The Dual Labour Market and the Motherhood Employment Penalty in Japan

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February 25, 2026

The Puzzle

Japan offers up to two years of paid parental leave, including one of the longest father-specific entitlements in the OECD (31 weeks) (OECD, 2024c). Yet maternal employment when the youngest child is under three

remains far below the OECD benchmark ($\approx$ 30 p.p. in the latest comparison) (OECD, 2024a).

If the policy infrastructure exists, why do women still leave?

In this paper, I show that the key margin is job type: formal eligibility exists, but continuity through childbirth is much weaker in non-regular tracks.

Regular = open-ended, internal career track jobs; non-regular = fixed-term/part-time/dispatch jobs.

What This Paper Is and Isn't

What it is:

- Descriptive event study of 662 first births (KHPS/JHPS, 2004–2022)
- Predictive risk stratification: which jobs predict exit?
- Transparent about what is robust, what is fragile, and what is interpretive

What it is not:

- Not a causal identification design
- Not administrative data (household panel, N=662)
- Not nationally weighted (sample-average trajectories)

If you take one thing away: the penalty is concentrated in jobs with weaker contractual protections.

Japan's Dual Labour Market

Regular (seishain)

- Open-ended contracts
- Seniority wages, firm training
- Strong de facto job protection
- Leave is exercisable

Non-regular (hi-seiki)

- Fixed-term, part-time, dispatch
- Flat wages, limited progression
- Contracts can lapse at/around leave
- Leave is formally available but fragile

- Over 50% of employed women hold non-regular contracts
- Small firms face tighter staffing, and it's harder to accommodate leave
- Spousal tax thresholds (103/130 man-yen) cap re-entry earnings
- Husbands work 47+ hrs/week - near-zero paternal caregiving adjustment

Sources: OECD (2024b), Genda (2005), Piotrowski et al. (2015)

Data and Sample I

Data: Harmonised KHPS/JHPS household panels, 2004–2022.

Sample: 1,184 first births $\rightarrow$ 662 in event window $\rightarrow$ 5,212 person-years

- KHPS (since 2004) and JHPS (since 2009) are nationally fielded household panels with harmonised core labour variables; I pool them using the official harmonisation framework and verify robustness to survey source (KHPS vs JHPS split).
- Panel support is unbalanced over event time (women observed: 186 at $t = -5$, 662 at $t = 0$, 454 at $t = +5$).

Data and Sample II

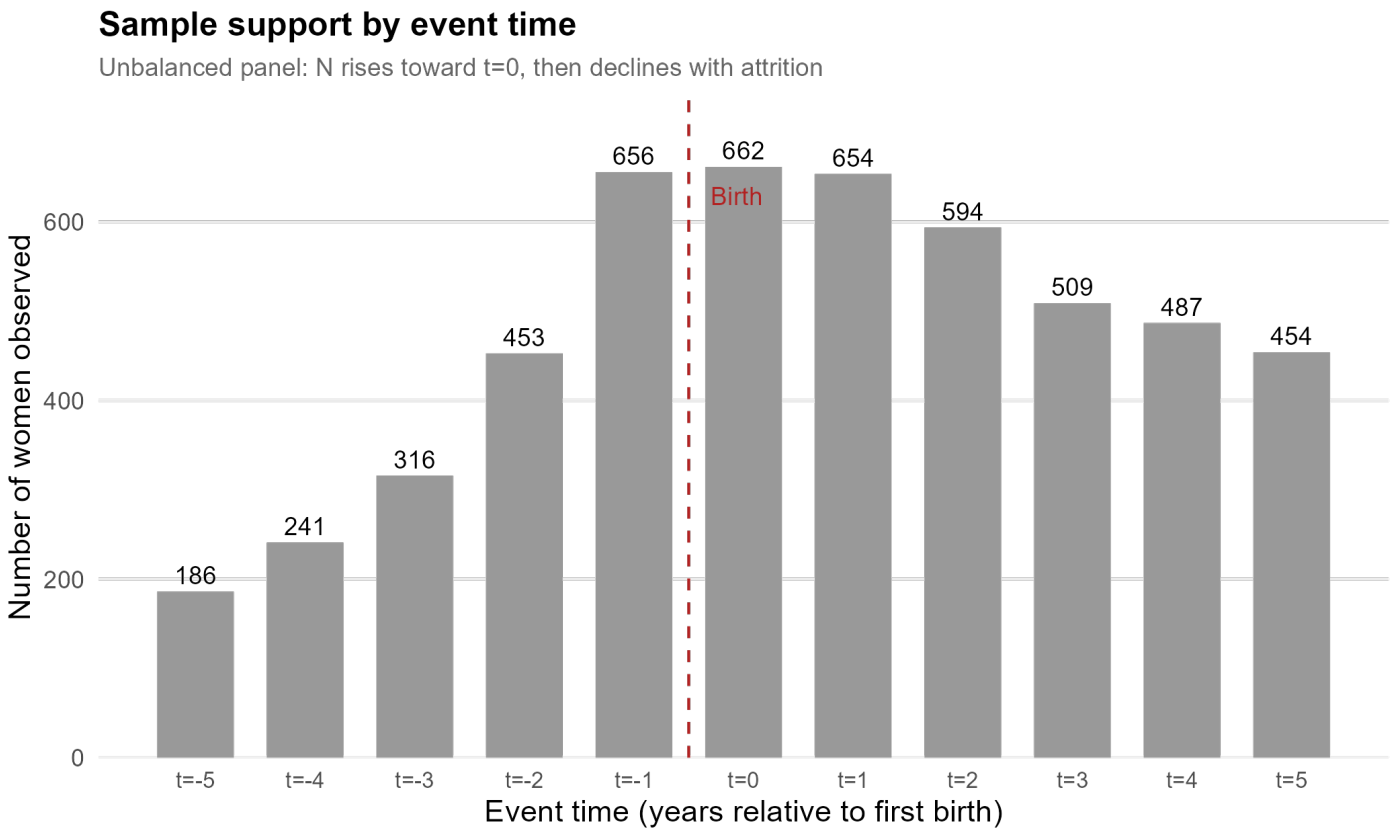


Figure: Event-time support in the unbalanced panel. Support peaks around childbirth and thins in far leads/lags, motivating primary interpretation in $[-2, +2]$.

Specification and Estimand

Specification:

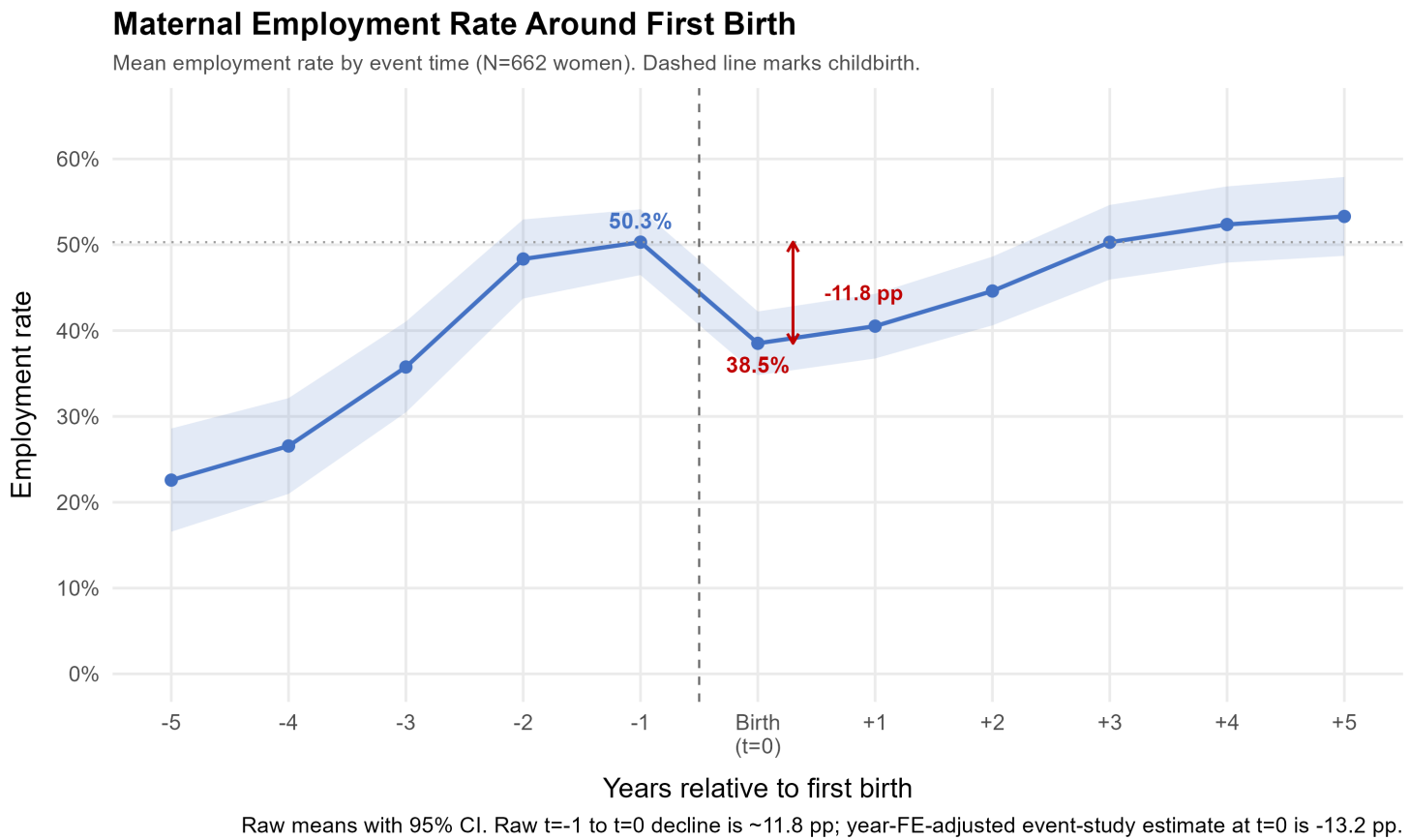
$$Y_{it} = \sum_{k \neq -1} \beta_k \mathbf{1}\{\text{event\_time}_{it} = k\} + \gamma_t + \varepsilon_{it}$$

- Y_{it}: outcome for woman i in survey year t; β_k: event-time coefficients relative to $t = -1$; γ_t: calendar-year fixed effects.
- Calendar-year FE, heteroskedasticity-robust SEs; woman-clustered SEs give the same qualitative inference.
- No individual FE in the main specification: individual FE + year FE = collinearity and inflated SEs in this short unbalanced panel. Point estimates are similar, but inference becomes uninformative.

Estimand: Descriptive sample-average event-time trajectories in this analytic panel (not within-person causal treatment effects).

Interpretation strategy: Focus on $[-2, +2]$, where support is strongest; treat far leads/lags as composition-sensitive diagnostics.

Result 1: The Birth-Year Break

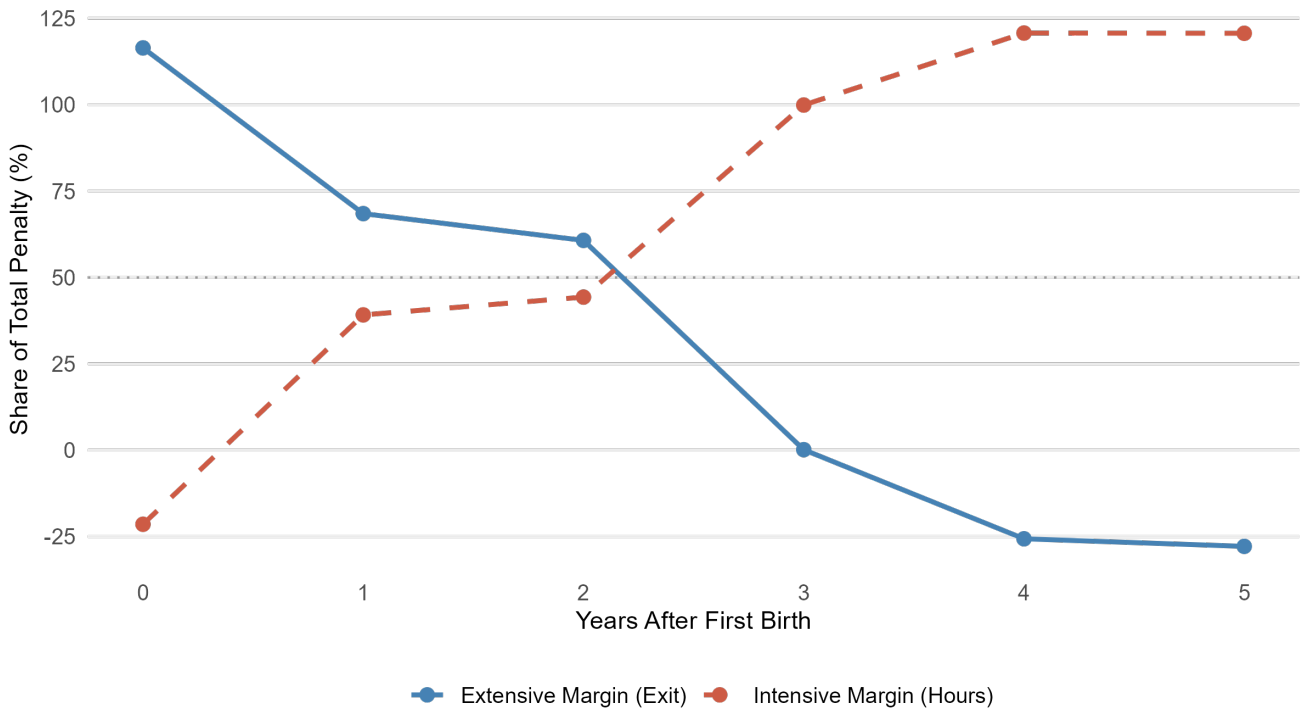


Raw employment levels shown; the year-FE-adjusted drop at $t = 0$ is -13.2 pp.
Employment is flat at $t = -2$. Then it drops from 50.3% to 38.5% at birth.
The pre-birth rise is life-cycle entry, not a pre-trend. The far leads are composition, not anticipation.

But the Recovery Is an Illusion

Figure 8: Decomposition Shares Over Time

Share of total penalty attributable to each margin. Negative = employment recovery exceeds baseline.



The composition of the penalty flips over time: the extensive margin (employment exit) explains most of the gap right after birth, but by $t = +3$ the intensive margin (hours/wage losses among returners) becomes dominant and remains so through $t = +5$.

Result 2a: Who Exits at Childbirth? (Risk Profile)

Risk set: women employed at $t = -1$, observed at $t = 0$ (N=330; 124 exits).

Short answer: women in non-regular jobs.

- Exit risk is much lower in protected jobs and much higher in precarious jobs.
- Regular workers in large firms: **13.8%** exit.
- Non-regular workers in small firms: **64.8%** exit.
- Household-side variables add little once job type is included.

Result 2b: Model Summary and Robustness

Model summary

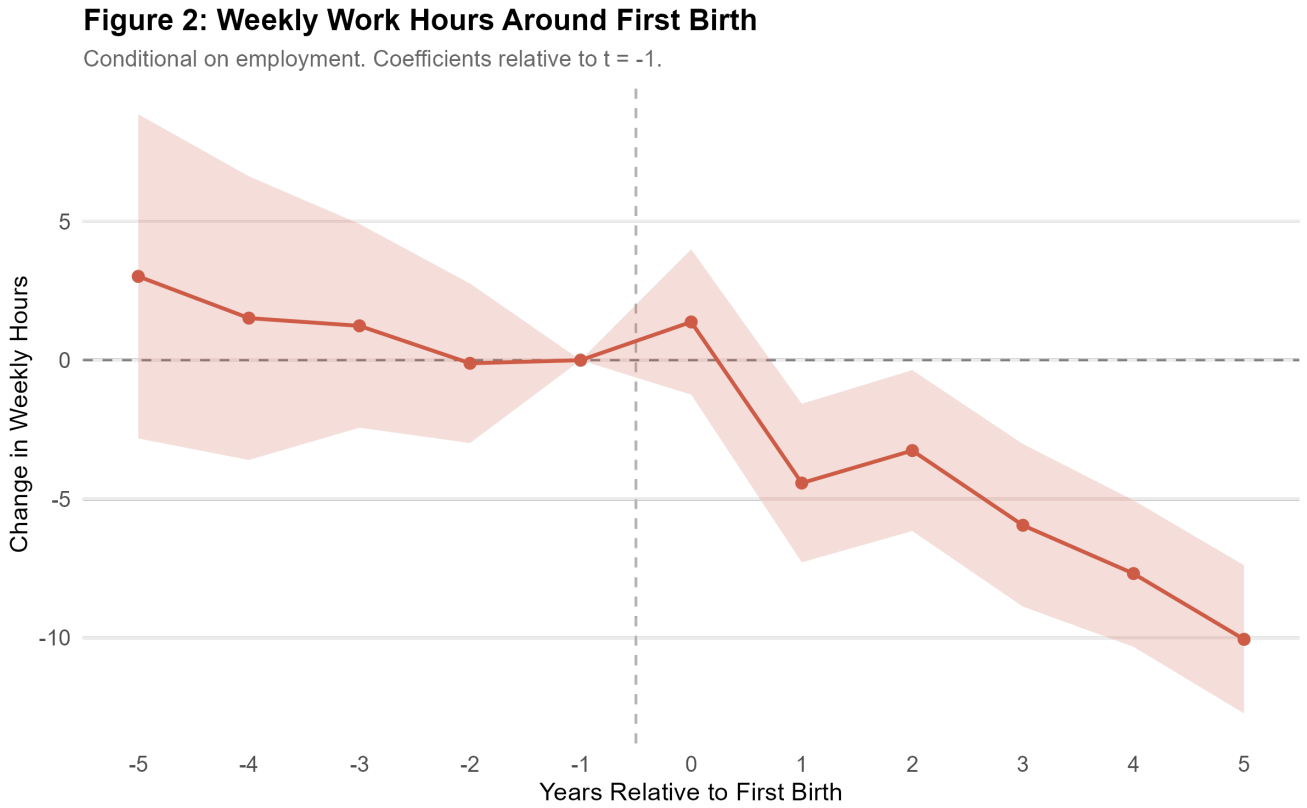
- Non-regular status: strong predictor of childbirth-margin exit (OR $= 7.50$, $p < 0.001$).
- Small-firm effect: positive but less precise (OR $= 1.55$, $p = 0.126$).

Robustness to missing-data handling

- Complete-case OR: 7.50
- Missing-indicator OR: 7.48
- High-information OR: 7.39

Takeaway: the non-regular gradient is stable across specifications, so this is not a missing-data artifact.

Result 3a: Persistent Hours Losses



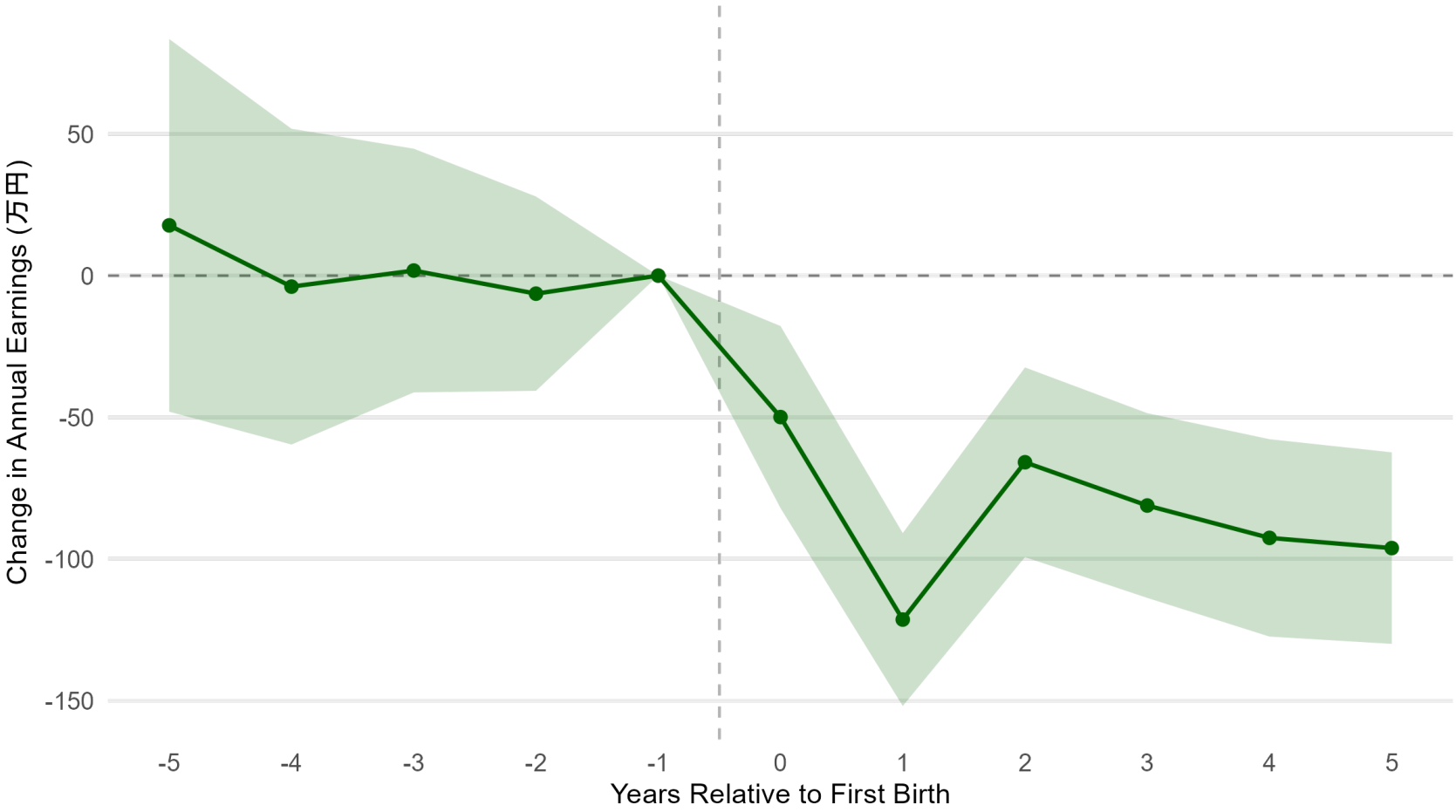
Conditional on employment (relative to $t = -1$):

- Coefficients are changes in weekly hours versus the pre-birth reference year.
- By $t = +5$: -10.1 hours/week, about a 30% decline from the $t = -1$ baseline of 34.1.

Result 3b: Persistent Earnings Losses I

Figure 3: Annual Earnings Around First Birth

Conditional on employment. Units: 万円 (10,000 yen). Relative to t = -1.



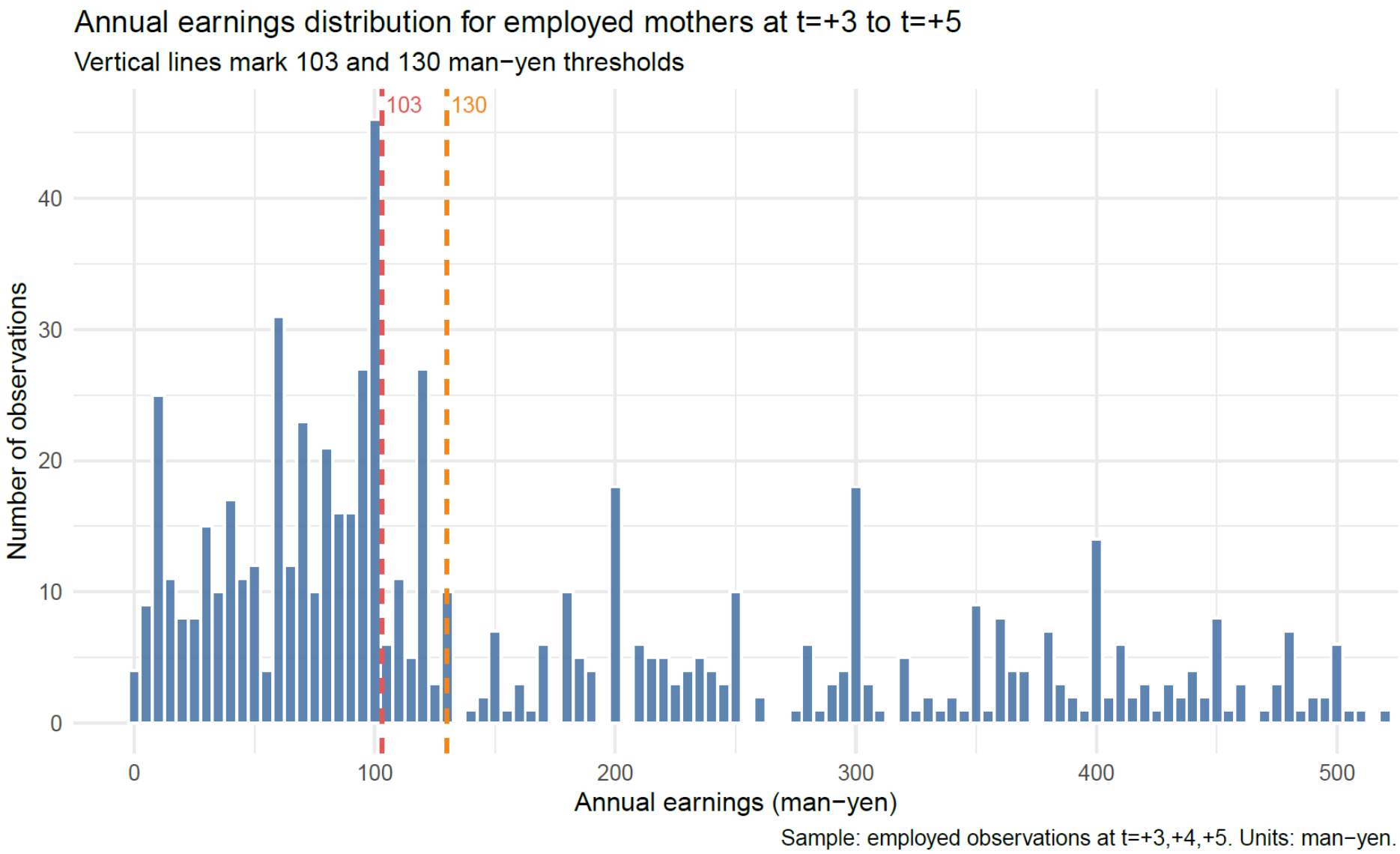
Result 3b: Persistent Earnings Losses II

Conditional on employment (relative to $t = -1$):

- Earnings fall more than hours and do not recover within five years.
- By $t = +5$: -96.2 man-yen (about a 36% decline from baseline 268.9; implied level ≈ 172.7).
- Implied hourly wage also declines (-7.1%), consistent with lower-quality re-entry.

Unconditional outcomes (coding 0 when non-employed) show the same qualitative pattern.

Result 4: Earnings Bunching at Tax Thresholds I



Result 4: Earnings Bunching at Tax Thresholds II

- Among employed mothers at $t = +3$ to $t = +5$, **47.8%** earn ≤ 103 man-yen.
- In the same window, **55.9%** earn ≤ 130 man-yen.
- These thresholds are salient secondary-earner tax/social-insurance benchmarks.
- Net-cost jumps around these points can reduce incentives to increase hours, reinforcing low-hours re-entry.

Notes: Shares are my calculations from KHPS/JHPS returners at $t = +3$ to $t = +5$. Threshold definitions follow OECD (2024b) and Nagase (2012).

Evidence Hierarchy: What Is Solid vs Cautious

Most credible

- Sharp childbirth break in employment at $t = 0$ (-13.2pp).
- Near lead at $t = -2$ is close to zero.
- Childbirth-margin exit risk is strongly stratified by non-regular status (OR ≈ 7.5).

Credible but more sample-sensitive

- Long-horizon ($t = +5$) levels and recovery magnitudes.
- Small-firm effects conditional on contract type.

Interpretive context (not separately identified)

- Childcare logistics, paternal-hours narrative, and institutional mechanisms.

Full stability map and all diagnostics are in backup (placebo, IPW, balanced panel, leave recoding, missingness sensitivity, clustered SE, cohort split, Lee-style trimming).

Implications

The penalty begins as exit and transforms into permanent downgrade. Policy implications consistent with the descriptive evidence:

1. **Protect non-regular workers** - ensure leave rights survive contract renewal
2. **Support small firms** - replacement-hiring subsidies, simplified leave admin
3. **Address men's overwork** - near-zero paternal adjustment in this sample
4. **Break the re-entry trap** - training subsidies are invisible ($<3\%$ usage); fiscal thresholds cap earnings

Bottom line: Expanding childcare and leave helps workers who already hold secure jobs. The binding constraint is labour-market structure - the divide between jobs that can accommodate parenthood and jobs that cannot.

Thank you

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Paper, code, and all robustness tables available on request.

References I

Genda, Y. (2005). *A nagging sense of job insecurity: The new reality facing Japanese youth*. International House of Japan, Tokyo.

Nagase, N. (2012). Japanese female labor supply and the tax/social insurance system. *Japanese Journal of Labour Studies*, 54(12):12–25.

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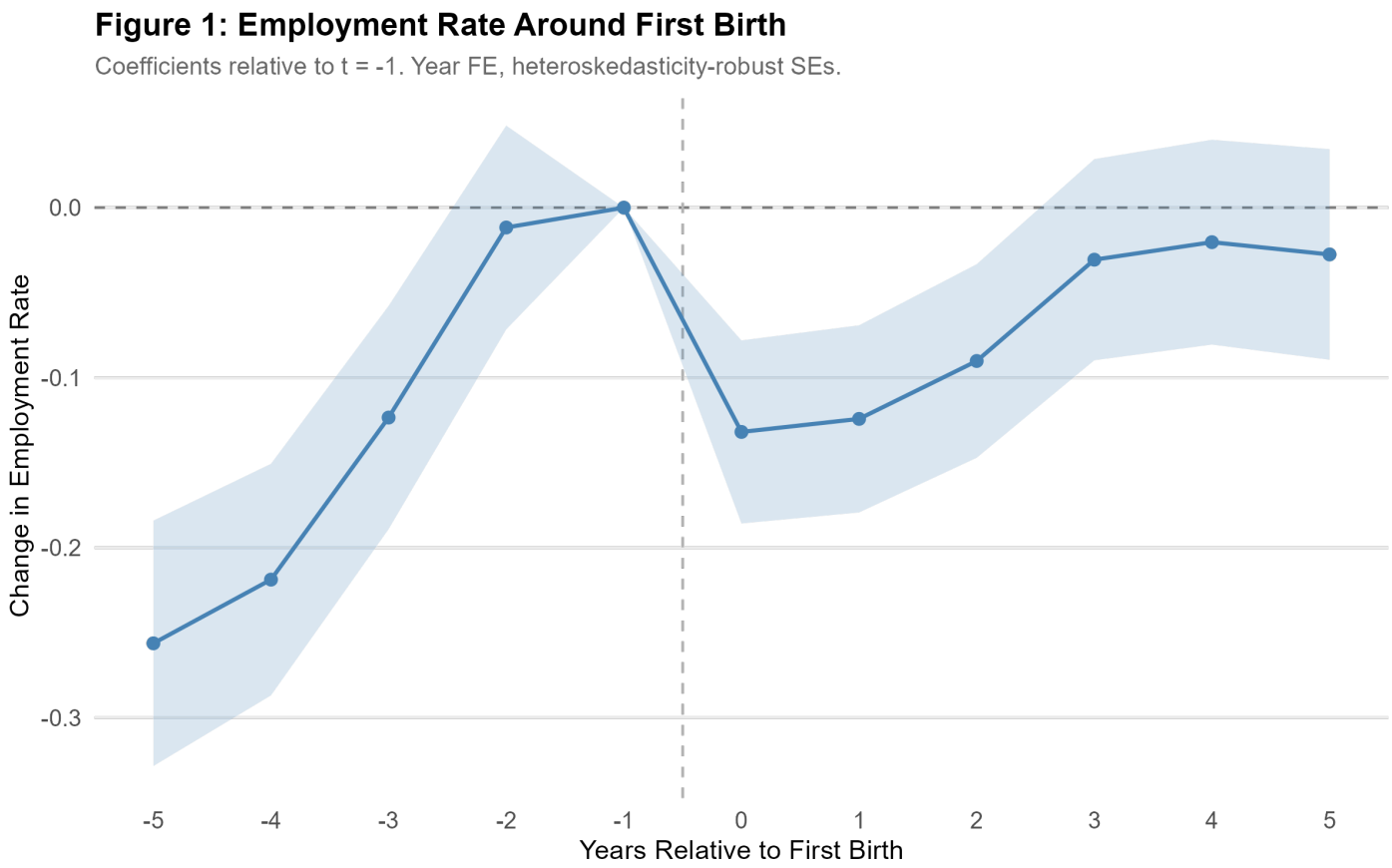
Piotrowski, M., Kalleberg, A., and Rindfuss, R. R. (2015). Contingent work rising: implications for the timing of marriage in Japan. *Journal of Marriage and Family*, 77(5):1039–1056.

Backup: Summary Statistics at $t = -1$

	Full Sample (N=662)	Quitters (N=29)	Stayers (N=262)
Employed (%)	50.3	55.2	61.0
Full-time (%)	30.9	31.0	36.7
Part-time (%)	19.4	24.1	24.3
Hours/week (mean)	34.1	32.5	33.4
Income, man-yen (mean)	268.9	148.4	302.7

Backup: Coefficient Event Study



Standard event-study coefficients relative to $t = -1$. Year FE, robust SEs.

Backup: Pre-Trend Diagnostics

The near lead at $t = -2$ is null across four specifications:

- Full sample: -0.012, $p = 0.70$
- Trimmed pre-period (drop $t = -5, -4, -3$): $p = 0.72$
- Balanced pre-support: $p = 0.078$
- With KHPS/JHPS dataset indicator: $p = 0.71$

Matched childless placebo: $t = 0$ coefficient $= +0.016$, $p = 0.608$.
Joint far-lead test: $p = 0.749$.

Backup: Cohort Split and COVID

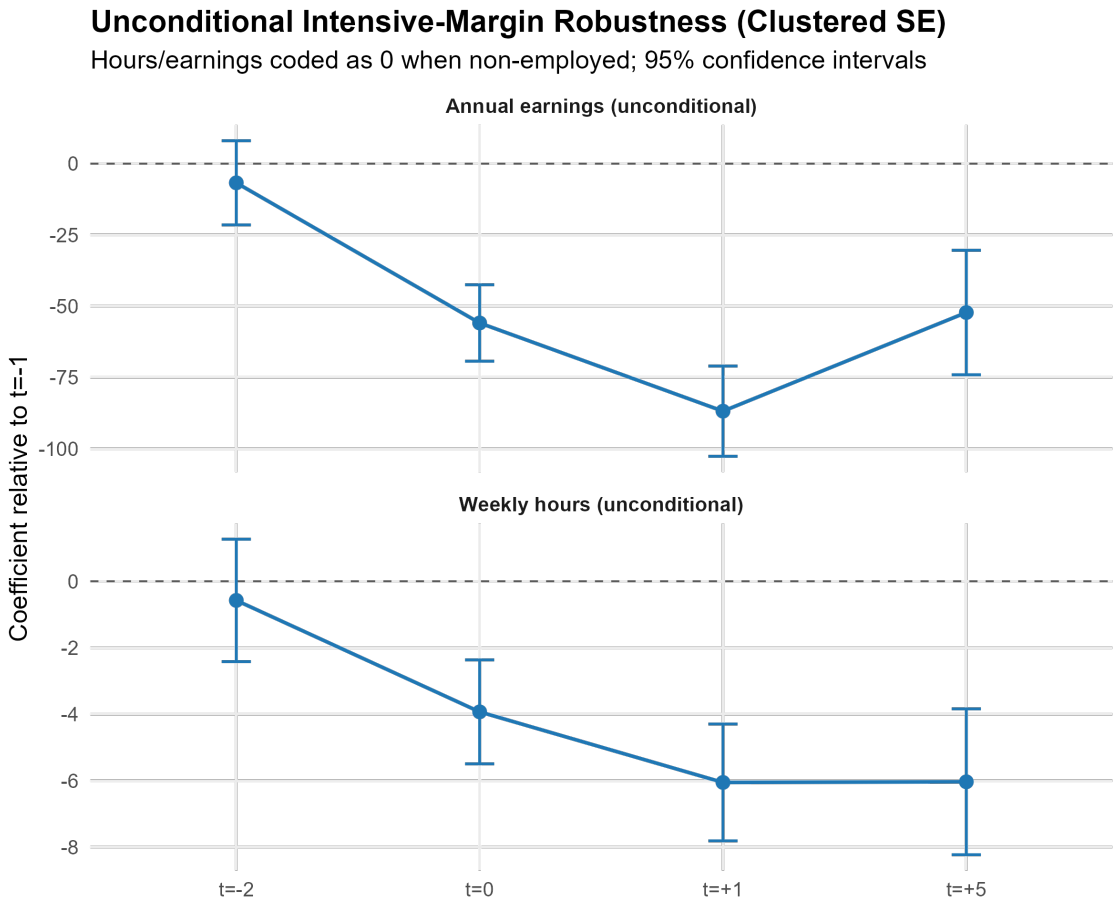
	$t = -2$	$t = 0$	$t = +5$
Pooled	-0.012 ($p = 0.70$)	-0.132 ($p < 0.001$)	-0.028 ($p = 0.38$)
Early ($\leq$2012)	$+0.020$ ($p = 0.63$)	-0.131 ($p < 0.001$)	-0.020 ($p = 0.66$)
Late ($\geq$2013)	-0.063 ($p = 0.19$)	-0.135 ($p = 0.002$)	-0.025 ($p = 0.66$)
No-COVID	-0.004 ($p = 0.91$)	-0.145 ($p < 0.001$)	-0.028 ($p = 0.40$)

The birth-year break is virtually identical across cohorts and unaffected by excluding 2020–2022.

Backup: IPW and Attrition

- Observability at $t = +5$ is weakly selective on baseline employment ($p = 0.045$)
- IPW reweighting:
  - Near lead: unchanged
  - Birth-year break: unchanged (-0.136, $p < 0.001$)
  - $t = +5$: shifts to -0.057 ($p = 0.076$) - more negative
- Balanced panel ($t = -2$ to $t = +1$, N=662, 2,648 obs): core coefficients preserved

Backup: Unconditional Outcomes



Standard event-study coefficients relative to $t = -1$. Year FE, robust SEs. Coding 0 for non-employed preserves the post-birth declines and near-lead null.

Backup: Missingness Sensitivity (Profile)

Table: Missingness profile for mechanism covariates in the childbirth-margin risk set (employed at $t = -1$, observed at $t = 0$).

Covariate missingness	N	Share of risk set	Exit rate at $t = 0$
Contract type missing	36	0.109	0.444
Firm size missing	16	0.048	0.750
Either missing	48	0.145	0.500

Notes: Risk-set size is $N = 330$ women. Exit is defined as non-employment at $t = 0$ among women employed at $t = -1$.

Backup: Missingness Sensitivity (Mechanism)

Table: Childbirth-margin mechanism sensitivity to missing-data handling.

Specification	N	Exits	OR Non-regular	p	OR Small firm	p
Complete-case	282	100	7.505	0.000	1.548	0.126
Missing-indicator	330	124	7.476	0.000	1.289	0.345
High-information	237	83	7.393	0.000	1.860	0.047

Notes: High-information sample requires non-missing contract type, firm size, commute indicator, and husband's overwork indicator at $t = -1$. Missing-indicator specification includes missing dummies for contract and firm size.

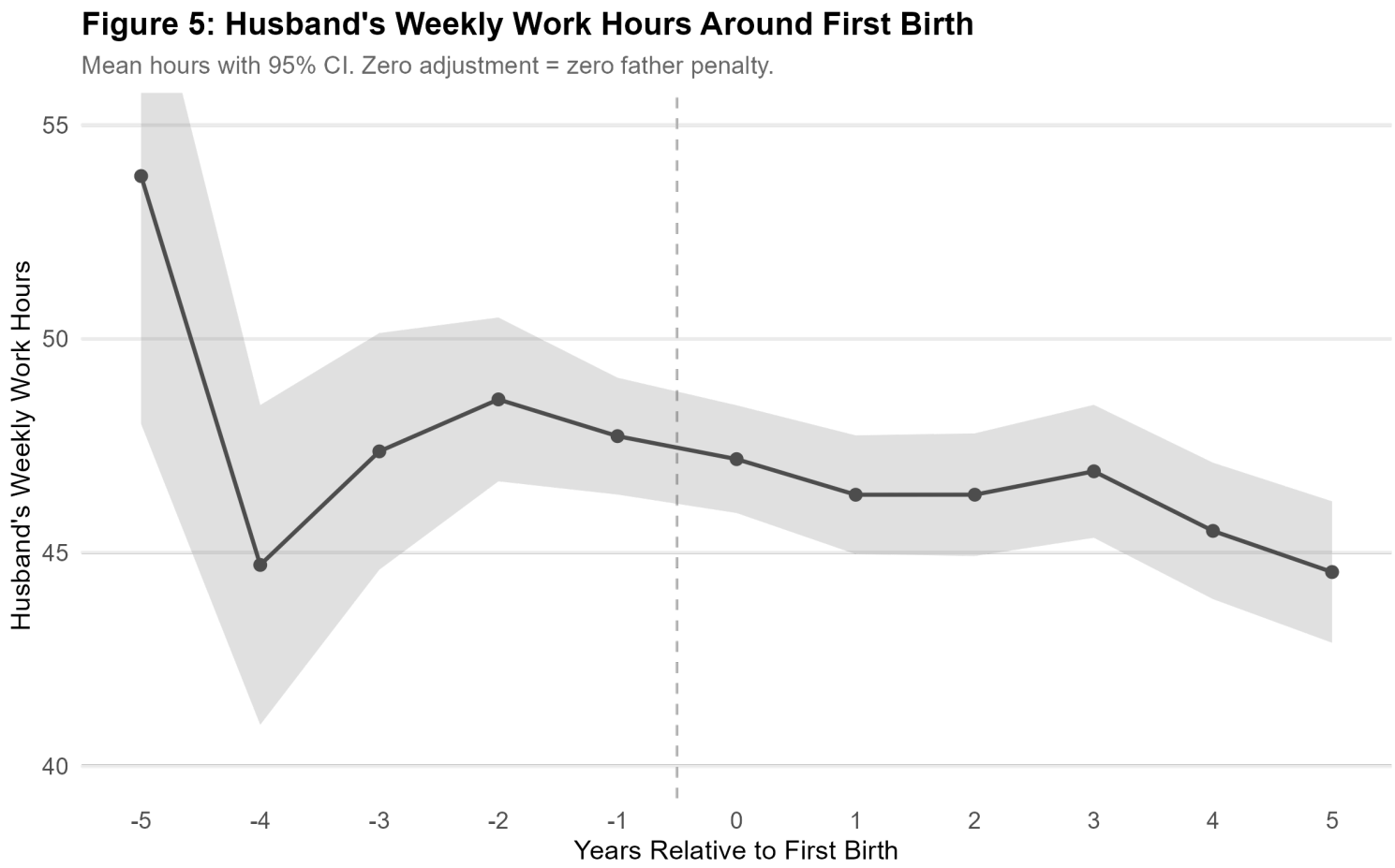
Non-regular OR stable: 7.50, 7.48, 7.39 across specifications.

Backup: Pre-Birth Mechanism ($t = -2$, 13 events)

	OR	p	95% CI	Method
Non-regular				
Standard	6.41	0.019	-	MLE
Firth	5.32	0.009	-	Penalised
Bootstrap	-	0.008	[1.68, 19.66]	2,000
Small firm				
Standard	4.14	0.025	-	MLE
Firth	3.84	0.021	-	Penalised
Bootstrap	-	0.038	[1.10, 18.34]	2,000

Jackknife: non-regular OR above 1 in all 185 replications (range: 5.69–12.82).

Backup: Father-Side Evidence



Flat profile. Childcare ratio 6.3:1 at $t = +1$, 5.3:1 at $t = +5$.
Only 3/1,183 husbands (0.3%) took childcare leave.

Backup: Training Grants Usage

Event time	N	Skills training (%)	Grants used (%)
−2	253	35.2	2.2
−1	475	31.2	2.3
0	568	8.6	1.0
+1	594	10.6	1.3
+3	493	15.6	0.3
+5	437	12.8	0.0

Training drops from ∼35% to 8.6% at birth, recovers to ∼13%.
Government grants: <3% at every horizon. System is invisible.

Backup: KHPS/JHPS Split

Table: Survey-split stability check for key employment event-study coefficients (year fixed effects).

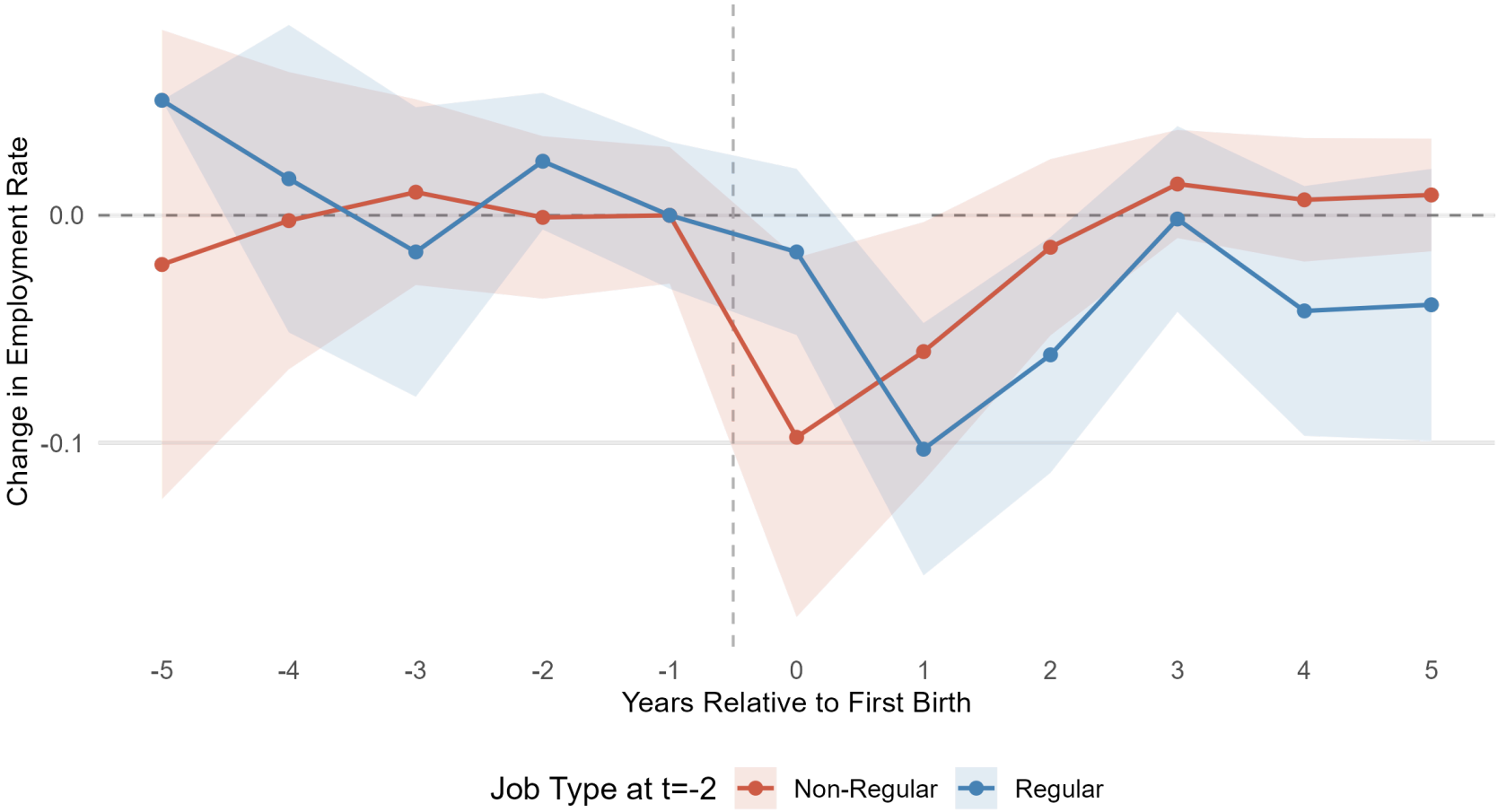
Sample	Event time	Estimate	SE	p-value	N obs	N women
Pooled	$t = -2$	-0.012	0.031	0.703	5,212	662
Pooled	$t = +0$	-0.132	0.027	0.000	5,212	662
Pooled	$t = +5$	-0.028	0.032	0.384	5,212	662
KHPS	$t = -2$	0.002	0.039	0.966	3,323	394
KHPS	$t = +0$	-0.134	0.036	0.000	3,323	394
KHPS	$t = +5$	0.010	0.040	0.796	3,323	394
JHPS	$t = -2$	-0.027	0.049	0.576	1,889	268
JHPS	$t = +0$	-0.136	0.044	0.002	1,889	268
JHPS	$t = +5$	-0.126	0.057	0.027	1,889	268

Near lead and birth-year break are stable across surveys. Long horizon diverges.

Backup: Heterogeneity by Contract Type

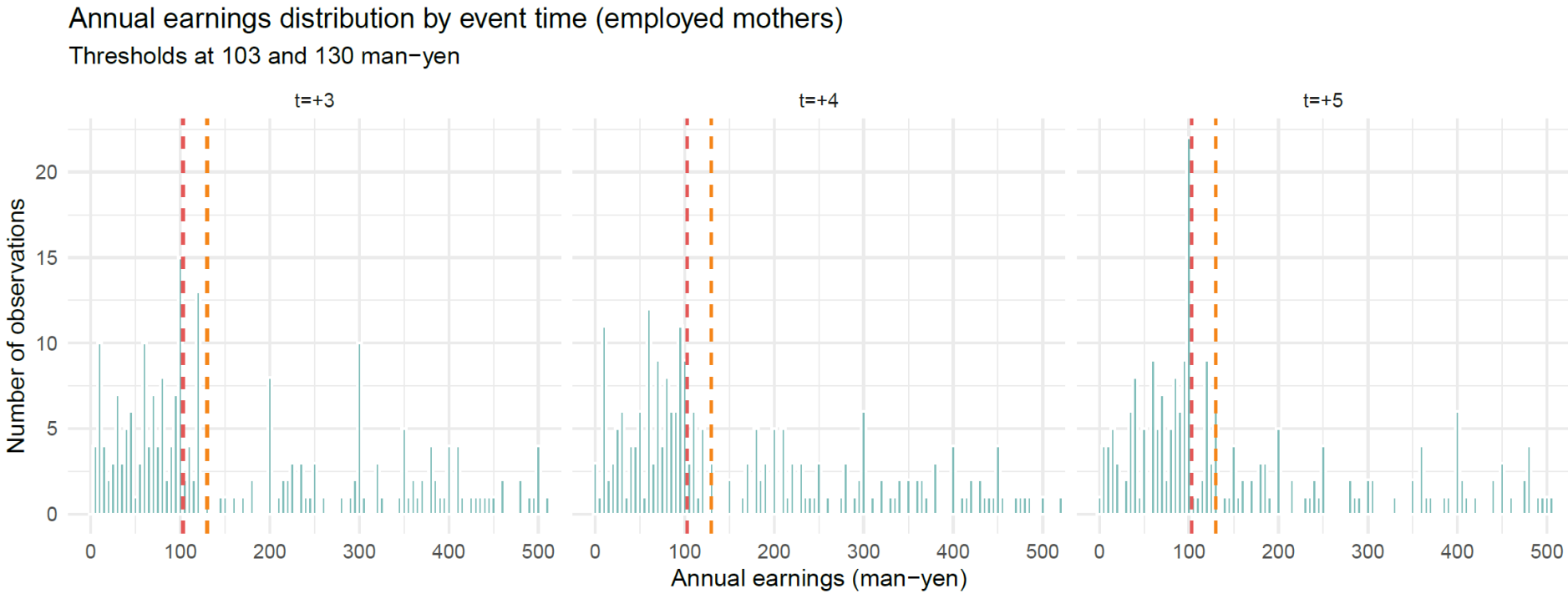
Figure 9a: Employment Trajectory by Job Type

Change relative to t = -1. Non-regular workers show larger, earlier penalty.



Non-regular: -9.8 pp at $t = 0$. Regular: -1.6 pp. Five-fold difference.

Backup: Earnings Bunching by Event Time



Backup: Geographic Non-Variation

- Metropolitan (Kanto/Kinki, N=355): -13.6 pp at $t = 0$
- Non-metropolitan (N=307): -12.9 pp at $t = 0$
- Near lead null in both subsamples

The dual labour market operates nationwide.

Backup: Leave-Recoding Sensitivity

Table: Leave-as-employment sensitivity at childbirth ($t = 0$).

Specification	Coef. at $t = 0$	SE	p-value	Reclassified at $t = 0$
Original (hours > 0)	-0.1319	0.0275	$<$0.001	0
Leave-adjusted	-0.0988	0.0276	$<$0.001	22

Notes: Sensitivity recodes women as employed at $t = 0$ if they are coded non-working but report leave take-up near birth. The coefficient remains strongly negative after reclassification.

Reclassifying 22 leave-takers as employed attenuates $t = 0$ from -0.132 to -0.099; remains strongly significant.

Backup: Full Stability Map

Stable	Sensitive	Interpretive
Near lead null (-0.012, $p = 0.70$)	Long horizon (composition-sensitive)	Marriage-stage sequencing
Birth-year drop (-0.132, $p < 0.001$)	Far leads reflect changing support	Childcare-logistics narrative
Non-regular OR at $t=0$ (7.50, $p < 0.001$)	Pre-birth mechanism (13 events)	Household-structure channels
Cohort-split stable (early $\approx$ late $\approx$ no-COVID)	Industry splits selection-sensitive	Cross-country framing
Bunching at 103 man-yen (47.8%)	Hours/earnings cond. on employment	Training non-uptake causes

Additional checks: placebo, IPW, balanced panel, Lee bounds, clustered SEs, KHPS/JHPS split, missingness sensitivity, jackknife.