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# THE EFFECT OF FERTILITY ON WOMEN'S LABOR FORCE PARTICIPATION IN INDONESIA

**Rani Safitri[1*], Ratih Ramadhani[2] , Yulia Anas[3]**

[1,2,3]Faculty of Economy and Business Universitas Andalas, Indonesia
E-mail : ranisafitri774@gmail.com*

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**Abstract:** Although previous studies have documented an association between fertility and women's labor force participation in Indonesia, limited evidence has addressed fertility endogeneity in identifying its causal effect on women's employment. This study contributes by applying an Instrumental Variables (IV) strategy using age at first marriage as an instrument for fertility. Using cross-sectional data from the 2022 National Socioeconomic Survey (SUSENAS) covering women aged 15–49 years, the study employs a Linear Probability Model estimated through Two-Stage Least Squares (2SLS), with education and household size as control variables. The first-stage results confirm that age at first marriage is significantly associated with fertility and satisfies the instrument relevance criterion, while the endogeneity test indicates that fertility is endogenous. The second-stage results show that fertility has a negative and statistically significant effect on women's probability of working. An additional child is associated with an approximately 48.2 percentage-point reduction in the probability of working, ceteris paribus. Education and household size have positive effects. These findings provide evidence of a causal relationship under the IV assumptions and contribute to the literature on fertility and women's labor market participation in Indonesia.

**Keywords:** Fertility, Female Employment Probability, Instrumental Variables.

## INTRODUCTION

Women's involvement in the labor market represents an important aspect of inclusive economic development, gender equality, and household well-being. Nevertheless, significant differences in labor market participation between women and men persist at the global level. In 2023, women's global labor force participation rate stood at 48.7 percent, substantially below the 73.0 percent recorded for men, resulting in a gender gap of more than 24 percentage points (ILO, 2024). In addition to differences in labor force participation, the unequal allocation of unpaid care and domestic responsibilities continues to restrict women's engagement in paid employment. The International Labour Organization estimated that approximately 708 million women worldwide were outside the labor force in 2023 due to unpaid care responsibilities (ILO, 2024). These continuing disparities demonstrate that women's participation in the labor market remains a significant global development concern, particularly in relation to promoting gender equality, improving household welfare, and maximizing women's contribution to economic growth (Kurniasari et al., 2025)

This issue is also highly relevant to Indonesia, where female labor force participation remains substantially below that of men. According to Statistics Indonesia, the female labor force participation rate was 54.42 percent in February 2023, whereas the corresponding rate for men was above 84 percent (BPS,

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2025). The continuing disparity indicates that women encounter various barriers that influence their ability to enter and remain in the labor market. Such barriers extend beyond economic conditions and include social expectations, household responsibilities, and demographic characteristics. Identifying the factors underlying women's relatively lower participation is therefore important for Indonesia, particularly in efforts to promote inclusive economic development and make greater use of women's human capital.

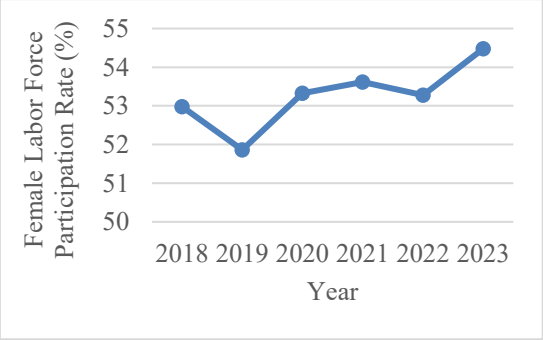



**Figure 1. Female Labor Force Participation Rate (%)**
Source: BPS (2025)

As presented in Figure 1, the female labor force participation rate in Indonesia followed a relatively stable trend between 2018 and 2023, with only modest annual changes. Nevertheless, a stable participation rate should not necessarily be interpreted as evidence that the constraints faced by women in the labor market have diminished. Women may continue to encounter difficulties associated with domestic responsibilities, limited employment opportunities, and demographic circumstances (Novia et al., 2022). Fertility is particularly relevant among these factors because an increasing number of children may require greater time commitments for childcare and household activities, consequently limiting the time that women can devote to market employment. Examining this relationship is important because fertility-related constraints may reduce women's involvement in productive activities and, in turn, affect household welfare and the utilization of female human capital. Accordingly, this study investigates the effect of fertility on the probability of women working in Indonesia, while accounting for educational attainment and household size.

The relationship between fertility and women's labor market participation can be explained through (Becker, 1965) Time Allocation Theory. According to this framework, individuals operate under limited time and must determine how to distribute it between market work and household production. As the number of children increases, women may allocate a greater proportion of their time to childcare and domestic activities, leaving less time for income-generating work (Akbar & Margaretha, 2024). Consequently, higher fertility is theoretically expected to reduce women's participation in the labor market. This mechanism becomes particularly relevant in settings where childcare and household responsibilities are predominantly assigned to women.

Fertility decisions are also connected to the way households allocate their limited resources. (Becker, 1960) viewed decisions regarding the number of children as part of household economic decision-making, in which families consider the costs and benefits associated with childbearing. Having additional children may increase both household expenditures and the amount of time required for caregiving. As a result, fertility decisions can influence the allocation of women's time between

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domestic activities and participation in market-oriented employment.

Empirical research has identified fertility as an important factor related to women's labor force participation, although the strength of this relationship may differ across economic and social settings. (Angrist & Evans, 1998) demonstrated that an increase in the number of children significantly reduced women's participation in the labor market. More recent evidence has likewise pointed toward a negative association between fertility and female labor force participation. In Indonesia, (Novia et al., 2022) reported that women with a greater number of children tended to exhibit lower labor force participation. Such findings indicate that additional childcare requirements and domestic responsibilities associated with higher fertility may restrict women's capacity to engage in paid employment and other productive economic activities.

Despite this evidence, estimating the effect of fertility on women's labor force participation involves an important empirical issue. Fertility can potentially be endogenous because the relationship between fertility and women's employment may run in both directions. On the one hand, having more children may affect a woman's decision to work; on the other hand, employment decisions may also influence fertility choices. Furthermore, unobserved factors, including individual preferences, cultural norms, and family circumstances, may simultaneously affect both fertility and labor market participation. When these sources of endogeneity are not properly addressed, conventional regression estimates may become biased and inconsistent (Wooldridge, 2012).

Although existing research has examined the relationship between fertility and women's labor force participation in Indonesia, an important gap remains in identifying the causal effect of fertility on women's employment decisions. Existing studies have largely focused on the association between fertility and labor market participation, while the potential endogeneity arising from the two-way relationship between fertility and employment remains an important methodological concern.

Moreover, empirical evidence applying an instrumental variable strategy to address this endogeneity in the Indonesian context remains relatively limited. This limitation is important because observed differences in fertility and employment outcomes may also reflect socioeconomic, household, and individual characteristics that are not fully captured by conventional regression models. Addressing this endogeneity is therefore necessary to obtain more reliable evidence on whether fertility itself causally affects women's labor market participation.on women's labor force participation.

To address this gap, the present study employs an Instrumental Variables (IV) approach using age at first marriage as an instrument for fertility. The selection of age at first marriage is motivated by its theoretical and empirical relationship with fertility. Women who marry at younger ages generally have a longer potential reproductive period, which may increase their likelihood of having more children (Becker, 1960). In this framework, age at first marriage provides variation in fertility that can be used to address the potential endogeneity of the fertility variable. The IV estimation is conducted using the Two-

Stage Least Squares (2SLS) method, enabling a more robust assessment of the effect of fertility on women's labor force participation. The validity of the instrumental variable depends on its relevance to fertility and the assumption that its influence on women's labor market participation operates primarily through its effect on fertility.

This study examines the effect of fertility on women's labor force participation in Indonesia using data from the 2022 National Socioeconomic Survey (SUSENAS). The potential endogeneity of fertility is addressed through an Instrumental Variables approach estimated using Two-Stage Least Squares (2SLS). Educational attainment and household size are incorporated as control variables to account for relevant socioeconomic and household characteristics.

By addressing the potential endogeneity of fertility, this study contributes to the literature by providing evidence on the causal relationship between fertility and women's labor force participation in Indonesia. The findings are expected to contribute to the literature on labor and family economics while providing empirical evidence that may inform policies designed to reduce barriers to women's labor market participation, particularly by considering the demographic and household factors that shape women's employment decisions.

## LITERATURE REVIEW

The relationship between fertility and women's labor force participation has received considerable attention in labor economics and demographic research. Women's decisions to participate in the labor market are influenced by a combination of labor market conditions, household characteristics, family responsibilities, and demographic factors (Tsaniyah & Sugiharti, 2021). Understanding the interaction between fertility and employment is therefore important for explaining female labor force participation, particularly in developing countries where women frequently assume both productive and reproductive roles.

This relationship can also be understood through Gender Role Theory, which emphasizes that the division of responsibilities between men and women is strongly influenced by social norms and cultural expectations rather than biological differences alone. Women are traditionally expected to assume greater responsibility for childcare, household management, and unpaid domestic activities, while men are generally positioned as the primary income earners (Eagly & Wood, 2016).

The theoretical foundation of this study is primarily based on Becker's Time Allocation Theory. (Becker, 1965) argues that households function not only as consumers but also as producers of commodities that generate utility and welfare for family members. Within the household, individuals allocate their limited time among market work, household production, childcare, and leisure. Because time is a scarce resource, allocating more time to one activity necessarily reduces the time available for other activities. In the context of fertility, having additional children increases the demand for childcare and domestic activities, thereby raising the opportunity cost of women's participation in paid employment (Sartika et al., 2024). Consequently, women with more children may reduce their labor market participation because of greater household obligations (Tsaniyah & Sugiharti, 2021).

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This perspective is closely related to the household division of labor framework, which suggests that family members allocate tasks according to comparative advantages as well as prevailing social expectations. In many societies, women continue to undertake a larger share of childcare and domestic work than men (Fushshilat & Nurwati, 2021).

In the Indonesian context, this division of responsibilities may become more pronounced as the number of children increases, potentially limiting women's time and opportunities to engage in income-generating activities. Fertility may therefore affect women's labor supply decisions not only through economic considerations but also through household arrangements and socially constructed expectations regarding gender roles.

Human Capital Theory provides an additional framework for understanding women's labor market behavior. (Schultz, 1961) and (Becker, 1964) define human capital as knowledge, skills, education, and experience that enhance productivity and earning potential. Education increases women's labor market opportunities and the opportunity cost of remaining outside paid employment (Iffah, 2024). It may also affect fertility by influencing marriage timing, reproductive preferences, and the perceived costs of raising children. Supporting evidence from Indonesia shows that higher educational attainment is associated with lower fertility (Lestari & Abdullah, 2024), while education is also an important factor associated with adolescent fertility (Stiyaningsih et al., 2023). Thus, education may simultaneously influence women's labor market participation and fertility decisions, making human capital relevant to the relationship between fertility and women's employment..

The economic theory of fertility proposed by (Becker, 1960) further suggests that decisions concerning childbearing are shaped by rational economic considerations. Although children provide utility to parents, they also require substantial investments of time, financial resources, and caregiving. As household income increases and the opportunity cost of time becomes greater, parents may choose to have fewer children while allocating more resources to each child to improve child quality (Nasution & Pohan, 2021).

Fertility decisions are also influenced by broader socioeconomic changes. (Fieldo et al., 2025) highlight several factors associated with declining fertility, including changes in women's roles, greater access to education and professional careers, urbanization, increasing living costs, economic uncertainty, changing family values, and improved access to reproductive health services and contraception. These factors demonstrate that fertility decisions are not determined solely by biological considerations but are also closely connected to economic opportunities, social transformation, and household resource allocation.

Empirical research generally indicates that fertility and women's labor force participation are closely interconnected, although the magnitude of the relationship varies across economic and social contexts. (Brewster & Rindfuss, 2000) found that fertility and women's employment are closely related, with the strength of this relationship depending on family policies, childcare availability, and prevailing social norms.

Their findings suggest that supportive institutional arrangements can reduce the conflict between motherhood and employment, allowing women to remain

active in the labor market despite having children. Similarly, (Bloom et al., 2007) using panel data from 97 countries, found that declining fertility was associated with higher female labor force participation and economic growth. Lower fertility reduces the time burden associated with childcare and enables women to allocate more time to productive economic activities.

More recent research has continued to highlight the relationship between fertility and women's labor market participation. (Nazah et al., 2021), using panel data from Asian countries, found a significant relationship between fertility and female labor force participation and emphasized the role of demographic and socioeconomic changes in shaping women's economic participation. In Indonesia, (Novia et al., 2022) reported that women with a greater number of children tended to exhibit lower labor force participation. More recent evidence from Indonesia also indicates that fertility, female labor force participation, and education are interconnected, although their relationships may differ across short- and long-term conditions (Anggia et al., 2025).

Taken together, these findings indicate that fertility remains an important factor in understanding women's labor market participation, while the relationship may be shaped by institutional, socioeconomic, and demographic conditions.

Despite these findings, estimating the causal effect of fertility on women's employment remains challenging because of potential endogeneity. Fertility may affect women's employment decisions, while employment considerations may also influence fertility choices (Fieldo et al., 2025). Women who prioritize education or careers, for example, may postpone childbearing or choose to have fewer children.

To address this methodological challenge, the Instrumental Variables (IV) approach can be employed to obtain more reliable estimates of the causal relationship between fertility and women's labor supply. (Angrist and Evans, 1998) demonstrated the importance of using an appropriate instrumental variable to identify the causal effect of fertility on women's labor supply.

In this study, age at first marriage is employed as an instrumental variable for fertility. Women who marry at younger ages generally have a longer potential reproductive period, which may increase their likelihood of having more children. Thus, variation in age at first marriage can provide variation in fertility that is useful for addressing the potential endogeneity of fertility. Previous research has also demonstrated that fertility levels and changes are influenced by broader socioeconomic and demographic conditions, including factors related to childbearing and childrearing policies (He et al., 2019). Accordingly, the use of age at first marriage in this study is based on its expected relevance to fertility, while its validity as an instrument depends on the assumptions of instrument relevance and exogeneity.

This methodological issue is important because conventional regression estimates may not adequately distinguish the effect of fertility from unobserved socioeconomic, household, and individual characteristics that simultaneously influence both fertility and employment. Furthermore, empirical evidence using age at first marriage as an instrumental variable to identify the causal effect of fertility on women's labor market participation in Indonesia remains limited. Therefore, this study contributes to the existing literature by applying an Instrumental Variables approach using age

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at first marriage as an instrument for fertility and employing the 2022 National Socioeconomic Survey (SUSENAS) to estimate the causal effect of fertility on women's probability of working in Indonesia.

## RESEARCH METHODS

This study employs a quantitative explanatory research design to investigate the effect of fertility on women's labor force participation in Indonesia. The analysis utilizes secondary cross-sectional data from the 2022 National Socioeconomic Survey (SUSENAS), administered by Statistics Indonesia (BPS). SUSENAS was selected because it provides comprehensive micro-level information on the socioeconomic and demographic characteristics of individuals and households, making it suitable for examining the factors associated with women's labor market participation.

The analysis focuses on women of reproductive age (15–49 years), consistent with the definition established by the World Health Organization (WHO) and Indonesia's National Population and Family Planning Agency (BKKBN). The secondary data are obtained from the 2022 SUSENAS Core dataset (VSEN22.K) provided by Statistics Indonesia (BPS). The dataset is processed and analyzed using Stata to construct the variables, estimate the econometric model, and conduct the necessary statistical tests. Given the complex sampling design of SUSENAS, the survey weights provided by BPS are incorporated into the analysis to account for differences in the probability of selection and to improve the representativeness of the estimates at the population level.

The dependent variable in this study is the probability of women working, measured using a dummy variable that takes the value of 1 if the individual is working and 0 otherwise. The main independent variable is fertility, proxied by the number of biological children living in the household. Furthermore, education level and household size are included as control variables. Education level represents women's human capital, while household size captures household characteristics that may influence women's employment decisions. Age at first marriage is employed as an instrumental variable to address the potential endogeneity of fertility.

The use of the Instrumental Variables (IV) method with the Two-Stage Least Squares (2SLS) approach is motivated by the potential endogeneity of fertility. According to (Wooldridge, 2012), endogeneity may cause Ordinary Least Squares (OLS) estimates to be biased and inconsistent. In this study, fertility and women's employment decisions may have a bidirectional relationship: having children may influence women's decision to work, while women's labor market participation may also affect fertility decisions.

This study adopts the analytical framework developed by (Angrist & Evans, 1998), with modifications to accommodate the research objective, Indonesian institutional context, and variables available in the 2022 SUSENAS dataset. The main adjustments concern the measurement of the outcome and fertility variables, the choice of instrumental variable, and the inclusion of additional control variables. First, the outcome variable in this study is defined as the probability of women working, while

fertility is measured by the number of biological children living in the household. Second, unlike (Angrist & Evans, 1998), who used the sex composition of children as an instrumental variable, this study employs age at first marriage as an instrument for fertility. Third, education level and household size are incorporated as control variables to account for relevant individual and household characteristics. The analysis is conducted among women aged 15–49 years using the 2022 SUSENAS data. The structural equation is specified as follows:

$$Y_i = \alpha_0 + \alpha_1 X_i + \alpha_2 W_i + \varepsilon_i$$

Where $Y_i$ represents the probability of women working, $X_i$ represents fertility, and $W_i$ is a vector of control variables consisting of education level and household size. The coefficient $\alpha_1$ represents the estimated effect of fertility on the probability of women working, while $\alpha_2$ captures the effects of the control variables.

Because fertility is potentially endogenous, the estimation is conducted using the Two-Stage Least Squares (2SLS) approach. The first stage estimates the component of fertility that is explained by the instrumental variable and the control variables. The first-stage equation is formulated as follows:

$$X_i = \beta_0 + \beta_1 W_i + \beta_2 age_i + u_i$$

where $X_i$ represents fertility, $W_i$ represents the vector of control variables, and $age_i$ denotes age at first marriage as the instrumental variable. The coefficient $\beta_2$ captures the relationship between age at first marriage and fertility. The relevance of the instrument is assessed based on the statistical significance of the instrumental variable and the first-stage F-statistic. Following the conventional rule of thumb, an F-statistic greater than 10 indicates that the instrument is sufficiently relevant or does not suffer from a weak-instrument problem.

In the second stage, the predicted fertility values obtained from the first-stage regression are used to estimate the effect of fertility on the probability of women working. The second-stage equation is expressed as:

$$Y_i = \alpha_0 + \alpha_1 \hat{X}_i + \alpha_2 W_i + \varepsilon_i$$

where $\hat{X}_i$represents the predicted value of fertility obtained from the first-stage estimation. The coefficient $\alpha_1$is interpreted as the estimated causal effect of fertility on the probability of women working, conditional on the validity of the instrumental variable assumptions. The coefficients of the control variables indicate the association of education level and household size with women's probability of working.

In addition to assessing instrument relevance through the first-stage regression, this study conducts an endogeneity test to determine whether fertility should be treated as an endogenous variable and whether the IV approach is more appropriate than conventional OLS estimation.

## RESULTS AND DISCUSSION

This section presents the descriptive characteristics of the sample and the variables included in the empirical analysis. The study uses cross-sectional data from the 2022 National Socioeconomic Survey (SUSENAS), covering 222,506 women aged 15–49 years across Indonesia. The analysis

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focuses on women's employment status as the dependent variable, fertility as the main explanatory variable, education level and household size as control variables, and age at first marriage as the instrumental variable. The descriptive statistics are presented in Table 1.

**Table 1. Descriptive Statistics of Variables**

| Variables | Obs | Mean | Std.Dev |
|---|---|---|---|
| Fertility | 222,506 | 1.949 | 1.155 |
| Probability of woman working | 222,506 | 0.510 | 0. 499 |
| Education level | 222,506 | 1.841 | 0. 664 |
| Number of household members | 222,506 | 4.313 | 1.538 |
| Age at married | 222,506 | 21.12 | 4.150 |

Source: Processed Data (2026)

The sample consists of women of reproductive age, providing a broad representation of women potentially exposed to both fertility-related responsibilities and labor market decisions in Indonesia. The mean fertility level is 1.95 children, with a standard deviation of 1.155, indicating substantial variation in the number of children across women in the sample. This variation is important for the empirical analysis because it provides sufficient differences in fertility to examine its relationship with women's employment outcomes. The variation also suggests that women in the sample experience different household and reproductive circumstances that may influence their allocation of time between domestic responsibilities and market activities.

The mean value of the employment variable is 0.510, indicating that approximately 51.0 percent of women in the sample were working during the reference period. Because the dependent variable is coded as a binary variable, this mean represents the proportion of women classified as working rather than a conventional continuous average. The figure is broadly consistent with the relatively low level of female labor force participation in Indonesia compared with men, reflecting the persistent gender gap in labor market participation. Thus, the sample captures the substantial proportion of Indonesian women who remain outside paid or economically productive employment despite being of reproductive age.

The mean education level is 1.841 with a standard deviation of 0.664. Given the categorical measurement used in the analysis, the average value suggests that the sample is concentrated in the middle education category, while the variation indicates differences in educational attainment across respondents. These differences are relevant because education may simultaneously influence women's employment opportunities and fertility decisions through human capital accumulation, expected earnings, and the opportunity cost of time.

The average household size is 4.313 members, indicating that respondents generally live in households consisting of approximately four to five members. The standard deviation of 1.538 demonstrates considerable variation in household structure. Differences in household size may affect women's employment decisions because larger households can increase household resource requirements while potentially providing additional family support for childcare.

Finally, the mean age at first marriage is 21.12 years, with a standard deviation of

4.150. The relatively wide variation in age at first marriage provides meaningful variation for the instrumental variable analysis. The variable is expected to be associated with fertility because women who marry at younger ages generally have a longer potential reproductive period and may consequently have more children.

To address the potential endogeneity of fertility, the study applies the Instrumental Variables (IV) approach using the Two-Stage Least Squares (2SLS) estimator. Age at first marriage is employed as an instrument for fertility because of its expected relationship with the number of children. The first-stage regression evaluates whether the proposed instrument provides sufficient variation in fertility after controlling for education and household size.

**Table 2. First Stage Regression**

| Fertility | Coef. | Std.Err. | P>\|t\| |
|---|---|---|---|
| Education level | -0.072 | 0.002 | 0.000 |
| Number of household members | 0.588 | 0.000 | 0.000 |
| Age at married | -0.012 | 0.000 | 0.000 |
| Cons | -0.197 | 0.009 | 0.000 |

Source: Processed Data (2026)

The estimated first-stage equation is expressed as:

$$Fertility_i = -0{,}197 - 0{,}072Educ_i + 0{,}588HH_i - 0{,}012age_i$$

The coefficient on age at first marriage is negative and statistically significant at the 1 percent level. The coefficient of -0.012 indicates that, holding education and household size constant, a one-year increase in age at first marriage is associated with a decrease of approximately 0.012 children in the predicted level of fertility. Conversely, women who marry at younger ages tend to have higher fertility, consistent with the longer potential reproductive period associated with earlier marriage.

Education also exhibits a negative and statistically significant relationship with fertility. The coefficient of -0.072 indicates that higher educational attainment is associated with a lower number of children, conditional on the other variables in the first-stage equation. This relationship may reflect delayed marriage and childbearing, greater access to reproductive information, and higher opportunity costs associated with having additional children.

Household size has a positive and statistically significant coefficient of 0.588. This indicates that women living in larger households tend to have higher fertility, conditional on education and age at first marriage. The relationship may partly reflect differences in household composition and family structure, although the coefficient should be interpreted as an association within the first-stage specification rather than as a causal effect of household size on fertility.

More importantly, the strength of the instrumental variable is assessed using the first-stage F-statistic. The test produces an F-statistic of 970.234 with a p-value below 0.001. The magnitude of the F-statistic is substantially higher than the conventional threshold of 10 commonly used to identify weak-instrument concerns. Therefore, the null hypothesis that the excluded instrument has no explanatory power for fertility is strongly rejected. These results provide strong empirical support for the relevance and strength of age at first marriage as an instrument for fertility in the present model.

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**Table 3. Instrument Validity Test**

| Endogenous Variable | F Statistic | Prob>F |
|---|---|---|
| Fertility | 970,234 | 0.000 |

Source: Processed Data (2026)

The first-stage results therefore indicate that age at first marriage provides substantial variation in fertility after accounting for the included control variables. This satisfies the relevance condition required for the IV estimation.

An endogeneity test was subsequently conducted to determine whether fertility should be treated as an endogenous variable. The results are presented in Table 4.

**Table 4. Endogeneity Test**

| Statistic Test | Value | Probability |
|---|---|---|
| Robust Score Chi-Square | 559,437 | 0.000 |
| Robust Regression F | 559,946 | 0.000 |

Source: Processed Data (2026)

The Robust Score Chi-Square statistic is 559.437 with a p-value below 0.001. The Robust Regression F statistic is also statistically significant, with a value of 559.946 and a p-value below 0.001. These results lead to the rejection of the null hypothesis that fertility is exogenous.

The significant endogeneity test provides evidence that fertility is systematically correlated with the structural error term in the employment equation. Consequently, an OLS estimator may not provide consistent estimates of the effect of fertility on women's employment probability. The finding therefore supports the use of an IV estimator to address the potential endogeneity of fertility.

After establishing the relevance of the instrumental variable and the presence of endogeneity in fertility, the study estimates the structural employment equation using the Instrumental Variables–Linear Probability Model (IV-LPM) through Two-Stage Least Squares (2SLS). The use of the IV-LPM is appropriate because the dependent variable, women's employment status, is binary and is interpreted as the probability of working.

**Table 5. Second Stage Regression (2SLS)**

| Probability of woman working | Coef. | Std.Err. | P>\|t\| |
|---|---|---|---|
| Fertility | -0.482 | 0.027 | 0.000 |
| Education level | 0.017 | 0.003 | 0.000 |
| Number of household members | 0.263 | 0.016 | 0.000 |
| Cons | 0.280 | 0.012 | 0.000 |

Source: Processed Data (2026)

The estimated second-stage equation can be expressed as:

$$Work_i = 0{,}280 - 0{,}482 Fertility_i + 0{,}263 HH_i + 0{,}017 educ_i$$

The estimation results indicate that fertility, education level, and household size are all statistically significant at the 1 percent level. The coefficient on fertility is negative, while education and household size exhibit positive coefficients.

Holding education and household size constant, and using the variation in fertility predicted by age at first marriage, an additional child is associated with an approximately 48.2 percentage-point reduction in the probability that a woman works. The magnitude of this estimate is substantial, suggesting that fertility constitutes an important constraint on women's labor market participation in the sample.

The negative coefficient is consistent

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with the time-allocation mechanism proposed by (Becker, 1965). Women face limited time that must be allocated between market work, household production, childcare, and leisure. An increase in the number of children raises the demand for childcare and domestic activities, thereby increasing the opportunity cost of women's participation in paid employment. Consequently, higher fertility can reduce the amount of time available for market-oriented activities.

The finding is also consistent with more recent empirical evidence. (Novia et al., 2022) reported that women with more children in Indonesia tended to exhibit lower labor force participation. More recent evidence from Indonesia further demonstrates that the relationship between fertility and female labor force participation is dynamic and may differ across time horizons. (Anggia et al., 2025) found that female labor force participation and fertility are significantly interconnected in both the short and long run, with female labor force participation showing a negative effect on fertility in the short run.

These findings complement the earlier evidence of (Angrist & Evans, 1998), who demonstrated that additional children can reduce women's labor supply. While the earlier study provides an important foundation for identifying the fertility–labor supply relationship, the present study extends the discussion by applying an IV strategy to Indonesian microdata and using age at first marriage as the instrument for fertility. Thus, the negative relationship identified in this study is not interpreted merely as a simple correlation between the number of children and women's employment.

Household size has a positive and statistically significant coefficient of 0.263. In the IV-LPM specification, this implies that, conditional on fertility and education, an additional household member is associated with an approximately 26.3 percentage-point increase in the probability of women working. One possible explanation is that larger households may face greater consumption and financial requirements, increasing the need for additional sources of income. Women may therefore enter or remain in the labor market as part of a household strategy to meet greater economic needs.

This result is consistent with previous evidence suggesting that household size can influence women's employment decisions as part of a household's strategy for maintaining economic welfare. (Majid & Handayani, 2012), for example, found that women living in larger households were more likely to work, suggesting that female employment may serve as an adaptive response to household economic needs.

Education has a positive coefficient of 0.017 and is statistically significant at the 1 percent level. Within the IV-LPM framework, the coefficient indicates that a one-unit increase in the education category is associated with an approximately 1.7 percentage-point increase in the probability of women working, holding the other variables constant.

This finding is consistent with Human Capital Theory developed by (Becker, 1964), which considers education an investment that enhances productivity, expected earnings, and labor market opportunities. Women with higher educational attainment may face greater opportunity costs when remaining outside paid employment because their accumulated human capital can generate higher potential returns in the labor market. Higher education may also expand access to formal employment and improve women's ability to

obtain jobs that are compatible with their skills and career aspirations.

The positive relationship between education and employment also reinforces the importance of human capital in understanding women's labor market participation. Education can increase economic independence, expand employment opportunities, and strengthen women's capacity to make decisions concerning work and household responsibilities.

The endogeneity test provides evidence that fertility cannot be treated as purely exogenous in the employment equation. At the same time, the first-stage results demonstrate that age at first marriage is strongly associated with fertility, with an F-statistic of 970.234. These findings provide empirical support for the use of the IV-2SLS framework in addressing the endogeneity of fertility.

The results therefore strengthen the evidence that fertility is an important factor associated with women's labor market outcomes in Indonesia. In particular, the negative fertility coefficient indicates that greater fertility may impose substantial time and caregiving constraints on women, reducing their capacity to participate in market employment. This finding highlights the importance of considering childcare responsibilities, household arrangements, and women's human capital when designing policies aimed at increasing female labor force participation.

## CONCLUSION AND SUGGESTION

The empirical results show that fertility has a negative and statistically significant causal effect on women's labor force participation in Indonesia. Using the Instrumental Variables approach estimated through Two-Stage Least Squares (IV-2SLS), the study addresses the potential endogeneity of fertility and finds that an additional child substantially reduces women's probability of working. This finding suggests that increased childcare and domestic responsibilities impose important time constraints on women's participation in market employment. Education is positively associated with women's probability of working, indicating that greater educational attainment strengthens human capital, employment opportunities, and women's economic participation.

Larger household size is also positively associated with women's probability of working. This finding may reflect two possible mechanisms: larger households may increase economic needs and encourage women to contribute to household income, while additional household members may provide childcare and domestic support that enables women to work. Because the available data do not allow these mechanisms to be distinguished, further research is needed to examine the role of household composition, intra-household support, and economic pressures. These findings contribute to the literature on labor economics and gender economics by providing evidence of a causal relationship between fertility and women's labor market participation in Indonesia using an IV-2SLS framework, extending previous research that primarily focuses on associations.

The findings suggest the importance of policies that address both fertility-related constraints and women's employment opportunities. Expanding access to family planning, reproductive health education, childcare services, flexible working arrangements, and women's education may help reduce barriers to labor market participation and strengthen women's economic autonomy. This study has several

limitations. First, the cross-sectional SUSENAS data limit the ability to examine changes in fertility and employment decisions over time. Second, fertility is measured by the number of biological children living in the household and may not fully capture broader fertility and childcare responsibilities. Third, the analysis is limited to variables available in the 2022 SUSENAS, excluding factors such as husbands' employment status, household income, childcare arrangements, and extended-family support. Finally, the causal interpretation of the IV estimates depends on the validity of the instrumental-variable assumptions, particularly the assumption that age at first marriage affects women's labor force participation primarily through fertility.

Future research could address these limitations by incorporating additional household and individual characteristics, using longitudinal or panel data, and examining differences across socioeconomic groups, educational levels, and rural–urban areas.

## THE USE OF AI OR AI-ASSISTED TECHNOLOGIES

The authors did not use any AI tools in the preparation of this work.

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