} \sum_{i=1}^{N^F} F(\hat{\alpha}^* + X_{1i}^M \hat{\beta}_1^* + X_{2i}^M \hat{\beta}_2^*) - F(\hat{\alpha}^* + X_{1i}^F \hat{\beta}_1^* + X_{2i}^M \hat{\beta}_2^*) \quad (6)$$

$$\frac{1}{N^F} \sum_{i=1}^{N^F} F(\hat{\alpha}^* + X_{1i}^F \hat{\beta}_1^* + X_{2i}^M \hat{\beta}_2^*) - F(\hat{\alpha}^* + X_{1i}^F \hat{\beta}_1^* + X_{2i}^F \hat{\beta}_2^*) \quad (7)$$

To identify the primary factors influencing the financial inclusion gender gap, the decomposition estimate is used, and a simple approach to measuring this gap is to compare the estimated probabilities for both gender groups and examine the average difference between them. Therefore, the decomposition technique uses a one-to-one matching method between male and female group observations. Because the number of observations of male-headed and female-headed households is different, the method used is to randomly choose the sub-sample of male-headed households and repeat 1000 times to match them with the sub-sample of female-headed households at random (Fairlie, 2005; Fairlie & Robb, 2007). This method is used to calculate the average decomposition estimate of all samples.

RESULTS AND DISCUSSION

Descriptive Analysis

The supply of access to formal financial services can impact the financial inclusion gender gap, but the demand side is primarily responsible (Aterido et al., 2013). Therefore, this analysis begins by documenting how characteristic variables differ between female-headed and male-headed households and how these differences affect the demand for formal financial services. Table 1 provides a statistical summary of all variables used in this study, categorized by the gender of the household head. The analysis is based on 315,672 household heads, derived from the 2019 Susenas data. Of these, 49,336 are female-headed households, and 266,336 are male-headed households.

Table 1. Summary of Statistics of the Head of Household

Variables	Description	Mean Male	Mean Female	Mean Total
<i>Dependent Variables</i>				
Deprivation on Saving	Households do not have access to saving at a formal financial institution	0.573 (0.495)	0.608 (0.488)	0.578 (0.494)
Deprivation on Loan	Households do not have access to get loans from a formal institutions in the past year	0.775 (0.417)	0.870 (0.337)	0.790 (0.407)
Deprivation on e-banking	Households do not have access to e-banking	0.966 (0.182)	0.979 (0.143)	0.968 (0.176)
Financial Inclusion	Binary variable has a value of 1 if female-headed households are financially inclusive and has a value of 0 if female-headed household are not financially inclusive	0.159 (0.365)	0.094 (0.292)	0.148 (0.356)
<i>Independent Variables</i>				
Gender of the Head of Household	The main independent variable with binary value of 1 if gender of the head of household is female, and 0 if it is male	0.000 (0.000)	1.000 (0.000)	0.156 (0.363)
<i>Household Characteristics</i>				
<i>Age</i>				
Middle-age	Binary variable of 1 if the head of household has age between 35-54 years old and 0 otherwise	0.552 (0.497)	0.352 (0.478)	0.521 (0.500)
Older Adults	Binary variable of 1 if the head of household has age above 55 years old and 0 otherwise	0.287 (0.452)	0.558 (0.497)	0.329 (0.470)
Age2 (in log)	The age squared of the head of household in log form	7.646 (0.560)	7.946 (0.633)	7.693 (0.582)
<i>Education</i>				
Basic Education	Binary variable of 1 if the head of household has graduated from elementary school and 0 otherwise	0.284 (0.451)	0.267 (0.442)	0.281 (0.450)
Middle Education	Binary variable of 1 if the head of household has graduated from junior high school and 0 otherwise	0.164 (0.370)	0.108 (0.310)	0.155 (0.362)
Higher Education	Binary variable of 1 if the head of household has graduated from senior high school or higher and 0 otherwise	0.391 (0.488)	0.346 (0.476)	0.384 (0.486)
<i>Employment</i>				
Self-employed	Binary variable of 1 if the head of household is self-employed both with or without employees,	0.514 (0.500)	0.432 (0.495)	0.502 (0.500)

Variables	Description	Mean Male	Mean Female	Mean Total
Formal Sector	and 0 otherwise Binary variable of 1 if the head of household worked on formal sector, and 0 otherwise	0.326 (0.469)	0.158 (0.365)	0.299 (0.458)
Freelance Workers	Binary variable of 1 if the head of household is a freelance workers, and 0 otherwise	0.078 (0.268)	0.045 (0.208)	0.073 (0.260)
Unpaid Workers	Binary variable of 1 if the head of household is an unpaid workers, and 0 otherwise	0.008 (0.092)	0.011 (0.106)	0.009 (0.094)
Urban	Binary variable of 1 if the location of household is in an urban area, and 0 if it is in a rural area	0.406 (0.491)	0.457 (0.498)	0.414 (0.493)
Children Education	Binary variable of 1 if the head of household have children graduated from college or university, and 0 otherwise	0.056 (0.230)	0.082 (0.274)	0.060 (0.237)
Mobile Phone	Binary variable of 1 if the head of household owns or controls a cell phone, and 0 otherwise	0.720 (0.449)	0.508 (0.500)	0.687 (0.464)
Household Size	Number of family members in the Household	4.005 (1.664)	2.794 (1.776)	3.816 (1.738)
Assets (House or Land)	Binary variable of 1 if the head of household owns house or land with ownership documentation and 0 otherwise	0.806 (0.396)	0.792 (0.406)	0.804 (0.397)
Regional Characteristics				
GRDP (in log)	Gross Regional Domestic Product, in Logs	-	-	9.697 (1.302)
Number of Observations		266,336	49,336	315,672

Source: Susenas (2019) and GRDP (2019)
Standard error in parentheses.

According to Table 1, the average percentage of female-headed households who do not have access to formal financial services is higher than male-headed households. The average percentage of female-headed households who experience deprivation in saving, loans, and e-banking were 60.8%, 87.0%, and 97.9%, respectively. Meanwhile, the deprivation in savings, loans, and e-banking of male-headed households was 57.3%, 77.5%, and 96.6% respectively. Based on the financial inclusion index, female-headed households have an average financial inclusion level of 9.4%, which is lower than male-headed households' average level of 15.9%. There is an inverse relationship between the financial inclusion index and financial inclusion deprivation because the deprivation reflects households with no access to formal financial services. Generally, the number of households with higher deprivation scores is more than half of the number of observations. This demonstrates that households without access to formal financial services are generally more numerous than households with access.

Depending on individual characteristics, men outperform women in terms of educational attainment and employment status at all category levels, except for unpaid employees. This result is in line with the SDG's Report data for 2019 that explain that discrimination against women occurs in various contexts, including employment and education. 750 million adults worldwide were illiterate in 2016; two-thirds were women. Women also devote more time to unpaid domestic tasks and less time seeking paid employment, education, and leisure activities. In

comparison to men, women's career development is also less sophisticated. Regarding political careers, women typically hold only 24.2% of seats in national parliaments. Furthermore, women in managerial positions have significantly low career measures. Only 27% of the 39% of women who were employed in 2018 held managerial roles (United Nations, 2019).

In addition, more male-headed households own mobile phones, have bigger families, and have more assets (such as homes or land) than female-headed households. Based on the location of residence, the families with female-headed households mostly lived in rural areas. However, when compared to male-headed households, slightly more female household heads live in urban areas. Regarding children's education, families headed by women have an average of children with higher education graduates than families headed by men. This is consistent with previous research stating that income allocation decisions for female-headed households prioritize children's welfare, including education (Prina, 2015).

Preliminary Analysis

A preliminary analysis can be seen using a graphic to determine whether there is a relationship between gender differences and financial inclusion in Indonesia as a whole. Figure 1 shows the relationship between the gender of the head of household and financial inclusion based on a region's Gross Regional Domestic Product (GRDP). This graphic shows a trend whereby the higher GRDP correlates with the increases in the probability of financial inclusion for male-headed households and female-headed households. However, as the GRDP increases, the additional increase in the probability of financial inclusion for the male-headed household is much higher than for the female-headed household.

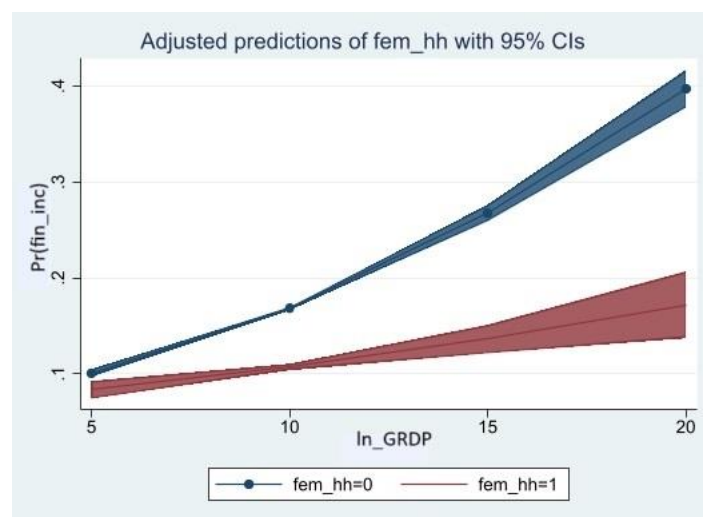


Figure 1. Differences in Financial Inclusion by Gender of Head of Household and GRDP. Source: Susenas (2019) and GRDP (2019), processed using STATA MP 17

This graphic pattern is in line with the previous study, which describes that regions with higher growth have higher levels of financial inclusion (Demirguc-Kunt et al., 2018). However, the additional increase of male-headed households' financial inclusion probability is much higher than female-headed households may be due to discrimination. Women may experience prejudice in areas with greater GRDP levels, as with women's participation in the formal employment sector. Compared to men, women are more likely to work in the informal sectors. Data from the 2019 National Labour Force Survey (Sakernas) show that 52.81% of males and 60.81% of women are employed in the informal sector. Meanwhile, regions with the largest proportion of the informal sector are Papua, East Nusa Tenggara, and West Sulawesi, which have low GRDP levels. In contrast, areas with higher GRDP levels have a greater density of the formal employment sector. This will increase the degree of financial inclusion for men. As a result, male financial inclusion is also much higher than females.

Decomposition Analysis

This study uses decomposition analysis developed by Fairlie (2005) to analyze whether there is a difference between financial inclusion among male-headed and female-headed households in Indonesia and what factors have the biggest impact on influencing the financial inclusion gender gap, especially on the explained characteristic factors. According to the estimation results in Table 2, the difference in access to formal financial services between male-headed and female-headed households is 0.0648. In other words, families headed by men are 6.48 percent more likely than those headed by women to have formal financial inclusion. Based on this value, the total contribution of the variation in the financial inclusion gender gap due to explained variation is 5.60% (or around 86.42%). These findings support the empirical findings of Aterido et al. (2013), Ghosh & Chaudhury (2019), and Ndoya & Tsala (2021) studies, which show that access to financial services varies by gender and the biggest contribution is the difference in explained characteristics factors. Furthermore, part of the gap that is influenced by unexplained variation could be coming from discrimination and most of the discrimination against women is related to participation in economic activities. This discrimination will reduce women's access to formal financial services (Ndoya & Tsala, 2021).

Table 2. Summary of Statistics of the Head of Household

Definition	Decomposition	
	Coefficient	Difference Proportion
Number of Observations (<i>N</i>)	315,672	
<i>N</i> observations male-headed household	266,336	
<i>N</i> observations female-headed household	49,336	
Male-headed household gap in access to formal financial services	0.1586	
Female-headed household gap in access to formal financial services	0.0938	
Difference gap in access to formal financial services	0.0648	
Explained variation gap	0.0560	86.42%
Unexplained variation gap	0.0088	13.58%

Note: Difference proportion is calculated based on explained variation gap and unexplained variation gap divided by difference gap in access to formal financial services among genders.

Based on the results of Table 2, Table 3 uses the Fairlie decomposition to break down three factors that significantly contribute to the gender gap in financial inclusion. The three biggest contributions that influence the financial inclusion gap between genders are mobile phone ownership (34%), participation in formal employment (28%), and higher education level (14%). This indicates that male-headed households have bigger access to formal financial services, and are influenced mainly by mobile phone ownership, the formal employment sector, and higher education level, which is owned more by male-headed households.

The result of this study supports the previous research that employment status and educational attainment are the two main factors contributing to the financial inclusion gender gap (Aterido et al., 2013; Ndoya & Tsala, 2021; Fanta & Mutsonziwa, 2016). In addition, mobile phone ownership also significantly affects the level of women's financial inclusion (Abor et al., 2018; Rahadiantino & Rini, 2021). Policies aimed at increasing mobile phone ownership among women, increasing women's education levels, and gender equality in the formal labor market can help reduce the problem of financial inclusion gender gaps, particularly in the household sphere.

Table 3. Fairlie Decomposition of Financial Inclusion Gender Gap

Variable	Fairlie Decomposition	Contribution Proportion
<u>Household Characteristics</u>		
Age		9%
Middle-age Adults	0.0033*** (0.0004)	6%
Older Adults	0.0015* (0.0008)	3%
Age2 (in log)	0.0033*** (0.0005)	6%
Education		15%
Basic Education	-0.0001 (0.0001)	0%
Middle Education	0.0007*** (0.0001)	1%
Higher Education	0.0082*** (0.0003)	14%
Employment		28%
Self-employed	-0.0001 (0.0002)	0%
Formal Sector Workers	0.0159*** (0.0005)	28%
Freelance Workers	-0.0002*** (0.0001)	0%
Unpaid Workers	-0.0001*** (0.0000)	0%
Urban	-0.0010*** (0.0001)	-2%
Children Education	-0.0018*** (0.0001)	-3%
Mobile Phone	0.0193*** (0.0003)	34%
Household Size	0.0050*** (0.0004)	9%
Assets (House or Land)	0.0024*** (0.0001)	4%
<u>Regional Characteristics</u>		
GRDP (in log)	0.0000 (0.0000)	0%
<i>N</i>	315,672	100%

Note: Standard errors in parentheses; * $p < .1$, ** $p < .05$, *** $p < .01$

Robustness Test

To check the robustness of the results, an alternative decomposition method is performed. Oaxaca decomposition using the weighting method described by Yun (2004) also supports the non-linear decomposition for binary outcome variables. The results of the non-linear decomposition are reported in Table 4.

Table 4. Robustness Test Non-Linear Decomposition

Variable	Oaxaca Non-Linear Decomposition	Difference Proportion
Number of Observations (<i>N</i>)	315,672	
N observations male-headed household	266,336	
N observations female-headed household	49,336	
Male-headed household gap in access to formal financial services	0.1586	
Female-headed household gap in access to formal financial services	0.0938	
Difference gap in access to formal financial services	0.0648	
Explained variation gap	0.0560	86.42%
Unexplained variation gap	0.0088	13.58%

Note: Difference proportion is calculated based on explained variation gap and unexplained variation gap divided by difference gap in access to formal financial services among genders.

The Oaxaca non-linear decomposition developed by Yun (2004) shows that the difference gap in access to formal financial services between male-headed and female-headed households is 0.0648. It means male-headed households are 6.48% more likely to access formal financial inclusion than female-headed households. The difference is mostly due to explained characteristics variations with the amount of 0.0560 (around 86.42%), so the difference generated by unexplained variations is 0.0088 (around 13.58%).

Based on the decomposition of characteristics, Table 5 shows that the most important factors that cause the financial inclusion gender gap are mobile phone ownership, with 44% of the explained gap, and participation in formal employment, with 20% of the explained gap. The rest explained gap does not vary much between household size (8%), higher education (7%), and age2 (7%). This result is similar with the Fairlie decomposition method in Table 3. Hence, equalizing mobile phone ownership and women's participation in formal employment will reduce the disparity in female–male financial inclusion by around 64%.

Table 5. Non-Linear Decomposition of Financial Inclusion Gender Gap

Variable	Non-Linear Decomposition	Contribution Proportion
<u>Household Characteristics</u>		
Age		9%
Middle-age Adults	0.0034*** (0.0004)	6%
Older Adults	0.0017* (0.0009)	3%
Age2 (in log)	0.0041*** (0.0006)	7%
Education		10%
Basic Education	0.0001* (0.0000)	0%
Middle Education	0.0017*** (0.0001)	3%
Higher Education	0.0039*** (0.0002)	7%
Employment		25%
Self-employed	0.0034*** (0.0002)	6%
Formal Sector Workers	0.0113*** (0.0004)	20%
Freelance Workers	-0.0005*** (0.0001)	-1%
Unpaid Workers	-0.0001*** (0.0000)	0%
Urban	-0.0011*** (0.0001)	-2%
Children Education	-0.0010*** (0.0001)	-2%
Mobile Phone	0.0244*** (0.0004)	44%
Household Size	0.0045*** (0.0004)	8%
Assets (House or Land)	0.0007*** (0.0001)	1%
<u>Regional Characteristics</u>		
GRDP (in log)	-0.0003*** (0.0000)	0%
<i>N</i>	315,672	100%

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

CONCLUSION

Although financial inclusion rates have grown globally, they remain lower for women than for men. This disparity may be due to taste discrimination by financial service providers or statistical discrimination arising from differences in the characteristics of each gender. Using the decomposition method, this study seeks to analyze whether a gender gap in financial inclusion exists in Indonesia and identify the factors influencing this gap. The study uses 2019 Susenas data, focusing on the gender of the household head as the unit of analysis.

The findings indicate that households led by women have fewer opportunities to access formal financial services compared to those led by men. The decomposition results also show that the characteristics of the household head (explained variation) significantly impact the gender gap in financial inclusion. Key factors contributing to this gap include mobile phone ownership (34%), employment in the formal sector (28%), and educational attainment (14%). Programs aimed at increasing financial inclusion for women by addressing supply-side barriers may not be effective, as the barriers primarily arise from the demand side.

A subsidized mobile phone program or free mobile phone distribution for particularly vulnerable groups could help promote mobile phone ownership. For example, Zambia has implemented a similar program through the GEWEL initiative, where the government provides mobile phones to vulnerable groups, such as low-income women, with financial support from the World Bank. This initiative is also part of accelerating digitalization through government assistance, commonly known as Government-to-Person (G2P) programs. Vulnerable groups receive G2P funds via mobile banking services, giving them a reason to regularly use mobile devices, e-banking, or mobile banking services, which can ultimately improve financial inclusion (Baur-Yazbeck et al., 2021).

The low level of women's participation in the formal employment sector in Indonesia is due to socio-cultural and institutional barriers (Nuraeni & Suryono, 2021). Establishing policies to formulate regulations related to gender equality in the field of employment, including internal company policies to equalize male and female workers in terms of recruitment, workload, remuneration, and other factors, can help reduce the level of gender inequality in the work environment. Women can also be empowered by implementing digitalized entrepreneurship programs in order to increase their income levels and open opportunities for women to learn digital finance (Khera et al., 2022).

To ensure access to higher education for everyone, the 12-Year Compulsory Education Program (*Program Wajib Belajar 12 Tahun*) must be continuously promoted. Additionally, schools need to incorporate gender equality norms into their learning systems to prevent inequality in learning opportunities for students. *Program Merdeka Belajar*, recently launched by the Ministry of Education, Culture, Research, and Technology, focuses on teacher and student development while considering equity norms in education. This initiative is expected to help reduce gender imbalance in education in the long term.

This study also has certain limitations. Since it relies on Susenas data, it cannot assess additional factors (such as risk profiles or legal and regulatory issues) that may influence the decision of female-headed households to access

financial services. It is hoped that future research analyzing the financial inclusion gender gap will take this limitation into consideration.

REFERENCES

- Abor, J. Y., Amidu, M., & Issahaku, H. (2018). Mobile Telephony, Financial Inclusion and Inclusive Growth. *Journal of African Business*, 19(3), 430–453. <https://doi.org/10.1080/15228916.2017.1419332>
- Ali, M. M., Devi, A., Furqani, H., & Hamzah, H. (2020). Islamic financial inclusion determinants in Indonesia: an ANP approach. *International Journal of Islamic and Middle Eastern Finance and Management*, 13(4), 727–747. <https://doi.org/10.1108/IMEFM-01-2019-0007>
- Anas, A., & Damayanti, M. G. A. (2020). Gender Gap pada Tingkat Partisipasi Kerja di Provinsi DKI Jakarta. *Jurnal Ekonomi Dan Pembangunan Indonesia*, 20(1), 56–78. <https://doi.org/10.21002/jepi.2020.04>
- Aterido, R., Beck, T., & Iacovone, L. (2013). Access to Finance in Sub-Saharan Africa: Is There a Gender Gap? *World Development*, 47, 102–120. <https://doi.org/10.1016/j.worlddev.2013.02.013>
- Badriah, L. S., & Istiqomah, I. (2022). Does Gender Inequality Lead to Income Inequality? Evidence from Indonesia. *Ekulilibrium : Jurnal Ilmiah Bidang Ilmu Ekonomi*, 17(1), 1–13. <https://doi.org/10.24269/ekulilibrium.v17i1.2022.pp1-13>
- Banks, J., & Oldfield, Z. (2007). Understanding pensions: Cognitive function, numerical ability and retirement saving. *Fiscal Studies*, 28(2), 143–170. <https://doi.org/10.1111/j.1475-5890.2007.00052.x>
- Bartley, S. J., Blanton, P. W., & Gilliard, J. L. (2005). Husbands and wives in dual-earner marriages: Decision-making, gender role attitudes, division of household labor, and equity. *Marriage and Family Review*, 37(4), 69–94. https://doi.org/10.1300/J002v37n04_05
- Baur-Yazbeck, S., Hobson, E. W., & Chimba, M. (2021). The Future of Government-to-Person (G2P) Payments: Three Years of Learning About G2P Choice in Zambia. *Washington DC: World Bank Group & CGAP*.
- Bertocchi, G., Brunetti, M., & Torricelli, C. (2014). Who holds the purse strings within the household? The determinants of intra-family decision making. *Journal of Economic Behavior and Organization*, 101, 65–86. <https://doi.org/10.1016/j.jebo.2014.02.012>
- Blinder, A. S. (1973). Wage Discrimination: Reduced Form and Structural Estimates. *The Journal of Human Resources*, 8(4), 436–455. <https://doi.org/10.2307/144855>
- Bose-Duker, T., Henry, M., & Strobl, E. (2021). Children's Resource Shares: Male Versus Female-Headed Households. *Journal of Family and Economic Issues*, 42(4), 573–585. <https://doi.org/10.1007/s10834-020-09743-3>
- Buvinić, M., & Gupta, G. R. (1997). Female-Headed Households and Female-Maintained Families: Are They Worth Targeting to Reduce Poverty in Developing Countries? *Economic Development and Cultural Change*, 45(2), 259–280. <https://doi.org/10.1086/452273>

- Churchill, S. A., & Marisetty, V. B. (2020). Financial inclusion and poverty: a tale of forty-five thousand households. *Applied Economics*, 52(16), 1777–1788. <https://doi.org/10.1080/00036846.2019.1678732>
- Claessens, S., & Rojas-Suárez, L. (2020). *A decision tree for digital financial inclusion policymaking* (525). Center for Global Development Washington, DC.
- Cole, S., Sampson, T., & Zia, B. (2011). Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets? *The Journal of Finance*, 66(6), 1933–1967. <https://doi.org/10.1111/j.1540-6261.2011.01696.x>
- Dabla-Norris, E., & Kochhar, K. (2019). Closing the gender gap. *Finance and Development*, 56(1), 8–11.
- Dawood, T. C., Pratama, H., Masbar, R., & Effendi, R. (2019). Does financial inclusion alleviate household poverty? Empirical evidence from Indonesia. *Economics and Sociology*, 12(2), 235–252. <https://doi.org/10.14254/2071-789X.2019/12-2/14>
- Demirguc-Kunt, A., Klapper, L. F., & Singer, D. (2013). Financial inclusion and legal discrimination against women: evidence from developing countries. *World Bank Policy Research Working Paper*, 6416.
- Demirguc-Kunt, A., Klapper, L. F., Singer, D., & Van Oudheusden, P. (2015). The global finindex database 2014: Measuring financial inclusion around the world. *World Bank Policy Research Working Paper*, 7255.
- Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Finindex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC: World Bank. <https://doi.org/10.1596/978-1-4648-1259-0>
- Duflo, E. (2012). Women empowerment and economic development. In *Journal of Economic Literature* (Vol. 50, Issue 4, pp. 1051–1079). <https://doi.org/10.1257/jel.50.4.1051>
- Fairlie, R. W. (2005). An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *Journal of Economic and Social Measurement*, 30(4), 305–316. <https://doi.org/10.3233/JEM-2005-0259>
- Fairlie, R. W., & Robb, A. M. (2007). Why Are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital. *Journal of Labor Economics*, 25(2). <http://www.ces.census.gov/>
- Fanta, A. B., & Mutsonziwa, K. (2016). Gender and financial inclusion. *FinMark Trust.-2016.-Policy Research Paper*, 1(1).
- Friedberg, L., & Webb, A. (2006). *Determinants and Consequences of Bargaining Power in Households* (Working Paper No. 12367). Center for Retirement Research.
- Ghosh, C., & Chaudhury, R. H. (2019). Gender gap in case of financial inclusion: An empirical analysis in Indian context. *Economics Bulletin*, 39(4), 2615–2630.
- Ghosh, S., & Vinod, D. (2017). What Constrains Financial Inclusion for Women? Evidence from Indian Micro data. *World Development*, 92, 60–81. <https://doi.org/10.1016/j.worlddev.2016.11.011>

- Gitaharie, B. Y., Soelistianingsih, L., & Djutaharta, T. (2018). Financial inclusion: Household access to credit in Indonesia. *Competition and Cooperation in Economics and Business*. London: Taylor & Francis Group.
- Handforth, C. (2019). Digital identity opportunities for women: insights from Nigeria, Bangladesh, and Rwanda. London: GSMA.
- Hess, J., Klapper, L., & Beegle, K. (2021). *Financial inclusion, women, and building back better*. World Bank, Washington, DC.
- Jack, W., & Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. *American Economic Review*, 104(1), 183–223. <https://doi.org/10.1257/aer.104.1.183>
- Kaligis, N. V. B., Tewal, B., Maramis, J. B., & Mangantar, M. (2018). International Journal of Economics and Financial Issues Financial Inclusion Profile: Determinant and Barriers. *International Journal of Economics and Financial Issues*, 8(5), 351–358.
- Khera, P., Ogawa, S., Sahay, R., & Vasisht, M. (2022). Women in Fintech: As Leaders and Users. *IMF Working Papers*, 2022(140).
- Klasen, S. (2002). Low schooling for girls, slower growth for all? cross-country evidence on the effect of gender inequality in education on economic development. *World Bank Economic Review*, 16(3), 345–373. <https://doi.org/10.1093/wber/lhf004>
- Maftuhin, M., & Kusumawardani, D. (2022). Household Saving Behavior on Formal Financial Institutions in Urban and Rural Areas. *Ekulilibrium: Jurnal Ilmiah Bidang Ilmu Ekonomi*, 17(1), 40–53. <https://doi.org/10.24269/ekulilibrium.v17i1.2022.pp40-53>
- Nakajima, N., Jung, H., Pradhan, M., Hasan, A., Kinnell, A., & Brinkman, S. (2020). Gender gaps in cognitive and social-emotional skills in early primary grades: Evidence from rural Indonesia. *Developmental Science*, 23(5). <https://doi.org/10.1111/desc.12931>
- Ndoya, H. H., & Tsala, C. O. (2021). What drive gender gap in financial inclusion? Evidence from Cameroon. *African Development Review*, 33(4), 674–687. <https://doi.org/10.1111/1467-8268.12608>
- Nugroho, A., & Purwanti, E. Y. (2018). Determinan inklusi keuangan di Indonesia (global findex 2014). *Jurnal Dinamika Ekonomi Pembangunan*, 1(1), 1. <https://doi.org/10.14710/jdep.1.1.1-13>
- Nuraeni, Y., & Lilin Suryono, I. (2021). Analisis Kesetaraan Gender dalam Bidang Ketenagakerjaan Di Indonesia. *Nakhoda: Jurnal Ilmu Pemerintahan*, 20(1). <https://doi.org/10.35967/njip.v20i1.134>
- Oaxaca, R. (1973). Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review*, 14(3), 693. <https://doi.org/10.2307/2525981>
- Oaxaca, R. L., & Ransom, M. R. (1994). On discrimination and the decomposition of wage differentials. *Journal of Econometrics*, 61(1), 5–21. [https://doi.org/10.1016/0304-4076\(94\)90074-4](https://doi.org/10.1016/0304-4076(94)90074-4)
- Posel, D. R. (2001). Who are the heads of household, what do they do, and is the concept of headship useful? An analysis of headship in South Africa. *Development Southern Africa*, 18(5), 651–670. <https://doi.org/10.1080/03768350120097487>

- Prina, S. (2015). Banking the poor via savings accounts: Evidence from a field experiment. *Journal of Development Economics*, 115, 16–31. <https://doi.org/10.1016/j.jdeveco.2015.01.004>
- Puspitasari, L., & Ishii, K. (2016). Digital divides and mobile Internet in Indonesia: Impact of smartphones. *Telematics and Informatics*, 33(2), 472–483. <https://doi.org/10.1016/j.tele.2015.11.001>
- Rahadiantino, L., & Rini, A. N. (2021). Women Access and Awareness of Financial Inclusion in Indonesia. *Jurnal Ekonomi Pembangunan*, 19(1), 39–50. <https://doi.org/10.29259/jep.v19i1.12467>
- Sahay, M. R., & Cihak, M. M. (2018). *Women in finance: A case for closing gaps*. International Monetary Fund.
- Schultz, T. P. (1997). *Chapter 8 Demand for children in low income countries* (pp. 349–430). [https://doi.org/10.1016/S1574-003X\(97\)80025-6](https://doi.org/10.1016/S1574-003X(97)80025-6)
- Sipayung, F. L., Wijaya, A. F., Putra, F., & Aratame, N. (2022). Analyzing the Characteristics of Highly Educated Unemployment in Indonesia’s Capital City. *Jurnal Ekonomi Dan Studi Pembangunan*, 14(2), 153. <https://doi.org/10.17977/um002v14i22022p153>
- Sohn, K. (2015). Gender Discrimination in Earnings in Indonesia: A Fuller Picture. *Bulletin of Indonesian Economic Studies*, 51(1), 95–121. <https://doi.org/10.1080/00074918.2015.1016569>
- Swamy, V. (2014). Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households. *World Development*, 56, 1–15. <https://doi.org/10.1016/j.worlddev.2013.10.019>
- United Nations. (2019). *Report of the Secretary-General on SDG Progress 2019 Special Edition*.
- Wagner, J., & Walstad, W. B. (2023). Gender Differences in Financial Decision-Making and Behaviors in Single and Joint Households. *The American Economist*, 68(1), 5–23. <https://doi.org/10.1177/05694345221076004>
- World Bank. (2022, March 29). *Financial Inclusion: Overview*. <https://www.worldbank.org/en/topic/financialinclusion/overview#1>
- Yun, M. S. (2004). Decomposing differences in the first moment. *Economics Letters*, 82(2), 275–280. <https://doi.org/10.1016/j.econlet.2003.09.008>
- Zhang, Q., & Posso, A. (2019). Thinking Inside the Box: A Closer Look at Financial Inclusion and Household Income. *The Journal of Development Studies*, 55(7), 1616–1631. <https://doi.org/10.1080/00220388.2017.1380798>