

The Spillover Effects of Maternity Leave Extensions on Unemployment Insurance

Francesca Truffa Ashley Wong

EEA-ESEM 2023

August 30, 2023

Motivation

Widespread adoption of government-funded **maternity leave (ML) programs**

- ▶ All OECD countries, except US, provide mothers with at least 14 weeks of ML around childbirth (OECD 2018)
- ▶ Public spending on maternity leave averages 0.2% of GDP in Germany (more than 8 billions per year)

Motivation

Widespread adoption of government-funded **maternity leave (ML) programs**

- ▶ All OECD countries, except US, provide mothers with at least 14 weeks of ML around childbirth (OECD 2018)
- ▶ Public spending on maternity leave averages 0.2% of GDP in Germany (more than 8 billions per year)

Large literature on direct impacts on female employment outcomes and child development

Less is known about **interaction with other social insurance programs**

- ▶ If ML reduces participation in alternative programs, potential cost savings
- ▶ Critical for evaluating welfare impacts of these policies

Maternity Leave Extensions and Unemployment Insurance (UI)

Why UI?

UI can be an important social welfare program for many mothers

- ▶ Changes in job separation rates of mothers, potentially affecting UI participation
- ▶ Mothers in 22 OECD countries who voluntarily quit their jobs after childbirth are eligible for UI benefits (Venn 2012)
 - ▶ In US, 24 states allow family caregivers to access UI (Ben-Ishai, McHugh, and Ujvari 2015)

Maternity Leave Extensions and Unemployment Insurance (UI)

Why UI?

UI can be an important social welfare program for many mothers

- ▶ Changes in job separation rates of mothers, potentially affecting UI participation
- ▶ Mothers in 22 OECD countries who voluntarily quit their jobs after childbirth are eligible for UI benefits (Venn 2012)
 - ▶ In US, 24 states allow family caregivers to access UI (Ben-Ishai, McHugh, and Ujvari 2015)

How can ML extensions affect UI?

- ▶ ↑ UI if more likely to separate from job (e.g. HC depreciation)
- ▶ ↓ UI if mothers were using UI as a substitute for paid leave

This paper

Research Question: What is effect of maternity leave extensions on UI?

This paper

Research Question: What is effect of maternity leave extensions on UI?

Context: 1979 German maternity leave reform that increased job-protected paid leave from two to six months

This paper

Research Question: What is effect of maternity leave extensions on UI?

Context: 1979 German maternity leave reform that increased job-protected paid leave from two to six months

Data: Administrative social security data with full employment and benefits receipt history

This paper

Research Question: What is effect of maternity leave extensions on UI?

Context: 1979 German maternity leave reform that increased job-protected paid leave from two to six months

Data: Administrative social security data with full employment and benefits receipt history

Identification strategy: DiD comparing mothers with children born before and after cutoff with mothers in non-reform years

This paper

Research Question: What is effect of maternity leave extensions on UI?

Context: 1979 German maternity leave reform that increased job-protected paid leave from two to six months

Data: Administrative social security data with full employment and benefits receipt history

Identification strategy: DiD comparing mothers with children born before and after cutoff with mothers in non-reform years

Welfare Analysis: Marginal Value of Public Funds (MVPF) of maternity leave reform (Hendren and Sprung-Keyser 2020)

Preview of Results

Extending paid job-protected ML from two to six months ...

1. ↓ UI take-up by **19%** in the first five years
 - ▶ Offsets 68% of the total increase in ML costs
 - ▶ Timing suggests use of UI as a way of extending leave prior to reform

Preview of Results

Extending paid job-protected ML from two to six months ...

1. ↓ UI take-up by **19%** in the first five years
 - ▶ Offsets 68% of the total increase in ML costs
 - ▶ Timing suggests use of UI as a way of extending leave prior to reform
2. ↓ Employment earnings in year of childbirth but no long-run impacts

Preview of Results

Extending paid job-protected ML from two to six months ...

1. ↓ UI take-up by **19%** in the first five years
 - ▶ Offsets 68% of the total increase in ML costs
 - ▶ Timing suggests use of UI as a way of extending leave prior to reform
2. ↓ Employment earnings in year of childbirth but no long-run impacts
3. Instead, mothers at the top of the pre-birth earnings distribution:
 - ▶ ↓ UI benefits *and* ↑ employment earnings

Preview of Results

Extending paid job-protected ML from two to six months ...

1. ↓ UI take-up by **19%** in the first five years
 - ▶ Offsets 68% of the total increase in ML costs
 - ▶ Timing suggests use of UI as a way of extending leave prior to reform
2. ↓ Employment earnings in year of childbirth but no long-run impacts
3. Instead, mothers at the top of the pre-birth earnings distribution:
 - ▶ ↓ UI benefits *and* ↑ employment earnings
4. UI matters for welfare calculations
 - ▶ MVPF doubles to 1.19
 - ▶ High-earning mothers: policy more than pays for itself (MVPF = ∞)

Background

Maternity Leave Reforms in Germany

- ▶ Since the 1950s, employed mothers in Germany entitled to paid leave 6 weeks before and 8 weeks after birth
 - ▶ Job protection and full salary
- ▶ **1979 Reform:** Extend job-protected ML from 2 to 6 months eligibility
 - ▶ Full salary for first two months
 - ▶ €383 afterwards (**1/3** of average pre-birth earnings)
- ▶ Series of reforms increased job protection to 36 months and benefits duration to 24 months after childbirth (Merz 2004)

German Unemployment Insurance Scheme

- ▶ Eligibility: worked at least 1 out of the last 4 years
- ▶ Benefits: **60-67%** of the previous net wage
 - ▶ 3 month penalty if quit job
- ▶ Duration: Up to one year (extension available, but means-tested)
- ▶ Conditions: registration with the job center, active job search and availability for work and activation programs

Use of UI to Extend Leave for Mothers

- ▶ Mothers can effectively extend paid leave using UI (Arntz, Dlugosz, and Wilke 2017)
 - ▶ Register as unemployed before the end of the job protection period
 - ▶ Receive UI benefits as soon as ML benefits expire
 - ▶ Up to 12 additional months

- ▶ Key differences with ML
 1. Replacement rate of UI is generally higher (67% vs. flat payment \approx 33% of average pre-birth earnings)
 2. No job protection
 3. Satisfy UI conditions such as being available to work (e.g. having childcare)

Data

Data

SIAB: Sample of Integrated Labour Market Biographies, for the years 1975 - 2017:

- ▶ 2% (1.7 million individuals) random sample drawn from the Integrated Employment Biographies (IEB)
- ▶ Information on entire work history (e.g., earnings, occupation, full-time/part-time status)
- ▶ Firm and worker characteristics (e.g., age, gender, education)
- ▶ Benefits that are administered by Federal Employment Agency (e.g., UI)
- ▶ No birth dates
 - ▶ Identified mothers using algorithm provided by Muller and Strauch (2017) [mothers](#)

Descriptive Evidence

Unemployment Insurance Participation Post Childbirth, 1975–2017

Figure: Probability of Ever Receiving UI

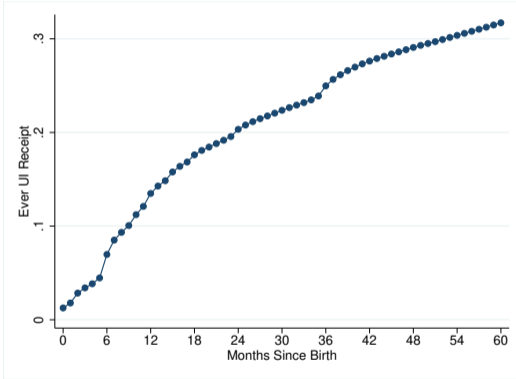
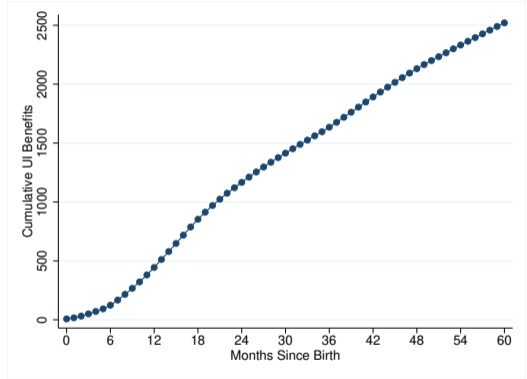


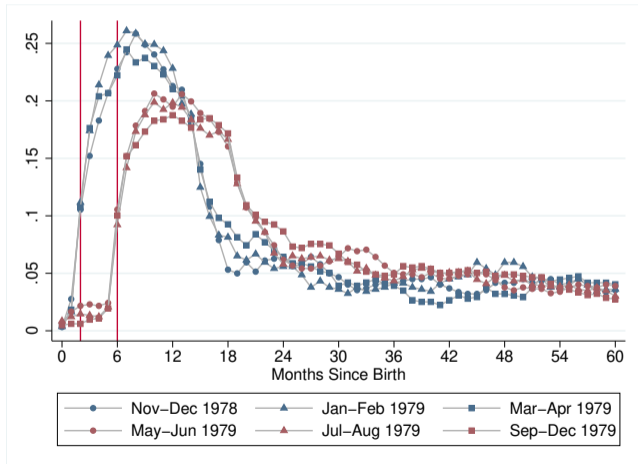
Figure: Cumulative UI Benefit Receipts



- ▶ Within the five years after birth, 32% of mothers have participated in UI
- ▶ On average, €2,520 in cumulative benefits

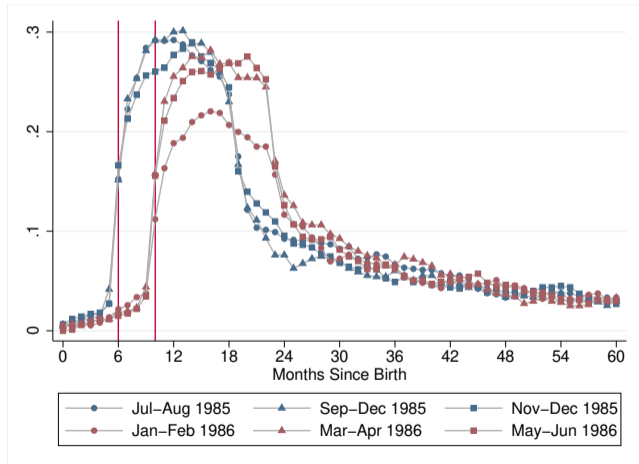
Extending Maternity Leave *Delays* and *Reduces* UI Participation

Figure: May 1979 Reform (2 to 6 Months)



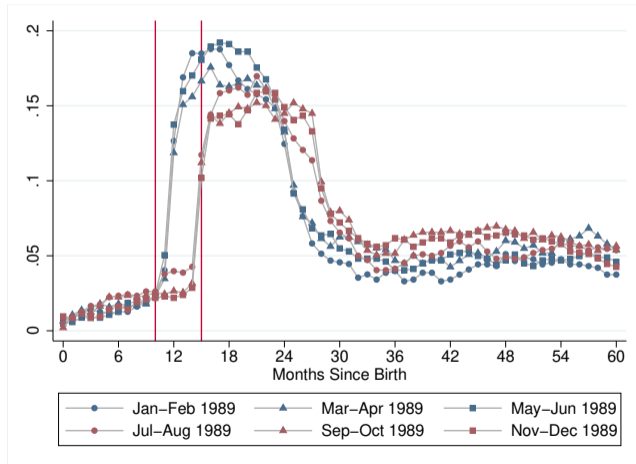
Extending Maternity Leave *Delays* and *Reduces* UI Participation

Figure: Jan 1986 Reform (6 to 10 Months)



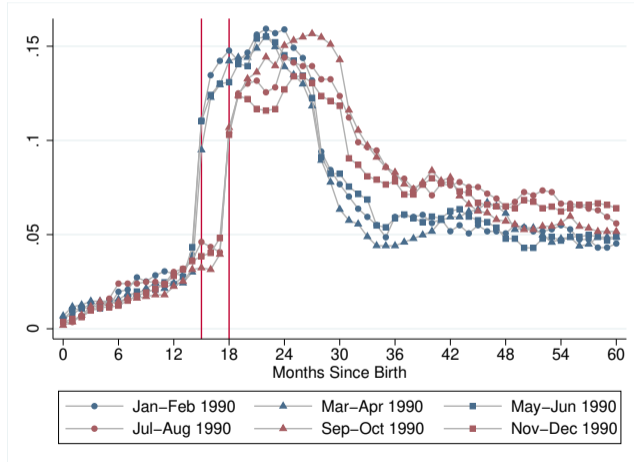
Extending Maternity Leave *Delays* and *Reduces* UI Participation

Figure: July 1989 Reform (10 to 15 Months)



Extending Maternity Leave *Delays* and *Reduces* UI Participation

Figure: July 1990 Reform (15 to 18 Months)



Empirical Strategy

Empirical Strategy

- ▶ Focus on May 1979 reform
 - ▶ Draft bill was unanticipated
 - ▶ Extension of job protection and paid leave by the same duration
 - ▶ Prior to series of UI reforms beginning in 1985 (Hunt 1995)
- ▶ Difference-in-differences design exploiting the birth date cutoff (Schönberg and Ludsteck 2014)
 - ▶ Mothers with child born 6 months before and 6 months after May
 - ▶ Mothers with children born in the same months but in non-reform years 1975-1978

Empirical Strategy

$$y_{it} = \sum_j (\beta_{0j} + \beta_{1j} Treated_i \cdot ReformYear_i + \beta_{2j} Treated_i + \beta_{3j} ReformYear_i) \times TimeSinceBirth_{it=j} + \theta_t + \gamma_i + \epsilon_{it} \quad (1)$$

- ▶ $Treated_i$ indicator that takes value 1 for mothers with child born between May and October
- ▶ $ReformYear_i$ indicator that takes value 1 if mothers gave birth in the reform year
- ▶ $TimeSinceBirth_{it=j}$ month or year relative to childbirth
- ▶ Time fixed effects θ_t , mother individual fixed effects γ_i
- ▶ **Identifying assumption:** common trends for mothers that give birth in the same calendar months absent reform

Results

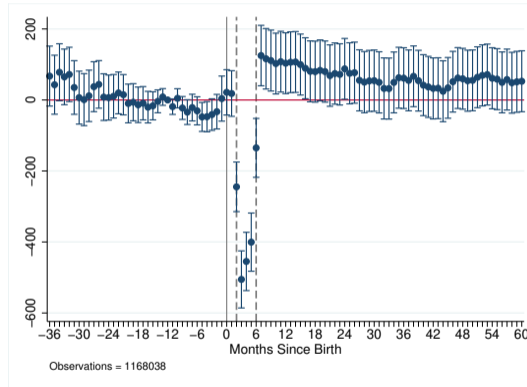
Effects on Maternity Leave Take-Up and Duration

	(1) Total Maternity Duration	(2) Share of Month 3 to 6 on Leave
Treated \times ReformYear	3.869*** (0.507)	0.386*** (0.0164)
Control Mean	12.77	0.47
R-squared	0.012	0.073
Observations	13060	13060

- ▶ 28% \uparrow in the time out of the labor force
- ▶ **In Months 3 to 6:** 82% \uparrow on leave; 57% \downarrow in employment, 100% \downarrow UI crowdout

Effect on Employment Outcomes

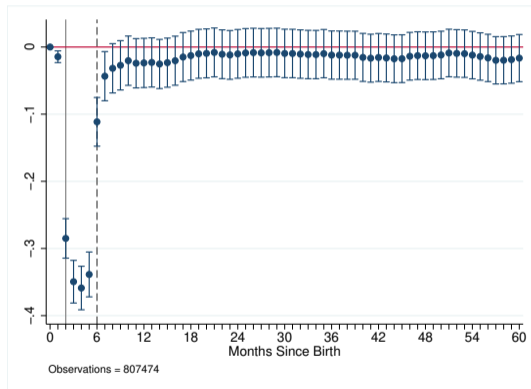
Figure: Monthly Employment Earnings



- ▶ No significant effect on monthly employment earning
- ▶ Similar results when we extend to 10 years post birth annual

Effects on Employment Outcomes

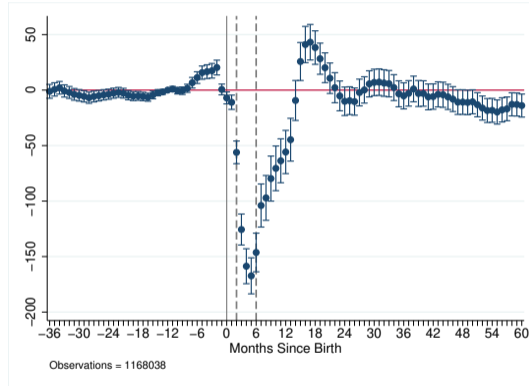
Figure: Ever Employed Post Birth



- ▶ No significant effect on mothers' probability of returning to employment after childbirth

Effect on Unemployment Insurance

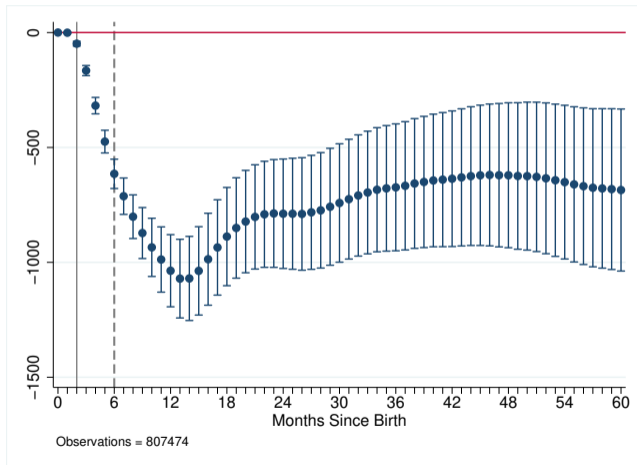
Figure: Monthly UI Benefits



- ▶ Reduction in UI during extension of ML
- ▶ Timing suggests use of UI to extend leave
- ▶ Increase in UI when control mothers would have exhausted UI benefits

Effect on Unemployment Insurance

Figure: Cumulative Total UI Benefits Post Birth



- ▶ 19% reduction in take-up;
21% reduction in UI benefits
- ▶ Over 10 years, €862.98↓
total annual UI benefits
- ▶ €1,271.70↑ in ML benefits
- ▶ *Substantial benefit substitution*: For every €1 increase in ML, mothers reduce UI benefits by €0.68

What explains the drop in UI take-up?

- ▶ Recall: null effects on employment + reduction in UI
- ▶ Reduction in ever re-entering the labor force LFP
- ▶ Before: ML \rightarrow UI \rightarrow Out of LF
- ▶ After: ML \rightarrow Out of LF
- ▶ Potential explanation: mothers learn over time whether they can balance work and family during leave period

Welfare Analysis

Welfare Analysis: Marginal Value of Public Funds (MVPF)

Hendren (2016) and Hendren and Sprung-Keyser (2020)

- ▶ MVPF measures the amount of welfare that can be delivered to policy beneficiaries per dollar of government spending

$$MVPF = \frac{WTP}{Cost}$$

- ▶ Benchmark MVPF = 1 (simple non-distortionary transfer)

MVPF Calculation

Without UI

$$MVPF = \frac{697.2}{1447.43} = 0.48$$

With UI

$$MVPF = \frac{697.2}{584.45} = 1.19$$

- ▶ Accounting for UI matters for welfare calculations

MVPF by Subpopulations

Low-income mothers:

- ▶ Reduction in UI participation
 - ▶ Short-term drop in employment earnings, no LR effects
- MVPF is between 0.40 and 0.99

High-income mothers:

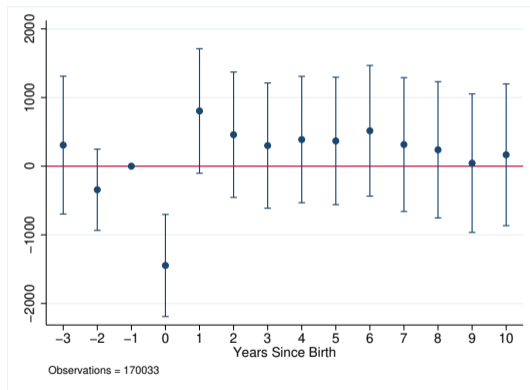
- ▶ Reduction in total UI benefits
 - ▶ Increase in tax revenues of these mothers through increased employment earnings
 - ▶ Total costs -€6,432.28
- **MVPF = ∞** (given positive WTP)
- ▶ Policy more than pays for itself for these mothers

Conclusions

- ▶ New evidence on the interaction of maternity leave and unemployment insurance
- ▶ Extending maternity leave from two to six months lowers probability of UI participation and benefits by 19%
- ▶ Generated substantial cost savings with meaningful implications for welfare calculations
 - ▶ Larger gains for high income women
- ▶ **Key Takeaways:**
 1. UI is an important social safety net program for mothers
 2. Fiscal externalities of ML policies on other social programs can be large
 3. Accounting for spillover effects is important for welfare calculations of ML

Effect on Annual Employment Earnings

Figure: Annual Employment Earnings



Effects on Crowd-Out

	(1) Share of Month 3 to 6 Employed	(2) Share of Month 3 to 6 on UI
Treated \times ReformYear	-0.191*** (0.0147)	-0.218*** (0.0158)
Control Mean	0.325	0.208
R-squared	0.039	0.097
Observations	13060	13060

During Months 3 to 6:

- ▶ Reduced employment by 57%
- ▶ UI participation dropped by 100%

Summary Statistics

	(1) Treated Mothers May 1979 - Nov 1979	(2) Control Mothers Nov 1978 - Apr 1979	(3) Difference <i>p</i> -value in parentheses
Age	26.35 (4.62)	26.53 (4.68)	0.18 (0.22)
Number of Children	0.10 (0.32)	0.09 (0.29)	-0.01 (0.15)
Monthly Wage Prior to Child Birth	1599.94 (736.36)	1619.78 (698.44)	19.84 (0.38)
Annual Earnings	19438.38 (8711.68)	20226.98 (8400.35)	788.60** (0.00)
Full-time	0.89 (0.31)	0.90 (0.31)	0.00 (0.84)
Skilled	0.73 (0.44)	0.73 (0.45)	-0.00 (0.93)
Observations	2416	1777	4193

Who Is Eligible For Maternity Leave In Germany?

Every woman who is pregnant or breastfeeding if they work in Germany or work abroad under a German contract, regardless of marital status or nationality

- ▶ Also if on UI at time of birth

The following women cannot apply for maternity leave in Germany:

- ▶ Stay at home wives
- ▶ 100% Self-employed women
- ▶ Board members of companies
- ▶ Managing directors of a legal entity who don't have an "employee" title
- ▶ Adoptive mothers

Effect of Maternity Leave Extension on UI and Employment Outcomes After 5 Years (Varying Pre-Birth Employment Length)

	Over 6 Months		Over 12 Months	
	(1) Cumulative Unemployment Benefits	(2) Cumulative Employment Earnings	(3) Cumulative Unemployment Benefits	(4) Cumulative Employment Earnings
Treated \times ReformYear \times 1($t = 60$)	-702.3*** (182.5)	1103.6 (1586.2)	-734.7*** (188.2)	2000.5 (1661.1)
Control Mean	3195.80	31461.35	3219.91	31427.57
R-squared	0.136	0.315	0.138	0.316
Observations	788137	788137	729760	729760

- ▶ Sample restricted to those that were employed at least 6 or 12 months in the year prior to birth

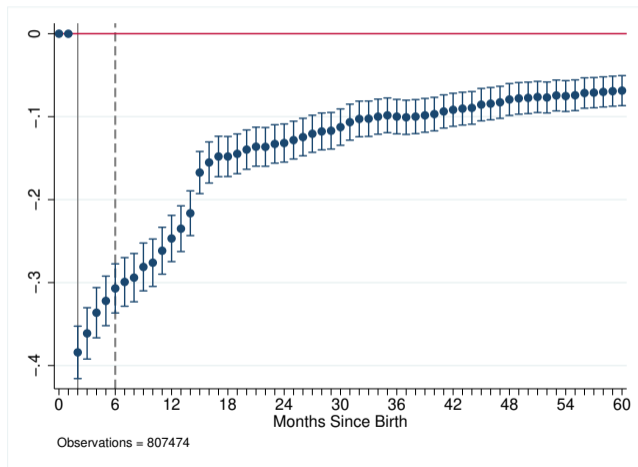
Effect of Maternity Leave Extension on UI and Employment Outcomes After 5 Years (No April and May Births)

	(1)	(2)	(3)	(4)
	Ever UI	Cumulative Unemployment Benefits	Ever Employed	Cumulative Employment Earnings
Treated \times ReformYear \times 1($t = 60$)	-0.0804*** (0.0202)	-836.7*** (197.9)	-0.0123 (0.0199)	300.6 (1724.0)
Control Mean	0.44	3202.03	0.66	31375.03
R-squared	0.181	0.138	0.306	0.313
Observations	661286	661286	661286	661286

- ▶ Mothers whose children were born in April and May are dropped from the sample

Effects on Labor Force Participation

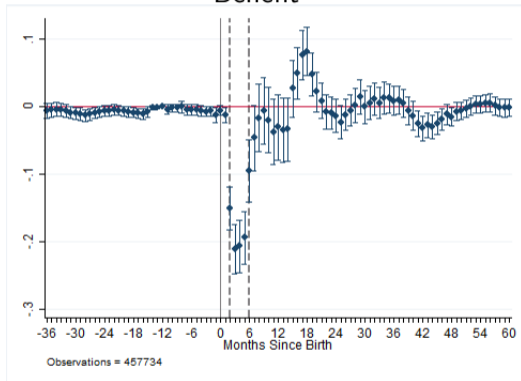
Figure: Ever Re-Entering the Labor Force (Starting Two Months After Birth)



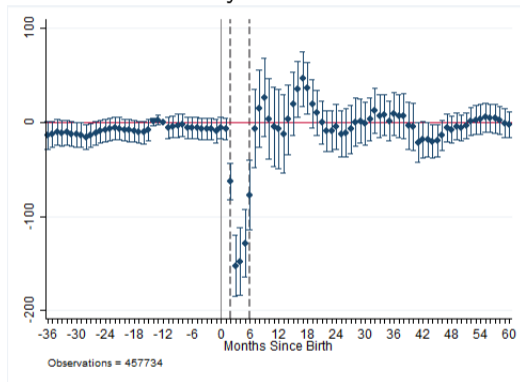
- ▶ Extension of ML shifted mothers that likely would have left anyways from UI to out of the LF

Main Analysis Using BASiD

Monthly Probability of Receiving Any UI Benefit



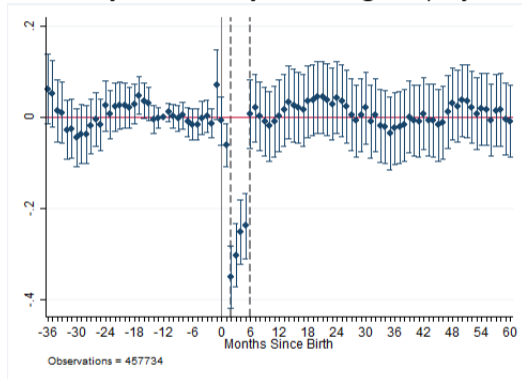
Monthly UI Benefits



[back](#)

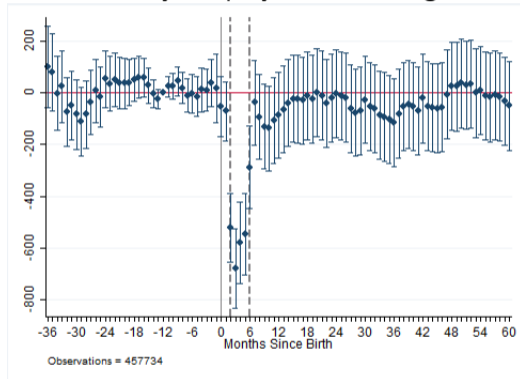
Main Analysis Using BASiD

Monthly Probability of Being Employed



[back](#)

Monthly Employment Earnings



Effect of Maternity Leave Extension on UI and Employment Outcomes After 5 Years (Within 3 Months of May and No April and May Births)

	(1)	(2) Cumulative Unemployment Benefits	(3) Ever Employed	(4) Cumulative Employment Earnings
Treated \times ReformYear \times 1($t = 60$)	-0.0773*** (0.0293)	-944.7*** (283.1)	0.00556 (0.0289)	1338.0 (2504.4)
Control Mean	0.43	3352.88	0.65	31081.06
R-squared	0.181	0.146	0.318	0.320
Observations	347974	347974	347974	347974

- ▶ Sample restricted to mothers who gave birth within 3 months before and 3 months after May 1979 plus mothers whose children were born in April and May are dropped from the sample

Heterogeneity by Earnings

Figure: Probability of Ever Receiving UI

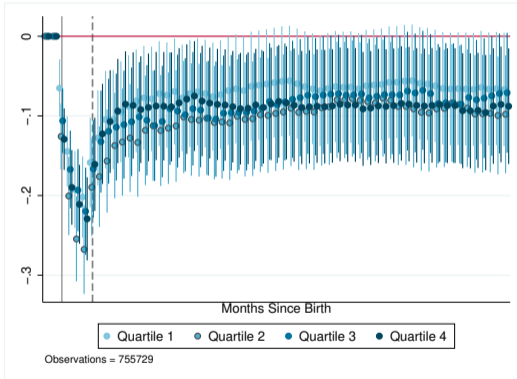
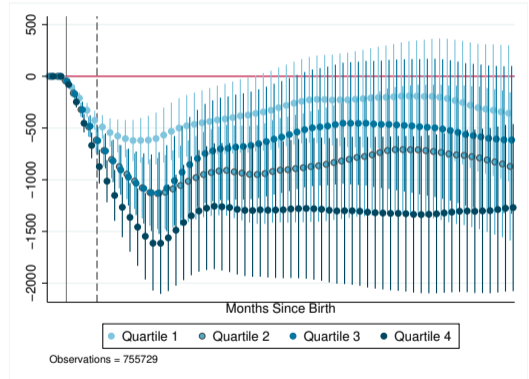


Figure: Cumulative UI Benefits



[Back](#)

Heterogeneity by Earnings

Figure: Cumulative UI Benefits

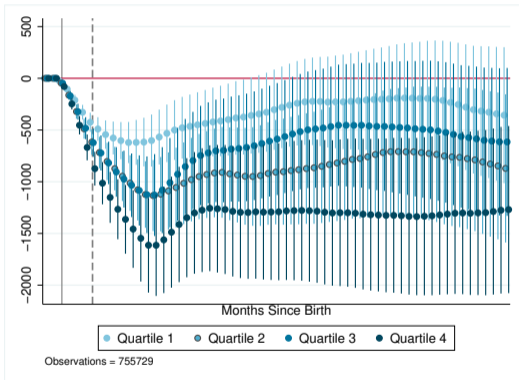
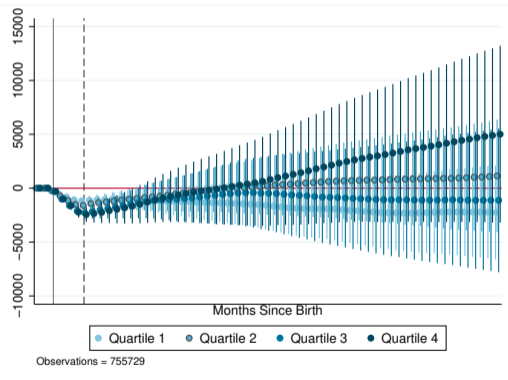


Figure: Cumulative Employment Earnings



[Back](#)

Heterogeneity by Earnings

Figure: Monthly Employment

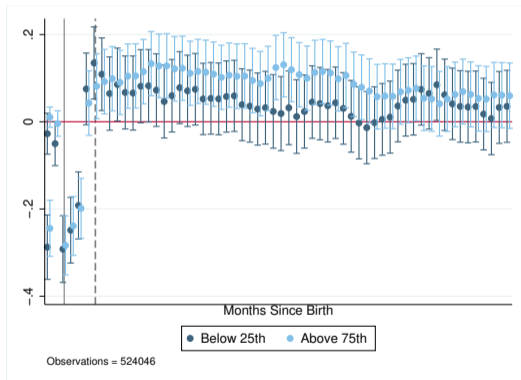
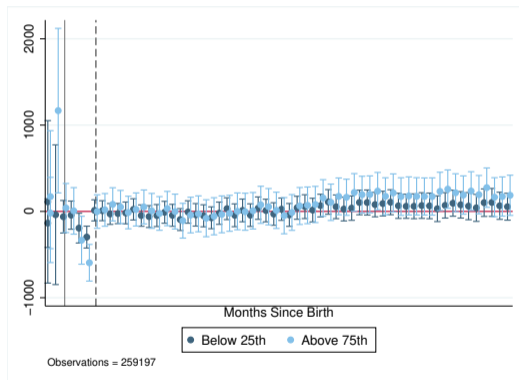


Figure: Monthly Earnings (> 0)



Back

Identification of Mothers Muller and Strauch (2017)

- ▶ Infer from interruptions to employment spells
 - ▶ Coded “entitlement to other compensation by the statutory health insurance provider”
- ▶ Woman is under the age of 40 and is absent from employment for at least 14 weeks (maternity protection period)
- ▶ Potential misclassification:
 - ▶ Code also used for illnesses that last longer than 6 weeks
 - ▶ Only mothers who are employed (95%) or receiving UI benefits at the time of birth and subject to social security
 - ▶ No births before 1975
 - ▶ Inaccurate if twin births
- ▶ Muller and Strauch (2017) show that they can identify around 60% of all births

Figure: Labor Force Participation

.49

Figure: Ever Being Out of the Labor Force

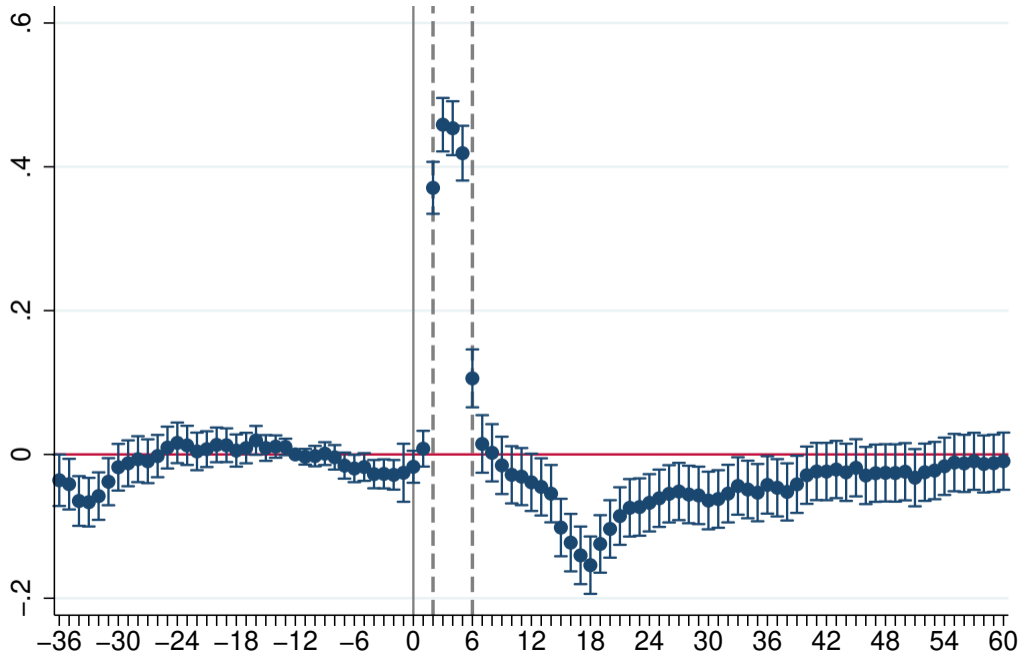
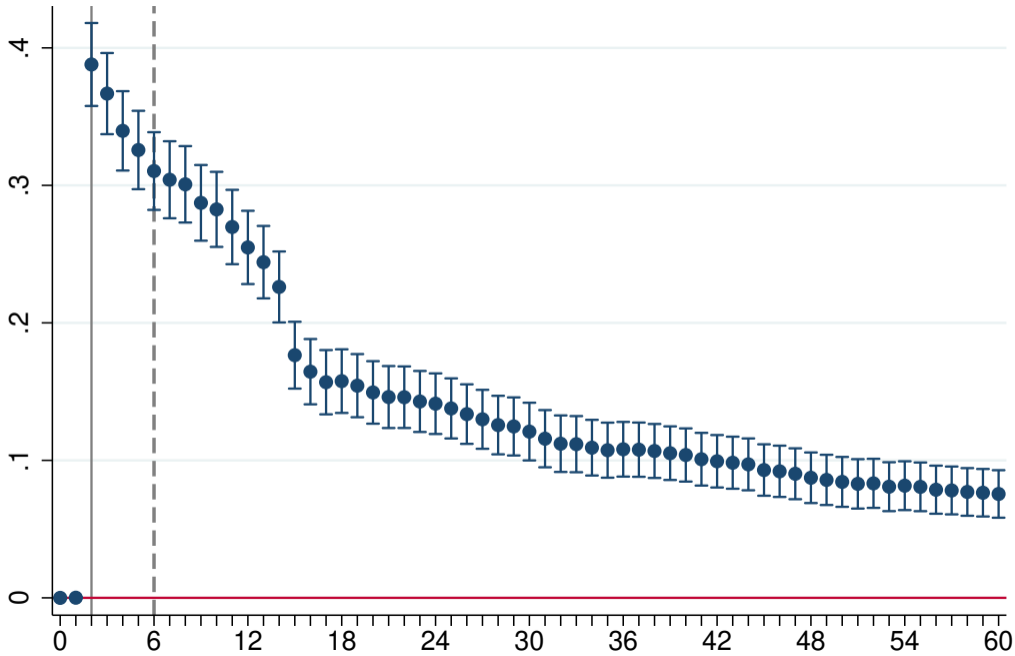


Figure: Probability to be Out of the Labor Force



Additional Social Welfare Programs for Mothers [back](#)

Social assistance (“sozialhilfe”)

- ▶ Means-tested benefit for all residents
- ▶ Mothers that receive social assistance are not eligible for additional maternity leave payments as these benefits are credited against social assistance payments

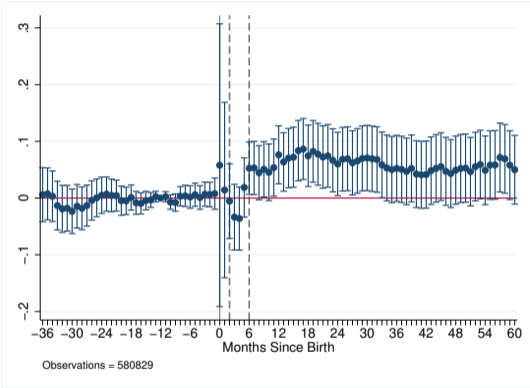
Child allowance (“Kindergeld”)

- ▶ In 1979, parents receive 50 DM per month for the first child, 80 DM for the second and 150 DM for higher order children (Hener 2017)
- ▶ If ML affects fertility decisions, may also change total amount of child allowance to families
- ▶ We found limited effects on fertility

Support for Single Mothers

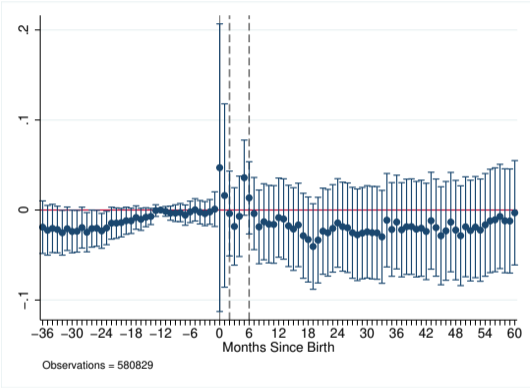
- ▶ Payments for single parents who receive inadequate financial support from other parent
- ▶ Unfortunately, we do not observe families or child support payments
- ▶ Potential changes in marital stability but literature suggests divorces are less likely to occur with ML extensions (Forde 2018; Petts, Carlson, and Knoester 2020; Olafsson and Steingrimsdottir 2020)

Probability of Working at Pre-Birth Employer



back

Probability of Working Full Time



back