

# Marriage and Child Penalties: Evidence from South Korea<sup>†</sup>

By MINSUB KIM\*

*This paper documents marriage and child penalties in Korea, where the female labor supply remains constrained by marriage and childbirth despite the urgent need to promote the female labor supply in the face of the world's most rapidly aging population. Using an event-study approach and nationally representative panel data, I find substantial marriage and child penalties in Korea. Unlike developed countries, Korea exhibits a significant marriage penalty that cannot be explained by childbirth-related factors. While marriage penalties declined during the 2010s, child penalties have prevailed despite the expansion of various family policies over the same period. The persistence of child penalties is discussed in relation to prevailing social norms and rigid labor market structures that limit mothers' labor supply.*

Key Word: Marriage penalty, Child penalty, Gender inequality,  
Labor market outcomes  
JEL Code: J13, J16, J22

## I. Introduction

As aging societies grapple with declining populations and a contracting labor force, there exists a pressing need to increase birthrates and better utilize the female workforce. Consequently, governments have attempted to strengthen a range of family policies to encourage higher birth rates and prevent career disruptions by women—such as but not limited to parental leave, reduced working hours during childcare periods, and subsidies for childbirth and childcare.

\* Associate Fellow, Korea Development Institute (e-mail: minsubkim@kdi.re.kr)

\* Received: 2025. 6. 5.

\* Referee Process Started: 2025. 6. 12.

\* Referee Reports Completed: 2025. 10. 14.

<sup>†</sup> Earlier versions of this paper (Kim, 2023; 2024) were distributed as policy studies in Korean under the titles “Work Environment for Work-Family Balance” and “Policy Directions to Enhance Women’s Labor Market Participation,” respectively. I am grateful to Jisoo Hwang, Chulhee Lee, Jaesung Choi, Seulki Choi, Eunhye Kwak, Youngbin Seo, Jiyeon Kim, Joseph Han, Youngwook Lee, and Inkyung Kim for their helpful comments and discussions. Songyi Shin provided excellent research assistance. I also thank participants at 2025 KDI Journal of Economic Policy Conference, 2025 Korean Labor Economic Association (KLEA) Summer Conference, and 2025 Korean Women Economists Association (KWEA) Fall Conference. All remaining errors are my own.

Yet the mere implementation of family policies may not necessarily yield desired outcomes, and their effectiveness is affected by many social variables. For instance, there is little evidence to support the contention that extended parental leaves have a positive effect on maternal labor market outcomes: rather, they have negative or null effects on women's labor market outcomes (Albanesi, Olivetti, and Petrongolo, 2023; Kleven *et al.*, 2024). Furthermore, it appears that the effectiveness of family policies varies depending on the country's social norms and/or labor market structures. While expansive public childcare provision has reduced the child penalty in Germany (Lim and Duletzki, 2025), similar childcare policies had no impact on the child penalty in Austria (Kleven *et al.*, 2024). Existing evidence suggests that conservative gender norms in the "childcare vs. career" dichotomy may explain the null effect of such family policies.

To improve the effectiveness of governmental interventions, it is essential to accurately quantify the extent of marriage and child penalties—labor market disadvantages linked to marriage and motherhood—and to identify their primary determinants within each country's unique social and economic landscape. In this regard, this paper estimates marriage and child penalties in Korea and examines their trends over time. Korea presents a particularly compelling case for analyzing the impact of marriage and childbirth on women's labor market outcomes for several reasons. First, despite having attained the highest level of female education, Korea exhibits one of the largest child penalties in the world, resulting in a notably low female labor force participation rate.<sup>1</sup> Second, Korea is one of the most acute cases of low fertility and rapid population aging worldwide, with its total fertility rate dropping to a record low of 0.72 in 2023. Third, it is likely that Korea experiences significant marriage and child penalties, as its rapid economic development may have outpaced shifts in gender norms and labor market structures unlike the more gradual transitions seen in many advanced Western economies (Goldin, 2025).

Given the growing recognition of social norms as a key driver of child penalties (e.g., Kleven *et al.*, 2019; Kleven, Landais, and Sogaard, 2019; Kleven, 2025), Korea—where shifts in social attitudes have lagged behind rapid economic development—provides a valuable empirical setting for examining the underlying mechanisms of labor market disadvantages faced by women. This paper documents not only child penalties but also marriage penalties, which may be even more directly shaped by entrenched conservative norms.<sup>2</sup> By disentangling the effects of marriage and child penalties, the analysis offers insight into the distinct factors contributing to declines in women's labor market outcomes following marriage and childbirth.

To document the impact of marriage and childbirth on mothers' and fathers' labor market outcomes, I adopt an event-study design that jointly estimates marriage and child penalties. I use data from the Korean Labor and Income Panel Study

<sup>1</sup>As of 2022, 76.6% of women aged 15 to 34 in South Korea had attained tertiary education; this is the highest rate among the 38 OECD member countries, and significantly above the OECD average of 54.1%. In contrast, the labor force participation rate for women aged 15 to 64 was 61.8%, ranking South Korea 31st among OECD countries, well below the OECD average of 70.7%. According to an international comparative study by Kleven, Landais, and Leite-Mariante (2025), South Korea has the fifth-largest child penalty in employment among 134 countries worldwide.

<sup>2</sup>Kleven, Landais, and Leite-Mariante (2025) show that sizable marriage penalties not directly attributable to childbirth exist in developing countries, unlike in developed countries where child penalties increasingly come to supplant marriage penalties as the dominant source of gender gaps in the labor market.

(henceforth KLIPS), a nationally representative panel survey. KLIPS provides detailed information on not only the timing of marriage and childbirth but also on labor market outcomes over an extended period both before and after marriage or childbirth. Its long panel span and rich information on individual characteristics allow me to examine how the marriage and child penalties evolve over time.

I begin by estimating “family penalties,” a concept that captures the combined effects of marriage and subsequent childbirth. Consistent with the findings of Yoo and Lee (2020), family penalties in Korea are substantial. My estimates indicate that women’s labor income declines by 49.3% relative to the counterfactual income they would have earned in the absence of marriage or childbirth. This decline persists for three years after marriage and shows no sign of recovery in the long run. The majority of the penalty arises along the extensive margin—that is, reduced labor force participation—rather than the intensive margin, such as reductions in working hours or hourly wages.

Next, I examine not only child penalties but also marriage penalties by jointly estimating them as per the approach of Kleven, Landais, and Leite-Mariante (2025). First, the estimates reveal sizable marriage penalties that are comparable in magnitude to child penalties: the long-run marriage penalty in terms of labor income is 24.1% of the counterfactual outcome absent marriage and childbirth, while the corresponding figure for the child penalty is 21.0%. This finding highlights the importance of accounting for marriage penalties in understanding the overall penalties faced by married women even before or in the absence of childbirth. Second, marriage penalties and child penalties follow a different trajectory over time. While child penalties emerge sharply and immediately after childbirth—followed by a significant recovery in the long run—marriage penalties increase more gradually and then plateau, showing no signs of recovery. These dynamic patterns suggest that child penalties are primarily driven by the childcare burden borne by women, whereas marriage penalties are more likely to reflect preferences or social norms surrounding labor force participation by married women. Third, both marriage and child penalties are driven largely by declines in labor force participation while the penalties in terms of working hours and wages are minimal. One potential explanation of this concentration along the extensive margin is Korea’s working environment, characterized by long and inflexible working hours.

Finally, I examine how marriage penalties and child penalties have evolved separately over time to further explore their potential underlying factors. Specifically, I compare penalties for individuals who married before 2010 with those who married in 2010 or later, motivated by the fact that family policies in Korea were significantly expanded during the 2010s. The results show that marriage penalties are smaller, while child penalties are larger for women married during the 2010s. The reduction in marriage penalties is consistent with shifting preferences and social norms that are increasingly supportive of women’s labor force participation. In contrast, the increase in child penalties suggests that family policies have not been effective in promoting mothers’ labor supply.

Previous studies of child penalties primarily focused on developed countries, where high-quality panel data are available. In these contexts, marriage penalties are typically negligible: female and male labor market outcomes evolve in parallel until the arrival of the first child. In contrast, only recently has attention turned to

developing countries, where marriage penalties appear to be significant (Kleven, Landais, and Leite-Mariante, 2025). In such settings, diverging trends in female and male labor market outcomes are observed even before the onset of childbirth. This distinction makes Korea a particularly important case for studying marriage penalties as well as child penalties.

Although this pre-childbirth gender divergence has been observed by previous literature (Yoo and Lee, 2020; Park, 2021; Kim and Hahn, 2022; Hwang and Yoo, 2025), its magnitude and underlying sources remain to be examined further. This paper is the first to provide empirical evidence that documents sizable marriage penalties in Korea, thereby showing that these penalties, which are unrelated to *ex-post* childbirth-related factors such as childcare, fully account for the pre-childbirth divergence in female and male labor market outcomes. By demonstrating that married women, even without children, experience significant declines in labor market outcomes due to factors other than childbirth, this paper provides new evidence of the mechanisms behind the declines in female labor market outcomes following marriage and childbirth, particularly in the context of developing countries.

Furthermore, several papers have documented how marriage and child penalties evolve with economic development over time. Comparing 134 countries worldwide, Kleven, Landais, and Leite-Mariante (2025) propose the hypothesis that marriage penalties tend to decline and are gradually substituted by child penalties as economic development and urbanization progress. Beyond such cross-country comparisons, several studies have also examined the evolution of child penalties within a single country, such as the United States (Kleven, 2025) and South Korea (Hwang and Yoo, 2025). However, empirical evidence pertaining to the evolution of these penalties is limited, especially with regard to marriage penalties.

This paper contributes to the literature by providing novel empirical evidence that supports the hypothesis of Kleven, Landais, and Leite-Mariante (2025) by documenting the evolution of not only child penalties but also marriage penalties within a rapidly developing country. In South Korea, marriage penalties declined significantly during the 2010s, whereas child penalties increased. My findings suggest that despite improvements in the labor market outcomes of married women without children, factors hindering mothers' outcomes (such as social norms and rigid labor market structures) have remained entrenched over the last two decades.

This paper also offers important policy implications in the context of Korea, focusing on family policies and the working-hours system. In Korea, child penalties are concentrated along labor force participation and employment (the extensive margin), with minimal effects on working hours (the intensive margin) (Park, 2021; Kim and Hahn, 2022). This pattern implies that mothers, along with fathers as well, have limited options to remain in the labor market while being able to adjust their working hours. Building on this finding, I provide new empirical evidence that the concentration of penalties along the extensive margin and the absence of penalties along the intensive margin have persisted over the past two decades. This suggests that family policies during the 2010s have overlooked the need to adjust working hours for employees with children in order to prevent their exit from the labor market. I argue that expanding access to flexible work arrangements and alleviating long, rigid working hours can provide promising approaches to reducing child penalties and to enabling mothers to sustain continuous career trajectories.

The paper proceeds as follows. Section 2 discusses the empirical methodology and concepts used to estimate marriage and child penalties. Section 3 describes the data and provides summary statistics. Section 4 presents the empirical results and explores potential factors contributing to these penalties. Section 5 concludes with a discussion of policy implications.

## II. Research Methodology

To estimate marriage and child penalties on women's labor market outcomes, this paper adopts the event-study methodology proposed by Kleven, Landais, and Sogaard (2019). While their study focuses exclusively on child penalties in the context of a developed country, it is important to account for marriage penalties as well, particularly in Korea and other developing countries. Therefore, I begin by estimating overall family penalties, which encompass both marriage and child penalties:

$$(1) \quad Y_{ist}^g = \sum_{j \neq -1} \gamma_j^g I[j = t] + \sum_a \beta_a^g I[a = age_{is}] + \sum_y \delta_y^g I[y = s] + \varphi_{ist}^g$$

In this equation, the left-hand side represents the labor market outcomes of individual  $i$ , of gender  $g \in \{f, m\}$  (where  $f$  and  $m$  denote female and male, respectively), in year  $s$  at event time  $t$ . The event-time window is defined as ranging from four years before to seven years after marriage ( $-4 \leq t \leq 7$ ). The labor market outcomes considered include labor income, labor force participation, wages, and working hours. On the right-hand side, the first term represents event-time dummy variables, the second term is age dummies, the third term is year fixed effects, and the last term is the error term. The event of interest is individual  $i$ 's first marriage, and the parameters of interest,  $\gamma_t^g$ s, capture the average change in labor market outcomes experienced by gender  $g$  before or after the marriage.

Based on the estimates from Model (1) and following the approach of Kleven *et al.* (2024), I define the family penalty as follows:<sup>3</sup>

$$(2) \quad FamilyPenalty_i^g \equiv \frac{\hat{\gamma}_t^g}{E[\tilde{Y}_{ist}^g | t]}$$

where  $\tilde{Y}_{ist}^g \equiv \sum_a \hat{\beta}_a^g I[a = age_{is}] + \sum_y \hat{\delta}_y^g I[y = s]$  represents the counterfactual average labor market outcome that an individual of gender  $g$  would have experienced at event time  $t$  had she not married. The potential drivers of the family

<sup>3</sup>Most existing studies of child penalties define the penalty as the ratio of the gender difference in  $\gamma_t^g$  to the counterfactual female outcome  $E[\tilde{Y}_{ist}^f | t]$  (e.g., Kleven, Landais, and Sogaard, 2019). However, given that the *fatherhood premium*—stemming from the division of household labor (Juhn and McCue, 2017; Krapf *et al.*, 2020; Goldin *et al.*, 2022)—may be significant in Korea, I prefer to define the family penalty as in Model (2), which arguably excludes such a premium. I also measure family and child penalties following the definition of Kleven, Landais, and Sogaard (2019) when I compare my estimates to those of previous studies (see Section 4).

penalty include both factors associated with marriage that are unrelated to childbearing<sup>4</sup> and factors directly related to having a child.<sup>5</sup> Therefore, the family penalty can be interpreted as a combination of the marriage penalty and the child penalty.

The main goal of this paper is to estimate the marriage penalty and the child penalty in Korea separately. To do this, I extend Model (1) to estimate both penalties simultaneously, following the approach of Kleven, Landais, and Leite-Mariante (2025):

$$(3) \quad Y_{istc}^g = \sum_{j \neq -1} \lambda_j^g I[j = t] + \sum_{k \neq -1} \theta_k^g I[k = c] + \sum_a \phi_a^g I[a = age_{is}] + \sum_y \psi_y^g I[y = s] + \varepsilon_{istc}^g$$

Relative to Model (1), this specification adds a set of event-time dummies for the first childbirth of individual  $i$ , represented by the second term on the right-hand side of Model (3). Given that the event-time window for the first marriage is  $-4 \leq t \leq 7$ , the event-time window for the first childbirth is defined as ranging from four or more years before to six or more years after childbirth ( $-5$  or earlier  $\leq c \leq 6$  or later). The parameters of interest,  $\lambda_t^g$  and  $\theta_c^g$ , capture changes in labor market outcomes experienced by gender  $g$  around the first marriage and the first childbirth, respectively.

In a manner analogous to Model (2), I define the marriage penalty and the child penalty as follows:

$$(4) \quad \text{MarriagePenalty}_t \equiv \frac{\hat{\lambda}_t^g}{E[\tilde{Y}_{istc}^g | t]}$$

$$(5) \quad \text{ChildPenalty}_c \equiv \frac{\hat{\theta}_c^g}{E[\tilde{Y}_{istc}^g | c]}$$

where  $\tilde{Y}_{istc}^g \equiv \sum_a \hat{\phi}_a^g I[a = age_{is}] + \sum_y \hat{\psi}_y^g I[y = s]$  presents the counterfactual outcome that an individual would have experienced if she had neither married nor given birth. In Models (4) and (5), the child penalty is defined as the *ex-post* effect of the first childbirth, capturing the decline in female labor market outcomes following the event. Similarly, the marriage penalty is defined as the *ex-post* effect of marriage net of *ex-post* childbirth-related factors. However, because the average time interval between marriage and the first childbirth is relatively short in the sample,<sup>6</sup> the marriage penalty may also capture some *ex-ante* anticipatory effects of the first childbirth, if any exist.<sup>7</sup>

Finally, I examine how marriage and child penalties have evolved over time by

<sup>4</sup>Division of household labor between spouses, prevailing social norms, and discrimination related to women's participation in the labor market, among other factors

<sup>5</sup>Burden of childcare borne by women, prevailing social norms, and labor market discrimination against mothers, among other factors

<sup>6</sup>See Table A2 for the distribution of the time interval between the first marriage and the first childbirth.

<sup>7</sup>Individuals' anticipatory behavioral adjustments may arise in response to childbirth-related factors such as pregnancy (Hwang and Yoo, 2025), infertility treatments, or transitions toward occupations that offer greater compatibility with a work-family balance.

extending Model (3) as follows:

$$(6) \quad Y_{istic}^g = \sum_{j \neq -1} \zeta_j^g I[j = t] + \sum_{k \neq -1} \eta_k^g I[k = c] + I[s - t \geq 2010] + \sum_{l \neq -1} \pi_l^g I[l = t] \cdot I[s - t \geq 2010] + \sum_{m \neq -1} \mu_m^g I[m = c] \cdot I[s - t \geq 2010] + \sum_a \psi_a^g I[a = age_{is}] + \sum_y \omega_y^g I[y = s] + v_{istic}^g$$

where  $I[s - t \geq 2010]$  is an indicator for individuals whose first marriage occurred in 2010 or later. The parameters of interest are  $\pi_t^g$  and  $\mu_c^g$ , which capture changes in the effects of marriage and childbirth, respectively, between those married before and after 2010. In Section 4, I scale these estimates by the counterfactual labor market outcomes absent marriage and childbirth, defining changes in the penalties as shown below.

$$(7) \quad \Delta \text{MarriagePenalty}_t \equiv - \frac{\hat{\pi}_t^g}{E[\tilde{Y}_{istic}^g | t]}$$

$$(8) \quad \Delta \text{ChildPenalty}_c \equiv - \frac{\hat{\mu}_c^g}{E[\tilde{Y}_{istic}^g | c]}$$

Here, a positive value for either of these changes (i.e., a negative  $\hat{\pi}_t^g$  or  $\hat{\mu}_c^g$ ) indicates that the respective penalty was larger for women or men married in the 2010s compared to those married earlier.

There are various potential factors driving the changes in marriage and child penalties. For instance, family policy support expanded steadily throughout the 2010s, women's preferences regarding labor force participation and leisure have shifted rapidly, and social norms surrounding gender roles in marriage and childcare have also evolved. These potential drivers are discussed in greater detail in Section 4.

### III. Data and Descriptive Statistics

#### A. Data

To analyze the impact of marriage and childbirth on workers' labor market outcomes using an event-study approach, it is essential to use data that (i) are representative of the working population; (ii) contain precise information on the timing of marriage and childbirth; (iii) include key labor market outcomes such as employment status, working hours, and labor income; and (iv) encompass a sufficiently long period both before and after the event. Most previous studies of child penalties—including those conducted in Sweden (Angelov *et al.*, 2016),

Denmark (Kleven, Landais, and Sogaard, 2019), Finland (Sieppi and Pehkonen, 2019), Austria (Kleven et al., 2024), and Germany (Lim and Duletzki, 2025)—rely on large-scale administrative data to meet these requirements.

In contrast, due to limited access to administrative data in Korea, most existing studies on marriage or child penalties rely on the Korean Labor and Income Panel Study (KLIPS), conducted by the Korea Labor Institute (Kwak, 2020; Yoo and Lee, 2020; Park, 2021; Kim and Hahn, 2022).<sup>8</sup> KLIPS is a nationally representative panel survey of household members aged 15 and older in the general population, tracking respondents annually since 1998. It provides detailed information on marriage, childbirth, and labor market outcomes over more than two decades. While the sample size of the survey is not as large as that of the administrative datasets used in studies from other countries, it remains the best available source in Korea that satisfies the key requirements for this analysis.

Following previous studies, this paper estimates marriage and child penalties in Korea using the KLIPS data covering the years 1998 to 2021. Unlike the large-scale administrative datasets used in international research, KLIPS—as a household survey—has a limited sample size. This poses challenges in constructing a fully balanced panel, as relatively few respondents are observed over a sufficiently long period both before and after marriage or childbirth. Therefore, while allowing for some imbalance in the number of observations at each event time, it is essential to construct a sample in which the estimates are not sensitive to compositional changes across the event time.

Accordingly, the sample used to analyze marriage penalties and child penalties is constructed based on the following criteria. It includes women born in 1970 or later and men born in 1969 or later who experienced their first marriage between 1999 and 2018 and have at least six years of observation, including at least one year prior to marriage. The event-time window is defined as ranging from four years before to seven years after marriage ( $-4 \leq t \leq 7$ ). Individuals with missing values for any labor market outcomes or other covariates included in the model are excluded. In addition, observations in the top 1 percent of the wage distribution are trimmed to preclude outliers that could make the estimates noisy.

The sample includes married women and men, both with and without children. All mothers, fathers, and their children are identified based on the household survey section of the KLIPS, which provides information on each household member's gender, date of birth, and relationship to the household head. Married women and men for whom children are not observed in the sample are treated as childless.

## B. Descriptive Statistics

Table 1 presents summary statistics for the sample, including all observations used to estimate marriage and child penalties. The sample comprises 16,892 individual-year observations from 1,725 individuals, with women accounting for

<sup>8</sup>An exception is Hwang and Yoo (2025), which utilize administrative data from Korea's National Health Insurance System (NHIS). The large-scale nature of the data allows for precise estimates and a range of heterogeneity analyses. However, NHIS data have a key limitation for the purposes of this study: they do not include marriage records, making it impossible to undertake a direct estimation of marriage penalties.

TABLE 1—DESCRIPTIVE STATISTICS

Variables	Female		Male		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	29.875	(4.702)	32.639	(5.061)	31.272	(5.078)
Age at first marriage	28.284	(3.475)	31.061	(4.094)	29.688	(4.046)
Age at first childbirth†	29.541	(3.581)	32.048	(3.907)	30.769	(3.949)
Total number of children†	1.615	(0.797)	1.502	(0.852)	1.558	(0.827)
No child	0.095	(0.293)	0.149	(0.356)	0.122	(0.328)
<i>Labor market outcomes</i>						
Monthly labor income (10,000 KRW)	111.422	(122.622)	253.709	(146.084)	183.349	(152.588)
Labor force participation	0.584	(0.493)	0.923	(0.267)	0.755	(0.430)
Employment	0.562	(0.496)	0.894	(0.308)	0.73	(0.444)
Weekly hours worked‡	43.63	(10.883)	49.447	(11.524)	47.233	(11.632)
Hourly wage (10,000 KRW)‡	1.124	(0.613)	1.399	(0.666)	1.295	(0.660)
<i>Employment type</i>						
Permanent	0.459	(0.498)	0.735	(0.441)	0.599	(0.490)
Temporary/daily	0.065	(0.247)	0.062	(0.240)	0.063	(0.244)
Self-employed	0.037	(0.188)	0.098	(0.297)	0.068	(0.251)
<i>Education level</i>						
Secondary	0.286	(0.452)	0.269	(0.444)	0.278	(0.448)
Associate degree	0.332	(0.471)	0.307	(0.461)	0.319	(0.466)
Tertiary degree or above	0.382	(0.486)	0.424	(0.494)	0.403	(0.491)
Observations	8,353		8,539		16,892	

Note: Standard deviations (S.D.) are reported in parentheses. KRW denotes South Korean won. The sample is drawn from the Korean Labor and Income Panel Study (KLIPS) and includes women born in 1970 or later and men born in 1969 or later, who experienced their first marriage between 1999 and 2018, and for whom at least six years of observation exist, including at least one year prior to marriage. The sample comprises 16,892 individual-year observations from 1,725 individuals. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wage is calculated by dividing monthly labor income by total monthly hours worked.

† Age at first childbirth and total number of children are calculated conditional on having a child during the period of analysis in the sample.

‡ Weekly hours worked and hourly wages are calculated conditional on employment.

49.4% of the sample.<sup>9</sup> The average age of individuals in the sample is 31.3, and the average ages at first marriage and first childbirth are 29.7 and 30.8, respectively. Among those who have ever had at least one child, the average number of children observed during the analysis period in the sample is 1.6. The percentage of individual-year observations of those who never had any children during the period of analysis in the sample is 12.2%.<sup>10</sup>

<sup>9</sup>It should be noted that only one spouse is included in the sample for most cases due to the sample selection criteria described above: while pre-marriage information is available for individuals who have been tracked by the survey since before their marriage, such information is not available for their spouses. As a result, the number of observations differs between women and men in the sample.

<sup>10</sup>2,075 individual-year observations or 225 individuals (see Table A2)

The labor market outcomes of interest in this study include monthly labor income, labor force participation,<sup>11</sup> working hours, and wages. Labor income and wages are adjusted using the Consumer Price Index, with 2020 as the base year. Monthly labor income is measured based on an individual's primary job for wage workers (regular, temporary, and daily employees). Similarly, labor income refers to business income for the self-employed (own-account workers, employers, and unpaid family workers). For individuals who are not employed and therefore do not generate income, labor income is recorded as zero. As such, labor income captures labor market performance along both the intensive margin (i.e., wages and hours worked) and the extensive margin (i.e., employment status).

According to Table 1, average monthly labor income is 1.11 million KRW for women and 2.54 million KRW for men. The large gender gap in labor income primarily reflects differences in employment status. In the sample, the employment rate is 56.2% for women and 89.4% for men, underscoring the substantial labor market exit of women following marriage and childbirth: the gender disparities in labor income, participation, and employment observed before the first marriage (Table A1) are not as large as the gaps in Table 1.

In contrast, gender gaps are relatively small along the intensive margin. Men work longer hours per week (49.4 hours) than women (43.6 hours), and the average hourly wage—calculated by dividing monthly labor income by total monthly hours worked—is 11,240 KRW for women and 13,990 KRW for men. It is important to note that monthly labor income and employment status are calculated for the full sample, while working hours and hourly wages are computed only for those employed at the time of observation.

In terms of employment type, the share of permanent employment is significantly lower among women (45.9%) than men (73.5%), suggesting that women's labor market exit, as noted earlier, is primarily associated with the loss of regular jobs. Regarding educational attainment, there is no substantial gender difference, although the proportion of college graduates is slightly lower among women (38.2%) compared to men (42.4%).

## IV. Empirical Results

### A. Family Penalties

Previous studies of child penalties focused mainly on developed countries, where high-quality panel data are available. In these contexts, marriage penalties are typically negligible: female and male labor market outcomes evolve in parallel until the arrival of the first child. In contrast, Korea (Yoo and Lee, 2020) and other developing countries (Kleven, Landais, and Leite-Mariante, 2025) exhibit diverging pre-childbirth trends in female and male labor market outcomes. Motivated by this

<sup>11</sup>Labor force participation is defined as the individuals who are either employed or have actively searched for a job during the past 30 days and reported that they would have been available to work during the previous week if a suitable position had been offered.

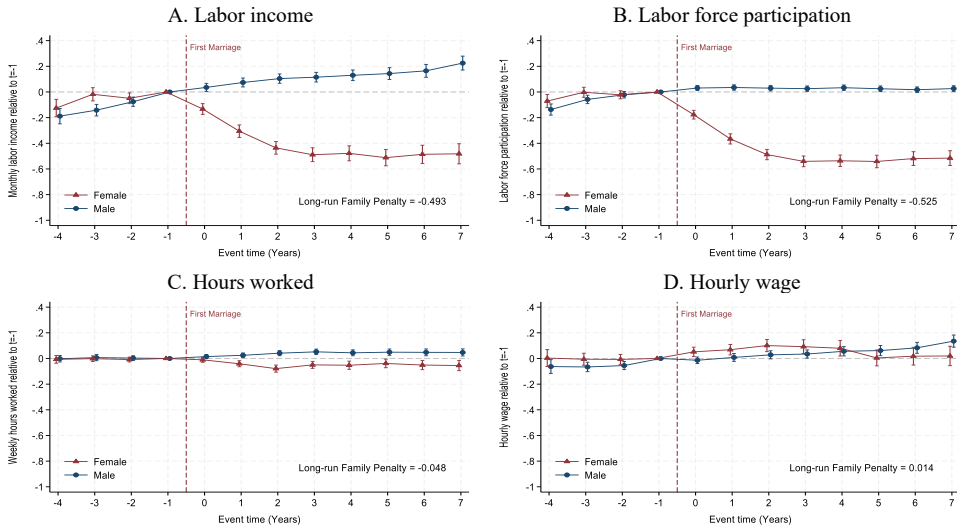


FIGURE 1. FAMILY PENALTIES IN KOREA

Note: The figure presents family penalties defined in Model (2), which are the estimated coefficients of event-time dummy variables ( $\hat{\gamma}_t^g$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\tilde{y}_{ist}^g | t]$ ). Red triangles and blue circles represent the family penalties for women and men, respectively, with corresponding 95% confidence intervals also displayed. The long-run family penalty is measured as the average penalty five or more years after marriage ( $t \geq 5$ ). The sample consists of 16,892 individual-year observations from 1,725 individuals: women born in 1970 or later and men born in 1969 or later, who married in or after 1999. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wages are calculated by dividing monthly labor income by total monthly hours worked. Weekly hours worked and hourly wages are calculated conditional on employment, while monthly labor income and labor force participation are calculated unconditional on employment status.

contrast, I begin by estimating family penalties, defined to encompass both marriage and child penalties.

Figure 1 visualizes gender-specific family penalties based on Model (2): the estimated coefficients of event-time dummies from Model (1), normalized by counterfactual outcomes in the absence of marriage and childbirth. The horizontal axis indicates the event time relative to marriage, while the vertical axes in Panels A through D display monthly labor income, labor force participation rate, working hours, and hourly wages, respectively. Red triangles and blue circles represent the estimated family penalties for women and men, respectively, with corresponding 95% confidence intervals also shown. Each estimate represents the change in the labor market outcome relative to the year immediately preceding marriage (i.e.,  $t = -1$ ), expressed as a percentage of the counterfactual outcome.

First, Panel A shows that women’s and men’s labor incomes follow a generally parallel trend prior to their first marriage. However, beginning in the year of marriage, women’s income declines sharply, with the drop continuing for three years after their marriage. This is followed by a period of stagnation lasting at least seven years post-marriage. These results suggest that in Korea, the family penalty for women is substantial and persistent over the long term: the long-run family penalty in labor income, measured as the average penalty five or more years after marriage ( $t \geq 5$ ), is 49.3%. In contrast, men’s labor income continues to rise steadily after

marriage, indicating that men do not experience a family penalty—and may even benefit from a marriage premium (Juhn and McCue, 2017; Krapf *et al.*, 2020; Goldin *et al.*, 2022). This result is both qualitatively and quantitatively consistent with previous findings on the female family penalty and male premium in Korea (Yoo and Lee, 2020).<sup>12</sup>

To examine the sources of the female family penalty in labor income, Panels B, C, and D illustrate family penalties in terms of labor force participation, working hours, and hourly wages, respectively. The results indicate that the most share of the penalty stems from the extensive margin—i.e., labor force participation. The long-run penalty suggests that women’s participation rate declines by 52.5% relative to the level observed in the year immediately preceding marriage.

In contrast, the penalties associated with working hours and wages are relatively small: the long-run family penalties in terms of hours worked and hourly wages are –4.8% and 1.4%, respectively. These findings suggest that Korea’s rigid labor market offers limited flexibility for workers to adjust their working hours or wages to accommodate household responsibilities and childcare. Consequently, women who bear the primary burden of domestic and caregiving duties are unable to achieve a work-family balance and are more likely to exit the labor market entirely. As a result, the family penalty manifests more strongly along the extensive margin—that is, through reduced employment.

### B. Marriage and Child Penalties

The baseline specification presented in Figure 1 shows that women’s labor market outcomes decline substantially, possibly due to the burden of household responsibilities and childcare. A natural question, then, pertains to the degree to which the overall family penalty is attributable to marriage-related factors versus child-related factors. To address this, Figures 2 and 3 present the estimated marriage and child penalties, respectively, as calculated using Models (4) and (5).

Controlling for the effect of childbirth (as in Model 3), marriage penalties capture changes in labor market outcomes attributable to marriage-related factors that are not directly linked to childbearing. These may include women’s preferences between labor supply and leisure, specialization in household work due to the domestic division of labor between spouses, and social norms or labor market discrimination against married women.

The estimates of marriage penalties reported in Figure 2 are qualitatively similar to the family penalties shown in Figure 1. As with family penalties, women experience substantial marriage penalties in terms of labor income and labor force participation. For instance, the participation rate for women declines continuously for three years after marriage and does not recover thereafter. The long-run penalty is –26.7%, indicating that women’s participation decreases by 26.7% relative to the level in the year immediately preceding marriage. In contrast, the penalties in terms of working hours and wages are minimal.

In contrast to women, no marriage penalties are observed for men. Men do not

<sup>12</sup>Note that the definition of “marriage penalty” in Yoo and Lee (2020) corresponds to the definition of “family penalty” in this paper.

reduce their labor force participation following marriage; in fact, their working hours increase. Their wages also rise gradually, possibly due to career accumulation and promotions. These contrasting patterns in marriage penalties for women and men are consistent with a domestic division of labor that is shaped by patriarchal social norms.

With limited variation in the time interval between first marriage and first childbirth, the marriage penalty estimates in Figure 2 may capture not only the effect of marriage but also part of the *ex-ante* effect of childbirth. Table A2 presents the distribution of the interval between the two events. The results indicate that most of the identifying variation in marriage penalties, particularly for long-term estimates, comes from comparing childless married women with mothers. To assess the robustness of Figure 2 across subsamples, I separately re-estimate marriage penalties for married women without children and for mothers whose time gap between the two events is at least zero, one, or two years. The results, illustrated in Figure A1, show that the long-term estimates are fairly robust, whereas the short-term estimates differ somewhat between childless married women and mothers. This short-term difference may reflect selection into childbirth or anticipatory childbirth-related factors such as pregnancy (Hwang and Yoo, 2025).

The child penalties estimated in Figure 3 are also qualitatively similar to the family (or marriage) penalties. As with family penalties, (i) the child penalty in terms of labor income is substantial for women but not for men, and (ii) the majority of

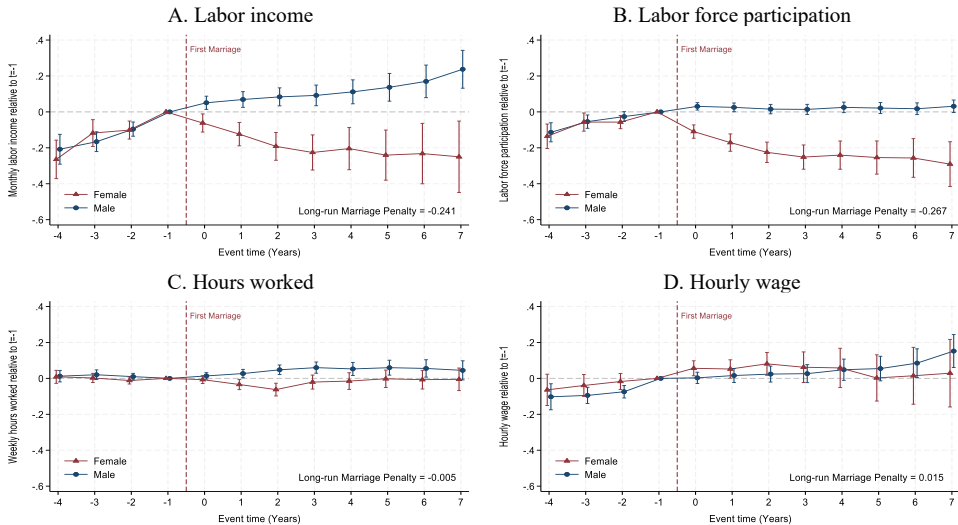


FIGURE 2. MARRIAGE PENALTIES IN KOREA

*Note:* The figure presents marriage penalties defined in Model (4), which are the estimated coefficients of event-time dummy variables ( $\hat{\lambda}_t^g$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{istic}^g | t]$ ). Red triangles and blue circles represent the marriage penalties for women and men, respectively, with corresponding 95% confidence intervals also displayed. The long-run marriage penalty is measured as the average penalty five or more years after the first marriage ( $t \geq 5$ ). The sample consists of 16,892 individual-year observations from 1,725 individuals: women born in 1970 or later and men born in 1969 or later, who married in or after 1999. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wages are calculated by dividing monthly labor income by total monthly hours worked. Weekly hours worked and hourly wages are calculated conditional on employment, while monthly labor income and labor force participation are calculated unconditional on employment status.

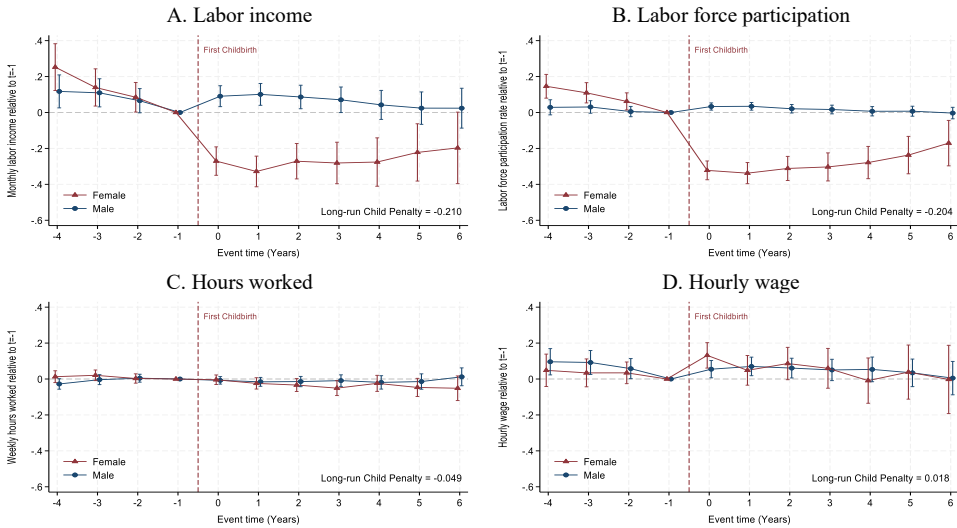


FIGURE 3. CHILD PENALTIES IN KOREA

Note: The figure presents child penalties defined in Model (5), which are the estimated coefficients of event-time dummy variables ( $\hat{\theta}_t^g$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\tilde{Y}_{istic}^g | c]$ ). Red triangles and blue circles represent the marriage penalties for women and men, respectively, with corresponding 95% confidence intervals also displayed. The long-run child penalty is measured as the average penalty five or more years after the first childbirth ( $c \geq 5$ ). The sample consists of 16,892 individual-year observations from 1,725 individuals: women born in 1970 or later and men born in 1969 or later, who married in or after 1999. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wages are calculated by dividing monthly labor income by total monthly hours worked. Weekly hours worked and hourly wages are calculated conditional on employment, while monthly labor income and labor force participation are calculated unconditional on employment status.

the female penalty arises along the extensive margin—that is, reduced labor force participation—while there is no significant penalty along the intensive margin, such as working hours or wages.

However, the dynamic patterns of child penalties are rather different from those of marriage penalties. First, the decline in women’s labor income and participation is sharp and substantial immediately following childbirth, particularly at  $t=0$  or 1. This pattern has also been observed in prior studies focusing on Korea (Kwak, 2020; Park, 2021; Kim and Hahn, 2022; Hwang and Yoo, 2025) and other developed countries (e.g., Kleven *et al.*, 2019). Second, the mothers’ participation rate gradually recovers beginning two years after their first childbirth, as many women return to the labor market during this time phase. As a result, the long-run penalty on participation is 20.4% of the counterfactual outcome. The gradual recovery in the long run aligns with the well-known M-shaped pattern of female labor force participation across age in Korea (e.g., Park, 2023). Combined with the fact that mothers’ participation drops immediately after childbirth, the gradual recovery in participation suggests that a primary driver of the child penalty is the burden of childcare borne by women.

Considering that the sample is unbalanced (see Section 3), the dynamic patterns of child penalties may be influenced by sample selection across event times. For example, mothers observed for six years after childbirth may differ in terms of their

characteristics from those observed for only three years or less. To assess whether such differences affect the results in Figure 3, I separately re-estimate child penalties for mothers who have been last observed for six or more years, for five years, and for four years or fewer after their first childbirth. Figure A2 shows that the child-penalty estimates are highly robust to sample selection, indicating that the observed dynamic patterns are not driven by the unbalanced panel structure.

The estimated child penalties presented in Figure 3 are significantly smaller than those reported in previous studies on child penalties in Korea. In previous studies, child penalties in Korea were estimated without accounting for the presence of marriage penalties, resulting in significant non-parallel pre-trends by gender (Park, 2021; Kim and Hahn, 2022; Hwang and Yoo, 2025). As a result, existing estimates of child penalties may have been overstated, as they partially capture the effects of marriage given the strong correlation between marriage and childbirth. In contrast, as shown in Figure 3, the estimates in this study exhibit a relatively parallel trend prior to childbirth as this study controls for marriage-related effects unrelated to childbirth. Consequently, the child penalty estimates reported here are significantly smaller than those in previous studies. For example, the long-run penalties on labor income and labor force participation implied by the estimates presented in Figure 3 are 24.1% and 26.7%,<sup>13</sup> respectively, whereas the corresponding estimates in Kim and Hahn (2022) are 66.2% and 35.4%.

Despite such quantitative differences, the finding that child penalties in Korea arise primarily along the extensive margin is consistent with existing evidence (Park, 2021; Kim and Hahn, 2022; Hwang and Yoo, 2025). Notably, the near-zero penalty along the intensive margin contrasts with findings from developed countries, where child penalties are also significant with regard to that dimension. For example, sizable child penalties for women are observed in both working hours and wages in Denmark (Kleven, Landais, and Sogaard, 2019), Austria (Kleven *et al.*, 2024), and Germany (Lim and Duletzki, 2025). The fact that child penalties in Korea are concentrated on the extensive margin suggests the presence of Korea-specific factors driving these outcomes, which are not relevant in Western developed countries.

A potential key factor contributing to the concentration of female penalties along the extensive margin is Korea's working environment, characterized by long and rigid working hours. Most permanent employees work around 40 hours per week, with limited opportunities to adjust their schedules flexibly (Figure A3). As a result, if affordable childcare is not available, one spouse must exit the labor market to provide care. In the context of prevailing patriarchal social norms, this burden disproportionately falls on mothers rather than fathers. In the absence of viable options to continue their careers with moderately reduced hours or wages, mothers are often left with a binary choice: work full time or exit the labor market entirely.

Existing empirical evidence from previous research on Korea also supports the hypothesis that child penalties are larger in less family-friendly work environments. For example, Lee, Lee, and Yang (2025) find that access to grandparental childcare

<sup>13</sup>These child penalties are recalculated following the definition in Kleven, Landais, and Sogaard (2019) and Kim and Hahn (2022), which differs from the definition in Model (5). Specifically, the child penalty is defined as a ratio of the gender difference in the estimated coefficients of event-time dummy variables ( $\hat{\theta}_c^m - \hat{\theta}_c^f$ ) to women's counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{isc}^f | c]$ ) in Models (3) and (5).

increases the likelihood of mothers remaining in full-time employment. This suggests that in the absence of affordable childcare, full-time work becomes less feasible for mothers. Additionally, Kim and Hahn (2022) show that working mothers tend to transition into female-dominated occupations and industries after childbirth. This finding implies that child penalties can be greater for women in less supportive or flexible work environments.

### *C. Evolution of Marriage and Child Penalties*

In this subsection, I examine whether the marriage and child penalties documented in Figures 2 and 3 have changed over time. This analysis is motivated by two main considerations. First, it allows for an assessment of whether family policies aimed at improving the work-family balance have effectively enhanced women's labor market outcomes and, in turn, reduced child penalties. The family policy initiative, known as The Basic Plan for a Low Fertility and Aging Society, has been implemented in five-year intervals since 2006 and has expanded for the past two decades. It includes a wide range of measures, such as housing support for newlywed couples, services and cash benefits related to childbirth and childcare, expansion of childcare facilities and subsidies, and work-family balance policies such as parental leave and reduced working hours during the childcare period. If these policies have been effective, the magnitude of marriage and child penalties should have declined.

Second, the factors potentially contributing to marriage and child penalties may have evolved over the past decades. In particular, patriarchal social norms and discrimination against married women and mothers may have shifted in a more female- and family-friendly direction. Women's educational attainment and labor force participation have increased substantially in the 21st century. Furthermore, evidence from social surveys suggests a growing public endorsement of gender equality in the division of domestic responsibilities between spouses (Figure A4).

To examine how marriage and child penalties have changed over time, I compare marriage and child penalties for individuals who married before 2010 with those for individuals who married in 2010 or later using the specification in Model (6). Tables A3 and A4 report descriptive statistics for each subsample, which reflect broad economic and demographic changes in the labor market over the past two decades: higher ages at first marriage and first childbirth, fewer children (and more childless couples), and improvements in women's educational attainment and labor market outcomes.

Figures 4 and 5 present the changes in marriage and child penalties, which are calculated per Models (7) and (8), respectively. The estimation results in Figure 4 show that marriage penalties have decreased for women who married in the 2010s, while the marriage premium has also declined for men who married during the same time period. The marriage penalty for women in terms of labor income decreased over time by 4.5%p. Such a decrease is driven mainly by the increase in married women's wages and moderately by the increase in labor force participation. In terms of working hours, women's marriage penalty did not change significantly during the 2010s.

Figure 5 presents changes in child penalties over time. In contrast to the overall decrease in marriage penalties, child penalties for women increase significantly:

women's child penalty on labor income increased by 7.8%p. Most of the increase seems to be driven by lower wages of women who married in the 2010s: their penalty on wages is 13.7%p larger than women who married before 2010. No significant changes are observed in women's participation and working hours over time. Notable changes are not found for child premiums for men either, only except the slight increases in wages and incomes during the four years after the birth of the first child.

The estimation results in Figure 5 are consistent with the findings of Hwang and Yoo (2025), which compare child penalties across birth cohorts of Korean women. Using large-scale administrative data, they provide precise estimates showing that child penalties have increased for more recent cohorts in terms of labor income, but not in terms of employment, which aligns with the patterns observed in Panels A and B of Figure 5. Building on this finding, Panels C and D indicate that the increase in labor income was driven by larger penalties in wages for recent cohorts rather than by changes in working hours.

The results in Figures 4 and 5 indicate that marriage penalties have eased over time, whereas child penalties have persisted. Compared to those who married before 2010s, married women who married more recently are more likely to remain in the labor market and earn higher wages, possibly reflecting their greater educational attainment and stronger preferences for career continuity. However, despite these

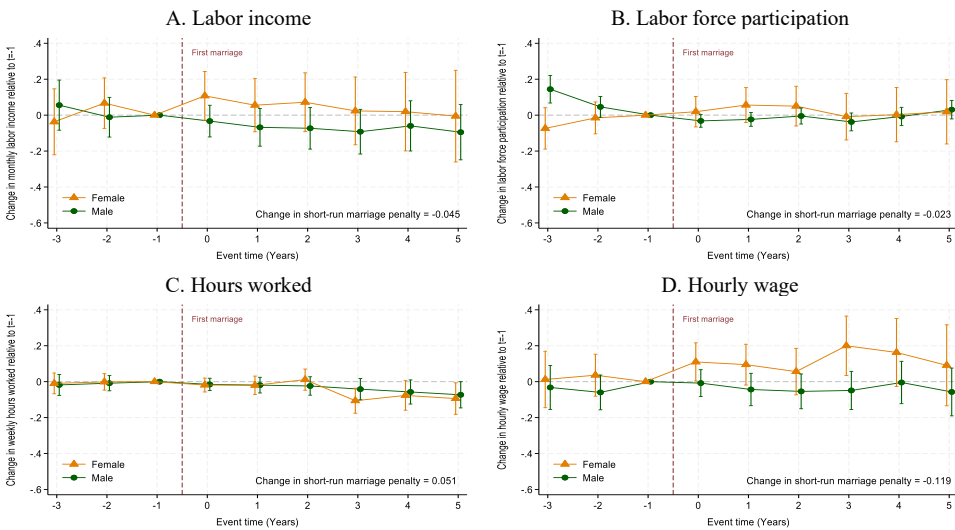


FIGURE 4. CHANGES IN MARRIAGE PENALTIES

*Note:* The figure presents changes in marriage penalties during the 2010s, as defined in Model (7). These are the estimated coefficients of interaction terms between event-time dummy variables and indicators for the women or men who married in the 2010s ( $\hat{\pi}_t^S$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{iSTC}^S | t]$ ). Orange triangles and green circles represent the change in marriage penalties for women and men, respectively, with corresponding 95% confidence intervals also displayed. The change in marriage penalty is measured as the average change after the first marriage ( $0 \leq t \leq 5$ ). The sample consists of 16,892 individual-year observations from 1,725 individuals: women born in 1970 or later and men born in 1969 or later, who married in or after 1999. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wages are calculated by dividing monthly labor income by total monthly hours worked. Weekly hours worked and hourly wages are calculated conditional on employment, while monthly labor income and labor force participation are calculated unconditional on employment status.

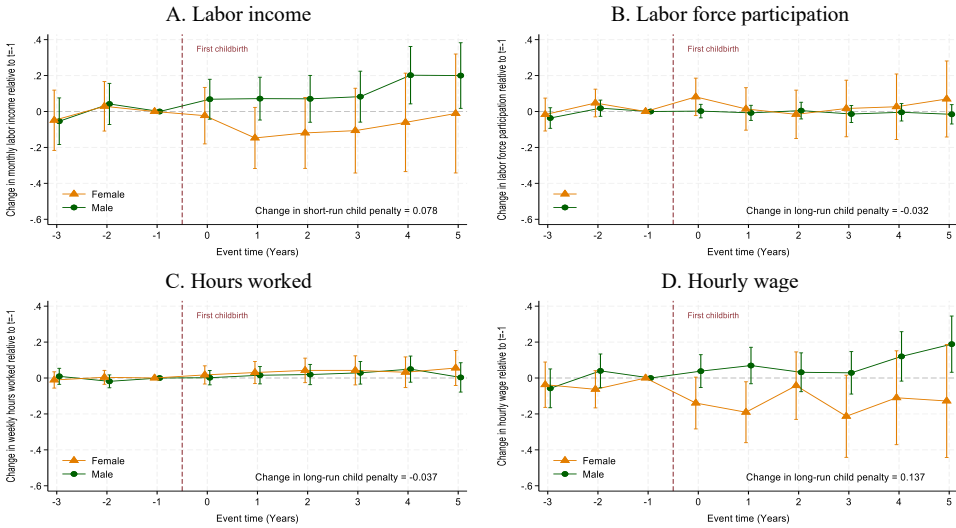


FIGURE 5. CHANGES IN CHILD PENALTIES

Note: The figure presents changes in child penalties during the 2010s, as defined in Model (8). These are the estimated coefficients of interaction terms between event-time dummy variables and indicators for the women or men who married in the 2010s ( $\hat{\mu}_c^S$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{istic}^S | c]$ ). Orange triangles and green circles represent the change in child penalties for women and men, respectively, with corresponding 95% confidence intervals also displayed. The change in child penalty is measured as the average change after the first childbirth ( $0 \leq c \leq 5$ ). The sample consists of 16,892 individual-year observations from 1,725 individuals: women born in 1970 or later and men born in 1969 or later, who married in or after 1999. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wages are calculated by dividing monthly labor income by total monthly hours worked. Weekly hours worked and hourly wages are calculated conditional on employment, while monthly labor income and labor force participation are calculated unconditional on employment status.

gains, many women who married in the 2010s eventually leave the labor market after childbirth, forfeiting wages that exceed those of married women who married before 2010. This pattern suggests that while the potential drivers of marriage penalties, such as personal preferences and social norms pertaining to married women’s work, have become more supportive of female labor supply, the underlying factors behind child penalties have remained largely unchanged. Evidence from a national social survey supports this interpretation: the share of respondents who believe that housework is primarily the role of married women declined steadily throughout the 2010s (Figure A4), whereas the decline in the percentage agreeing that women should prioritize caregiving over employment was more gradual and then plateaued in the 2020s (Figure A5).

In addition to social norms, other potential factors may explain the evolution of child penalties. For instance, Hwang and Yoo (2025) provide evidence that the increase in child penalties (measured in terms of labor income) for more recent cohorts is primarily driven by (i) increased parental leave take-up and (ii) changes in selection into motherhood. Labor income among mothers has declined (at least in the short run) as relatively more women actually utilize parental leave. Furthermore, as women with lower incomes or weaker job security levels become less likely to have children, this changing selection into motherhood mechanically increases child

penalties in labor income among recent cohorts.

Despite accounting for various potential factors, the increase in child penalties suggests that family policies implemented during the 2010s were not sufficiently effective in mitigating mothers' disadvantages in labor market outcomes. In particular, the near-zero change in child penalties along both the extensive (labor force participation) and intensive (working hours) margins of the female labor supply indicates that mothers' labor supply has remained persistently constrained over the past two decades, with little observable impact from family policies.

#### D. Family Penalties across Countries

Growing evidence from developed countries indicates that child penalties are closely correlated with social norms regarding gender roles within families with children. For example, child penalties are smaller for women whose mothers participated in the labor market (Kleven, Landais, and Sogaard, 2019) but are larger for women from regions or countries with more conservative gender norms in childcare (Kleven *et al.*, 2019; Kleven, 2025). As discussed above, marriage penalties, and thus overall family penalties, may also be strongly correlated with prevailing gender norms.

To examine whether family penalties are also correlated with social norms, I compare the estimated family penalty on labor income in Korea (Figure 1, Panel A) with those of developed countries including Denmark, Sweden, the United Kingdom, the United States, Austria, and Germany. Because marriage penalties are negligible in these countries, their family penalties correspond to child penalties. To ensure cross-country comparability, I recalculate the family penalty following Kleven *et al.* (2019), defining it as the ratio of the gender difference in the estimated coefficients of event-time dummy variables ( $\hat{\gamma}_t^m - \hat{\gamma}_t^f$ ) to women's counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{ist}^f | t]$ ) in Models (1) and (2).

The results in Figure 6 show that Korea is not an outlier in this relationship: women's family penalty in labor income is larger in countries where a higher share of people agree that mothers with young children should stay at home rather than participate in the labor market

As discussed earlier, long and rigid working hours are a potential key factor amplifying child penalties, and consequently family penalties, by concentrating these penalties along the extensive margin, i.e., female labor force participation. Therefore, I also examine whether a relationship similar to that observed in Figure 6 emerges between family penalties and the prevalence of flexible working-time arrangements. The measure of flexible working-time arrangements is based on the incidence of employees (aged 15–64) who have full or partial control over their work schedules, as calculated by the OECD (2021). As illustrated in Figure 7, women's family penalties are smaller in countries where flexible working-time arrangements are more widespread. Notably, family penalties are highly correlated with the prevalence of flexible work among not only women (Panel A) but also men (Panel B). Given that countries with well-established flexible working systems tend to exhibit high utilization rates for both women and men (Figure A3), this finding is not surprising.

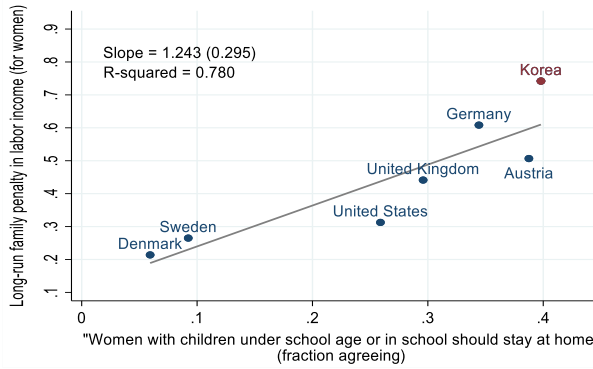


FIGURE 6. FAMILY PENALTIES AND SOCIAL NORMS ON THE ROLE OF MOTHERS ACROSS COUNTRIES

Note: The figure presents the correlation between the long-run family penalty in labor income (for women) and social norms regarding gender roles within families with children. The family penalty in labor income is calculated as the *difference* in the estimated coefficients of event-time dummy variables between men and women ( $\hat{\gamma}_t^m - \hat{\gamma}_t^f$ ) divided by women’s counterfactual outcomes in the absence of marriage and childbirth ( $E[\tilde{Y}_{ist}^f | t]$ ) in Models (1) and (2). The long-run family penalty is measured as the average penalty five or more years after marriage ( $t \geq 5$ ). See Table 1 for detailed information about the sample used to estimate the family penalty in Korea.

Source: For Korea, the family penalty estimate of Korea is from Figure 1 and the estimate of social norms is calculated using the data from the 2023 Social Survey (Statistics Korea). For the other countries, both the family penalty estimates and social norm estimates are from Figure 4 of Kleven *et al.* (2019), where the estimates of social norms are calculated using the International Social Survey Program (ISSP).

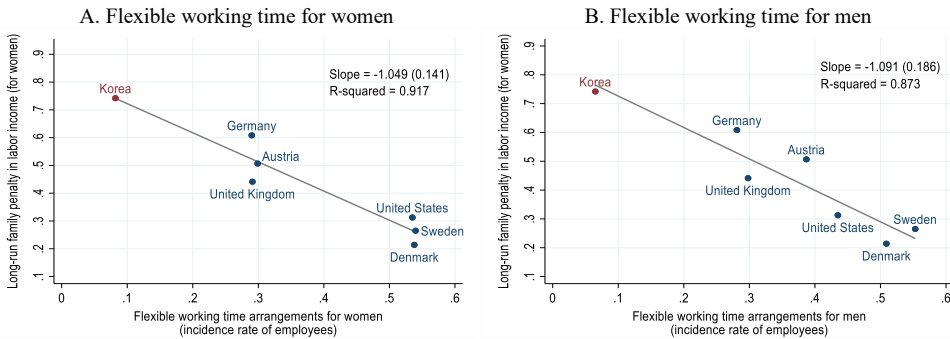


FIGURE 7. FAMILY PENALTIES (FOR WOMEN) AND FLEXIBLE WORKING TIME ARRANGEMENTS ACROSS COUNTRIES

Note: The figure presents the correlation between the long-run family penalty in labor income (for women) and flexible working time arrangements for women (Panel A) and men (Panel B). The family penalty in labor income is calculated as the *difference* in the estimated coefficients of event-time dummy variables between men and women ( $\hat{\gamma}_t^m - \hat{\gamma}_t^f$ ) divided by women’s counterfactual outcomes in the absence of marriage and childbirth ( $E[\tilde{Y}_{ist}^f | t]$ ) in Models (1) and (2). The long-run family penalty is measured as the average penalty five or more years after marriage ( $t \geq 5$ ). See Table 1 for detailed information about the sample used to estimate the family penalty in Korea. Flexible working time arrangements indicate the incidence rate of employees aged 15–64 who have flexible working time arrangements. Flexible working time arrangements describe a work arrangement in which employees have full or partial control over their schedules, including cases where adjustments are allowed within certain limits (e.g., flexitime).

Source: For the family penalties, the estimate for Korea is from Figure 1, while the estimates for the other countries are from Figure 4 of Kleven *et al.* (2019). The source of the estimates of flexible working time arrangements is the OECD (2021), of which the calculations are based on the 4th, 5th and 6th European Working Conditions Survey (EWCS); the 1st, 3rd and 5th Korean Working Conditions Survey (KWCS); and the American Working Conditions Survey (AWCS) 2015. Korean data are from 2017, while data for other countries are from 2015.

## V. Conclusion

A growing body of evidence highlights social norms as a key driver of child penalties (e.g., Kleven *et al.*, 2019; Kleven, Landais, and Sogaard, 2019; Kleven, 2025). Even in advanced economies, caregiving responsibilities are still widely perceived as the mother's role, and the resulting child penalty accounts for a significant share of the remaining gender gap in labor market outcomes. In developing countries, where patriarchal norms tend to be more deeply entrenched, significant marriage penalties are observed in addition to child penalties. Such penalties limit women's participation in the labor market, despite ongoing government efforts to promote the female labor supply amid rapid population decrease and aging. Understanding the marriage penalty is therefore crucial to explaining the labor market trajectories of married women in such contexts.

This paper demonstrates that in Korea, women face not only child penalties but also sizable marriage penalties that arise before the first childbirth or even if they do not have children. These marriage penalties cannot be explained by *ex-post* childbirth-related factors, suggesting that other factors (such as but not limited to social norms regarding gendered household roles) limit the labor supply of married women. Unlike developed countries examined in previous research where such pre-childbirth declines in female labor market outcomes are not observed, the findings for Korea underscore the importance of understanding marriage penalties to explain women's labor market outcomes in developing countries.

Furthermore, this paper documents the evolutionary trends of marriage penalties in addition to child penalties, thus providing new empirical evidence from Korea that supports the relationship between economic growth and changes in such penalties over time as presented by Kleven, Landais, and Leite-Mariante (2025). In Korea, although significant marriage penalties remain, likely reflecting social norms that have not yet kept pace with economic development (Goldin, 2025), women married in the 2010s do exhibit improved labor market outcomes and reduced marriage penalties, suggesting that gender norms have gradually progressed in favor of women's economic achievement. Unlike marriage penalties, however, the findings of this paper show that Korea exhibits substantial child penalties which have prevailed over time. This persistence suggests that despite improvements in married women's overall labor market outcomes, deeply rooted social norms surrounding the role of mothers remain influential. In conjunction with these norms, structural conditions such as rigid working hours and limited access to affordable childcare appear to exacerbate the child penalty. The fact that these penalties are concentrated in employment, with virtually no effects on working hours or wages, further supports this interpretation.

The findings above suggest that addressing marriage and child penalties cannot be accomplished through the expansion of family policies alone. Because social norms and labor market structures play a critical role in shaping the effectiveness of family policies (Doepke *et al.*, 2023), policy expansion endeavors must be accompanied by broader efforts to shift social attitudes and reform labor market institutions. On the social norms front, there is a pressing need to strengthen public recognition of women's economic participation, whether with or without children, and both within

the home and in the workplace. At the household level, greater involvement of men in domestic labor and childcare is essential. In the workplace, encouraging the uptake of parental leave and reduced working hours by both fathers and mothers would be key. From a structural perspective, improving labor market flexibility will be critical to promote women's career progression, especially through reforms to working time arrangements.

## APPENDIX

TABLE A1—DESCRIPTIVE STATISTICS OF PRE-MARRIAGE CHARACTERISTICS

Variables	Female		Male		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	26.076	(3.704)	29.019	(4.234)	27.552	(4.241)
Number of children†	0.008	(0.106)	0.009	(0.106)	0.009	(0.106)
<i>Labor market outcomes</i>						
Monthly labor income (10,000 KRW)	126.663	(98.400)	176.235	(133.250)	151.523	(119.762)
Labor force participation	0.792	(0.406)	0.819	(0.385)	0.805	(0.396)
Employment	0.745	(0.436)	0.771	(0.420)	0.758	(0.428)
Weekly hours worked‡	45.974	(10.886)	50.121	(12.755)	48.089	(12.054)
Hourly wage (10,000 KRW)‡	0.920	(0.496)	1.124	(0.566)	1.024	(0.542)
<i>Employment type</i>						
Permanent	0.625	(0.484)	0.635	(0.482)	0.63	(0.483)
Temporary/daily	0.092	(0.289)	0.078	(0.268)	0.085	(0.279)
Self-employed	0.029	(0.167)	0.058	(0.234)	0.043	(0.204)
<i>Education level</i>						
Secondary	0.319	(0.466)	0.301	(0.459)	0.31	(0.463)
Associate degree	0.342	(0.475)	0.336	(0.472)	0.339	(0.473)
Tertiary degree or above	0.339	(0.473)	0.363	(0.481)	0.351	(0.477)
Observations	2,654		2,670		5,324	

*Note:* Descriptive statistics for the individual-year observations observed before the first marriage (5,324 observations) in the sample. Standard deviations (S.D.) are reported in parentheses. KRW denotes South Korean won. The sample is drawn from the Korean Labor and Income Panel Study (KLIPS) and includes women born in 1970 or later and men born in 1969 or later, who experienced their first marriage between 1999 and 2018, and for whom at least six years of observation exist, including at least one year prior to marriage. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wage is calculated by dividing monthly labor income by total monthly hours worked.

‡ Weekly hours worked and hourly wages are calculated conditional on employment.

TABLE A2—DISTRIBUTION OF TIME INTERVAL BETWEEN FIRST MARRIAGE AND FIRST CHILDBIRTH

Interval (year of 1st childbirth – year of 1st marriage)	Individuals		Individual-year observations	
	Frequency	Percent	Frequency	Percent
-5	2	0.12	15	0.09
-4	1	0.06	7	0.04
-3	5	0.29	42	0.25
-2	5	0.29	46	0.27
-1	17	0.99	165	0.98
0	220	12.75	2,232	13.21
1	627	36.35	6,284	37.2
2	368	21.33	3,658	21.66
3	154	8.93	1,480	8.76
4	67	3.88	603	3.57
5	34	1.97	285	1.69
No child	225	13.04	2,075	12.28
Total	1,725	100.00	16,892	100.00

*Note:* Distribution of frequencies and percentages across the time interval between first marriage and first childbirth (= year of the first childbirth – year of the first marriage) in the sample (1,725 individuals and 16,892 individual-year observations). The sample is drawn from the Korean Labor and Income Panel Study (KLIPS) and includes women born in 1970 or later and men born in 1969 or later, who experienced their first marriage between 1999 and 2018, and for whom at least six years of observation exist, including at least one year prior to marriage.

TABLE A3—DESCRIPTIVE STATISTICS FOR OBSERVATIONS MARRIED BEFORE 2010

Variables	Female		Male		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	29.245	(4.403)	31.501	(4.529)	30.346	(4.605)
Age at first marriage	27.420	(2.927)	29.677	(3.197)	28.522	(3.263)
Age at first childbirth†	28.905	(3.246)	30.913	(3.257)	29.866	(3.402)
Total number of children†	1.763	(0.713)	1.762	(0.770)	1.763	(0.741)
No child	0.045	(0.207)	0.080	(0.271)	0.062	(0.241)
<i>Labor market outcomes</i>						
Monthly labor income (10,000 KRW)	95.357	(114.925)	237.207	(145.899)	164.615	(148.924)
Labor force participation	0.544	(0.498)	0.909	(0.288)	0.722	(0.448)
Employment	0.517	(0.500)	0.874	(0.332)	0.692	(0.462)
Weekly hours worked‡	44.895	(10.977)	51.385	(12.290)	48.900	(12.218)
Hourly wage (10,000 KRW)‡	1.018	(0.586)	1.296	(0.649)	1.190	(0.640)
<i>Employment type</i>						
Permanent	0.435	(0.496)	0.722	(0.448)	0.575	(0.494)
Temporary/daily	0.048	(0.214)	0.056	(0.230)	0.052	(0.222)
Self-employed	0.034	(0.182)	0.096	(0.294)	0.064	(0.245)
<i>Education level</i>						
Secondary	0.340	(0.474)	0.293	(0.455)	0.317	(0.465)
Associate degree	0.317	(0.465)	0.304	(0.460)	0.311	(0.463)
Tertiary degree or above	0.343	(0.475)	0.403	(0.491)	0.372	(0.483)
Observations	5,203		4,964		10,167	

*Note:* Descriptive Statistics for the subsample which include 10,167 individual-year observations (1,019 individuals) who married before 2010. Standard deviations (S.D.) are reported in parentheses. KRW denotes South Korean won. The sample is drawn from the Korean Labor and Income Panel Study (KLIPS) and includes women born in 1970 or later and men born in 1969 or later, for whom at least six years of observation exist, including at least one year prior to marriage. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wage is calculated by dividing monthly labor income by total monthly hours worked.

† Age at first childbirth and total number of children are calculated conditional on having a child during the period of analysis in the sample.

‡ Weekly hours worked and hourly wages are calculated conditional on employment.

TABLE A4—DESCRIPTIVE STATISTICS FOR OBSERVATIONS MARRIED IN 2010 OR LATER

Variables	Female		Male		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	30.914	(4.987)	34.220	(5.329)	32.671	(5.428)
Age at first marriage	29.710	(3.821)	32.984	(4.413)	31.451	(4.456)
Age at first childbirth†	30.761	(3.868)	33.965	(4.158)	32.396	(4.326)
Total number of children†	1.371	(0.864)	1.142	(0.828)	1.249	(0.853)
No child	0.178	(0.383)	0.245	(0.430)	0.214	(0.410)
<i>Labor market outcomes</i>						
Monthly labor income (10,000 KRW)	137.959	(130.116)	276.622	(143.243)	211.672	(153.699)
Labor force participation	0.651	(0.477)	0.942	(0.235)	0.805	(0.396)
Employment	0.635	(0.482)	0.922	(0.268)	0.788	(0.409)
Weekly hours worked‡	41.927	(10.520)	46.896	(9.867)	45.019	(10.400)
Hourly wage (10,000 KRW)‡	1.267	(0.619)	1.535	(0.663)	1.434	(0.660)
<i>Employment type</i>						
Permanent	0.500	(0.500)	0.752	(0.432)	0.634	(0.482)
Temporary/daily	0.094	(0.291)	0.069	(0.254)	0.081	(0.272)
Self-employed	0.041	(0.199)	0.100	(0.301)	0.073	(0.260)
<i>Education level</i>						
Secondary	0.196	(0.397)	0.236	(0.425)	0.218	(0.413)
Associate degree	0.357	(0.479)	0.310	(0.463)	0.332	(0.471)
Tertiary degree or above	0.447	(0.497)	0.454	(0.498)	0.451	(0.498)
Observations	3,150		3,575		6,725	

Note: Descriptive Statistics for the subsample which include 6,725 individual-year observations (706 individuals) who married in or after 2010. Standard deviations (S.D.) are reported in parentheses. KRW denotes South Korean won. The sample is drawn from the Korean Labor and Income Panel Study (KLIPS) and includes women born in 1970 or later and men born in 1969 or later, for whom at least six years of observation exist, including at least one year prior to marriage. For the self-employed—including own-account workers, employers, and unpaid family workers—labor income refers to business income. Hourly wage is calculated by dividing monthly labor income by total monthly hours worked.

† Age at first childbirth and total number of children are calculated conditional on having a child during the period of analysis in the sample.

‡ Weekly hours worked and hourly wages are calculated conditional on employment.

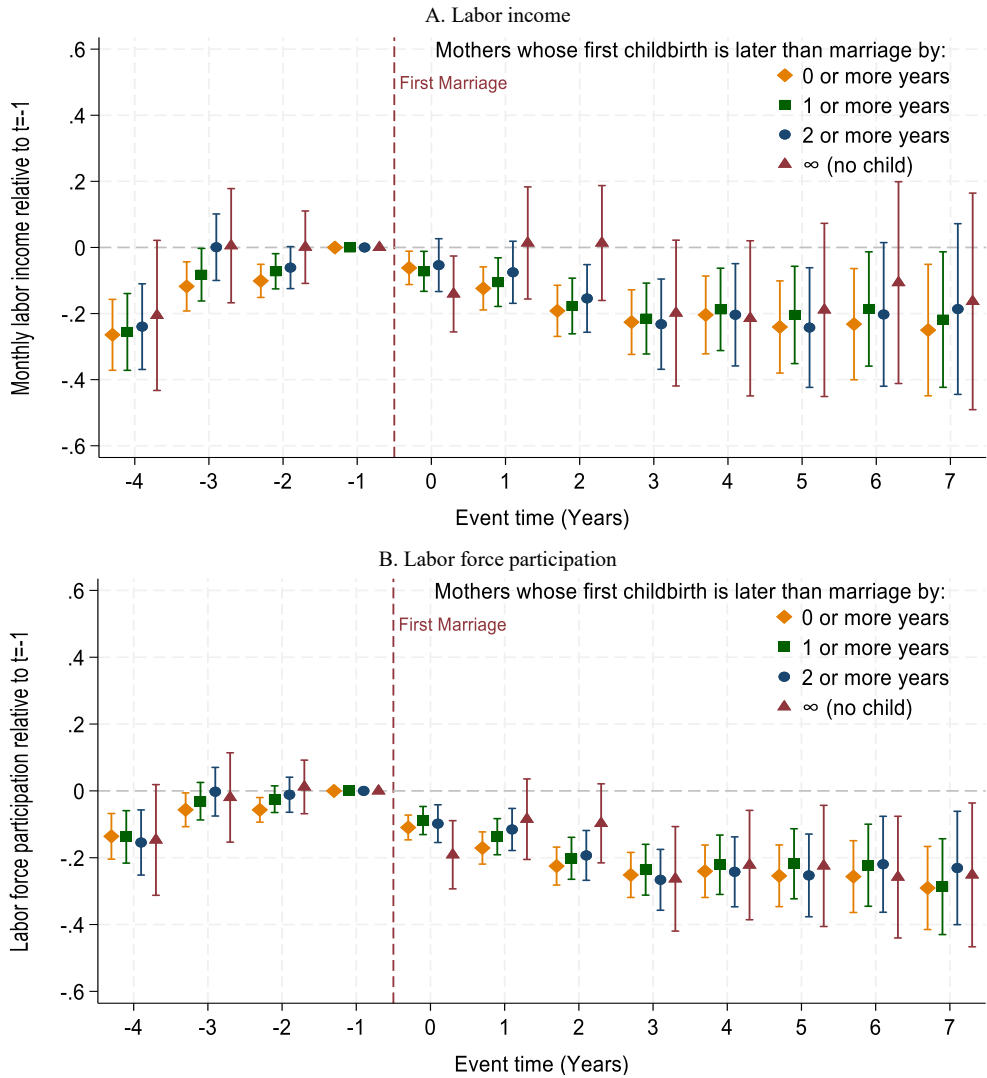


FIGURE A1. MARRIAGE PENALTIES BY TIME BETWEEN FIRST MARRIAGE AND FIRST CHILDBIRTH

Note: The figure presents female marriage penalties defined in Model (4), which are the estimated coefficients of event-time dummy variables ( $\hat{\lambda}_t^f$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{istic}^f | t]$ ). Red triangles, blue circles, green squares, and orange diamonds respectively represent the marriage penalties for women whose time gap between her first childbirth and her first marriage (year of the first childbirth – year of the first marriage) is at least zero, one, or two years, and married women without children, with corresponding 95% confidence intervals also displayed. The sample comprises 16,892 individual-year observations from 1,725 individuals.

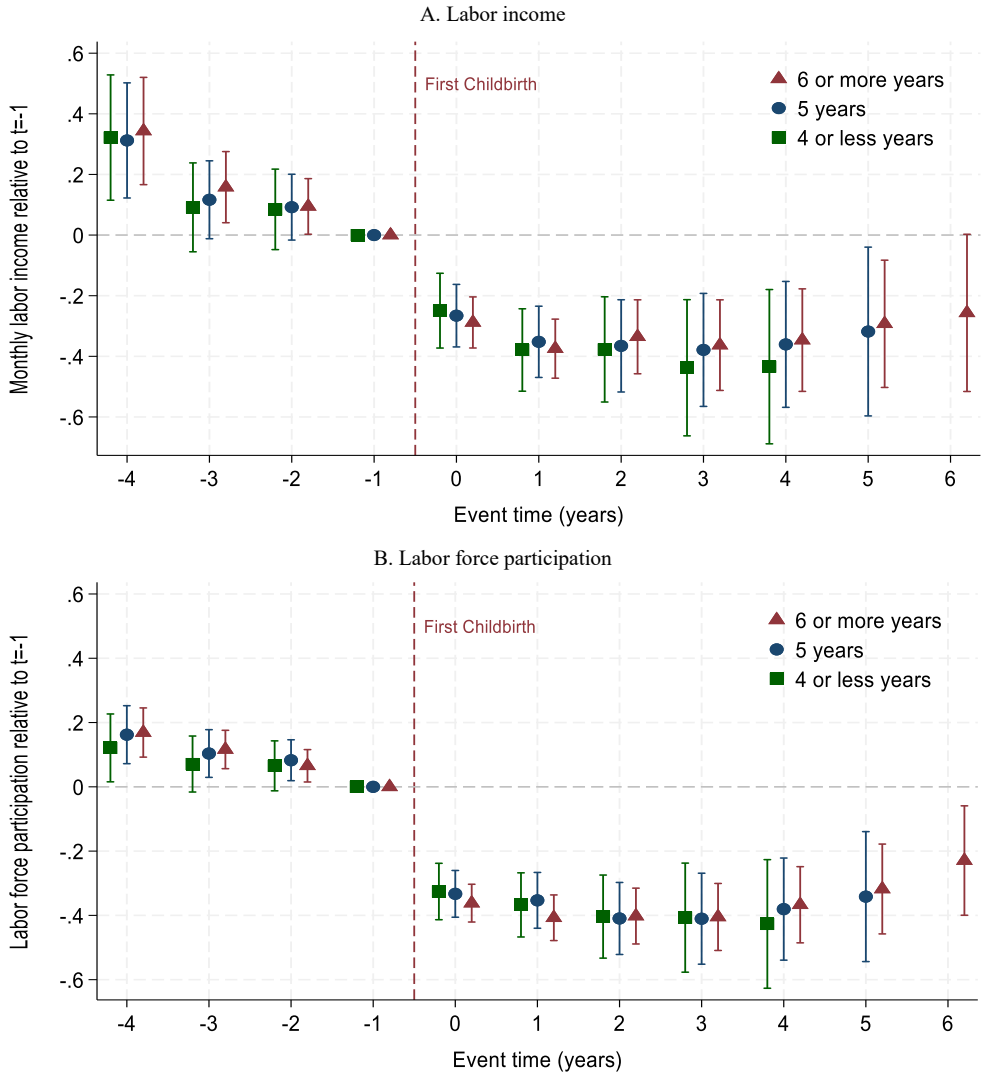


FIGURE A2. CHILD PENALTIES BY YEAR OF FINAL OBSERVATION

Note: The figure presents child penalties for mothers defined in Model (5), which are the estimated coefficients of event-time dummy variables ( $\theta_c^f$ ) divided by the counterfactual outcomes in the absence of marriage and childbirth ( $E[\hat{Y}_{istic}^f | c]$ ). Red triangles, blue circles, and green squares represent the child penalties for mothers who are last observed in six or more years, five years, and four or less years after the first childbirth, respectively, with corresponding 95% confidence intervals also displayed. The sample comprises 16,892 individual-year observations from 1,725 individuals.

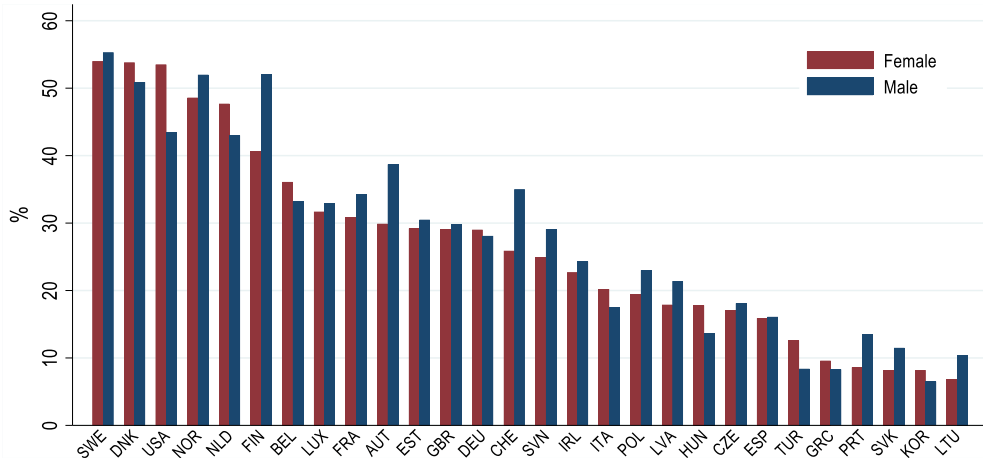


FIGURE A3. FLEXIBLE WORKING TIME ARRANGEMENTS BY GENDER IN 2015

Note: Incidence of employees aged 15–64 in percentage. Flexible working hours describe a work arrangement in which employees have full or partial control over their schedules, including cases where adjustments are allowed within certain limits (e.g., flexitime). Korean data are from 2017, while data for other countries are from 2015.

Source: OECD (2021), of which the calculations are based on the 4th, 5th and 6th European Working Conditions Survey (EWCS); the 1st, 3rd and 5th Korean Working Conditions Survey (KWCS); and the American Working Conditions Survey (AWCS) 2015.

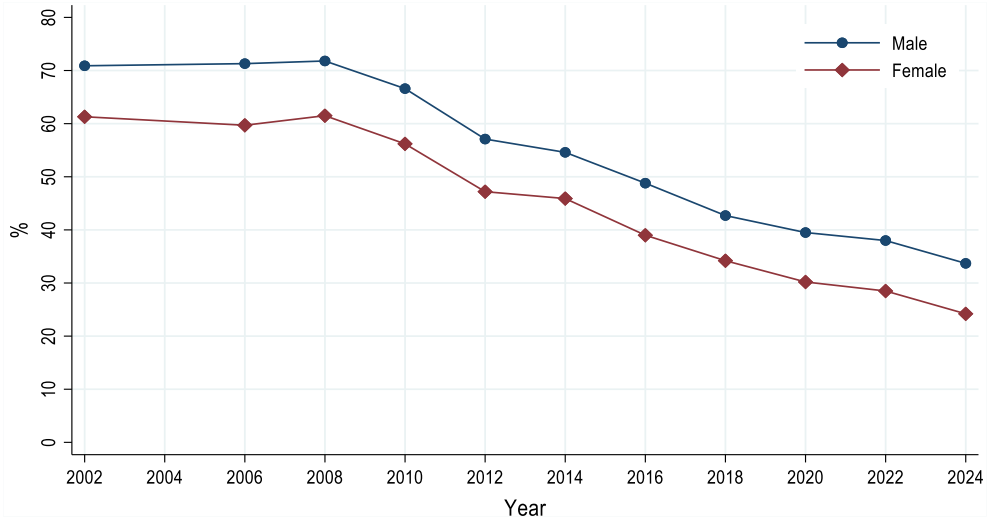


FIGURE A4. TRENDS IN PERCEPTIONS OF WOMEN’S ROLE IN HOUSEWORK

Note: Percentage of respondents aged 13 or over who believe the wife should be fully or primarily responsible for housework. Percentages are based on responses to the following survey question: “Who do you think should be responsible for housework?”

Source: Statistics Korea, Social Survey, 2002–2024

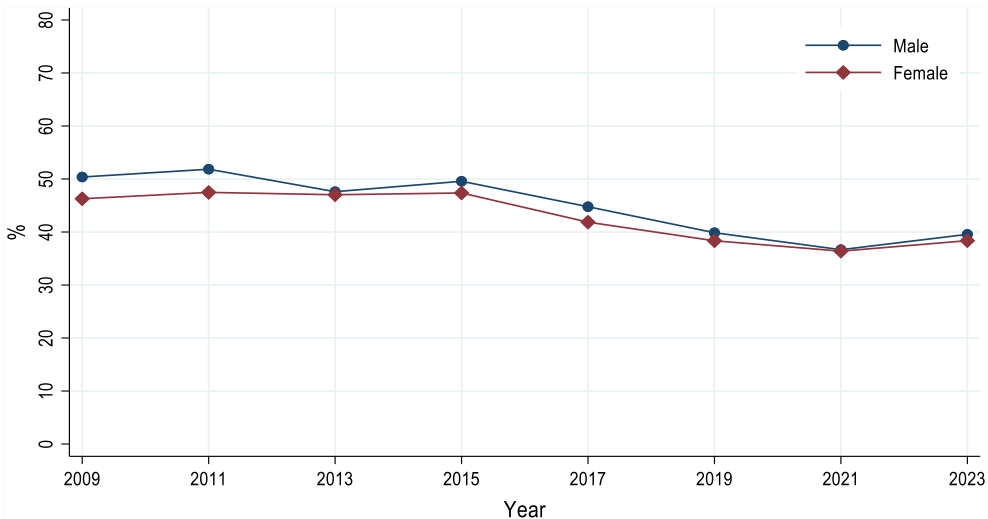


FIGURE A5. TRENDS IN PERCEPTIONS OF MOTHER’S EMPLOYMENT

Note: The percentage represents respondents who agree that women should prioritize housework or caregiving or should be employed only before childbirth or after their children have grown. Percentages are based on responses to the following survey question: “What is your view on women’s employment? If you have a positive view, when do you think is the most appropriate time for a woman to be employed?”

Source: Statistics Korea, Social Survey, 2009–2023

## REFERENCES

- Albanesi, Stefania, Claudia Olivetti, and Barbara Petrongolo.** 2023. "Families, labor markets and policy," In Shelly Lundberg and Alessandra Voena (eds.), *Handbook of the Economics of the Family*, 1(1): 255–326, Elsevier.
- Angelov, Nikolay, Per Johansson, and Erica Lindahl.** 2016. "Parenthood and the gender gap in pay," *Journal of Labor Economics*, 34(3): 545–579.
- Doepke, Matthias, Anne Hannusch, Fabian Kindermann, and Michèle Tertilt.** 2023. "The economics of fertility: A new era," In Shelly Lundberg and Alessandra Voena (Eds.), *Handbook of the Economics of the Family*, 1(1): 151–254, Elsevier.
- Goldin, Claudia.** 2025. "Babies and the macroeconomy," *Economica*, 92(367): 675–700.
- Goldin, Claudia, Sari Pekkala Kerr, and Claudia Olivetti.** 2022. "When the kids grow up: Women's employment and earnings across the family cycle," *NBER Working Paper* No. 30323.
- Hwang, Jisoo and Inkyung Yoo.** 2025. "The motherhood effect on earnings amid declining fertility: Evidence from Korea," *RFBerlin Discussion Paper* No. 57/25.
- Juhn, Chinhui and Kristin McCue.** 2017. "Specialization then and now: Marriage, children, and the gender earnings gap across cohorts," *Journal of Economic Perspectives*, 31(1): 183–204.
- Kim, Anna and Youjin Hahn.** 2022. "The motherhood effect on labor market outcomes: Evidence from South Korea," *Asian-Pacific Economic Literature*, 36(2): 71–88.
- Kim, MinSub.** 2023. *Work environment for work-family balance*, Policy Study Series 2023-09. Sejong: Korea Development Institute (in Korean).
- Kim, MinSub.** 2024. "Policy Directions to Enhance Women's Labor Market Participation," in Han, Joseph, Dohun Kim, MinSub Kim, and Jongkwan Lee (Eds.), *Study on the efficient utilization of human resources in the era of population decline*, Research Monograph Series 2024-04, 137–201, Sejong: Korea Development Institute (in Korean).
- Kleven, Henrik.** 2025. "The geography of child penalties and gender norms: A pseudo-event study approach," *NBER Working Paper* No. 30176.
- Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaard.** 2019. "Children and gender inequality: Evidence from Denmark," *American Economic Journal: Applied Economics*, 11(4): 181–209.
- Kleven, Henrik, Camille Landais, Johanna Posch, Andreas Steinhauer, and Josef Zweimüller.** 2019. "Child penalties across countries: Evidence and explanations," *AEA Papers and Proceedings*, 109: 122–126.
- Kleven, Henrik, Camille Landais, Johanna Posch, Andreas Steinhauer, and Josef Zweimüller.** 2024. "Do family policies reduce gender inequality? Evidence from 60 years of policy experimentation," *American Economic Journal: Economic Policy*, 16(2): 110–149.
- Kleven, Henrik, Camille Landais, and Gabriel Leite-Mariante.** 2025. "The child penalty atlas," *Review of Economic Studies*, 92(5): 3174–3207.
- Krapf, Matthias, Anja Roth, and Michaela Slotwinski.** 2020. "The effect of childcare on parental earnings trajectories," *CESifo Working Paper* No. 8764.
- Kwak, Eunhye.** 2020. *Analysis of the motherhood wage gap by wage level*, Research Series 2020-07. Sejong: Korea Labor Institute (in Korean).
- Lee, Jongkwan, Yujeong Lee, and Hee-Seung Yang.** 2025. "Mitigating child penalty: Grandparents' childcare and maternal labor supply in South Korea," *SSRN Working Paper* No. 5179349.
- Lim, Nayeon and Lisa-Marie Duletzki.** 2025. "The impact of early public childcare on child penalties," Working paper.
- OECD.** 2021. *OECD employment outlook 2021: Navigating the COVID-19 crisis and recovery*, Paris: OECD Publishing.
- Park, Jinseong.** 2023. "Long-term trends in labor supply by gender, 1981–2022," *Korea Review of Applied Economics*, 25(1): 65–116 (in Korean).
- Park, Narae.** 2021. "Is there a child penalty in South Korea?" Working paper.

- Sieppi, Antti and Jaakko Pehkonen.** 2019. “Parenthood and gender inequality: Population-based evidence on the child penalty in Finland,” *Economics Letters*, 182: 5–9.
- Yoo, Inkyung and Jungmin Lee.** 2020. “The effects of marriage and childbearing on labor market outcomes and subjective well-being among women,” *Korean Journal of Labor Economics*, 42(4): 35–86 (in Korean).

## LITERATURE IN KOREAN

- 곽은혜. 2020. 『임금수준별 모성 임금 격차 분석』, 연구보고서 2020-07, 한국노동연구원.
- 김민섭. 2023. 『일-가정 양립을 위한 근로환경』, KDI 정책연구시리즈 2023-09, 한국개발연구원.
- 김민섭. 2024. 「여성 인력 활용 제고를 위한 정책방향」, 한요섭·김도현·김민섭·이종관, 『인구감소 시대 인적자원의 효율적 활용을 위한 종합 연구』, KDI 연구보고서 2024-04, 한국개발연구원.
- 박진성. 2023. 「성별에 따른 노동공급의 장기 추세, 1981-2022」, 『응용경제』, 25(1): 65-116.
- 유인경·이정민. 2020. 「결혼과 출산이 여성의 노동시장 성과와 생활만족도에 미치는 영향」, 『노동경제논집』, 43(4): 35-86.