Marriage and Child Penalties: Evidence from South Korea

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Contents

Introduction

Introduction

Need for better utilization of female workforce owing to a contracting & aging labor force with a declining population

- Increase in women's labor force participation as an offset to labor supply decline caused by low fertility (Lee & Kim, 2019)
- Highly educated women as a potentially productive and competitive source of young labor

Constrained women's labor supply due to burden of housework and childcare associated with marriage and childbirth

- Marriage and child penalties: labor market disadvantages linked to marriage and parenthood

Introduction

Uncertain effectiveness of governments' family policies aimed at preventing women's career disruptions

- Parental leave, reduced working hours, subsidies for childcare, etc.
- Negative or null effects of extended parental leaves (Albanesi et al., 2023)
- Mixed evidence on expansive childcare provision (Kleven et al., 2024; Lim & Duletzki, 2025)

Effective governmental interventions to support female labor supply must:

- accurately estimate marriage and child penalties;
- understand primary determinants of such penalties.

This Paper

Estimates marriage and child penalties on labor market outcomes in Korea to:

- accurately estimate marriage and child penalties;
- understand primary determinants of such penalties.

Further explores policy implications by discussing potential factors that amplify these penalties, especially in the Korean context:

- Social norms within & without the home, working hours system, etc.

Korea: A Case in Point

Despite rapid population decline, women's labor supply remains constrained by substantial marriage and child penalties.

- Most acute case of low fertility and rapid population aging
  - lowest fertility rate: 0.72 in 2023
- Highly educated women leaving the labor market
  - highest proportion of tertiary-educated women: 76.6% in 2022
  - low female participation rate: 61.8%, 31st among 38 OECD countries
- Huge decline in female labor market outcomes after marriage/childbirth
  - 5th largest child penalty in employment among 134 countries (Kleven et al., forthcoming)
  - significant decline in female labor supply after marriage (Yoo & Lee, 2020)

Contribution

Empirical evidence on the existence of significant marriage penalties in Korea

- Importance of accounting for marriage penalties in child penalty estimation
- Estimates on child penalties could be exaggerated without considering marriage penalties.

Distinctive features of child penalties in Korea and subsequent policy implications:

- Substantial penalties along extensive margin (employment) while zero penalties along intensive margin (working hours or wages)
- Social norms against female labor supply, long and inflexible working hours

Data & Empirical Strategy

Data

Korean Labor and Income Panel Study (KLIPS), 1998-2021

- Women & men born in 1970 or later, married between 1999 and 2018
- Imbalanced panel: at least six years of observations, one year prior to marriage
- 17,509 individual-year observations (1,851 individuals)

Advantages of the KLIPS data:

- Representative of the population aged 15 or older
- Provide precise timing of marriage & childbirth
- Document labor market outcomes (i.e., employment status, working hours, labor income, etc.)
- Span a sufficiently long period both before and after marriage & childbirth

Data

Key labor market outcomes (Kleven, Landais, & Søgaard, 2019)

- Monthly earnings (labor income) measured based on primary job
  - wage workers – labor income
  - self-employed – business income
  - unemployed – recorded as zero
- Labor force participation (Extensive margin)
- Hours worked per week, Hourly wages (Intensive margin)

Descriptive Statistics

Table: Demographic Characteristics by Gender

Variables	**Female**		**Male**		**Total**	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	29.849	(4.703)	32.453	(4.989)	31.135	(5.018)
Age at first marriage	28.305	(3.488)	30.947	(4.038)	29.610	(3.994)
Age at first childbirth	29.528	(3.554)	31.994	(3.949)	30.713	(3.946)
Number of children	1.581	(0.818)	1.490	(0.863)	1.536	(0.841)
Observations	8,866		8,643		17,509	

Descriptive Statistics

Table: Labor Market Outcomes by Gender

Variables	Female		Male		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Labor force participation	0.584	(0.493)	0.921	(0.270)	0.751	(0.433)
Employment	0.561	(0.496)	0.893	(0.309)	0.725	(0.447)
Weekly hours worked	43.652	(10.807)	49.404	(11.572)	47.150	(11.622)
Hourly wage (10,000 KRW)	1.125	(0.610)	1.399	(0.661)	1.292	(0.655)
Observations	8,866		8,643		17,509	

Empirical Strategy: Marriage & Child Penalties

This paper aims to separately estimate Korea's marriage penalties and child penalties following the specification of Kleven et al. (forthcoming):

$$Y^g_{istc} = \sum_{j \neq -1} \lambda^g_j \mathbb{I}[j = t] + \sum_{k \neq -1} \theta^g_k \mathbb{I}[k = c] + \sum_a \phi^g_a \mathbb{I}[a = \text{age}_{is}] + \sum_y \psi^g_y \mathbb{I}[y = s] + \varepsilon^g_{istc}$$

- i:individual, s: year, t: marriage event time, c: childbirth event time, g: gender
- Y^g_{istc}: labor market outcomes
- $\mathbb{I}[j = t]$: marriage event-time dummies
- $\mathbb{I}[k = c]$: childbirth event-time dummies
- $\mathbb{I}[a = \text{age}_{is}]$: age dummies
- $\mathbb{I}[y = s]$: year dummies
- ε^g_{istc}: error term

Empirical Strategy: Marriage & Child Penalties

This paper aims to separately estimate Korea's marriage penalties and child penalties following the specification of Kleven et al. (forthcoming):

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- i:individual, s: year, t: marriage event time, c: childbirth event time
- λ^g_j: changes in outcomes before/after first marriage
- θ^g_k: changes in outcomes before/after first childbirth

⏩ Family Penalties

Empirical Strategy: Marriage & Child Penalties

Definition of marriage and child penalties:

$$\text{MarriagePenalty}_t \equiv \frac{\hat{\lambda}_t^g}{\mathbb{E}\left[\tilde{Y}_{istc}^g \mid t\right]} \tag{1}$$

$$\text{ChildPenalty}_c \equiv \frac{\hat{\theta}_c^g}{\mathbb{E}\left[\tilde{Y}_{istc}^g + \hat{\lambda}_t^g \mid c\right]} \tag{2}$$

$$\text{where } \tilde{Y}_{istc}^g \equiv \sum_a \hat{\phi}_a^g \, \mathbb{I}[a = \text{age}_{is}] + \sum_y \hat{\psi}_y^g \, \mathbb{I}[y = s] \tag{3}$$

- $\tilde{Y}_{istc}^g$: counterfactual outcome for i had (s)he neither married nor had a child
- $\tilde{Y}_{istc}^g + \hat{\lambda}_t^g$: counterfactual outcome for i had (s)he *married* but not had a child

Results

Marriage Penalties

Women: gradual decrease in earnings after marriage (long-run penalty: -25.4%)
Reduced labor force participation as main driver of marriage penalties

- Minimal marriage penalties on working hours or wages

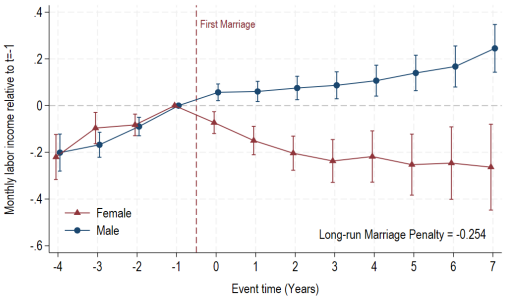

Figure: Labor income

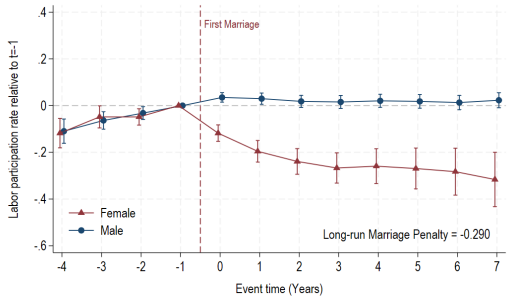

Figure: Participation

Marriage Penalties

Men: marriage premiums in both income and working hours

- Division of labor between spouses (i.e., market vs. home production)

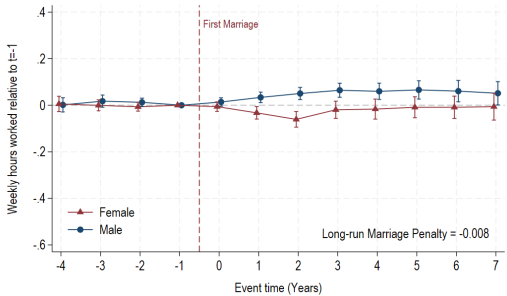

Figure: Hours worked

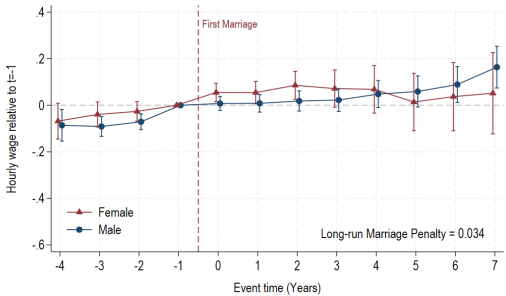

Figure: Hourly wage

Additional Analyses

Child Penalties

Women: sharp decrease in earnings immediately following childbirth
Driven almost entirely by reductions in labor force participation

- Gradual recovery in earnings and participation (long-run penalty: -25.8%, -25.1%)

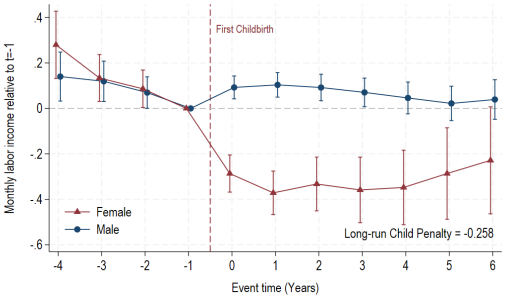

Figure: Labor income

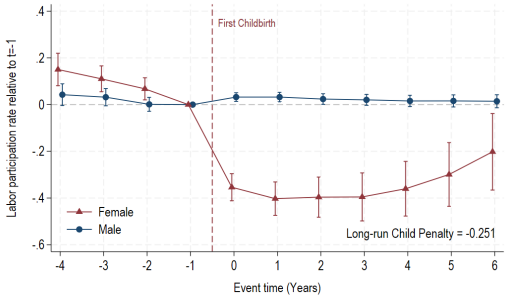

Figure: Participation

Child Penalties

Minimal child penalties on working hours and wages

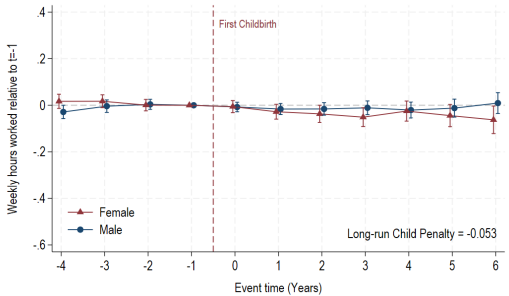

Figure: Hours worked

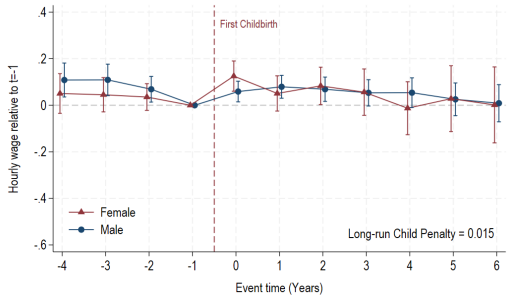

Figure: Hourly wage

Findings on Marriage & Child Penalties

Women's marriage penalties are comparable in magnitude to their child penalties.

- Smaller than child penalty estimates found in previous studies (e.g., Kim & Hahn, 2022)

Women's marriage and child penalties on labor income are substantial in Korea:

- Long-run marriage and child penalties: -25.4%, -25.8%
- Significantly larger than Scandinavian or English-speaking countries
- Comparable to German-speaking countries (Kleven et al., 2019)

Most of the penalties are driven by reduced female labor force participation.

- No changes in working hours or wages after marriage or childbirth
- Long and rigid working hours of permanent employees

⏩ Flexible working ⏩ Comparative Analyses

Findings on Marriage & Child Penalties

Marriage penalties persist in the long run:

- Division of labor between spouses, personal preference, discrimination, etc.
- Patriarchal gender norms on married women

Child penalties gradually recover in the long run:

- Social norms on motherhood: childcare burden
- Rigid working hours, limited childcare services, etc.
- Arguably reflect more involuntary career disruption than marriage penalties do

Changes in Marriage & Child Penalties

Comparison between marriage & child penalties for individuals married before 2010 vs. 2010 or later:

$$
\begin{aligned}
Y_{istc}^{g} = & \sum_{j \neq -1} \zeta_{j}^{g} \mathbb{I}[j = t] + \sum_{k \neq -1} \eta_{k}^{g} \mathbb{I}[k = c] + \mathbb{I}[s - t \geq 2010] \\
& + \sum_{l \neq -1} \pi_{l}^{g} \mathbb{I}[l = t] \cdot \mathbb{I}[s - t \geq 2010] + \sum_{m \neq -1} \mu_{m}^{g} \mathbb{I}[m = c] \cdot \mathbb{I}[s - t \geq 2010] \\
& + \sum_{a} \psi_{a}^{g} \mathbb{I}[a = \mathsf{age}_{is}] + \sum_{y} \omega_{y}^{g} \mathbb{I}[y = s] + \nu_{istc}^{g}
\end{aligned}
\tag{4}
$$

- π_{l}^{g}, μ_{m}^{g}: changes in effects of marriage and motherhood between cohorts

Changes in Marriage & Child Penalties

Changes in marriage and child penalties:

$$\Delta\text{MarriagePenalty}_t \equiv -\frac{\hat{\pi}_t^g}{\mathbb{E}\left[\tilde{Y}_{istc}^g \mid t\right]}$$

$$\Delta\text{ChildPenalty}_c \equiv -\frac{\hat{\mu}_c^g}{\mathbb{E}\left[\tilde{Y}_{istc}^g + \hat{\zeta}_j^g \mid c\right]}$$

- $\tilde{Y}_{istc}^g$: counterfactual outcome for i had (s)he neither married nor had a child
- $\tilde{Y}_{istc}^g + \hat{\zeta}_j^g$: counterfactual outcome for i had (s)he married but not had a child

Changes in Marriage Penalties

Decreased marriage penalty on earnings for the recent cohort

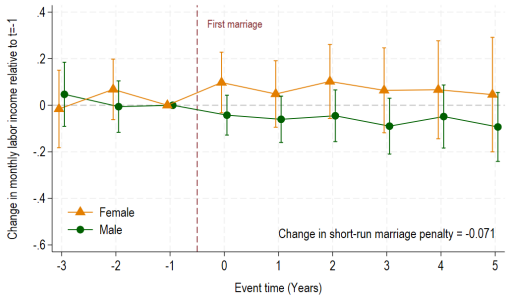

Figure: Labor income

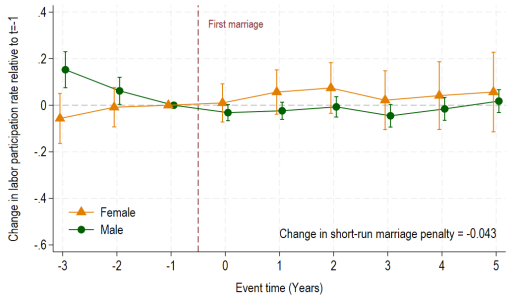

Figure: Participation

Changes in Marriage Penalties

Decrease in marriage penalty is:

- mainly driven by the increase in married women's wages;
- moderately driven by the increase in their participation.

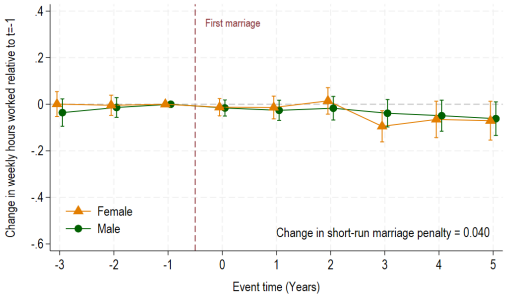

Figure: Hours worked

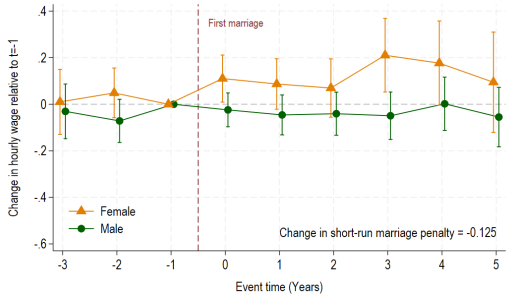

Figure: Hourly wage

Changes in Child Penalties

16.8%p increase in child penalty on earnings for the recent cohort

- No change in child penalties in terms of participation

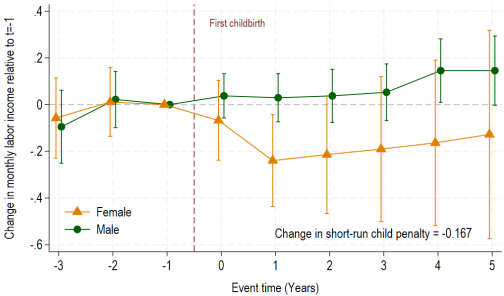

Figure: Labor income

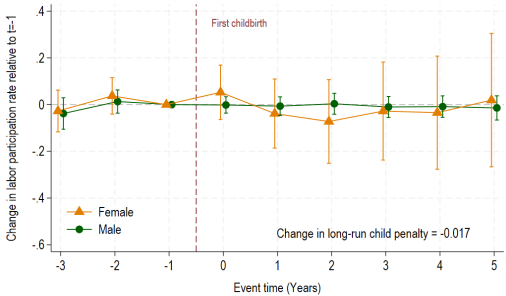

Figure: Participation

Changes in Child Penalties

Increase in child penalties driven by larger wage loss of the recent cohort

- Zero change in terms of working hours

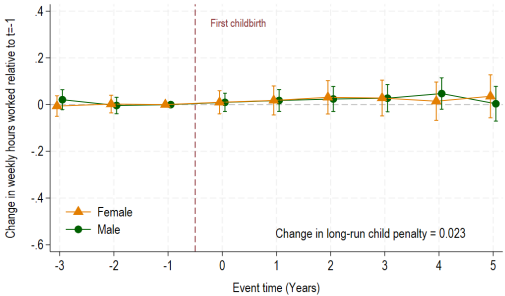

Figure: Hours worked

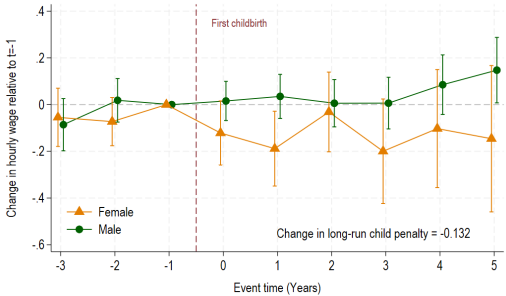

Figure: Hourly wage

Findings on Changes in Marriage & Child Penalties

Decrease in marriage penalties on earnings for women of the recent cohort

- Driven by higher wages of the recent cohort

Increase in women's child penalties for the recent cohort

- Driven by larger wage loss of the recent cohort
- Increased parental leave take-up and changes in selection into motherhood (Hwang & Yoo, 2025)

No change in child penalties in terms of mothers' labor supply

- Neither in extensive nor intensive margin

Findings on Changes in Marriage & Child Penalties

Decrease in marriage penalties suggests that married women became more likely to

- remain in the labor market;
- earn higher wages.
- Greater educational attainment, stronger preferences for career, etc.

Increase in child penalties implies that mothers

- still exit the labor market after childbirth;
- forfeit wages that exceed those of previous cohorts.
- Persistent social norms on motherhood, etc.

⏩ Social Survey on Gender Roles

Conclusion

Conclusion

Significant marriage penalties for women:

- Comparable in magnitude to child penalties
- Social norms against married women's labor supply

Substantial sum of marriage and child penalties:

- Constrained labor supply of mothers due to childcare
- Large opportunity cost of having and raising a child

Such penalties are entirely on employment with null effects on working hours or wages.

- Suggests that long and rigid working hours amplify the penalties

Conclusion

Existing evidence of social norms as a key driver of child penalties

- Kleven et al. (2019), Kleven (2025)

Decreased marriage penalty vs. increased child penalty

- Changes in gender norms favoring married women's economic achievement
- Persistent social norms on motherhood

Near-zero change in marriage & child penalties on female labor supply

- Insufficient effectiveness of family policies in 2010s

Conclusion

Critical role of social norms and labor market structures in family policy effectiveness (Doepke et al., 2023)

Policy expansion in conjunction with reformation of social norms and labor market institutions

Pressing need to strengthen public recognition of women's economic participation

- Within the household: greater involvement of men in housework and childcare
- In the workplace: parental leave and reduced working hours for both parents

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(Appendix) Empirical Strategy: Family Penalties

Estimation of family penalties (marriage+child penalties) adopting the event study methodology proposed by Kleven, Landais, & Søgaard (2019):

$$Y_{ist}^{g} = \sum_{j \neq -1} \gamma_{j}^{g} \mathbb{I}[j = t] + \sum_{a} \beta_{a}^{g} \mathbb{I}[a = \text{age}_{is}] + \sum_{y} \delta_{y}^{g} \mathbb{I}[y = s] + \phi_{ist}^{g} \tag{5}$$

- i:individual, s: year, t: event time, $g \in \{f, m\}$: gender
- Y_{ist}^{g}: labor market outcomes
- $\mathbb{I}[j = t]$: event-time dummies (event: first marriage of i)
- $\mathbb{I}[a = \text{age}_{is}]$: age dummies
- $\mathbb{I}[y = s]$: year dummies
- ϕ_{ist}^{g}: error term

Main Specification

(Appendix) Empirical Strategy: Family Penalties

Definition of family penalty:

$$\text{FamilyPenalty}_t^g \equiv \frac{\hat{\gamma}_t^g}{\mathbb{E}\left[\tilde{Y}_{ist}^g \mid t\right]} \tag{6}$$

$$\text{where } \tilde{Y}_{ist}^g \equiv \sum_a \hat{\beta}_a^g \mathbb{I}[a = \text{age}_{is}] + \sum_y \hat{\delta}_y^g \mathbb{I}[y = s] \tag{7}$$

- $\tilde{Y}_{ist}^g$: counterfactual outcome for i had (s)he not married
- family penalty $\approx$ marriage penalty + child penalty

(Appendix) Family Penalties

Substantial and persistent family penalty on earnings for women (Yoo & Lee, 2020):

- Long-run family penalty on labor income: -49.5%

Most share of the penalty stems from labor market participation (extensive margin).

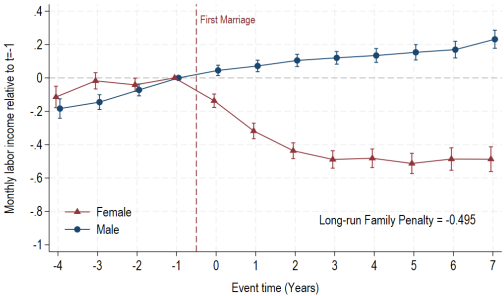


Figure: Labor income

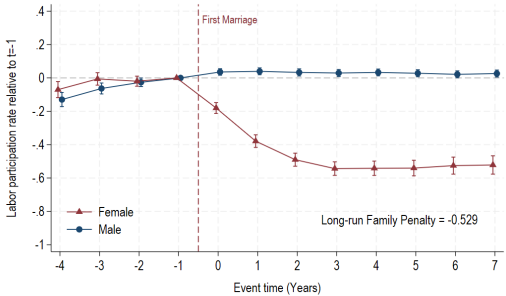


Figure: Participation

(Appendix) Family Penalties

Relatively small family penalties on working hours and wages (intensive margin):

- Long-run family penalty on working hours and wages: -4.8%, 2.4%

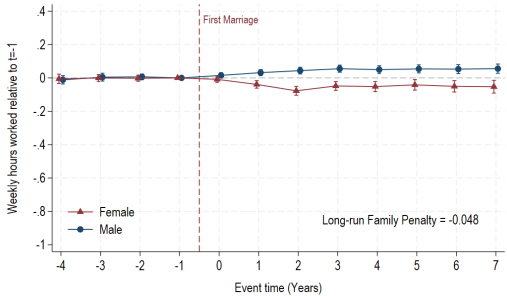


Figure: Hours worked

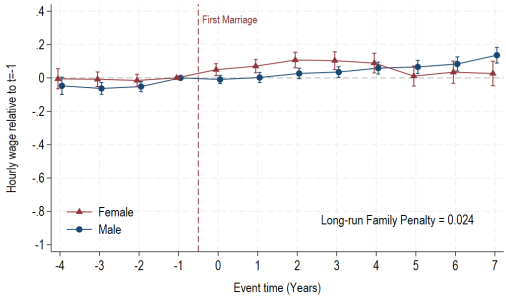
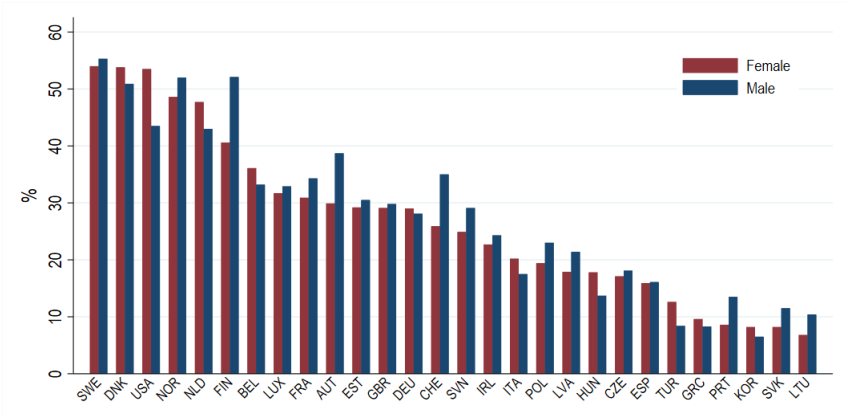


Figure: Hourly wage

(Appendix) Flexible Working Time Arrangements

The % of employees aged 15-64 who have full or partial control over their schedules, including cases where adjustments are allowed within certain limits (e.g., flexitime).



Main Findings

Figure: Flexible working time arrangements by gender

(Appendix) Trends in the Perceptions of Gender Roles

According to a national social survey, the percentage of respondents who believe the wife should be primarily responsible for housework is consistently decreasing.
On the other hand, the percentage of respondents who agree that women should prioritize caregiving over employment stays persistent.

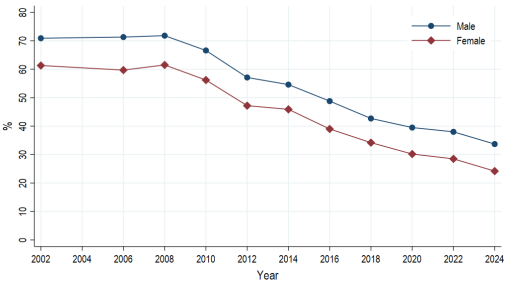


Figure: Housework

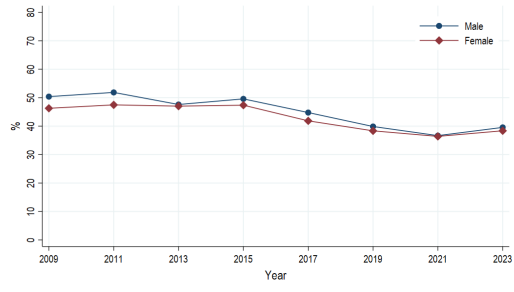


Figure: Mothers' employment

Change in Penalties

(Appendix) Child Penalties across Developed Countries

Kleven et al. (2019)

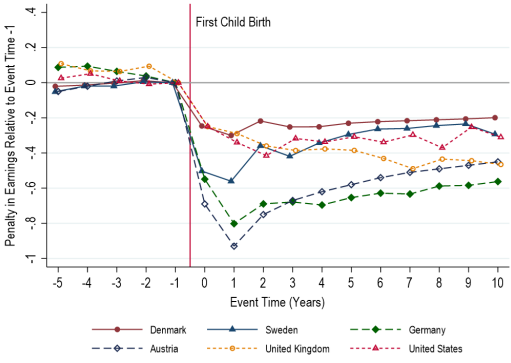


Figure: Labor Income

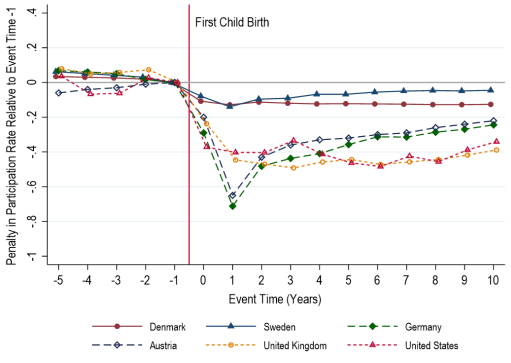


Figure: Participation

Main Findings

(Appendix) Child Penalties across Developed Countries

Family penalties ≈ marriage penalty + child penalty in Korea

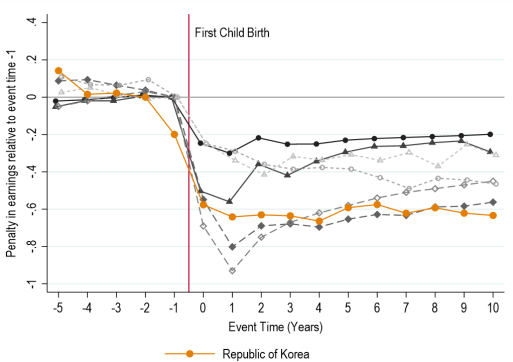


Figure: Labor Income

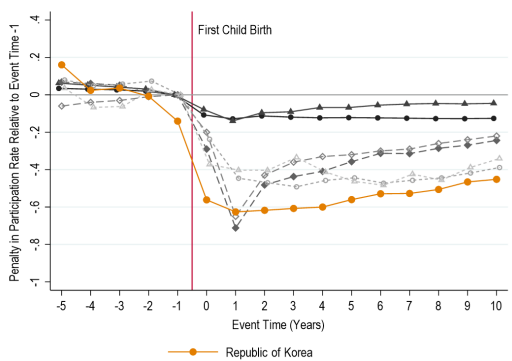


Figure: Participation

Main Findings

(Appendix) Marriage Penalties of Childless Couple

Childless couples during the analysis period

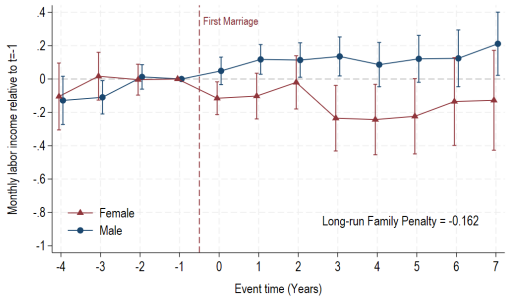


Figure: Labor Income

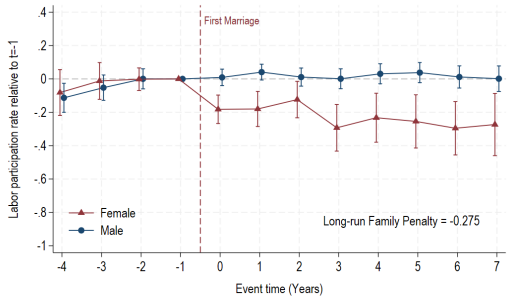


Figure: Participation

⏩ Marriage Penalties

(Appendix) Marriage Penalties of Childless Couple

Couples who have the first child three or more years after the marriage (including childless couple)

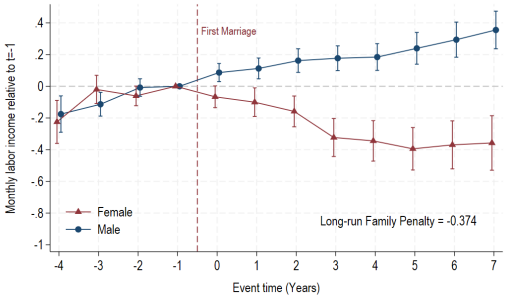


Figure: Labor Income

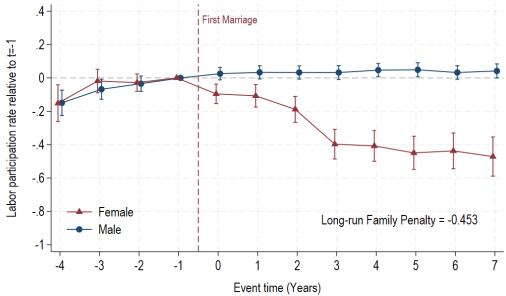


Figure: Participation

Marriage Penalties