

Long-Run and Heterogeneous Effects of Maternity Leave Expansions

Research Question and Contribution

How do parental leave expansions affect mothers labor market outcomes after births?

Focus on:

- First time mothers
- Employment and earnings up to 20 years after birth
- Several reforms that each expanded job protection and maternity benefits
- Potential reasons for missing long-run effects
- Who signs up for maternity leave?
- Are reform effects identical across subpopulations?

Contribution:

- Scarce evidence for the long-run
- Suggestive evidence for heterogeneous effects for compliers and non-compliers
- Analysis of subpopulation characteristics
- Lower bound evidence for loss in experience

Data

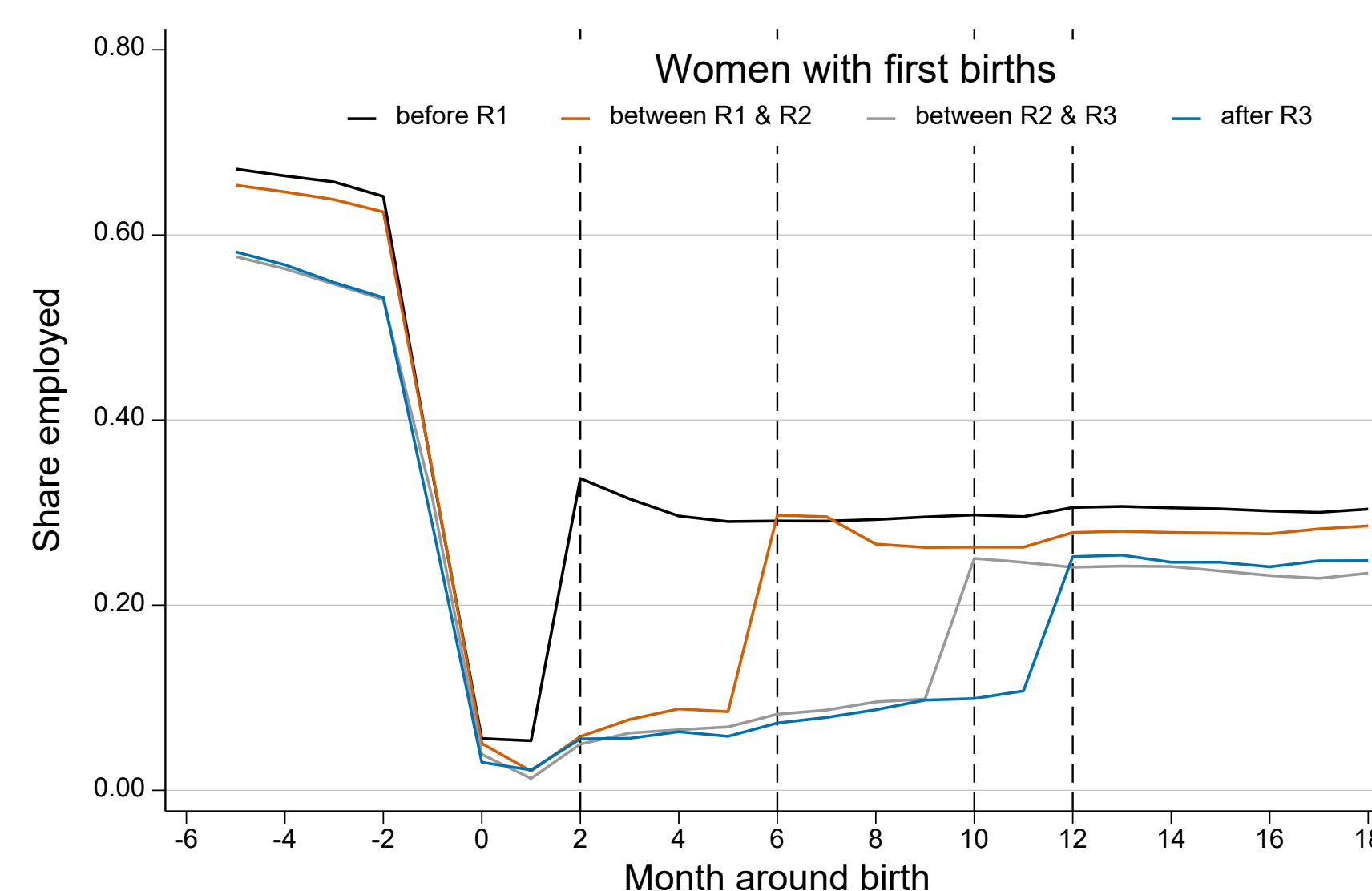
German Pension Insurance Data:

- 25% subsamples of the *Versicherungskontenstichprobe* (sample of all insurance accounts) from waves 2016-2018
- Monthly data on earning biographies
- Information on year and month of first childbirth
- 40636 mothers in Western Germany born between 1949-1988 (≥55 first births in each relevant month)
- Outcomes
 - Months employed (subject to social security)
 - Earnings measured by pension points (*Entgeltpunkte*, EP) from employment; 1 EP \triangleq national average income

Institutional Setting

Maternity Leave Reforms:

- **Basis:** Maternal protection period (*Mutterschutz*), 8 weeks post-birth, 100% earnings
- **Reform 1:** 05/1979, Maternity leave (*Mutterschaftsurlaub*), up to 6 month post-birth, earnings-related benefits, max. DM 750/month
- **Reform 2:** 01/1986, Parental leave (*Erziehungsurlaub*), up to 10 month post-birth, DM 600/month in month 2-6, income-tested benefits up to DM 600/month in month 7-10
- **Reform 3:** 01/1988, extended duration of parental leave to up to 12 month, no further changes



Reform	1	2	3
Extension	2 → 6 4 month	6 → 10 4 month	10 → 12 2 month

Empirical Strategy

- Regression discontinuity design for each reform: Treatment assignment by birth month of first child
- Compare outcomes of mothers giving birth in a 4 month window around the reform + control for seasonal differences by including mothers giving birth in the same months but one year earlier
- Difference-in-differences estimation at different times after birth

$$Y_{im} = \beta Treat_i + \gamma Cohort_i + \eta_m + X_i \delta_t + \epsilon_{im}$$

$Treat_i$: Dummy, =1 if first births after reform

$Cohort_i$: Dummy, =1 if birth around reform (vs. previous year)

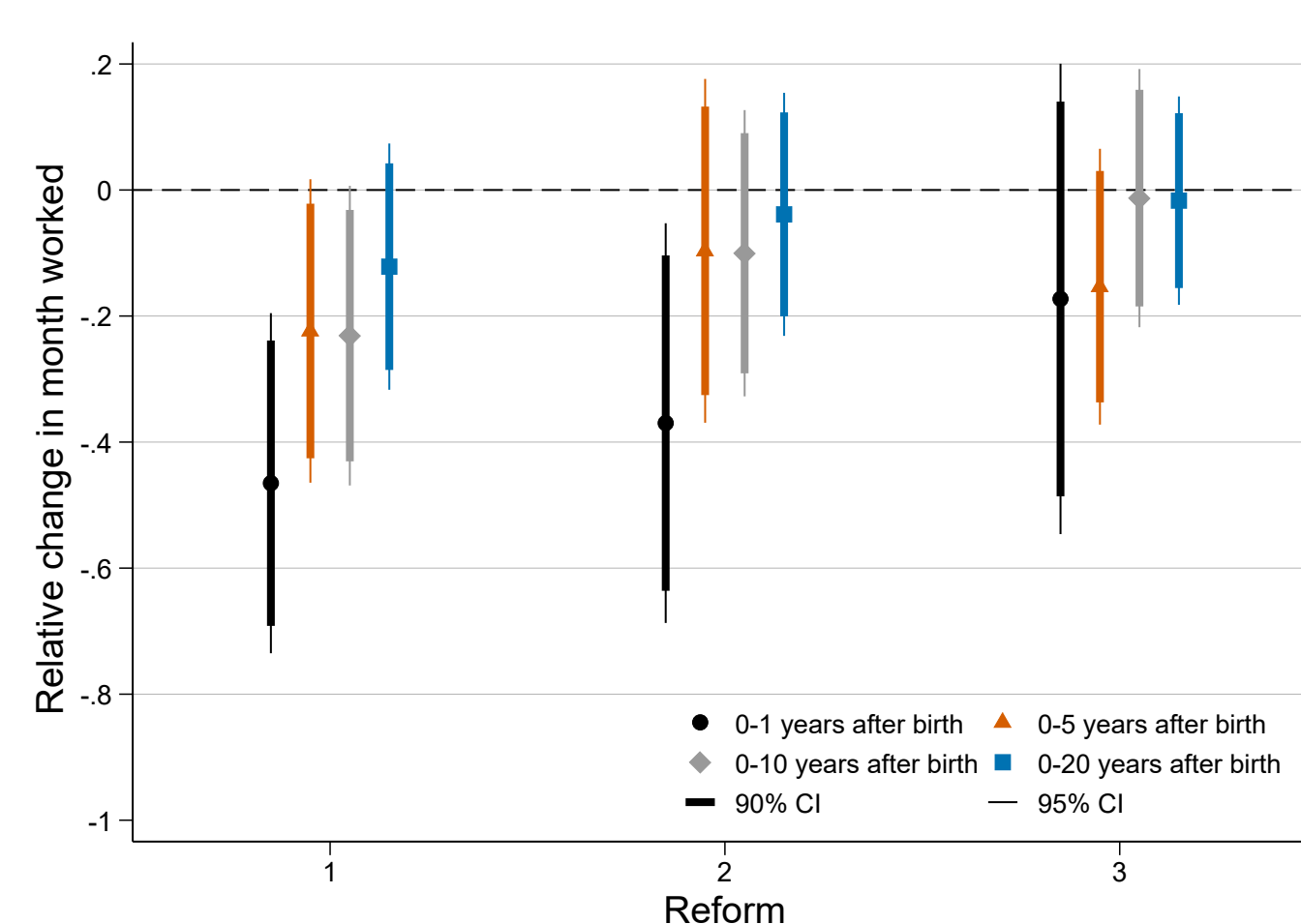
η_m : Fixed effects for calendar month of first birth

X_i : vector of mothers' pre-birth characteristics

- Identifying assumption: Within the 4 month window the timing of birth is random

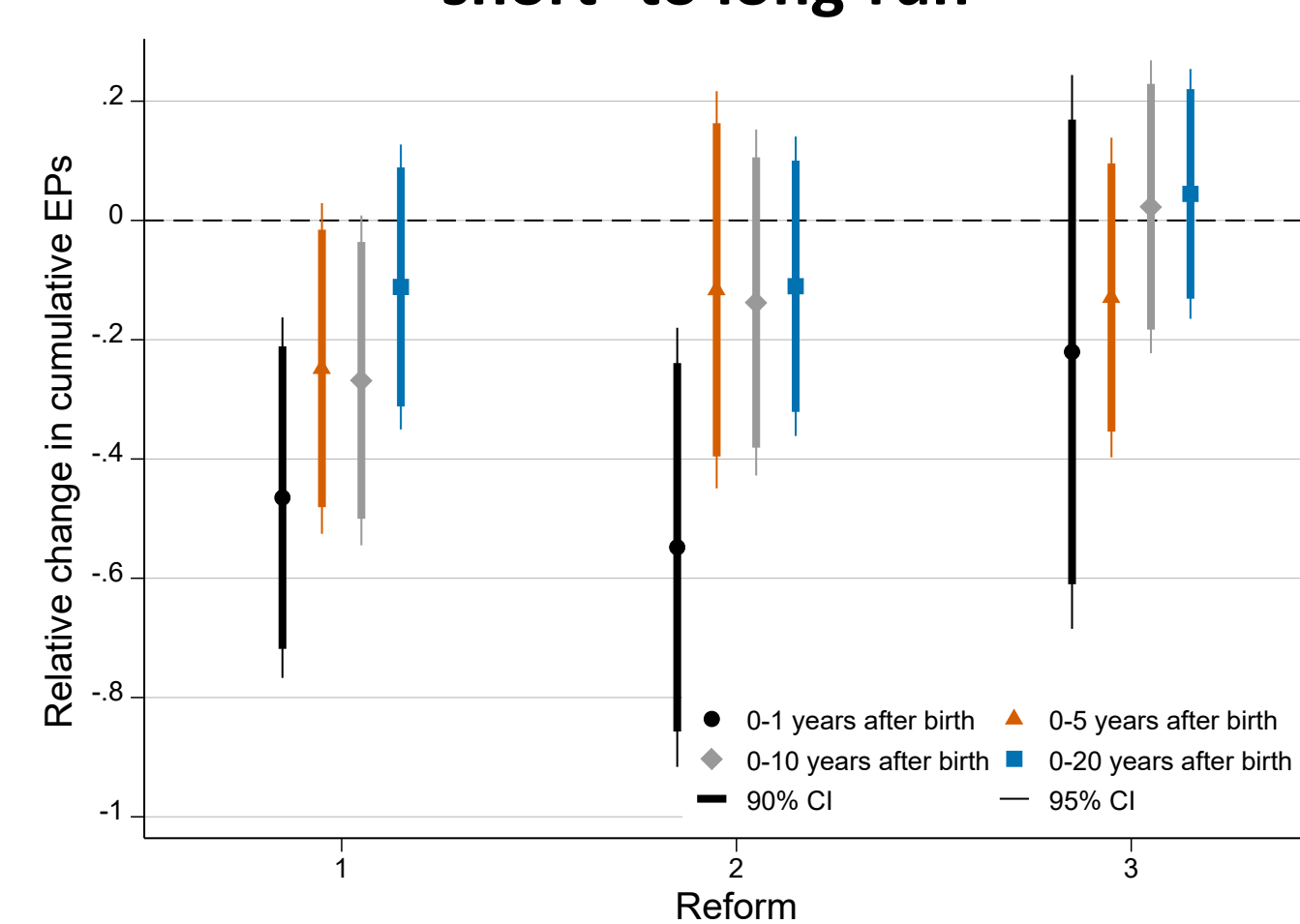
Main Results

Relative reform effects on employment from short- to long-run



NOTE.—The effects are given relative to the group means of control mothers giving birth 4 month before the reform. CIs are based on robust standard errors.

Relative reform effects on earnings from short- to long-run



- Causal effect of being assigned to treatment (ITT)
- Significant reductions in employment and earnings for all reforms in the short-run (reform 3 effect not significant at the year level, but still for the 2 month of expansion)
- Employment and earnings effects decline over time
- Long-run effects are smaller for each further expansion
- Changes in earnings apparently driven by labor market participation
- Reform 1: Mothers assigned to treatment have worked and earned >20% less 10 years after birth than mothers of the control group
- Lack of significant long-run effects of reforms 2 and 3

Heterogeneities

Characteristics of always-takers (AT), never-takers (NT) and compliers (C):

	Share (π) in each population	Mean of each pre-birth characteristic for each population	
		Earnings	Month worked
Reform 1			
Sample	1.00	0.43	50.48
Always-takers	0.69	0.33	43.14
Never-takers	0.07	0.57	58.83
Compliers	0.24	0.72	73.73
Reform 2			
Sample	1.00	0.44	55.26
Always-takers	0.65	0.32	46.13
Never-takers	0.08	0.55	62.43
Compliers	0.27	0.64	73.95
Reform 3			
Sample	1.00	0.42	56.68
Always-takers	0.74	0.33	50.83
Never-takers	0.17	0.65	60.54
Compliers	0.09	0.73	75.18

NOTE.—These statistics are calculated using the methods from Imbens and Rubin (1997).

- AT: Always stay home in months of expansion $D_i(Treat_i) = 1$
- NT: Never stay home in months of expansion $D_i(Treat_i) = 0$
- C: Comply with reforms $D_i(1) = 1, D_i(0) = 0$
- Compliers have above average means in pre-birth earnings and experience
- Always-takers have low pre-birth mean earnings
- Different costs of staying home
- Heterogeneous treatment effects for compliers and non-compliers

Local Average Treatment Effect (LATE) for compliers:

- Effect of longer employment breaks

	Cumulated total EPs after births			
	0-1 years	0-5 years	0-10 years	0-20 years
Reform 1				
ITT	-0.0713*** (0.0236)	-0.230* (0.131)	-0.504* (0.265)	-0.499 (0.545)
LATE	-0.0779*** (0.0254)	-0.900* (0.469)	-1.985** (0.976)	-2.237 (2.047)
Reform 2				
ITT	-0.0531*** (0.0182)	-0.0922 (0.135)	-0.259 (0.278)	-0.526 (0.610)
LATE	-0.228*** (0.0610)	-0.399 (0.550)	-1.117 (1.144)	-1.959 (2.543)
Reform 3				
ITT	-0.0134 (0.0144)	-0.0950 (0.101)	0.0386 (0.210)	0.203 (0.487)
LATE	-0.140 (0.125)	-1.009 (0.933)	0.410 (2.281)	2.190 (5.453)

NOTE.—Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Positive reform effect for AT (δ_{AT}):

- Extended job security might strengthen positions of AT in the long-run if utility of staying home decreases with child's age (e.g. for reform 1: mothers who want to stay home at least 6 months return to the same employer if treated and might have no job or worse conditions if untreated)

$$ITT = \pi_{NT} \cdot \delta_{NT} + \pi_{AT} \cdot \delta_{AT} + \pi_C \cdot \delta_C$$

- If $\delta_{NT} = 0$ and $\delta_{AT} > 0$:

- Positive job security effect partly offsets negative experience effect in the long run
- Estimated LATE ($\frac{ITT}{\pi_C}$) is upper bound of true effect $\delta_C: \frac{ITT}{\pi_C} = \frac{\pi_{AT}}{\pi_C} \delta_{AT} + \delta_C$ (exclusion restriction violated)

Contact: