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Female Labor Supply in a Developing Economy: Intrahousehold Decision-Making and Non-Monetary Costs

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Female Labor Supply in a Developing Economy: Intrahousehold Decision-Making and Non-Monetary Costs*

Abstract

This paper develops a new approach to evaluating how household decision-making patterns shape women's employment. It examines the role of social norms by providing a framework reflecting the trade-off between household economic surplus and the non-monetary costs of women's employment. The framework distinguishes between regimes with different relative cost structures: husband-cost-dominant settings under stronger traditional norms and wife-cost-dominant settings under weaker norms regarding women's work.¹ We apply the model using Indonesian household reports on decision-making involvement. Considering both spouses' reports provides a more comprehensive analysis than relying on wives' reports alone, as is standard in literature: spousal reporting discrepancies are non-random, with women tending to overestimate their involvement. The results support the husband-cost-dominant model, implying wives' employment in Indonesia is shaped by traditional norms to a large extent. The findings also suggest that the non-monetary cost of her employment plays a more significant role than the income effect. Finally, the results highlight the persistence of social norms surrounding Indonesian women's labor supply, both over time and across cohorts.

JEL classification

J21, O12

Keywords

female labor supply, intra-household decision making

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¹ These terms, reflecting the relative influence of traditional norms on women's employment decisions, roughly correspond to patterns described as patriarchal in earlier literature and as female agency in feminist studies.

1 Introduction

A rich body of literature documents the link between female labor supply and bargaining power, particularly in developing countries where both remain substantially lower than those of men. However, the empirical literature has rather focused on inferring bargaining power from labor market outcomes of spouses, either indirectly - through structural models of collective labor supply (see Chiappori and Molina, 2020 and Chiappori et al., 2022 for a comprehensive review) - or directly, by measuring bargaining power using survey-based decision-making indicators and examining its determinants (*e.g.* Adkins, 2024; Zimmermann, 2018; Vaz et al., 2016; Meurs et al., 2015; Hanmer and Klugman, 2015; Li and Wu, 2011; Mabsout and van Staveren, 2010; Anderson and Eswaran, 2009; Rammohan and Johar, 2009).

In contrast, empirical studies that investigate the reverse relationship - namely, the impact of bargaining power on women’s labor supply - are scarce (see Jayachandran and Voena (2025) for a comprehensive review). Rare exceptions include recent studies by Field et al. (2021) or Heath and Xu (2020), who use Indian data to show that changes in women’s control over resources can influence their labor supply.

This paper offers a new approach to evaluating the role of spousal bargaining power in women’s employment decisions and applies it to examine the impact of intra-household decision-making on women’s labor market participation using data from the Indonesian Family Life Survey (IFLS, 1997–2014).

Furthermore, by exploiting the relationship between decision-making over female employment and women’s actual labor participation, it tests whether social norms around gender roles act as constraints on female labor supply in a developing economy - an issue also widely discussed in the literature (Jayachandran 2015; 2021; Bertrand et al. (2015); Muñoz Boudet et al., 2012) but rarely addressed empirically. Some exceptions include Chen and Ge (2018), who show the intergenerational transmission of conservative gender norms regarding employment from mothers to sons and subsequently to wives in China; Heintz et al. (2018) and

Bernhardt et al. (2018), who show that perceived community disapproval is a self-reported barrier to women’s work outside the home in Bangladesh and is negatively associated with female employment in India, respectively; while more recent work moves toward examining the interaction between cultural norms and various development policies (*e.g.* Field et al., 2021; Bourles et al., 2024; Bargain et al., 2024).

Specifically, the paper adds to the literature by presenting a conceptual framework grounded in the collective household approach (Chiappori, 1992). This framework allows us to link the intra-household distribution of the non-monetary costs associated with the wife’s employment to household dynamics, thereby delineating two distinct scenarios: a husband-cost-dominant model stemming from strong traditional norms and discouraging women’s employment and a wife-cost-dominant model aligning women’s employment with their own preferences.

These non-monetary costs include social penalties for deviating from traditional gender roles, which prescribe that women prioritize household responsibilities while men act as primary breadwinners (Jayachandran, 2021; Bernhardt et al. 2018). A wife’s employment may therefore trigger societal disapproval and be perceived as a threat to the husband’s masculinity and provider identity (Bernhardt et al., 2018; Meurs, 2016; Muñoz Boudet et al., 2012), thereby substantially increasing his cost. A working wife may be viewed as reflecting financial struggle or dishonoring cultural values; norms around modesty and safety concerns for women in public spaces, combined with stigma attached to certain job types (Goldin, 1995), reinforce the costs.

Empirically, we relate the cost distribution with the survey-based self-reported decision-making question related to a woman’s employment - a type of data provided by large-scale household surveys such as the Demographic and Health Surveys (DHS) and commonly used by the literature to assess women’s bargaining power and their participation in household decision-making (*e.g.* Ambler et al., 2026; Abdurazzakova et al., 2024; Adkins, 2024; Augsburg et al., 2023; Ambler et al., 2022; Cassidy et al., 2021; Bargain et al., 2019; Miedema

et al., 2018; Anderson et al., 2017; Mabsout and van Staveren, 2010). Depending on the survey, respondents may simply indicate whether they participate in a given decision (Chhabra and Hurtado, 2020) or, in more recent surveys such as the IFLS we use, specify whether the decision is made solely by them, jointly with their spouse, or solely by their spouse.

In contrast to earlier studies that rely exclusively on women’s reports (*e.g.* Ajefu and Casale, 2021; Wiig, 2013; Li and Wu, 2011; Rammohan and Johar, 2009; Kishor and Subaiya, 2008), we incorporate decision-making reports from both spouses, responding to evidence of systematic discrepancies between their answers documented in recent literature (*e.g.* Van Campenhout et al., 2023; Amler et al., 2021; 2022; Liaqat et al., 2021; Acosta et al., 2019; Seymour and Peterman, 2018; Twyman et al., 2015). We demonstrate that these spousal discrepancies - reflected in differing reports of decision-making regarding the wife’s employment - are not random but systematic, with women tending to overstate their level of involvement, consistent with the findings of Ambler et al. (2021) and Liaqat et al. (2021).

Further, we exploit the full range of responses to the decision-making question, rather than reducing participation to a binary measure, as is common in the existing literature. (*e.g.* Ambler et al., 2026; Corradini and Buccione, 2023; Ajefu et al., 2022; Cassidy et al., 2021; Rizkianti et al., 2020; Kafle et al., 2019; Upadhyay and Karasek, 2012). Consistent with Seymour and Peterman (2018), who show that using a detailed response scale can influence estimated associations, this approach preserves gradations in decision-making involvement and enables a more precise measurement of variation in household decision-making and individual agency.

While the literature commonly combines multiple decision-making questions - covering household expenditures, children’s health, and education, etc - to construct indices of female bargaining power (*e.g.* Wiig, 2013; Meurs and Ismaylov, 2019; Kochar et al., 2022; Ewerling et al., 2017; Sharaunga et al., 2019; Augsburg et al., 2023; Kochar et al., 2022; Abdurazzakova et al., 2024; Nibogore and Eryurt, 2024; Khatun et al., 2025; Sharma and Das, 2021; Bargain

et al., 2019), we treat the employment question as specific. Following Bernard et al. (2020), Maiorano et al. (2021), and Donald et al. (2026), we recognize that different decisions reflect women’s involvement in household decision-making to varying degrees and may be influenced by social norms or individual preferences rather than bargaining power per se. This specificity allows us to assume that the decision regarding a wife’s employment precedes her actual labor market engagement, thereby mitigating concerns about simultaneity when modeling the wife’s labor outcome as a function of the spousal costs associated with her employment.

The assumption is supported by empirical evidence examining whether women’s employment affects alternative measures of decision-making power, such as control over household expenditures and time allocation. If employment were the source of reverse causality, its effect on reported decision-making power should be even more pronounced in these indicators than in the employment-specific decision measure. However, even under a conservative upper-bound scenario - where the entire observed association is attributed to a unilateral effect of female employment on decision-making, with no reverse causal effect - the estimated feedback is weak. The bias-corrected estimates closely align with the baseline results and fall within the original 95% confidence intervals, without altering the interpretation.

The results support the husband-cost-dominant model of household behavior in Indonesia, highlighting the dominance of the husband’s disutility from his wife’s work over her own preferences. This pattern of male dominance in intra-household decisions is consistent with recent experimental evidence from developing countries showing that husbands’ preferences often prevail in household choices on other issues (Alem et al., 2023; Abbink et al., 2020). Moreover, the results suggest that the non-monetary costs associated with woman’s employment outweigh the corresponding income effects.

Furthermore, our results highlight the enduring influence of social norms surrounding Indonesian women’s labor supply, both over time and across cohorts. While prior literature has widely discussed the role of cultural norms and traditional gender roles in persistently low female labor force participation from a qualitative or conceptual perspective (*e.g.* Jay-

achandran, 2021), our study complements this body of work by explicitly demonstrating this connection through empirical evidence, confirming the persistence of the main findings.

Finally, the paper contributes to the thin literature focusing on female labor supply and intra-household dynamics in Indonesia, which is scarce, primarily descriptive, and predominantly focuses on economic, demographic, and human capital factors of woman’s employment (*e.g.* Cameron et al., 2019; Schaner and Das, 2016).

The paper is organized as follows. The next section presents the Indonesian institutional context. Section 3 outlines the conceptual framework. Section 4 describes the data and examines decision-making patterns in Indonesian households. Section 5 presents the empirical model and the bias-correction strategy. Section 6 discusses the results. The final section concludes and summarizes the key findings.

2 Institutional Context

2.1 Indonesian background

Indonesia is the largest archipelagic country, with 922 islands and an ethnically diverse but predominantly Muslim population (about 90%). Patriarchal household structures persist, shaped in part by the long-lasting influence of the New Order regime under Suharto (1967–1998), which emphasized gendered roles in society and women’s central role in the home (Blackburn, 2004; Parker, 2016).

Asymmetric gender roles are reflected in various socioeconomic outcomes, including labor force participation, land ownership, and marriage legislation². The 1974 Marriage Law assigns the wife the responsibility of taking care of the household, permits polygamy if the wife does not fulfill her obligations, and automatically designates the man as the head of the household (Schaner and Das, 2016; UNFPA, 2015; UN CEDAW, 2012).

²For instance, in 2012, only about 36% of married women aged 15-49 owned land either alone or jointly, while 54% of men owned land (Schaner and Das, 2016).

In the case of divorce, joint assets are divided equally between the husband and wife, and each spouse retains any property owned prior to the marriage (UN CEDAW, 2005; Schaner and Das, 2016). However, divorce remains a challenging and lengthy process, often subject to social stigma, which further undermines women’s autonomy and limits their exit options. (Parker, 2016). For the Muslim majority of women, marriages are governed by sharia rather than civil law (UN CEDAW, 2012), which is often even more restrictive. Additionally, access to sexual and reproductive health services is limited to legally married individuals, and a husband’s consent is required for certain birth control methods (Schaner and Das, 2016).

Since the fall of the New Order regime in 1998, the Reformasi period brought democratization and decentralization of the government, along with civil and social changes affecting households and their operation. On the positive side, the 2004 Law on the Elimination of Domestic Violence was introduced (World Bank, 2020). However, decentralization reforms also enabled various regions and provinces to implement discriminatory policies against women. For example, in Aceh province, restrictions were imposed on women’s social and public activities, dress codes, and freedom of movement (UN CEDAW, 2012).

More generally, the National Commission on Violence Against Women reported in 2013 that since 1999, the government at both national and subnational levels has passed 342 discriminatory laws, including 79 local mandates requiring women to wear the hijab (Harsono, 2014). On the other hand, the government has taken some actions towards gender equality more recently, including putting 30% female quotas on candidates nominated by political parties to the House of Representatives (Quota Project, 2014), but there remain challenges at the national level due to the population’s diversity in ideologies (Schaner and Das, 2016).

These political and social shifts, combined with economic shocks, have significantly shaped the experiences of the Indonesian cohorts observed, though, as shown by the time dynamics analysis in section 6.3, they did not necessarily induce lasting socio-cultural shifts.

2.2 Indonesian Female Employment

While the Indonesian economy has grown steadily over the last three decades, except for the 1997 Asian financial crisis, and has seen rapid improvements in narrowing the gender gap in educational attainment, women’s participation in the labor market has stagnated since 1990.

Figure 1 shows the female and male working rates for the years used in the analysis: 1997, 2000, 2007, and 2014. Female rates have consistently been lower compared to the high rates for men. The dip in 1997 corresponds to the financial crisis. However, the rates recovered in subsequent years, with male employment returning to approximately 90%, and female employment increasing from 50% before the 1997 crisis to 60% by 2014.

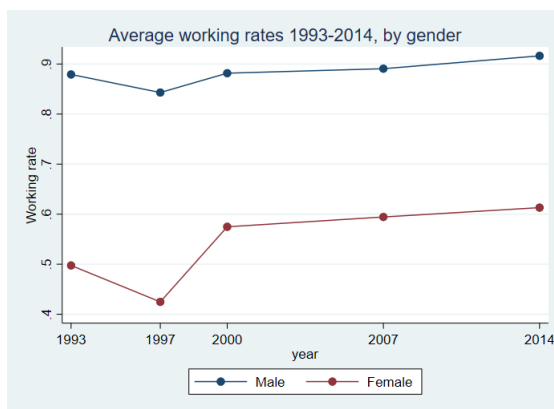


Figure 1: Dynamics of Workforce Employment by Gender. Source: IFLS, 1993-2014

The working sample used consists of women whose working years spanned from 1955 to 2014 (see section 4 for data description). Most worked in agriculture, manufacturing (especially textiles and electronics), retail, domestic work, education, and services. Many held low-wage, labor-intensive jobs with limited job security (Osterreich, 2007, 2020; Sohn, 2015) and were driven into the labor force by economic hardship and household financial constraints (Schaner and Das, 2016).

3 Conceptual Framework

Building on the cultural context and institutional background described above, where male employment is nearly full while female employment is only around half, and those who work are predominantly employed in manufacturing with long working hours and low wages, the decision-making dynamics within the household can be modeled to reflect the interplay between cultural, economic, and personal factors influencing a wife's employment status, as outlined in the model framework below.

3.1 Model Framework

Assuming that husbands are primarily engaged in employment activities or are, at the very least, active participants in the labor market, and taking a collective household approach (Chiappori, 1992), we posit that each spouse derives separate utility, $u^f(\cdot)$ and $u^m(\cdot)$, from the wife's employment. Following Basu (2006), these utilities incorporate the trade-offs between the economic surplus generated by her employment and the non-economic costs of her working, c^f and c^m , borne by the wife and the husband, respectively: $u^f = u^f(Y^{hh}, c^f)$ and $u^m = u^m(Y^{hh}, c^m)$.

Both utilities positively depend on the household income Y^{hh} ($(u^j)'_{Y^{hh}} > 0$, for $j = f, m$) and negatively on the associated costs of woman working c^f and c^m ($(u^j)'_{c^j} < 0$, for $j = f, m$). This framework closely aligns with the standard labor supply model, which balances individual utility between leisure and consumption. However, here c^f extends beyond leisure traded off to include other outcomes also traded off against economic gains, such as home production and socio-cultural factors. Additionally, these factors also represent a cost for the husband, as reflected by c^m .

The spouses' cost functions differ in their individual arguments, $\mathbf{X}^f$ and $\mathbf{X}^m$, and the marginal values of shared arguments, $\mathbf{Z}$: $c^f(\mathbf{X}^f, \mathbf{Z}) \neq c^m(\mathbf{X}^m, \mathbf{Z})$ and $(c^f)'_{\mathbf{Z}} \neq (c^m)'_{\mathbf{Z}}$. Specifically, the wife's cost of working extends beyond direct monetary trade-offs and is

closely tied to her overall utility. This cost includes the time she spends away from home, which reduces her available hours for leisure and home production activities, such as childcare, household management, and other domestic responsibilities. However, the cost is not solely negative; it also incorporates potential non-economic benefits, such as greater autonomy and personal fulfillment, that may offset or even outweigh the burdens of employment, potentially increasing her utility and influencing her decision to participate in the labor market. In this sense, the cost of working is not just a constraint but also an integral part of the wife's utility function, where the psychological and social rewards of employment can effectively lower the perceived cost of working.

The husband's cost function also includes a potential reduction in the wife's home production time and output, but also losses in his status as the main provider, and the family's income status and honor. These factors are closely tied to the behavior and visibility of women, particularly in patriarchal and culturally conservative contexts, where the wife's employment may be perceived as a threat to the husband's social and familial standing.

The wife's decision to work is modeled as an outcome of the household maximand U , which integrates the individual utilities weighting them by a factor θ ($\theta \in [0; 1]$), representing the decision-making power within the household specifically concerning the wife's employment status:

$$U = \theta \cdot u^f(Y^{hh}, c^f) + (1 - \theta) \cdot u^m(Y^{hh}, c^m) \quad (1)$$

The parameter θ reflects the relative influence of the wife and husband in determining her participation in the labor market, and is determined prior to her actual labor market outcome. Unlike consumption or savings decisions, which are typically made after income is realized and may adjust dynamically based on the wife's employment status, θ represents a structural aspect of household decision-making that is largely established beforehand. Once employment status is realized, household choices such as consumption or time allocation may adapt accordingly, and the distribution of bargaining power may also evolve over time.

However, the relevant bargaining structure governing the employment decision is treated as predetermined in our analysis, such that $\theta = \theta^*$, with θ^* shaped by long-standing cultural norms, household dynamics, and pre-existing economic conditions, rather than being an immediate response to the wife's realized labor market outcome.

Assuming separability in monetary income and other factors, the utility functions for both spouses can be represented as:

$$u_j(Y^{hh}, c^j) = V^{hh}(Y^{hh}) - c^j \quad (2)$$

where V^{hh} represents the household utility derived from income, with $(V^{hh})'_{Y^{hh}} > 0$. This additive utility structure simplifies the analysis while also providing a framework that can be tested empirically. Disaggregating household income into female labor income (Y^f), male labor income (Y^m), and non-labor household income (Y^{nl}) components, the utility function for an individual spouse can then be expressed as:

$$u_j(Y^{hh}, c^j) = V^{hh}(Y^f, Y^m, Y^{nl}) - c^j \quad (3)$$

The overall household utility then becomes a difference between the household income utility and cost function:

$$U = V^{hh}(Y^f, Y^m, Y^{nl}) - [\theta \cdot c^f + (1 - \theta) \cdot c^m] \quad (4)$$

This utility function simplifies the representation of the decision-making process by capturing both the economic benefits (the wife's income contribution Y^f) and non-economic costs of the wife's employment while factoring in the bargaining dynamics between the two spouses. The household utility is maximized when the sum of these individual costs and benefits is balanced according to the spouses' relative decision power.

The wife's working outcome is determined by a trade-off between the household utility gained from her labor income and the weighted costs incurred by both spouses due to her

working. The corresponding decision rule can be expressed as:

$$P(W^f = 1) \equiv P(V^{hh}(Y^f, Y^m, Y^{nl}) - V^{hh}(0, Y^m, Y^{nl}) > [\theta \cdot c^f + (1 - \theta) \cdot c^m]) \quad (5)$$

where $P(W^f = 1)$ is a probability reflecting the likelihood of the wife working, given the utility and costs involved.

The value of the weighted cost negatively impacting the wife's working probability is determined by the distribution of the spouses' costs between the wife and husband, $\frac{c^f}{c^m}$, combined with the relative influence each spouse has on the decision, $\frac{\theta}{1-\theta}$. Meanwhile, the economic surplus from her work may depend on the male labor income (Y^m), and the household non-labor income (Y^{nl}).

Cost Distribution Scenario 1: wife-cost-dominant, $\frac{c^f}{c^m} > 1$. When the cost of work is higher for the woman herself, an increase in her decision-making power over employment (θ) raises the overall cost. As a result, the probability of her working ($P(Work^f = 1)$) decreases, such that $P'_\theta < 0$. This scenario is most likely to arise in household settings where the wife has greater influence over her employment decision and the husband incurs relatively low costs from her working.

Cost Distribution Scenario 2: husband-cost-dominant, $\frac{c^f}{c^m} < 1$. When the husband bears higher costs and experiences greater disutility from his wife's employment, an increase in her decision-making power about her work (θ) reduces the overall cost. Consequently, the probability of her working ($P(W^f = 1)$) increases, such that $P'_\theta > 0$. This scenario is more likely to arise under strong traditional norms, where the husbands' preferences - shaped by social pressures - play a central role in determining wives' employment.

Implication: The sign of P'_θ reflects the relative magnitude of the husband's cost (c^m) compared to the wife's (c^f):

$P'_\theta < 0$ implies the wife-cost-dominant scenario where the cost of work is more burdensome for the woman herself. Increasing her decision-making power (θ) would raise the overall cost,

reducing the likelihood of her working.

$P'_\theta > 0$ implies the husband-cost-dominant scenario where the man experiences significant disutility from the wife working. Increasing her decision-making power (θ) reduces the overall cost, increasing the probability of her working.

The empirical work below focuses on these implications by examining the relationship between $P(W^f = 1)$ and θ to explore the household dynamics regarding the wife's employment in a developing setting. Additionally, the assumption of additivity in the utility function (4) is tested to assess its validity.

4 Data and Descriptive Analysis

The data come from the Indonesian Family Life Survey (IFLS), panel data representative of about 83% of the population and covering 13 of the country's 17 provinces in 1993, 1997, 2000, 2007, and 2014³. We use the 1997-2014 waves, which contain information on 17 decision-making items, focusing on the 9 items that apply to the full population, are commonly available in household surveys, and exhibit high response rates (99% among married women and 89% among their husbands).

Sub-Section 4.1 below provides the descriptive analysis related to the key information - household decision-making patterns regarding the wife's employment, and develops the proxies for the spouses' weights (θ , see 3.1). Subsection 4.1.2 examines their joint distribution with women's employment outcomes. Table 5 (Appendix B) reports the distribution of spousal responses to 8 additional decision-making questions covering expenditures on food consumed at home, routine household spending and durables, parties and wedding gifts, as well as spousal clothing and social time which are used in the bias-correction analysis described in Subsection 5.1.

Our sample consists of 27,590 married women aged 18-60 whose spouses also provide

³See <https://www.rand.org/health/surveys/FLS/IFLS.html> for details on the survey design and implementation.

information on the 9 decision-making questions. We classify them into four age groups - 18-30, 31-40, 41-50, and 51-60 - to examine age-related dynamics. These women, born between 1937 and 1996, participated in the labor force between 1955 and 2014.

44% of women are not employed, compared to only 4% of men. Employed women tend to be in their early to mid-life, have fewer children under 5, more children aged 6-18, and are more likely to belong to households with a business, compared to non-working women. Many women have completed grade school (40%) and most practice Islam (90%), with spouses sharing the same religion and being, on average, about 5 years older.

The panel dimension of the data is very limited. Around half of the women in the working sample are observed only once, and fewer than 12% are observed across all four periods. On average, the women are observed in just two periods. This is likely due to the long observation window, which generates attrition and migration, as well as turnover in the working-age population as women enter and exit the sample over time.

The right panel of Table 3, based on the sub-sample of women observed more than once, indicates that individually, female working status is relatively stable over time, providing initial evidence of behavioral persistence despite significant political and economic shocks in Indonesia. Women who are working tend to maintain their working status with a probability of 80%, while non-working women change their status with a probability of 44%. However, it is important to note that these probabilities are unconditional on age and other socio-economic factors, which may influence these dynamics.

Table 1 presents the descriptive statistics for individual and household characteristics used in the analysis. Specifically, it details the distribution of household wealth-related variables driving the household income utility from wife working (V^{hh} , see 3.1), including husband's income, the total value of household assets⁴, household non-labor income, which is

⁴The assets include house(s) and land(s) occupied by the household, poultry/livestock, vehicles, household appliances, savings, certificates of deposit, stocks, receivables, jewelry, furniture, and utensils. Non-labor income comprises earnings from renting, leasing, interest, or profit-sharing of household assets (owned by 7% of households) and other non-asset sources, such as government assistance (including pensions, retirement funds, government scholarships, private scholarships, insurance payouts, and lottery winnings, which are received by 16% of households).

earned by approximately 22% of households, as well as individual and household demographic characteristics.

4.1 Household Decision-Making Patterns

The decision-making process regarding female labor market participation is measured using the following survey questions: "Who makes the decision about whether you work?" and "Who makes the decision about whether your spouse works?". Each spouse has three options for reporting their degree of participation in the decision-making process: "Spouse decides"; "Joint with spouse"; "Decide alone". We therefore define variables A^f and A^m to represent the female and male answers: $A^j = \{0, 1, 2\}$ corresponding to {not participating in the decision process; jointly deciding; deciding individually}, with $j = f, m$.

The resulting household decision-making is described by $A^{fm} = \{00; 01; 02; 10; 11; 12; 20; 21; 22\}$, which represents the joint outcomes reported by the spouses when answering the question.

4.1.1 Heterogeneity of the Decision Making Process

Decision-making patterns related to female labor supply vary significantly across Indonesian households. Their tabulation (Table 2) indicates that the predominant pattern involves joint decision-making between spouses. This implies that many couples actively share decision-making responsibilities regarding female labor market participation. In what follows, we will refer to this mainstream scenario as the baseline outcome.

In about 17% of households, the husband is the sole decision-maker, as attested by both spouses, whereas in less than 1% of households, both spouses agree that the woman is the sole decision-maker.

Two other frequent patterns involve a joint decision being attested by only one of the spouses. In 14% of households, the man claims it was his solo decision, while in another 9%, the woman claims it was hers. These types of discrepancies are addressed in the literature,

Table 1: Descriptive Statistics of Control Variables by Women's Employment Status

	Work status		
	0	1	Total
N	12,098 (43.9%)	15,484 (56.1%)	27,582 (100.0%)
Age group			
Age: 18-30	5,272 (43.6%)	4,244 (27.4%)	9,516 (34.5%)
Age: 31-40	3,620 (29.9%)	5,338 (34.5%)	8,958 (32.5%)
Age: 41-50	1,977 (16.3%)	3,892 (25.1%)	5,869 (21.3%)
Age: 51-60	1,229 (10.2%)	2,010 (13.0%)	3,239 (11.7%)
Cohorts			
Born: 1937-1947	563 (4.7%)	548 (3.5%)	1,111 (4.0%)
Born: 1947-1956	1,232 (10.2%)	1,945 (12.6%)	3,177 (11.5%)
Born: 1957-1966	2,328 (19.2%)	4,238 (27.4%)	6,566 (23.8%)
Born: 1967-1976	3,462 (28.6%)	4,372 (28.2%)	7,834 (28.4%)
Born: 1977-1986	3,414 (28.2%)	3,479 (22.5%)	6,893 (25.0%)
Born: 1987-1997	1,099 (9.1%)	902 (5.8%)	2,001 (7.3%)
Education			
Unschool	772 (6.4%)	1,282 (8.3%)	2,054 (7.4%)
Grade school	4,850 (40.1%)	6,405 (41.4%)	11,255 (40.8%)
Jr. High school	2,146 (17.7%)	2,076 (13.4%)	4,222 (15.3%)
Sr. high school	1,187 (9.8%)	1,254 (8.1%)	2,441 (8.8%)
Higher education	2,238 (18.5%)	3,559 (23.0%)	5,797 (21.0%)
Muslim schools	905 (7.5%)	908 (5.9%)	1,813 (6.6%)
Religion			
Islam	11,180 (92.4%)	13,562 (87.6%)	24,742 (89.7%)
Protestant	334 (2.8%)	651 (4.2%)	985 (3.6%)
Catholic	157 (1.3%)	249 (1.6%)	406 (1.5%)
Hinduism	427 (3.5%)	1,022 (6.6%)	1,449 (5.3%)
Young children under 6	0.663 (0.688)	0.441 (0.623)	0.539 (0.662)
Children age 6-17	0.863 (1.037)	0.942 (1.036)	0.908 (1.037)
HH size	4.756 (1.913)	4.452 (1.753)	4.585 (1.831)
Female in-laws			
Doughter-in-law	976 (8.1%)	1,069 (6.9%)	2,045 (7.4%)
Mother-in-law	175 (1.4%)	316 (2.0%)	491 (1.8%)
Number of elderly	0.145 (0.394)	0.170 (0.423)	0.159 (0.411)
Husband unemployed			
1	496 (4.1%)	559 (3.6%)	1,055 (3.8%)
Ln(Husband's Income)	15.252 (3.487)	15.205 (3.383)	15.226 (3.429)
Non-labor income >0			
1	2,601 (21.5%)	3,353 (21.7%)	5,954 (21.6%)
Ln(HH Non-labor income) >0	14.217 (1.867)	13.974 (1.918)	14.080 (1.899)
Ln(HH total assets)	17.435 (1.707)	17.638 (1.650)	17.549 (1.678)
HH owns farm business			
1	3,855 (31.9%)	6,890 (44.5%)	10,745 (39.0%)
HH owns nonfarm business			
1	4,096 (33.9%)	8,166 (52.7%)	12,262 (44.5%)
Urban			
1	6,566 (54.3%)	7,464 (48.2%)	14,030 (50.9%)
year			
1997	2,640 (21.8%)	2,036 (13.1%)	4,676 (17.0%)
2000	2,940 (24.3%)	3,704 (23.9%)	6,644 (24.1%)
2007	3,407 (28.2%)	4,855 (31.4%)	8,262 (30.0%)
2014	3,111 (25.7%)	4,889 (31.6%)	8,000 (29.0%)

which suggests they may arise from different gendered interpretations of survey questions. For instance, Ambler et al. (2022; 2021) and Liaqat et al. (2021) find evidence of gender asymmetry using data from Nepal, Bangladesh and the Philippines, respectively. These studies highlight that wives tend to report stronger involvement in decision-making than their husbands’ evaluations suggest, indicating differing perceptions of who holds decision-making power within the household.

Household pattern, A_m A_f [Wives’ Working Rates]	0 (not deciding)	1 (jointly deciding)	2 (deciding individually)	Total
0 (not deciding)	1.0% [0.310]	9.1% [0.377]	17.3% [0.202]	27.5%
1 (jointly deciding)	1.5% [0.671]	49.4% [0.740]	14.3% [0.464]	65.3%
2 (deciding individually)	0.8% [0.766]	3.5% [0.702]	2.9% [0.362]	7.2%
Total	3.4%	62.1%	34.6%	100%

Table 2: Distribution of Household Decision-Making Patterns and Wives’ Working Rates among the Corresponding Couples [in brackets]

The sub-sample of women observed two or more times allows for tracking changes in their reported degree of involvement in decision-making (left and central panels of Table 3). The mainstream outcome of 1 (joint decision-making) remains quite stable, with 0.8 probability of being reported again after it has been reported once, as implied by the within percentage. This indicates a strong persistence of joint decision-making over time within households.

Less frequent outcomes, such as 0 (not participating) or 2 (deciding alone), tend to be less stable and exhibit gender asymmetry in line with the asymmetry reported above. Men frequently report a decision outcome of 2 (deciding alone), while women more often report 0 (not participating). However, when changes occur, both men and women tend to switch to outcome 1 (joint decision). This suggests that, over time, households might either gravitate towards more cooperative decision-making or adjust their interpretation of what constitutes joint decision-making.

Yet, women are more likely to shift to a joint decision-making pattern from making decisions independently, while men tend to move towards sharing the decision-making process when previously uninvolved. Conversely, when responses shift away from joint decision-making, the reverse is true. This gendered gravitation around joint decision-making highlights a persistent gender imbalance in decision-making roles across multiple households.

Decision making											Working status		
Women						Men					Women		
	0	1	2	Total	Within % ^{a)}	0	1	2	Total	Within % ^{a)}	0	1	Within % ^{a)}
0	34	58	8	100	67	6	62	32	100	53	56	44	77.4
1	22	70	8	100	82	3	67	30	100	80	20	80	81.5
2	26	64	10	100	53	3	55	42	100	67	0 / 1: no/yes		

a) Within %: % of observations having the given outcome for the same individual

0 / 1 / 2: no/ joint /solo decision

Table 3: Individual transitions between degrees of participation in the decision-making

4.1.2 Woman's Employment and Decision-Making Power: Joint Distribution

Table 2, which provides a tabulation of decision-making patterns, also shows the corresponding female working rates (in brackets). The more intense rates are clearly visible in the lower left part of the table, corresponding to stronger degrees of women's involvement in decision-making about their labor market participation. This contrasts with the more frequent sections, where female working rates are the lowest.

This pattern suggests that stronger/weaker involvement in decision-making is associated with higher/lower female working rates. The empirical analysis below explores this relationship in depth, examining how decision-making within households influence women's labor market participation.

4.1.3 Determinants of the Decision-Making Process

The degree of women's involvement in household decision-making varies slightly based on individual characteristics, household structure, education, and religion. Estimates from the multinomial logit regression (Appendix B, Tables 6-7) suggest that older women are more

likely to make decisions independently, aligning with the literature (Meurs, 2016; Mabsout and van Staveren, 2010, for Ethiopia; Kishor and Subaiya, 2008, for multiple developing countries). Women with children under 6 are less likely to participate in work-related decisions, though having more school-aged children is associated with increases in their involvement. This contrasts with (Kishor and Subaiya, 2008), which found no correlation between children and joint decision-making.

The distribution of education within households serves as a subtle factor associated with power dynamics: a wife’s higher level of education increases her decision-making involvement, whereas a husband’s higher level of education tends to reduce it. Couples where women are Protestant tend to follow joint decision-making, consistent with previous findings from Indonesia, Malawi, Morocco, and Nigeria (Kishor and Subaiya, 2008).

Husband’s labor income is related to the power distribution within decision-making, though the association is weak: a 10% increase in his income shifts the probability of joint decision-making toward his solo decision-making by only 0.1%. The relationship is only pronounced when comparing the highest and lowest quartiles of male income: the relative likelihood (odds) of his solo decision-making compared to joint decision-making is 30% higher at the top quartile.

Household business ownership also reduces her involvement in decision-making, potentially because the business is owned by the husband. Conversely, his unemployment decreases the likelihood of his solo decision-making by 6%, favoring her decision autonomy instead (the corresponding odds increasing to 12.5 times).

5 Empirical Model

The baseline empirical analysis of the female labor market participation across households with different decision-making patterns builds on the full working sample of married women and the following Probit model related to the work decision rule defined by equation (5):

$$W_{it}^f = \begin{cases} 1 & \text{if } U_{it}^* \geq 0 \\ 0 & \text{if } U_{it}^* < 0 \end{cases} \quad (6)$$

where the dummy W_{it}^f describes working status of woman i observed in year t .

U_{it}^* is the latent function associated with the household utility surplus from the wife's employment:

$$U_{it}^* = \beta_0 + \mathbf{A}_{it}^{fm} \boldsymbol{\alpha} + \mathbf{X}_{it} \boldsymbol{\beta} + \mathbf{Y}_{it} \boldsymbol{\gamma} + \lambda_t + \pi_p + \varepsilon_{it} \quad (7)$$

It therefore depends on wealth-related variables that shape the income utility from the wife working, represented by the vector $\mathbf{Y}_{it}$, as well as individual and household characteristics that shape household income utility and the spouses' costs associated with the wife working, represented by the vector $\mathbf{X}_{it}$.

The key variables are $\mathbf{A}_{it}^{fm}$, which represents a vector of dummy variables capturing different decision-making patterns associated with decision power θ (as specified in (5)) and corresponding to A^{fm} categories of $\{00; 01; 02; 10; 11; 12; 20; 21; 22\}$ with A^{fm} of 11 used as a baseline (reference) pattern (see Section 4.1).

$\boldsymbol{\alpha}$, $\boldsymbol{\beta}$, and $\boldsymbol{\gamma}$ are the vectors of coefficient to be estimated. λ_t and π_p are the time and province fixed effects. ε_{it} is the error term representing individual heterogeneity of the women and their households and following the standard normal distribution ($\varepsilon_{it} \sim N(0, 1)^5$).

To test the persistence of the relationship between the female working outcomes and decision-making patterns, we extend the model by allowing the model parameters differ across age groups or cohorts, a , and years, t :

$$U_{ait}^* = \beta_{a0} + \mathbf{A}_{it}^{fm} \boldsymbol{\alpha}_{at} + \mathbf{X}_{it} \boldsymbol{\beta}_{at} + \mathbf{Y}_{it} \boldsymbol{\gamma}_{at} + \lambda_{at} + \pi_{ap} + \varepsilon_{ait} \quad (8)$$

⁵The error terms ε_{it} are assumed to be independent across all the observations since the data do not allow for modeling time-invariant unobserved heterogeneity due to the weak panel dimension as discussed in Section 4.

5.1 Reverse Causality Bias

Model (6)-(7) assumes that the wife's employment decision, $\mathbf{A}_{it}^{fm}$, is predetermined and exogenous. If, however, the work decision-making variable proxies for overall decision power, it may be jointly determined with the woman's employment status W_{it}^f , inducing reverse causality and endogeneity. If decision-making power and employment mutually reinforce each other, estimates α of the effect of the work decision-making $\mathbf{A}_{it}^{fm}$ on female employment W_{it}^f , are subject to bias away from zero.

Bias evaluation Consider the structural simultaneity model

$$\begin{aligned} W_{it}^f &= \delta_{0W} + \mathbf{A}_{it}' \boldsymbol{\delta}_W + \mathbf{R}_{it}' \boldsymbol{\Delta}_W + \lambda_{tW} + \pi_{pW} + u_{it} \\ \mathbf{A}_{it} &= \delta_{0A} + \delta_A W_{it}^f + \mathbf{R}_{it}' \boldsymbol{\Delta}_A + \lambda_{tA} + \pi_{pA} + v_{it} \end{aligned} \quad (9)$$

where W_{it}^f is, as previously described, the woman's working status depending on the decision-making patterns j , represented by a vector of the corresponding dummy variables $\mathbf{A}_{it}$. The parameter vector $\boldsymbol{\delta}_W$ captures the structural effect of decision-making patterns on the woman's employment status, whereas $\boldsymbol{\delta}_A$ captures the feedback effect of employment status on decision-making patterns, thereby representing potential reverse causality; $\boldsymbol{\Delta}_W$ and $\boldsymbol{\Delta}_A$ contain the coefficients on covariates $\mathbf{R}_{it} = [\mathbf{X}_{it}, \mathbf{Y}_{it}]$. δ_{0A} , v_{it} , λ_{tA} and π_{pA} denote the intercepts, disturbances, time and province fixed effects in the feedback equations.

Solving the standard OLS probability limit in this multiple-equation feedback system (Wooldridge, 2010) yields the closed-form expression

$$plim \hat{\delta}_W = (I + \boldsymbol{\Sigma}^{-1} \boldsymbol{\delta}_A \boldsymbol{\delta}_W')^{-1} \boldsymbol{\delta}_W + (I + \boldsymbol{\Sigma}^{-1} \boldsymbol{\delta}_A \boldsymbol{\delta}_W')^{-1} \boldsymbol{\Sigma}^{-1} \boldsymbol{\delta}_A \sigma_W^2 \quad (10)$$

where $\boldsymbol{\Sigma}$ is the variance-covariance matrix of the feedback-equation disturbances $\mathbf{v}_{it}$.

Because $\boldsymbol{\delta}_A \boldsymbol{\delta}_W'$ is a rank-one matrix (as the outer product of two vectors), its effect on the

inverse term is defined by its single nonzero eigenvalue, the scalar $\delta'_W \delta_A$. When $|\delta'_W \delta_A| \ll 1$, the inverse matrix $(I + \Sigma^{-1} \delta_A \delta'_W)^{-1}$ is close to the identity, and the probability limit admits the approximation

$$plim \hat{\delta}_W = \delta_W + \Sigma^{-1} \delta_A \sigma_W^2 \quad (11)$$

This implies that, under weak feedback, the asymptotic bias induced by reverse causality is

$$Bias(\hat{\delta}_W) = \Sigma^{-1} \delta_A \sigma_W^2 \quad (12)$$

It is proportional to the strength of the feedback effect δ_A and to the variance of the main-equation disturbance σ_W^2 , and is therefore negligible when feedback effects or outcome-equation noise are small.

Accordingly, a bias-corrected estimator $\hat{\delta}_W$ of δ_W can be constructed as

$$\hat{\delta}_W \approx \hat{\delta}_W - \hat{\Sigma}^{-1} \hat{\delta}_A \hat{\sigma}_W^2 \quad (13)$$

where $\hat{\delta}_W$ is the OLS estimate of δ_W from the structural equation (9), $\hat{\delta}_A$ and $\hat{\Sigma}^{-1}$, $\hat{\sigma}_W^2$ are the estimates of the feedback coefficients and the system variance-covariance matrix, obtained using the peer decision-making indicators as mentioned above and detailed in the Appendix A.

6 Results

6.1 Decision-Making Patterns: from Decision to Work

Figure 2 below and Tables 8-10 (Appendix B) present the baseline model results. Figure 2 highlights the key findings: the blue points, together with the confidence interval (CI)

bars, plot α estimates that relate different patterns of decision-making A^{fm} to the wife's probability of working, as defined by equation (7).

The estimates show the differences in the probability of wives working across households with varying decision-making patterns, compared to the mainstream pattern of joint decision-making by both spouses as mutually attested by them ($A^{fm} = 11$). To interpret the results, note that the A^{fm} scale is ordered from the lowest ($A^{fm} = 02$, at the bottom), to the highest ($A^{fm} = 20$, at the top) degree of the wife's involvement in decision-making about her work.

The full set of patterns A^{fm} includes both joint outcomes, those which imply consistent decision-making patterns ($\{02\}$ - his solo decision, $\{11\}$ - joint decision, $\{20\}$ - her solo decision), and outcomes reflecting differing patterns as indicated by spouses' responses: $\{02; 00; 12; 10; 22; 21\}$. The patterns are ordered by prioritizing the wife's response first, followed by the husband's response next, yielding the sequence:

$$A^{fm} = \{02; 01; 00; 12; 11; 10; 22; 21; 20\}.$$

All the coefficients are highly statistically significant (see Table 8 for the standard errors).

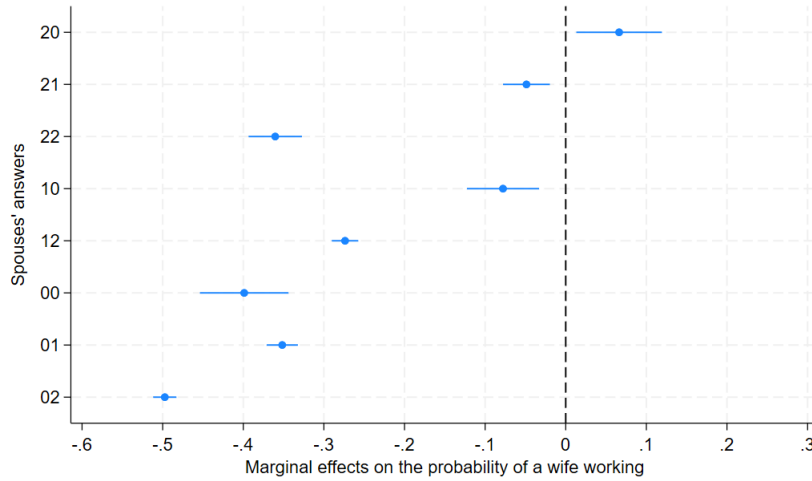


Figure 2: Changes in the Probability of the Wife Working with deviations in A^{fm} form the baseline $A^{fm} = \{11\}$: Probit point estimates with 95% CI.

6.1.1 Bias estimation

Figure 3 shows the *LPM* baseline estimates (blue points), which are nearly identical to the Probit marginal effects presented above, alongside the bias-corrected *LPM* estimates (red points) obtained using (13).

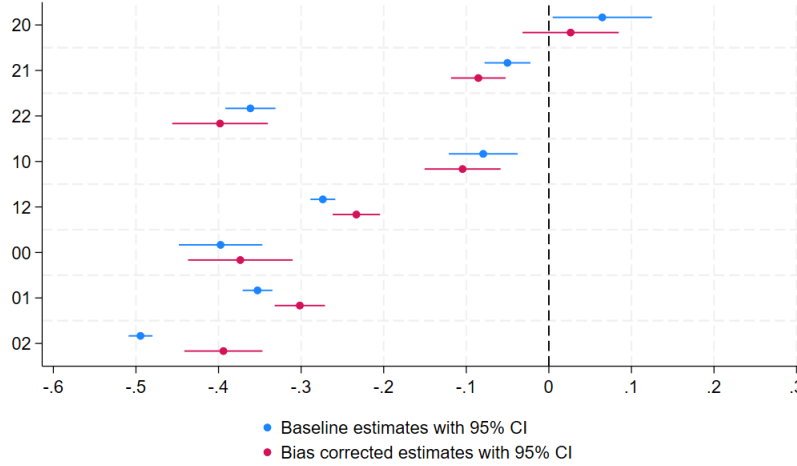


Figure 3: Changes in the Probability of the Wife Working with deviations in A^{fm} from the baseline $A^{fm} = \{11\}$: Blue points - *LPM* baseline estimates with 95% *CI*; red points - bias-corrected *LPM* estimates.

Table 11 (Appendix B) shows the feedback estimates $\hat{\delta}_A$ based on the alternative decision-making indicators covering expenditures on food consumed at home, routine household spending and durables, parties and wedding gifts, as well as spousal clothing and social time (reported in Table 5, Appendix B). If the work-decision question captured overall bargaining power, these indicators should be even more predictive of women’s labor supply and more responsive to changes in it, as they relate more directly to expenditures and time allocation, and are therefore expected to respond more strongly to a woman’s income and work status than her working decision.

The estimates represent a conservative upper bound of the feedback effect of female work status on the decision items, calculated under the extreme scenario assuming that the observed association is entirely due to the unilateral effect of employment on decision-making, with no reverse effect (see Appendix A for the estimation details). Even this upper-bound

effect is weak: the estimates are small - mostly below 1%, with a few reaching 1.5-2% - and generally statistically insignificant.

Table 12 (Appendix B) shows the estimates of the variance-covariance matrix of system 9. Since the correlations between the decision patterns are weak, the resulting biases given by (12) are primarily driven by $\hat{\delta}_{\mathbf{A}}$ scaled by the ratio of the working residual variance ($\hat{\sigma}_W^2$ of 0.17) to the residual variances of the decision patterns (ranging from 0.05 to 0.17 as reported in the table).

The resulting biases (reported in Table 13, Appendix B) inflate the baseline estimates by 2-3% for most decision patterns, with the exception of $A^{fm} = 00$ (less than 1%) and $A^{fm} = 20$ (almost 10%). Nonetheless, the relative biases are negligible, as indicated by the close alignment between baseline (blue) and bias-corrected (red) estimates, which fall within the baseline 95% confidence intervals for the majority of the estimates, as shown in Figure 3.

Crucially, the results remain robust, and the eventual biases have no meaningful impact on the interpretation of the results presented in the next sections.

6.1.2 Spouses' costs

The results are striking in several respects. First and foremost, as A^{fm} goes up along its scale, the α estimates rise along the diagonal, indicating a higher probability of the wife working with increasing involvement in decision-making, $P'_\theta > 0$. This aligns with the descriptive analysis and Table 2 discussed in Section 4.1, strongly confirming the influence of varying degrees of spousal decision-making power on women's participation in the labor market.

More generally, $P'_\theta > 0$ indicates that the husband's cost associated with the wife working is greater for him than for her (as outlined in 3.1). An increase in her decision-making power (θ) reduces the overall cost, thereby increasing the probability of her employment. The observed Indonesian pattern, therefore, aligns with the husband-cost-dominant framework, where the husband incurs significant disutility from his wife working.

Specifically, in the case of husband's solo decision ($A^{fm} = \{02\}$), the probability of the wife working, $P(W^f = 1|.)$, is about 50% lower compared to the mainstream pattern ($A^{fm} = \{11\}$) of joint decision-making in households. On the contrary, wife's solo decision ($A^{fm} = \{20\}$, at the top) implies about 5% higher probability of her working compared to the likelihood of wives working in households with joint decision-making.

6.1.3 Spouses' scales

In general, the probability of the wife working $P(W^f = 1)$ increases as her response moves from $A^f = 0$ (not participating in decision-making) to $A^f = 1$ (participating jointly with husband), such that

$$P(W^f = 1|A^f = 0, .) < P(W^f = 1|A^f = 1, .)$$

Interestingly, the corresponding probability difference varies with the husband's response (A^m), and, more importantly, also follows an ordered pattern, as illustrated in Figure 4:

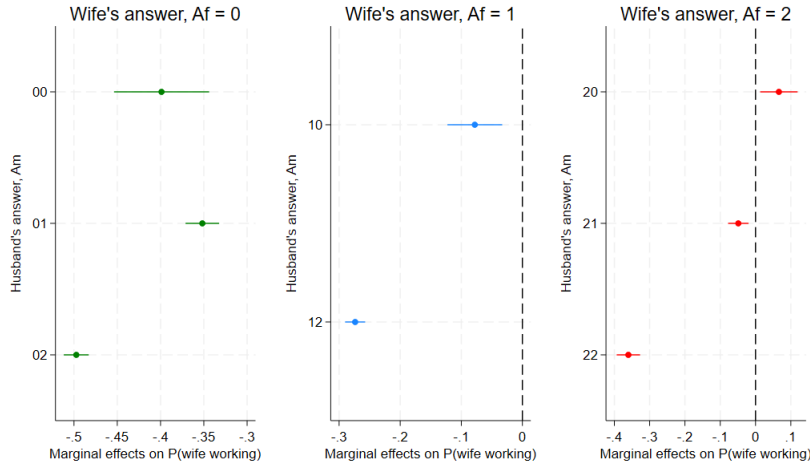


Figure 4: Changes in the Probability of the Wife Working with deviations in A^m conditional on A^f .

Figure 4 shows that, keeping the wife's response (A^f) fixed at 0, 1, or 2 (corresponding to the green, blue, and red graphs, respectively), her probability of working increases as the

husband's reported involvement in decision-making regarding her work decreases (moving up the vertical axis), such that

$$\begin{aligned}
P(W^f = 1|A^f = 0, A^m = 2, .) &< P(W^f = 1|A^f = 0, A^m = 1, .) \\
P(W^f = 1|A^f = 0, A^m = 2, .) &< P(W^f = 1|A^f = 0, A^m = 0, .) \\
P(W^f = 1|A^f = 1, A^m = 2, .) &< P(W^f = 1|A^f = 1, A^m = 0, .)
\end{aligned}$$

$$P(W^f = 1|A^f = 2, A^m = 2, .) < P(W^f = 1|A^f = 2, A^m = 1, .) < P(W^f = 1|A^f = 2, A^m = 0, .)$$

Therefore, the probability of the wife working is higher when the husband's involvement in decision-making is lower, as reported by him, but not necessarily by the wife. This suggests that discrepancies in spousal responses - leading to differing patterns of decision-making regarding the wife's employment - are not random. Men and women appear to use slightly different scales when interpreting the decision-making question. This divergence results in differing subjective evaluations of the decision process, with women ultimately overestimating their degree of involvement (the same effect, where women report higher involvement compared to what is attested by their husbands, has been documented in the literature: *e.g.* Ambler et al. (2021) and Liaqat et al. (2021). The observed ordering suggests that the husband's response is meaningfully associated with the decision and aligns with a specific household scale for measuring the decision-making process.

This is further confirmed by the pattern where $A^{fm} = \{22\}$ stands out, aligning more closely with $A^{fm} = \{02\}$ than with $A^{fm} = \{20\}$ in terms of the wife's working outcomes. $A^{fm} = \{22\}$ represents the most conflicting and rare spousal response (found in less than 3% of households), where both spouses claim sole decision-making authority. In this case, the wife's probability of working is more similar to the outcome when the husband is the sole

decision-maker $A^{fm} = \{02\}$ than when the wife is the sole decider $A^{fm} = \{20\}$, suggesting again that some women may overestimate their role in decision-making.

6.2 Economic and Social Factors

The results above are obtained while controlling for observable economic and social factors, which may influence female employment outcomes by affecting the spouses' costs of the wife working or shaping the household's utility derived from her working income.

On the economic side, the results provide empirical evidence of a negative income effect: higher household income reduces the utility gained from the additional economic surplus generated by a woman's employment. First, the husband's labor income negatively impacts the likelihood of the wife working, with a tangible effect observed across income quartiles: her probability of employment decreases by 1% to 5% as his income increases from the lowest to the highest quartile (Table 10).

Similarly, household non-labor income (earned by approximately 20% of households) also reduces the probability of the wife working. The effect is particularly noticeable when comparing quartiles: a one log-point increase in non-labor income corresponds to approximately a 1% decrease in the likelihood of the wife working. Notably, a one log-point difference in non-labor income aligns with moving between the income quartiles.

On the other hand, household ownership of a farm or non-farm business increases the likelihood of the wife working by 9–14%. These assets often require active management and labor input, encouraging and facilitating her economic participation in ways that are less constrained by barriers in the formal labor market and more compatible with prevailing social norms, thereby reducing the husband's cost of her employment. Work within a family enterprise is typically conducted within the household sphere and perceived as contributing to the family rather than as an independent economic activity. Family enterprises therefore provide a socially acceptable channel for women's employment by reducing the non-monetary costs associated with their work.

Regarding social factors, women are marginally more likely to work as they age, with a marginal effect of 0.004 decreasing further as they get older. The results also support a well-established finding that the presence of a child reduces a woman’s likelihood of working. Specifically, having a child under 6 years old decreases the likelihood by approximately 7% in Indonesia, while the effect gets to 1% for older children.

Woman’s higher education increases her likelihood of working by about 7%, a pattern commonly observed in developing countries. In contrast, the husband’s education tends to decrease the probability of the wife working by 5%-6%.

Finally, the results show a positive impact of Protestant religion, which increases the likelihood of a wife working by about 7% compared to Muslim households (which make up the majority, approximately 90%). This emphasizes the more conservative gender roles inherent in Muslim culture relative to Protestantism (with other religions being rare in Indonesia) and helps explain, to some extent, the persistence of the Indonesian norms evidenced in the next section.

6.2.1 Normative vs Economic Factors

While the household economic side matters, as discussed above, the results imply that the contribution of economic factors driving a wife’s employment is smaller compared to the influence of normative household practices related to the decision-making process about her work:.

Table 4 shows that the likelihood function value drops substantially with the exclusion of the decision-making variables (A^{fm}) but remains relatively stable with the exclusion of wealth-related variables (including husband’s income categories, household ownership of a farm or non-farm business, and the value of total household assets). The significance of the drop is confirmed by the likelihood ratio statistics reported in the table.

This suggests that normative household practices, as reflected in the decision-making process about the wife’s work, play a more dominant role in shaping her employment outcomes

than purely economic factors. In terms of the conceptual framework, this means that the overall cost of the wife working - determined by the distribution of decision-making power between spouses - has a more significant impact than the household’s utility derived from income.

	Full Model	Wealth variables excluded	Decision-making variables excluded (A^{fm})
<i>Log – likelihood</i>	–14953	–14981	–17408
<i>LR χ^2 – statistics</i>		55	4910

Table 4: Relative Contribution of Economic and Decision-Making Factors. *** $p < 0.001$

6.3 Persistence in the Relationship Between Female Employment and Household Decision-Making

This section complements the main analysis by examining heterogeneity in the relationship between household decision-making and female employment across age and cohort dimensions, with the aim of capturing potential socio-cultural evolution over time. Figures 5 and 6 present estimates linking various patterns of decision-making A^{fm} to the wife’s probability of working, as detailed in 6.1, allowing these relationships to vary by age and cohort as specified in model (8).

Figure 5 reports estimates for 10-year age groups, dividing women aged 18–60 into four categories. The results replicate the baseline pattern in Figure 2, showing that the probability of working increases with greater involvement in decision-making. Importantly, the absence of statistically meaningful differences across age groups - indicated by overlapping confidence intervals- suggests that the relationship between decision-making power and female employment is not driven by life-cycle variation. Similarly, the stability of the estimates across 2000 and 2014 (left and right panels) indicates that this relationship is persistent over time.

This pattern is further confirmed by a similar analysis across four cohorts of the same population. Figure 6 replicates the baseline results, showing no meaningful differences across

cohorts born between 1937 and 1997, nor between the 2000 and 2014 periods. This suggests strong persistence of the relationship over time and across generations, consistent with intergenerational transmission of household decision-making patterns.

Overall, the results indicate that the responsiveness of a woman's employment probability to varying degrees of involvement in decision-making about her work remains consistent across age groups, cohorts, and over time. This persistence suggests that the influence of household decision-making norms on female labor market participation is deeply embedded and resilient to socio-demographic and temporal shifts in Indonesia. It underscores the enduring role of intra-household dynamics in shaping employment outcomes for women, regardless of broader societal changes or generational differences.

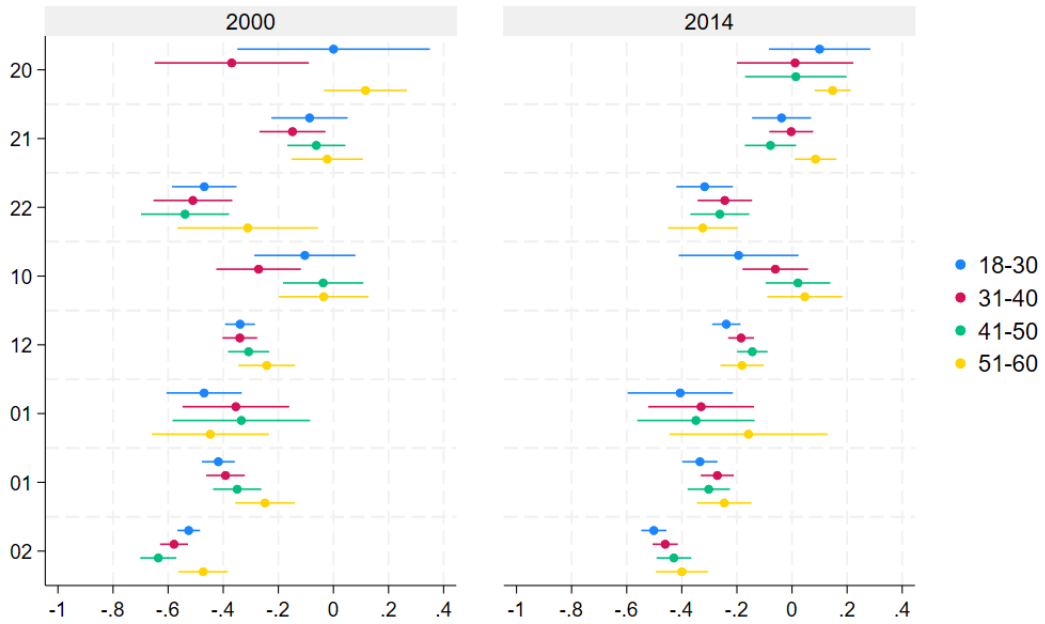


Figure 5: Changes in the Probability of the Wife Working by A^{fm} and Age Groups: point estimates with 95% CI

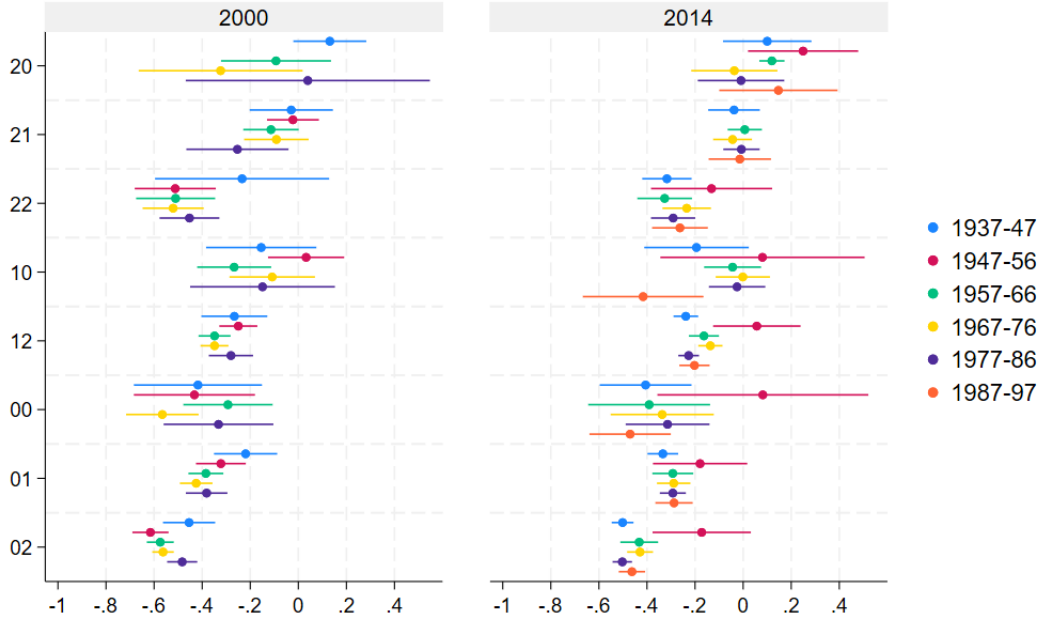


Figure 6: Changes in the Probability of the Wife Working by A^m and Cohorts: point estimates with 95% CI

7 Conclusions

Using the Indonesian data (IFLS 1997-2014) and presenting a conceptual framework of household behavior concerning women's employment in a developing economy - where male labor force participation is near universal but women's participation remains limited-we test the model to distinguish between a husband-cost-dominant and wife-cost-dominant patterns by examining the relationship between the spouses' non-monetary costs associated with the wife's employment.

The results show that an increase in a woman's decision-making power regarding her work reduces the household cost of her working, increasing the probability of her employment. This provides empirical evidence supporting a husband-cost-dominant model of household behavior, as it indicates that the husband's cost associated with the wife's employment exceeds the cost experienced by the wife, reflecting the influence of cultural expectations, societal pressures, and personal preferences on male behavior.

The results are robust with respect to potential reverse causality: bias-corrected estimates, derived from feedback using alternative decision-making indicators related to individual and household expenditures and time allocation, remain within the original confidence intervals and do not alter the interpretation. This indicates that reverse causality does not meaningfully affect the findings and reinforces a causal interpretation of the effect of women’s decision-making power over her work on her employment.

A key finding is the significance of the husband’s perspective in the observed hierarchy of decision-making patterns regarding female employment, which is derived by jointly considering both spouses’ reports regarding spouses’ degree of involvement in the decision-making process regarding wife working. Integrating this perspective enhances the understanding and measurement of the household decision-making process. It also shows that spousal discrepancies in responses stem from different evaluation scales when interpreting the decision-making question, with women tending to overestimate their degree of involvement.

The results also reveal that the overall non-monetary cost of the wife working has a more significant impact than the household’s utility derived from income, while also providing evidence of a negative income effect on the household utility gained from the additional economic surplus generated by the wife’s employment.

Further, we find the persistence of the relationship between her employment probability and varying degrees of involvement in decision-making about her work across age groups, cohorts, and over time, implying the enduring role of intra-household dynamics in shaping women’s employment.

Together with decision-making patterns being weakly related to observable household characteristics, the results collectively suggest that normative household practices regarding women’s employment are embedded in cultural traditions, exhibit strong inertia despite the significant political and economic shocks experienced by the Indonesian cohorts observed, and pose a substantial barrier to female employment.

References

- Abbink, K., Islam, A., and Nguyen, C. (2020). Whose voice matters? an experimental examination of gender bias in intra-household decision-making. *Journal of Economic Behavior Organization*, 176:337–352.
- Abdurazzakova, D., Kosec, K., and Parpiev, Z. (2024). Women’s involvement in intra-household decision-making and infant and young child feeding practices in Central Asia. *World Development*, 178:106572.
- Acosta, M., van Wessel, M., van Bommel, S., Ampaire, E. L., Twyman, L., and Jassogne, L. (2019). What does it mean to make a "joint" decision? unpacking intrahousehold decision making in agriculture: Implications for policy and practice. *Journal of Development Studies*, 56(6):1210–1229.
- Adkins, S. (2024). Shifting the balance: Examining the impact of local labor market opportunities on female household bargaining power in India. *Journal of Development Studies*, 60(5):685–704.
- Ajefu, J. B. and Casale, D. (2021). The long-term effects of violent conflict on womens intra-household decision-making power. *Journal of Development Studies*, 57(10):1690–1709.
- Ajefu, J. B., Singh, N., Ali, S., and Efobi, U. (2022). Womens inheritance rights and child health outcomes in India. *Journal of Development Studies*, 58(4):752–767.
- Alem, Y., Hassen, S., and Köhlin, G. (2023). Decision-making within the household: The role of division of labor and differences in preferences. *Journal of Economic Behavior Organization*, 207:511–528.
- Ambler, K., Doss, C., Kieran, C., and Passarelli, S. (2021). He says, she says: Spousal disagreement in survey measures of bargaining power. *Economic Development and Cultural Change*, 69(2):1–24.

- Ambler, K., Doss, C., Kieran, C., and Passarelli, S. (2022). Spousal concordance in joint and separate households: Survey evidence from Nepal. *World Development*, 151:105744.
- Ambler, K., Jones, K. M., and O’Sullivan, M. (2026). Increasing women’s empowerment: Evaluating two interventions in Uganda. *Journal of Development Economics*, 178(C).
- Anderson, C. L., Reynolds, T. W., and Gugerty, M. K. (2017). Husband and wife perspectives on farm household decision-making authority and evidence on intra-household accord in rural Tanzania. *World development*, 90:169–183.
- Anderson, S. and Eswaran, M. (2009). What determines female autonomy? evidence from Bangladesh,. *Journal of Development Economics*, 90(2):179–191.
- Augsburg, B., Malde, B., Olorenshaw, H., and Wahhaj, Z. (2023). To invest or not to invest in sanitation: The role of intra-household gender differences in perceptions and bargaining power. *Journal of Development Economics*, 162:103074.
- Bargain, O., Boutin, D., and Champeaux, H. (2019). Women’s political participation and intrahousehold empowerment: Evidence from the Egyptian Arab Spring. *Journal of Development Economics*, 141:102379.
- Bargain, O., Loper, J., and Ziparo, R. (2024). Traditional norms, accessto divorce and womens empowerment. *Working paper, Aix-Marseille University*.
- Basu, K. (2006). Gender and say: A model of household behaviour with endogenously determined balance of power. *The Economic Journal*, 116(511):558–580.
- Bernard, T., Doss, C., Hidrobo, M., Hoel, J., and Kieran, C. (2020). Ask me why: Patterns of intrahousehold decision-making. *World Development*, 125: 104671.
- Bernhardt, A., Field, E., Pande, R., Rigol, N., Schaner, S., and Troyer-Moore, C. (2018). Male social status and women’s work. *AEA Papers and Proceedings*, 108:363–367.

- Bertrand, M., Kamenica, E., and Pan, J. (2015). Gender identity and relative income within households. *The Quarterly Journal of Economics*, 130(2):571–614.
- Blackburn, S. (2004). Women and the state in modern Indonesia. *Cambridge University Press*. <https://doi.org/10.1017/CBO9780511492198>.
- Bourles, R., Demont, T., Vincent, S., and Ziparo, R. (2024). Female entrepreneurship and gender norms: Theory and evidences on household investment choices. *AMSE Working Papers 2422, Aix-Marseille School of Economics*.
- Cameron, L., Suarez, D. C., and Rowell, W. (2019). Female labour force participation in Indonesia: Why has it stalled. *Bulletin of Indonesian Economic Studies*, 55(2):157–192.
- Cassidy, R., Bruinderink, M. G., Janssens, W., and Morsink, K. (2021). The power to protect: Household bargaining and female condom use. *Journal of Development Economics*, 153:102745.
- Chen, X. and Ge, S. (2018). Social norms and female labor force participation in urban China. *Journal of Comparative Economics*, 46(4):966–987.
- Chhabra, N. and Hurtado, C. (2020). Measurement brief: women’s household decision-making agency. *College Park: WEDGE Program, University of Maryland*.
- Chiappori, P. (1992). Collective labor supply and welfare. *Journal of Political Economy*, 100(3):437–467.
- Chiappori, P., Giménez-Nadal, J., Molina, J., and Velilla, J. (2022). Household labor supply: Collective evidence in developed countries. In: *Zimmermann, K.F. (eds) Handbook of Labor, Human Resources and Population Economics. Springer, Cham*.
- Chiappori, P. and Molina, J. (2020). The intra-spousal balance of power within the family: cross-cultural evidence. In: *Halford WK, van de Vijver F (eds) Cross-cultural family research and practice. Academic, London*, pages 185–209.

- Corradini, V. and Buccione, G. (2023). Unilateral divorce rights, domestic violence and women’s agency: Evidence from the Egyptian Khul reform. *Journal of Development Economics*, 160:102947.
- Donald, A., Johnson, H. C., Arugay, A. A., Valenciano, A., B., K., and Jarvis, F. B. (2026). When does decision-making reflect agency? evidence from the rural Philippines. *Journal of Development Studies*, 62(5):758.
- Ewerling, F., Lynch, J. W., Victora, C. G., van Eerdewijk, A., Tyszler, M., and Barros, A. J. (2017). The SWPER index for women’s empowerment in Africa: development and validation of an index based on survey data. *The Lancet Global Health*, 5(9):e916–e923.
- Field, E., Pande, R., Rigol, N., Schaner, S., and Moore, C. (2021). On her own account: How strengthening women’s financial control impacts labor supply and gender norms. *American Economic Review*, 111(7):2342–2375.
- Goldin, C. (1995). *The U-Shaped Female Labor Force Function in Economic Development and Economic History*, pages 61–90. University of Chicago Press.
- Hanmer, L. and Klugman, J. (2015). Exploring women’s agency and empowerment in developing countries: Where do we stand? *Feminist Economics*, 22(1):237–263.
- Harsono, A. (2014). Indonesian women’s rights under siege. *Human Rights Watch*. <https://www.hrw.org/news/2014/11/25/indonesian-womens-rights-under-siege>, November 25.
- Heath, R. and Xu, T. (2020). Intrahousehold bargaining, female autonomy, and labor supply: Theory and evidence from India. *Journal of the European Economic Association*, 18(4):19281968.
- Heintz, J., Kabeer, N., and Mahmud, S. (2018). Cultural norms, economic incentives and

- women's labour market behaviour: empirical insights from Bangladesh. *Oxford Development Studies*, 46(2):266–289.
- Jayachandran, S. (2015). The roots of gender inequality in developing countries. *Annual Review of Economics*, 7(1):63–88.
- Jayachandran, S. (2021). Social norms as a barrier to women's employment in developing countries. *IMF Economic Review*, 69(3):576–595.
- Jayachandran, S. and Voena, A. (2025). Women's power in the household. *R&R, Journal of Economic Literature*.
- Kaffe, K., Michelson, H., and Winter-Nelson, A. (2019). His, hers, or ours: Impacts of a training and asset transfer programme on intra-household decision-making in Zambia. *Journal of Development Studies*, 55(9):2046–2064.
- Khatun, M. S., Dey, R., Rahman, M. S., and Hasan, M. (2025). Constructing women empowerment indices based on kernel PCA and evaluating its determinants: Evidence from BDHS. In *Machine Learning Technologies on Energy Economics and Finance: Energy and Sustainable Analytics, Volume 2*, pages 243–263. Springer.
- Kishor, S. and Subaiya, L. (2008). Understanding women's empowerment: A comparative analysis of demographic and health surveys (DHS) data. DHS Comparative Reports 20, Calverton, MD.
- Kochar, A., Nagabhushana, C., Sarkar, R., Shah, R., and Singh, G. (2022). Financial access and women's role in household decisions: Empirical evidence from India's National Rural Livelihoods project. *Journal of Development Economics*, 155:102821.
- Li, L. and Wu, X. (2011). Gender of children, bargaining power, and intrahousehold resource allocation in China. *Journal of Human Resources*, 46(2):295–316.

- Liaquat, S., Donald, A., Jarvis, F., Perova, E., and Johnson, H. C. (2021). Lost in interpretation: Why spouses disagree on who makes decisions. *World Bank Group, Policy Research Working Paper*.
- Mabsout, R. and van Staveren, I. (2010). Disentangling bargaining power from individual and household level to institutions: Evidence on women’s position in Ethiopia. *World Development*, 38(5):783–96.
- Maiorano, D., Shrimankar, D., Thapar-Björkert, S., and Blomkvist, H. (2021). Measuring empowerment: Choices, values and norms. *World Development*, 138: 105220.
- Meurs, M. (2016). Gender and the rural landscape: Agency and access to finance/credit and livelihood resources. In *Food and Agriculture Organization of the United Nations, Lessons from four decades of gender research, programs and policies*. FAO.
- Meurs, M. and Ismaylov, R. (2019). Improving assessments of gender bargaining power: A case study from bangladesh. *Feminist Economics*, 25(1):90–118.
- Meurs, M., Slavchevska, V., Wang, L., Ismaylova, R., and Woldsenbet, T. (2015). Structural change and household bargaining power in Bangladesh 1999-2011. *Background Paper for Asian Development Report*. Mandaluyong City, Philippines: Asian Development Bank.
- Miedema, S. S., Haardorfer, R., Girard, A. W., and Yount, K. M. (2018). Women’s empowerment in East Africa: Development of a cross-country comparable measure. *World Development*, 110:453–464.
- Muñoz Boudet, A. M., Petesch, P., Turk, C., and Thumala, A. (2012). *On Norms and Agency: Conversations about Gender Equality with Women and Men in 20 Countries*. World Bank, Washington, DC.
- Nibogore, G. and Eryurt, M. A. (2024). Women’s empowerment and infant mortality: Evidence from Rwanda. *Maternal and Child Health Journal*, 28(6):1092–1102.

- Osterreich, S. (2007). Globalization, labour markets and gender inequity: Report on Indonesia. *UNDP Asia Pacific Trade Investment Initiative*.
- Parker, L. (2016). The theory and context of the stigmatisation of widows and divorcees (janda) in Indonesia. *Indonesia and the Malay World*, 44(128):7–26.
- Quota Project (2014). Global database of quotas for women. <https://www.quotaproject.org/uid/>.
- Rammohan, A. and Johar, M. (2009). The determinants of married women’s autonomy in Indonesia. *Feminist Economics*, 15(4):31–55.
- Rizkianti, A., Afifah, T., Saptarini, I., and Rakhmadi, M. F. (2020). Women’s decision-making autonomy in the household and the use of maternal health services: an Indonesian case study. *Midwifery*, 90:102816.
- Schaner, S. and Das, S. (2016). Female labor force participation in Asia: Indonesia country study. *Asian Development Bank Economics Working Paper Series*, (474).
- Seymour, G. and Peterman, A. (2018). Context and measurement: An analysis of the relationship between intrahousehold decision making and autonomy. *World Development*, 111:97–112.
- Sharaunga, S., Mudhara, M., and Bogale, A. (2019). Conceptualisation and measurement of women’s empowerment revisited. *Journal of Human Development and Capabilities*, 20:1–25.
- Sharma, E. and Das, S. (2021). Integrated model for women empowerment in rural India. *Journal of International Development*, 33:594–611.
- Sohn, K. (2015). Gender discrimination in earnings in indonesia: A fuller picture. *Bulletin of Indonesian Economic Studies*, 51(1):95–121.

- Twyman, J., Useche, P., and Deere, C. D. (2015). Gendered perceptions of land ownership and agricultural decision-making in Ecuador: who are the farm managers? *Land Economics*, 91(3):479–500.
- UN CEDAW (2005). United nations committee on the elimination of discrimination against women. *Consideration of reports submitted by States Parties under Article 18 of the Convention on the Elimination of All Forms of Discrimination against Women. Combined Fourth and Fifth Periodic Reports of States Parties, CEDAW/C/IDN/4-5. Indonesia. 27 July. <https://www.refworld.org/docid/453778220.html>.*
- UN CEDAW (2012). Concluding observations of the committee on the elimination of discrimination against women, Indonesia. *United Nations Committee on the Elimination of Discrimination Against Women. UN Doc. CEDAW/C/IDN/CO/6-7.*
- UNFPA (2015). Women and girls in indonesia: Progress and challenges. *United Nations Population Fund. Monograph Series No. 5. Indonesia: UNFPA.*, Retrieved from <https://indonesia.unfpa.org/sites/default/files/pub-pdf/Women>
- Upadhyay, U. D. and Karasek, D. (2012). Women’s empowerment and ideal family size: an examination of DHS empowerment measures in Sub-Saharan Africa. *International perspectives on sexual and reproductive health*, pages 78–89.
- Van Campenhout, B., Lecoutere, E., and Spielman, D. J. (2023). Hiding or pleasing: Spousal disagreement among Ugandan maize farmers. *Journal of Development Studies*, 59(1):39–57.
- Vaz, A., Pratley, P., and Alkire, S. (2016). Measuring women’s autonomy in Chad using the relative autonomy index. *Feminist economics*, 22(1):264–294.
- Wiig, H. (2013). Joint titling in rural Peru: Impact on women’s participation in household decision-making. *World Development*, 52:104–19.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. The MIT Press.

World Bank (2020). Indonesia country gender assessment: Investing in opportunities for women. *World Bank, Washington, DC*. <http://hdl.handle.net/10986/35310> License: CC BY 3.0 IGO.

Zimmermann, L. (2018). Its a boy! women and decision-making benefits from a son in India. *World Development*, 104:326–335.

Appendix A

Feedback evaluation Let $\mathbf{A}^{fm_k}$ be a vector of j binary indicators describing woman participation in decision k ($k = 2, \dots, 9$). Each binary component A^{j_k} of $\mathbf{A}^{fm_k}$ corresponds to a specific participation regime $j = \{02\ 01\ 00\ 12\ 11\ 10\ 22\ 21\ 20\}$:

$$A^{j_k} = \begin{cases} 1, & \text{if } fm_k = j \\ 0, & \text{if } fm_k \neq j \end{cases}$$

Let $\widehat{\boldsymbol{\delta}}_A^k$ denote the vector of the feedback obtained from the system of $(j - 1)$ equations

$$\mathbf{A}^{fm_k} \boldsymbol{\delta}^k = \boldsymbol{\delta}_{0A}^k + \boldsymbol{\delta}_A^k W_{it}^f + \mathbf{R}_{it}' \boldsymbol{\Delta}_A^k + \boldsymbol{\lambda}_{tA}^k + \mathbf{v}_{it}^k \quad (14)$$

Since the reverse-causality biases are proportional to the feedback coefficients (see (12)), their upper-bound estimates correspond to upper bounds on the biases. We therefore define the feedback estimates using the component-wise maximum of absolute values:

$$\widehat{\boldsymbol{\delta}}_A = \widehat{\boldsymbol{\delta}}^{max}$$

where

$$|\widehat{\boldsymbol{\delta}}^{max}| = max \left\{ |\widehat{\boldsymbol{\delta}}_A^2|, \dots, |\widehat{\boldsymbol{\delta}}_A^K| \right\}$$

The maximum is taken element-wise across the feedback coefficient vectors, and the sign of each component of $\widehat{\boldsymbol{\delta}}^{max}$ is inherited from the corresponding estimate.

This yields a vector of conservative upper-bound estimates of the effect of women's employment on each component of bargaining power, constructed under the extreme scenario in which the observed association is entirely driven by the unilateral effect of employment on decision-making power, with no reverse effect.

Variance-covariance matrix evaluation We estimate σ_W^2 using the residuals $\hat{u}_{it}$ from the corresponding equation in system (9) and Σ^{-1} from the residual covariance matrix of the reduced form of system (14):

$$A^{fm} = \tilde{\delta}_{0A} + R'_{it} \tilde{\Delta}_A + \tilde{\lambda}_{tA} + \tilde{v}_{it}$$

Appendix B

k	Decision Item	% of wives by decision-making response			Spousal discrepancy $A^f \neq A^m$, %
		$A^f = 0$, %	$A^f = 1$, %	$A^f = 2$, %	
(1)	Wife's work	27.9	63.4	7.3	30.9
(2)	Food at home	12.4	23.2	63.2	26.3
(3)	Routine HH expenditure	10.9	22.2	65.7	23.9
(4)	Wife's clothes	8.5	30.0	60.3	48.8
(5)	Husband's clothes	27.8	38.1	32.8	35.7
(6)	HH Durables	19.5	67.6	9.7	28.4
(7)	Parties/wedding gifts	7.7	69.6	21.3	25.5
(8)	Husband's social time	46.3	42.9	9.6	40.8
(9)	Wife's social time	10.0	47.4	41.4	30.5

Table 5: Decision-Making Items. A^f : wife's response {0: not participating in the decision process; 1: jointly deciding; 2: deciding individually}; $A^f \neq A^m$: discrepancy in spouses' reports.

Table 6: Decision-Making Patterns: Odds from Multinomial Logit Regression

	RECODE of AfAm (Spousal Responses on Decision-Making about the Wife's Work)								
	02	01	00	12	11	10	22	21	20
Wife's age	0.970*** (0.002)	0.984*** (0.003)	0.974*** (0.007)	0.984*** (0.002)	1.000 (.)	1.004 (0.006)	0.997 (0.005)	1.015*** (0.004)	1.015 (0.009)
<i>Wife's educ, ref: unschooled</i>									
Grade school	0.931 (0.076)	0.971 (0.094)	0.583* (0.128)	1.194* (0.105)	1.000 (.)	1.101 (0.226)	1.227 (0.206)	1.095 (0.153)	1.235 (0.334)
Jr. High school	0.876 (0.083)	0.973 (0.111)	0.478** (0.136)	1.158 (0.119)	1.000 (.)	0.940 (0.244)	1.038 (0.207)	1.193 (0.203)	1.514 (0.515)
Sr. high school	0.680*** (0.073)	0.670** (0.089)	0.371** (0.130)	0.874 (0.101)	1.000 (.)	1.212 (0.351)	0.978 (0.217)	1.078 (0.211)	1.017 (0.421)
Higher education	0.448*** (0.045)	0.507*** (0.062)	0.271*** (0.087)	0.733** (0.079)	1.000 (.)	0.912 (0.247)	0.502** (0.108)	0.765 (0.140)	0.503 (0.203)
Muslim schools	1.000 (0.107)	1.024 (0.135)	0.519 (0.176)	1.130 (0.132)	1.000 (.)	0.863 (0.273)	1.056 (0.243)	0.949 (0.202)	0.945 (0.441)
<i>Religion, ref: Islam</i>									
Protestant	0.491*** (0.054)	0.649*** (0.083)	0.425 (0.195)	0.550*** (0.061)	1.000 (.)	0.398* (0.145)	0.480** (0.118)	0.504** (0.108)	0.615 (0.247)
Catholic	0.734 (0.121)	0.796 (0.160)	0.547 (0.392)	0.804 (0.130)	1.000 (.)	0.606 (0.310)	0.778 (0.269)	1.103 (0.277)	0.780 (0.474)
Hinduism	0.493*** (0.047)	1.021 (0.095)	0.355* (0.149)	0.694*** (0.061)	1.000 (.)	0.923 (0.207)	0.433*** (0.099)	0.858 (0.130)	0.244* (0.144)
<i>HH Structure</i>									
Young children under 6	1.219*** (0.037)	1.080 (0.043)	1.036 (0.116)	1.133*** (0.038)	1.000 (.)	0.914 (0.094)	1.180* (0.080)	1.091 (0.071)	1.047 (0.170)
Children age 6-17	0.943** (0.019)	0.903*** (0.022)	0.876 (0.061)	0.917*** (0.020)	1.000 (.)	0.874* (0.052)	0.939 (0.040)	0.942 (0.036)	0.977 (0.087)
HH size	1.105*** (0.013)	1.094*** (0.016)	1.095* (0.043)	1.060*** (0.014)	1.000 (.)	1.075* (0.035)	1.066* (0.027)	1.073** (0.024)	0.987 (0.048)
Mother-in-law	1.190 (0.172)	1.149 (0.189)	0.754 (0.399)	1.148 (0.165)	1.000 (.)	0.987 (0.317)	0.860 (0.260)	0.898 (0.208)	0.471 (0.288)
Daughter-in-law	1.073 (0.077)	1.032 (0.094)	0.961 (0.249)	1.081 (0.083)	1.000 (.)	1.232 (0.261)	1.208 (0.194)	1.136 (0.171)	0.944 (0.374)
Number of elderly	0.927 (0.044)	0.871* (0.052)	1.222 (0.179)	0.962 (0.047)	1.000 (.)	1.044 (0.129)	0.908 (0.092)	0.921 (0.080)	1.043 (0.181)
Observations	27591								

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Decision-Making Patterns: Odds from Multinomial Logit Regression, continued

	RECODE of AfAm (Spousal Responses on Decision-Making about the Wife's Work)								
	02	01	00	12	11	10	22	21	20
<i>Husband's educ, ref: Unschooled</i>									
Grade school	1.114 (0.111)	1.110 (0.131)	0.946 (0.255)	1.029 (0.106)	1.000 (.)	1.122 (0.284)	0.852 (0.160)	0.978 (0.162)	0.753 (0.226)
Jr. High school	1.451*** (0.159)	1.307* (0.173)	1.085 (0.343)	1.224 (0.140)	1.000 (.)	1.063 (0.309)	0.991 (0.209)	0.966 (0.185)	0.586 (0.222)
Sr. high school	1.187 (0.138)	1.248 (0.177)	0.863 (0.304)	1.039 (0.127)	1.000 (.)	0.783 (0.250)	0.732 (0.170)	0.976 (0.201)	0.721 (0.292)
Higher education	1.072 (0.121)	1.325* (0.179)	0.514 (0.181)	1.063 (0.124)	1.000 (.)	0.667 (0.204)	0.739 (0.163)	0.894 (0.177)	0.769 (0.295)
Muslim schools	1.186 (0.154)	1.165 (0.188)	0.953 (0.384)	1.066 (0.146)	1.000 (.)	0.920 (0.344)	0.859 (0.225)	0.790 (0.203)	0.646 (0.361)
<i>Husband's income, ref: 1st quartile</i>									
2nd quartile	0.929 (0.046)	1.027 (0.063)	0.845 (0.146)	0.999 (0.052)	1.000 (.)	0.842 (0.128)	1.063 (0.109)	0.910 (0.089)	0.613 (0.155)
3d quartile	1.086 (0.057)	0.996 (0.067)	0.968 (0.182)	1.067 (0.060)	1.000 (.)	0.994 (0.160)	1.034 (0.118)	0.950 (0.101)	0.714 (0.190)
4th quartile	1.324*** (0.080)	1.153 (0.088)	1.277 (0.276)	1.160* (0.074)	1.000 (.)	1.240 (0.222)	1.280 (0.168)	0.961 (0.117)	0.632 (0.200)
Husband Unemployed	0.773* (0.091)	1.330* (0.159)	1.966* (0.535)	1.080 (0.118)	1.000 (.)	4.056*** (0.751)	1.457* (0.277)	3.170*** (0.422)	12.506*** (2.760)
No non-labor income	1.158** (0.055)	1.140* (0.068)	1.065 (0.176)	0.975 (0.048)	1.000 (.)	0.974 (0.130)	0.921 (0.089)	0.983 (0.086)	1.501* (0.291)
HH non-labor income	1.033 (0.022)	1.051 (0.028)	1.008 (0.076)	1.000 (0.021)	1.000 (.)	0.966 (0.054)	1.039 (0.044)	0.947 (0.035)	0.854* (0.067)
HH owns farm business	0.736*** (0.032)	0.963 (0.051)	0.728* (0.110)	0.935 (0.042)	1.000 (.)	0.749* (0.094)	0.860 (0.079)	0.917 (0.076)	0.728 (0.138)
HH owns nonfarm business	0.551*** (0.020)	0.676*** (0.031)	0.529*** (0.071)	0.756*** (0.029)	1.000 (.)	0.876 (0.092)	0.605*** (0.047)	1.039 (0.073)	0.818 (0.125)
Ln(HH total assets)	0.991 (0.012)	0.979 (0.015)	0.968 (0.042)	0.991 (0.013)	1.000 (.)	0.959 (0.034)	0.957 (0.025)	0.963 (0.023)	0.960 (0.047)
Urban	1.186*** (0.050)	1.098 (0.058)	1.239 (0.183)	1.124** (0.050)	1.000 (.)	1.034 (0.126)	1.388*** (0.124)	1.136 (0.093)	1.552* (0.282)
Observations	27591								

Exponentiated coefficients; Standard errors in parentheses

Time fixed effects included.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Women's Employment: Impact of Household Decision-Making

	Coefficients	Average_Marginal_Effects
<i>Household Decision-Making Pattern, ref: 11</i>		
00	-1.189*** (0.087)	-0.399*** (0.028)
01	-1.048*** (0.030)	-0.352*** (0.010)
02	-1.521*** (0.026)	-0.497*** (0.007)
10	-0.255*** (0.071)	-0.078*** (0.023)
12	-0.822*** (0.025)	-0.274*** (0.008)
20	0.236* (0.110)	0.066* (0.027)
21	-0.163*** (0.048)	-0.049*** (0.015)
22	-1.075*** (0.051)	-0.360*** (0.017)
Observations	27587	27582

Standard errors in parentheses

Conditional on household human capital, structure, and wealth(see below). Time/Provence fixed effects included.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Woman's Employment, continued: Impact of Wife's Education and Household Structure

	Coefficients	Average_Marginal_Effects
Wife's age	0.112*** (0.007)	0.004*** (0.000)
Wife's age $\times$ Wife's age	-0.001*** (0.000)	
<i>Wife's educ, ref: unschooled</i>		
Grade school	0.005 (0.038)	0.002 (0.011)
Jr. High school	-0.062 (0.045)	-0.018 (0.013)
Sr. high school	0.049 (0.052)	0.015 (0.015)
Higher education	0.216*** (0.048)	0.063*** (0.014)
Muslim schools	-0.126* (0.052)	-0.037* (0.015)
<i>Religion, ref: Islam</i>		
Protestant	0.237*** (0.052)	0.068*** (0.015)
Catholic	-0.054 (0.074)	-0.016 (0.022)
Hinduism	0.080 (0.075)	0.024 (0.022)
<i>HH Structure</i>		
Young children under 6	-0.229*** (0.015)	-0.067*** (0.004)
Children age 6-17	-0.031** (0.010)	-0.009** (0.003)
Number of elderly	0.018 (0.021)	0.005 (0.006)
Observations	27587	27582

Standard errors in parentheses

Time and Province fixed effects included.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Woman's Employment, continued: Impact of Husband's Education and Household Wealth

	Coefficients	Average_Marginal_Effects
<i>Husband's educ, ref: Unschooled</i>		
Grade school	-0.105* (0.046)	-0.030* (0.013)
Jr. High school	-0.207*** (0.052)	-0.060*** (0.015)
Sr. high school	-0.221*** (0.055)	-0.064*** (0.016)
Higher education	-0.181*** (0.053)	-0.052*** (0.015)
Muslim schools	-0.164** (0.063)	-0.048** (0.018)
<i>Husband's income, ref: 1st quartile</i>		
2nd quartile	-0.034 (0.024)	-0.010 (0.007)
3d quartile	-0.071** (0.026)	-0.021** (0.008)
4th quartile	-0.169*** (0.030)	-0.050*** (0.009)
Husband Unemployed	-0.159*** (0.047)	0.038 (0.034)
<i>Household's wealth</i>		
No non-labor income	-0.071** (0.023)	-0.021** (0.007)
HH non-labor income	-0.025* (0.010)	-0.007* (0.003)
Ln(HH total assets)	-0.011 (0.006)	-0.003 (0.002)
HH owns farm business	0.306*** (0.021)	0.089*** (0.006)
HH owns nonfarm business	0.493*** (0.018)	0.144*** (0.005)
Urban	-0.085*** (0.021)	-0.025*** (0.006)
Observations	27587	27582

Standard errors in parentheses

Time and Province fixed effects included.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Feedback Estimates

	Food	Routine Purchases	Large Purchases	Own Clothes	Spouse' Clothes	Gifts	His Social Time	Her Social Time
20	-0.004 (0.007)	0.005 (0.007)	0.021*** (0.005)	0.018** (0.005)	0.004* (0.002)	0.008* (0.003)	0.000 (0.001)	-0.001 (0.005)
21	0.007 (0.004)	0.012** (0.004)	0.013** (0.005)	0.007* (0.003)	0.010** (0.003)	0.005 (0.004)	0.002 (0.002)	0.003 (0.004)
22	-0.003 (0.003)	-0.005 (0.003)	0.008 (0.005)	0.002 (0.002)	-0.002 (0.002)	0.002 (0.002)	0.002 (0.003)	0.002 (0.003)
10	0.002 (0.004)	0.002 (0.004)	-0.001 (0.003)	0.013** (0.005)	0.008* (0.003)	0.001 (0.004)	0.003 (0.002)	-0.001 (0.005)
12	0.004* (0.002)	0.001 (0.002)	-0.009** (0.004)	-0.007*** (0.002)	-0.012** (0.004)	-0.007* (0.003)	0.001 (0.005)	0.000 (0.003)
00	-0.010*** (0.003)	-0.006* (0.003)	-0.002 (0.002)	-0.004 (0.005)	-0.002 (0.002)	-0.006*** (0.002)	0.001 (0.002)	-0.002 (0.003)
01	-0.001 (0.002)	-0.002 (0.002)	-0.007*** (0.002)	-0.006 (0.003)	-0.018*** (0.004)	-0.014*** (0.002)	0.003 (0.004)	-0.002 (0.002)
02	-0.004* (0.002)	-0.007*** (0.002)	-0.015*** (0.003)	-0.009*** (0.002)	-0.029*** (0.003)	-0.007*** (0.002)	-0.020*** (0.006)	-0.006*** (0.002)

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Variance-Covariance Estimates

	Sigma W	20	21	22	10	12	00	01	02
W	.1736415	.	.	.	.	.	.	.	.
20	.	.1715482	-.036047	-.0060771	-.0131797	-.0019511	-.0054806	-.0043405	-.0020303
21	.	-.036047	.13016	-.0014499	-.0153607	-.0065996	-.0043296	.0045974	-.0053793
22	.	-.0060771	-.0014499	.0452578	-.0031736	.0048629	-.0010489	-.0007717	.0032932
10	.	-.0131797	-.0153607	-.0031736	.138392	.0072207	-.0008287	-.0044722	-.0036922
12	.	-.0019511	-.0065996	.0048629	.0072207	.0829082	-.0008965	-.0081332	-.0057898
00	.	-.0054806	-.0043296	-.0010489	-.0008287	-.0008965	.0458251	.0025339	.0007262
01	.	-.0043405	.0045974	-.0007717	-.0044722	-.0081332	.0025339	.0760339	-.00573
02	.	-.0020303	-.0053793	.0032932	-.0036922	-.0057898	.0007262	-.00573	.0534553

Table 13: Bias Estimates

	Household decision-making patterns							
	02	01	00	12	10	22	21	20
Bias	.0383295	.0352843	.0367779	.0249998	-.0405631	-.0239562	-.0512467	-.1003786
SE	.0106335	.0084913	.0252536	.0099992	.0125718	.0192523	.0122885	.0230579

SE: Bootstrapped standard errors