

# Family Policies & the Dynamics of Gender Inequality

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# Gender Inequality and Family Policies

- ▶ Evidence that children/parenthood explains most of the remaining gender inequality in modern societies
  - ▶ Large and persistent *child penalties* on women's careers
  - ▶ Debate about mechanisms
- ▶ Large expansions of family policies over the last 50 years
  - ▶ Maternity and parental leave policies
  - ▶ Child care provision and subsidization
- ▶ Impact of these policies on gender gaps is still debated
  - ▶ Widespread belief that family policies could be helpful
  - ▶ But also a concern that some policies may have backfired

# Family Policies and Child Penalties

- ▶ Most of the literature estimates the contemporaneous impact of policy on female labor supply or earnings
- ▶ Given child penalties are now understood to explain most of the gender inequality, we study
  - ▶ Child penalties as our outcome
  - ▶ The dynamic impacts on career paths of women relative to men
- ▶ Enables us to map estimates back into cross-sectional gender inequality

# The Parental Leave / Child Care Provision Bundle

- ▶ Most of the literature focuses on specific family policies in isolation
- ▶ But parental leave and child care provision are in practice a bundle of policies
  - ▶ There may be complementarities/cross effects btw the two
- ▶ We analyze these two policies together
  - ▶ Study both policies and their potential interaction within a single empirical setting



# Uniquely Rich Quasi-Experimental Variation

- ▶ Rich quasi-experimental variation in Austria:
  - ▶ Multiple parental leave reforms at different baseline levels (RD)
  - ▶ Local child care expansions (DiD a la Duflo 2001)
- ▶ Combined with administrative data including very rich information on child care provision
- ▶ Effects on child penalties:
  - ▶ **Parental leave:** Negative short-run effect; no long-run effect (Marginal treatment effect is declining in baseline level)
  - ▶ **Child care:** Very small effect, if any
  - ▶ **Interaction:** None
  - ▶ **Bottom line:** Family policy has had little effect on gender inequality

# Context and Data

# The Austrian Context

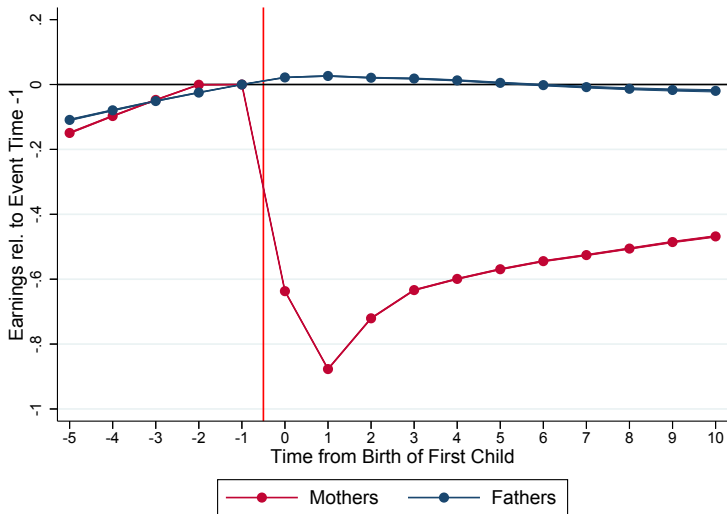
- ▶ A gender conservative environment:
  - ▶ Total gender gap in earnings:  $\approx 40\%$  Gender Gaps
  - ▶ Relatively low female LFP
  - ▶ Prevalence of conservative gender norms Elicited Values
- ▶ Generous maternity leave policy:
  - ▶ Up to 30 months, with replacement rate  $\approx 40\%$  net median female earnings
  - ▶ Multiple reforms of parental leave over last 50 years
    - ▶ 1961, 1990, 1996, 2000, 2008
- ▶ Institutional child care provision before age 5:
  - ▶ **Nurseries (age 1-2):** limited provision  $\approx 15\%$  of children
  - ▶ **Kindergarten (age 3-5):** more widespread  $\approx 75\%$  of children

# Data

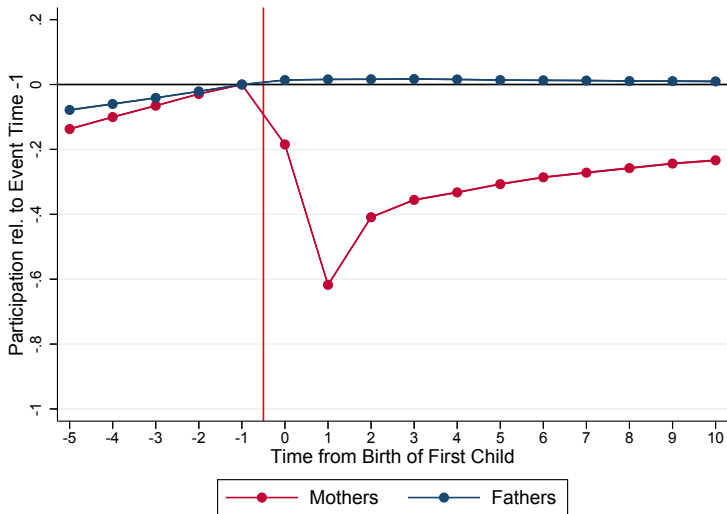
- ▶ **ASSD**: Universe of matched employer employee data 1980-2017
  - ▶ Info on annual earnings + labor contract start/end dates
  - ▶ Detailed geographical info on place residence
  - ▶ + **REV**: earnings history from pension data since 1949
- ▶ Linking children to parents:
  - ▶ ASSD+REV: information on child births for women
  - ▶ Tax data: link fathers to mothers and child
- ▶ **Detailed municipality level data on child care provision**
  - ▶ For all child care institutions (nurseries and kindergarten), info on number of teachers and legal max # of children per teacher

# Child Penalties

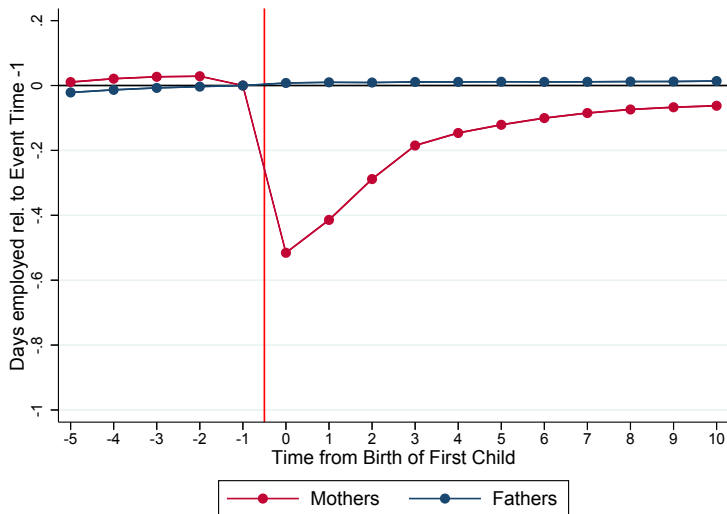
# Child Penalty in Earnings



# Child Penalty in Extensive Margin Labor Supply

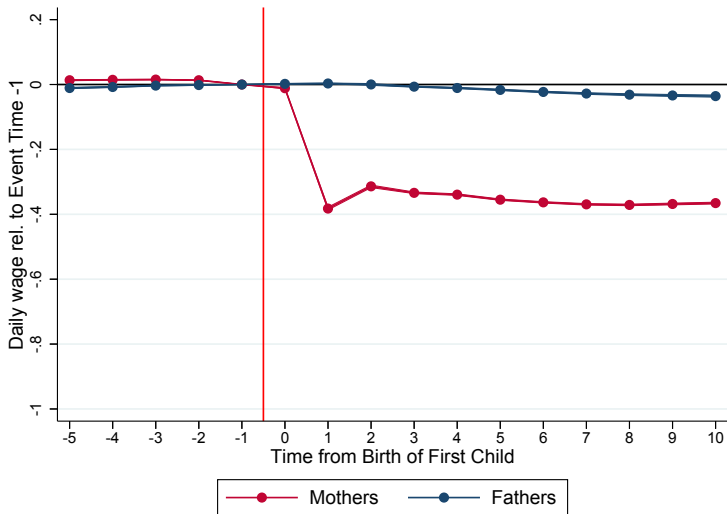


# Child Penalty in Intensive Margin Labor Supply

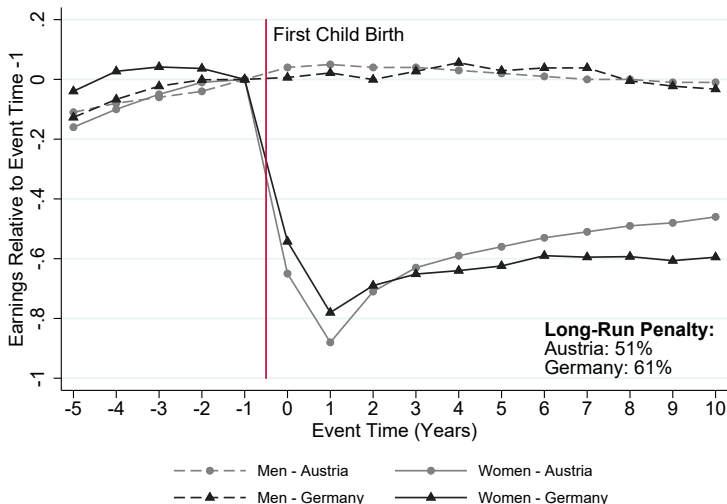




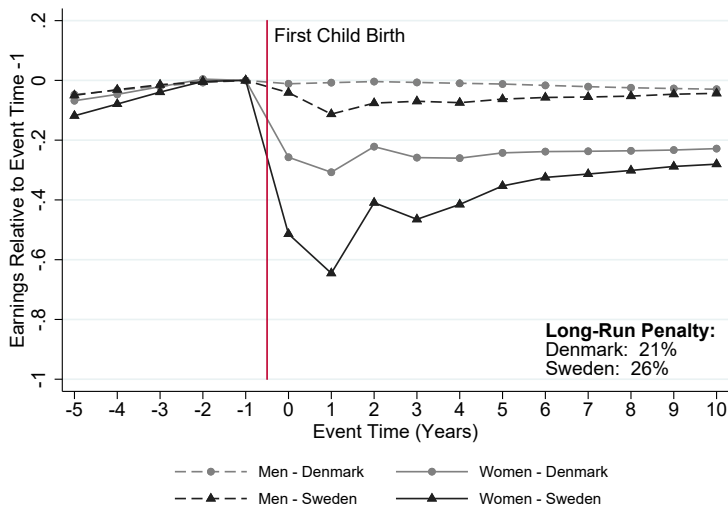
# Child Penalty in Daily Wage Rate



# Child Penalty: German-Speaking Countries

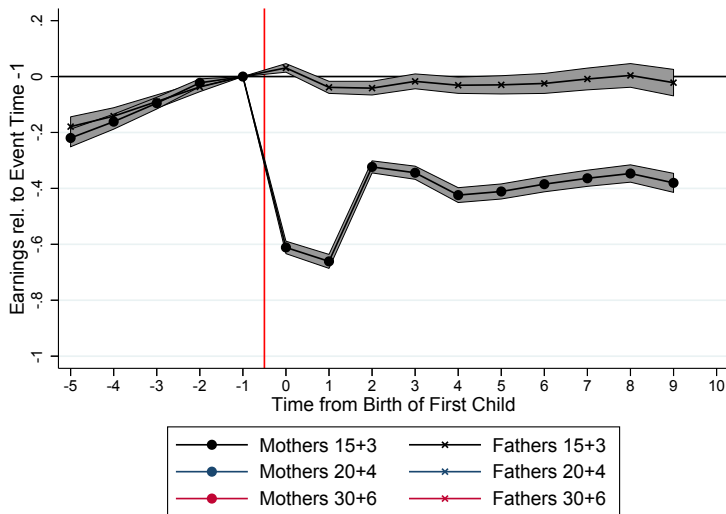


# Child Penalty: Scandinavian Countries

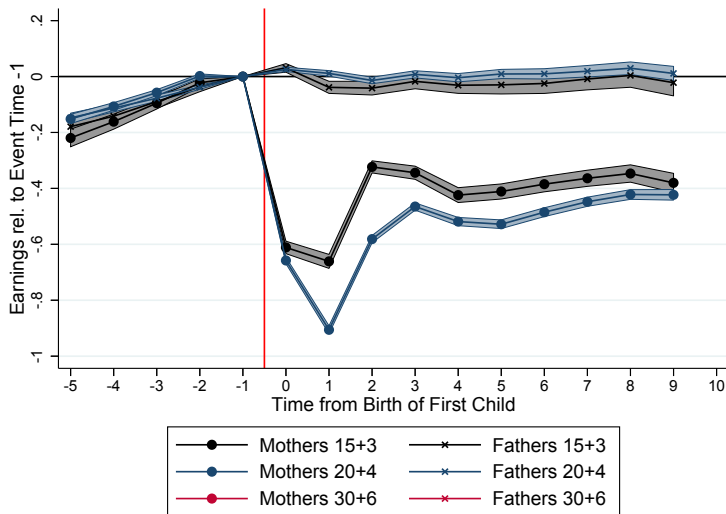


# Impact of Parental Leave Policy

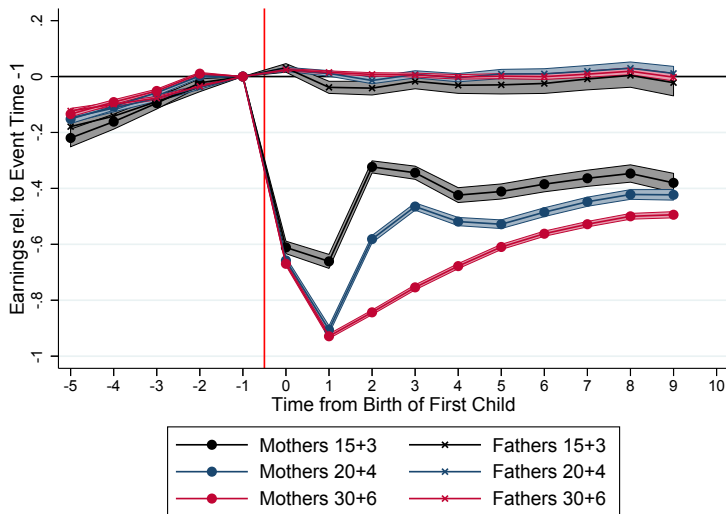
# 2008 Regime: Child Penalty by Parental Leave Option



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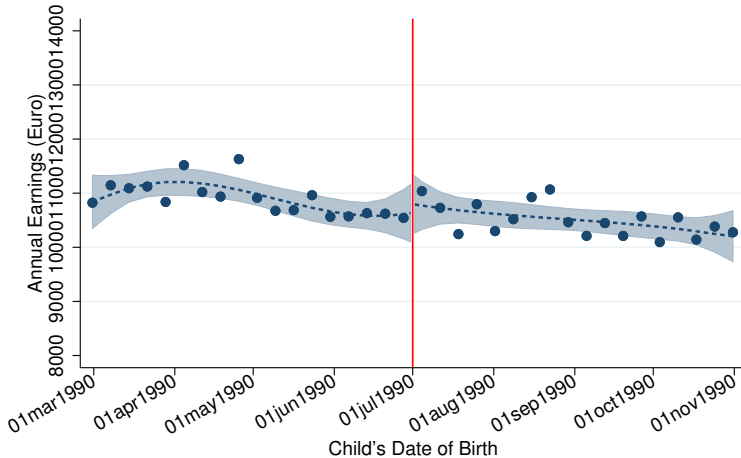


# Parental Leave Reforms: Empirical Strategy

- ▶ 2008 regime evidence confounded by selection into parental leave option
- ▶ Use 4 reforms that exogenously changed PL duration:
  - ▶ **1961**: introduction of 12 months PL
  - ▶ **1990**: increase duration from 12 to 24 months
  - ▶ **1996**: decrease duration from 24 to 18 months
  - ▶ **2000**: increase duration from 18 to 30 months
- ▶ Job protection increased from 12 to 24 months in 1990
- ▶ 1990 to 2000 reforms:
  - ▶ Replacement rate was kept constant
  - ▶ Regime eligibility depends on DOB of child (no grandfathering)
  - ▶ **RD based on DOB of 1st child** relative to cutoff date

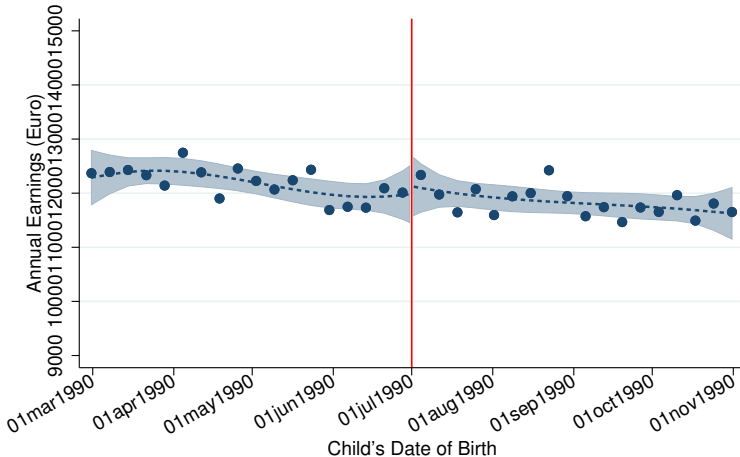


# 1990 Reform: 3 Years Before Birth



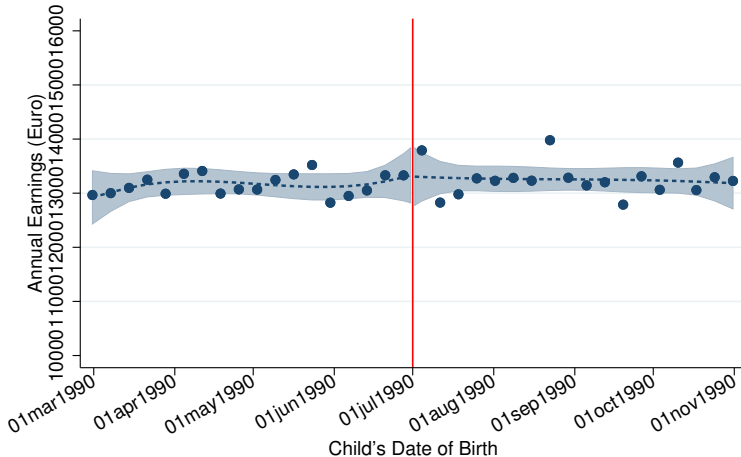
RD Estimate: 151.3 (393.7)  
Div. by Counterfactual: 0.0131 (0.0340)

## 1990 Reform: 2 Years Before Birth



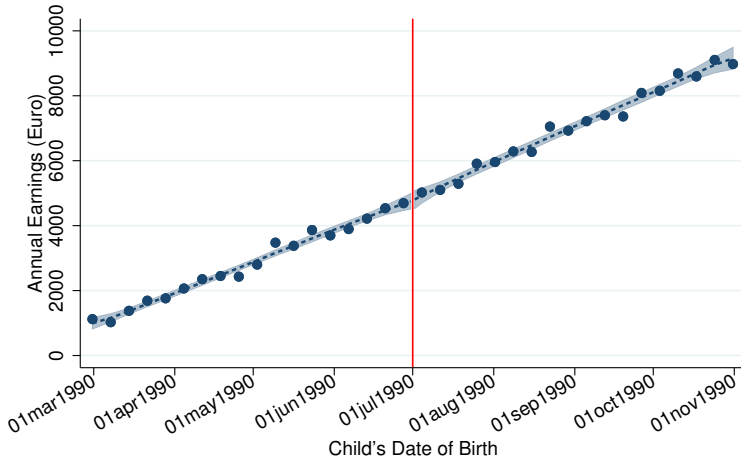
RD Estimate: 133.3 (392.5)  
Div. by Counterfactual: 0.0107 (0.0314)

# 1990 Reform: 1 Year Before Birth



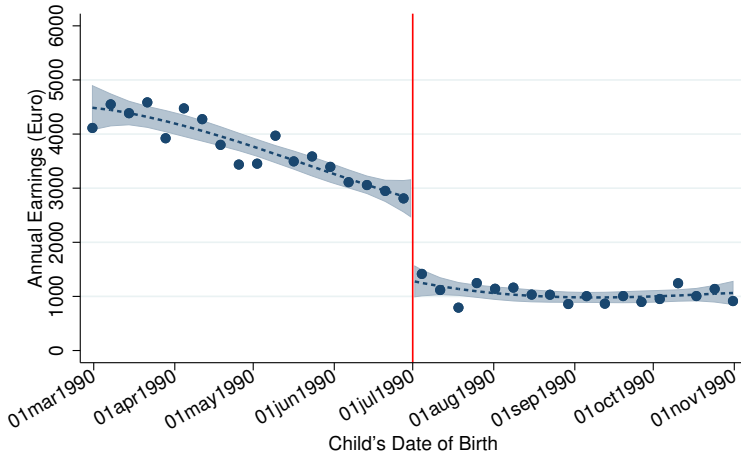
RD Estimate:  $-38.3$  (386.0)  
Div. by Counterfactual:  $-0.0029$  (0.0290)

# 1990 Reform: Year of Birth



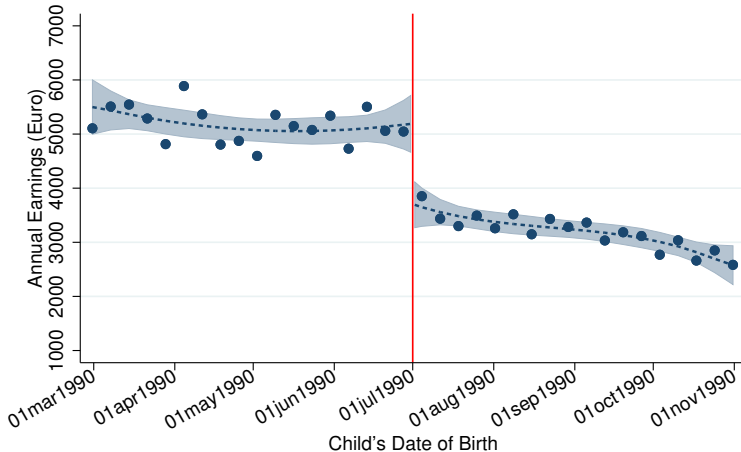
RD Estimate: 27.6 (191.3)  
Div. by Counterfactual: 0.0020 (0.0137)

# 1990 Reform: 1 Year After Birth



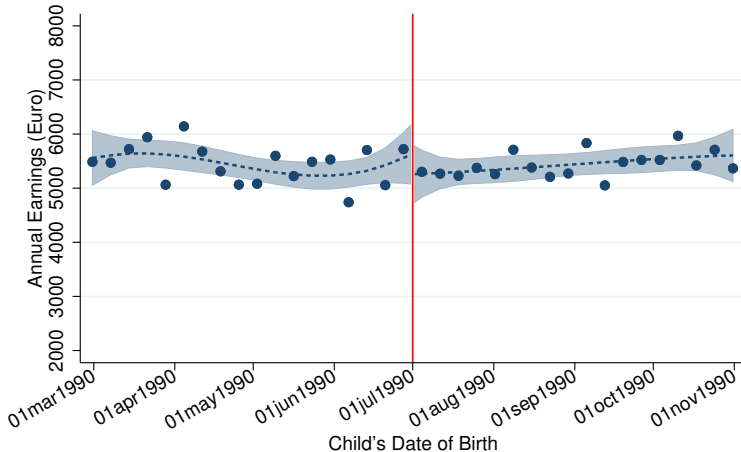
RD Estimate:  $-1522.5$  (236.1)  
Div. by Counterfactual:  $-0.1059$  (0.0164)

# 1990 Reform: 2 Years After Birth



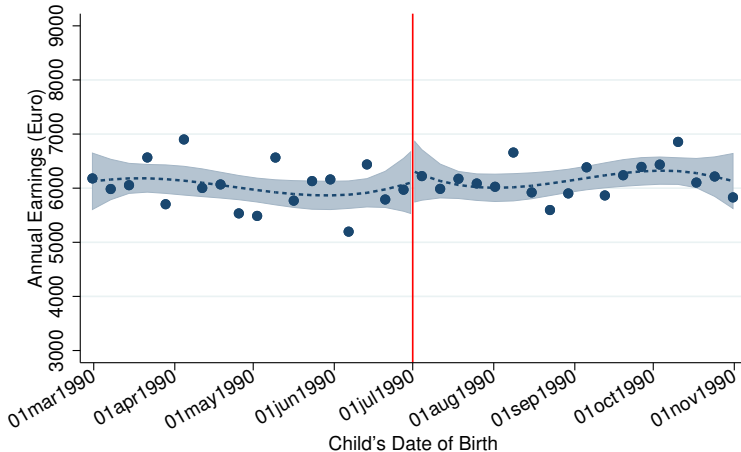
RD Estimate:  $-1501.6$  (356.4)  
Div. by Counterfactual:  $-0.1021$  (0.0242)

# 1990 Reform: 3 Years After Birth



RD Estimate:  $-387.2$  (396.9)  
Div. by Counterfactual:  $-0.0259$  (0.0265)

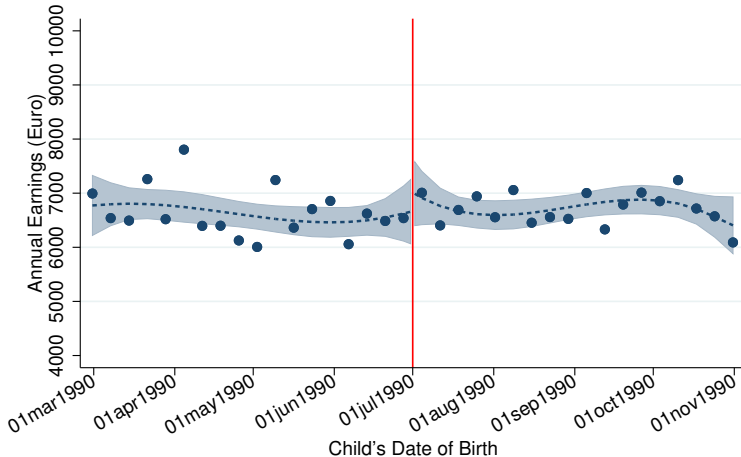
# 1990 Reform: 4 Years After Birth



RD Estimate: 184.5 (419.9)  
Div. by Counterfactual: 0.0122 (0.0277)

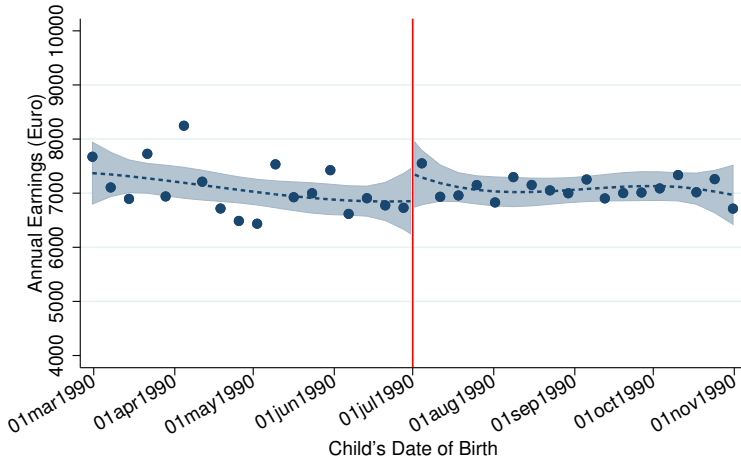


# 1990 Reform: 5 Years After Birth



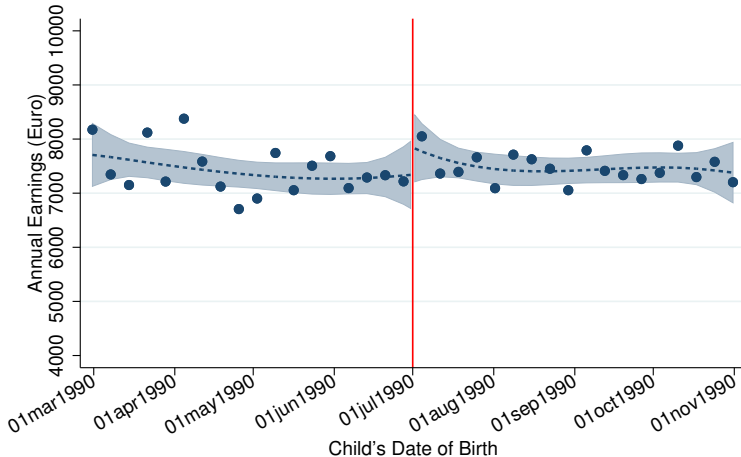
RD Estimate: 316.7 (440.6)  
Div. by Counterfactual: 0.0206 (0.0286)

# 1990 Reform: 6 Years After Birth



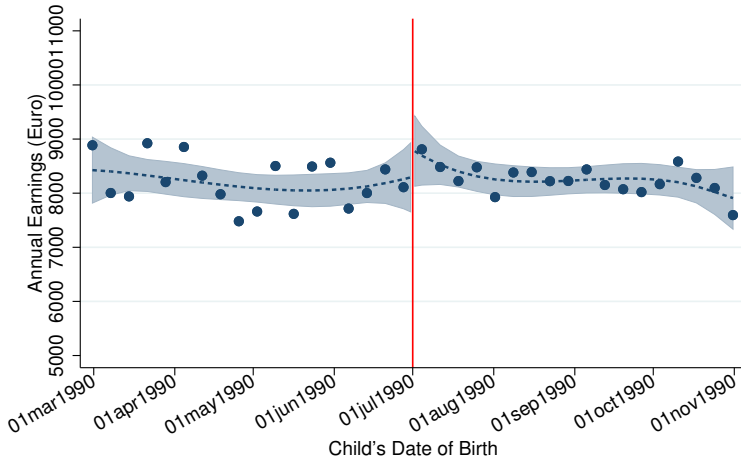
RD Estimate: 488.7 (447.3)  
Div. by Counterfactual: 0.0311 (0.0284)

# 1990 Reform: 7 Years After Birth



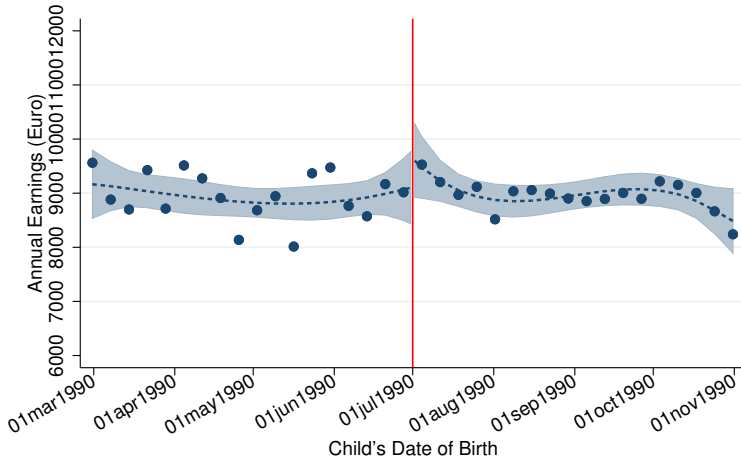
RD Estimate: 483.5 (460.7)  
Div. by Counterfactual: 0.0302 (0.0288)

# 1990 Reform: 8 Years After Birth



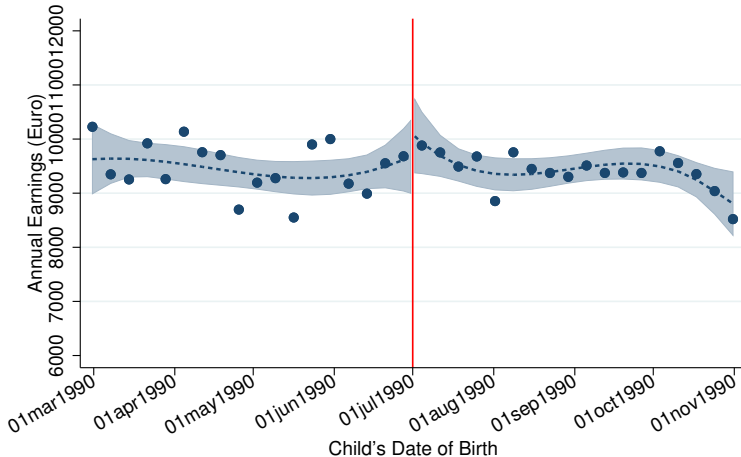
RD Estimate: 471.5 (478.9)  
Div. by Counterfactual: 0.0288 (0.0292)

# 1990 Reform: 9 Years After Birth



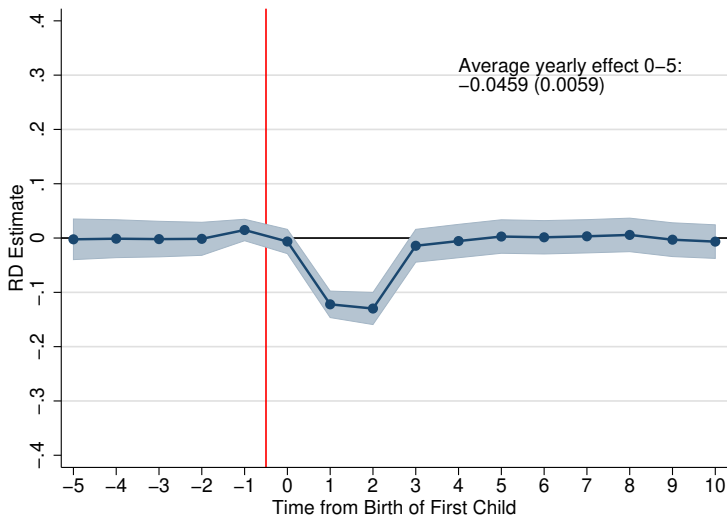
RD Estimate: 485.4 (500.2)  
Div. by Counterfactual: 0.0288 (0.0297)

# 1990 Reform: 10 Years After Birth

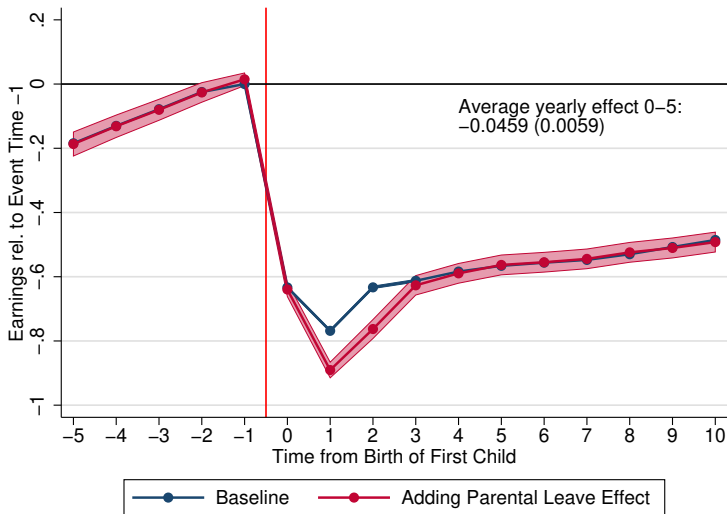


RD Estimate: 360.1 (502.1)  
Div. by Counterfactual: 0.0208 (0.0290)

# 1990 Reform: Dynamic RD Estimates

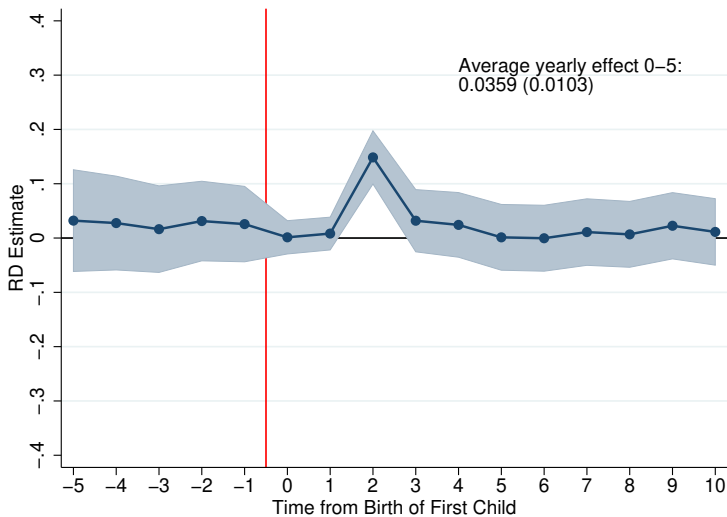


# 1990 Reform: Effects on Child Penalties

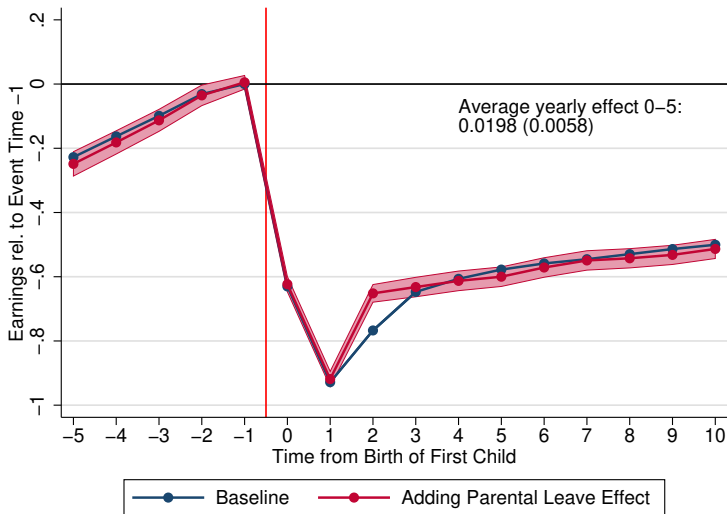




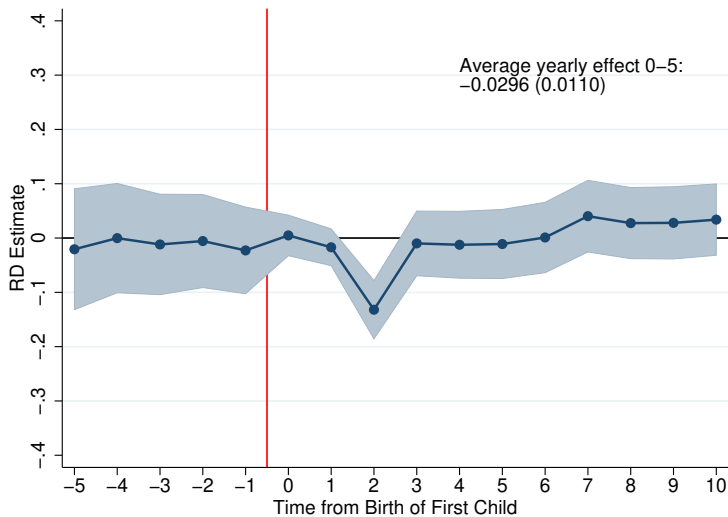
# 1996 Reform: Dynamic RD Estimates



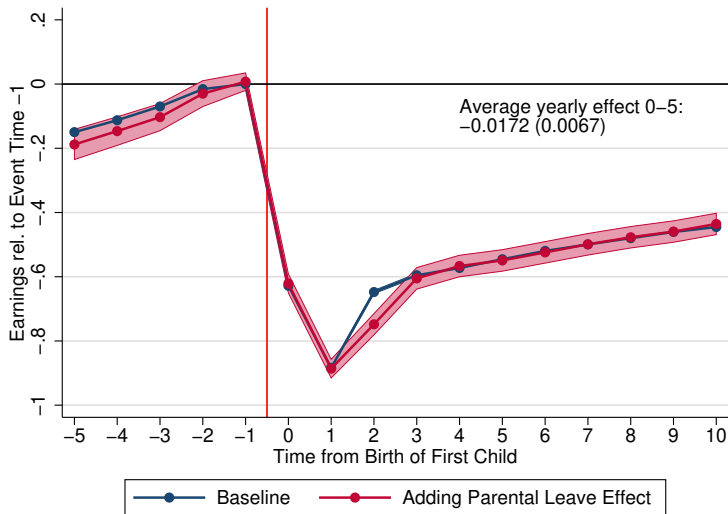
# 1996 Reform: Effects on Child Penalties



# 2000 Reform: Dynamic RD Estimates



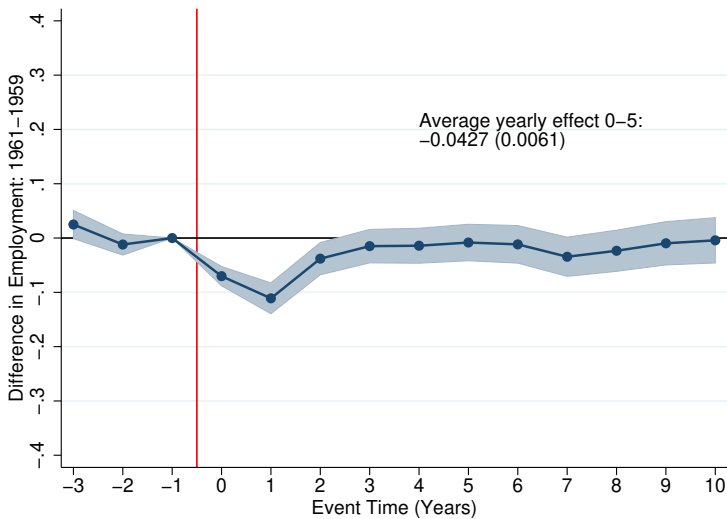
# 2000 Reform: Effects on Child Penalties



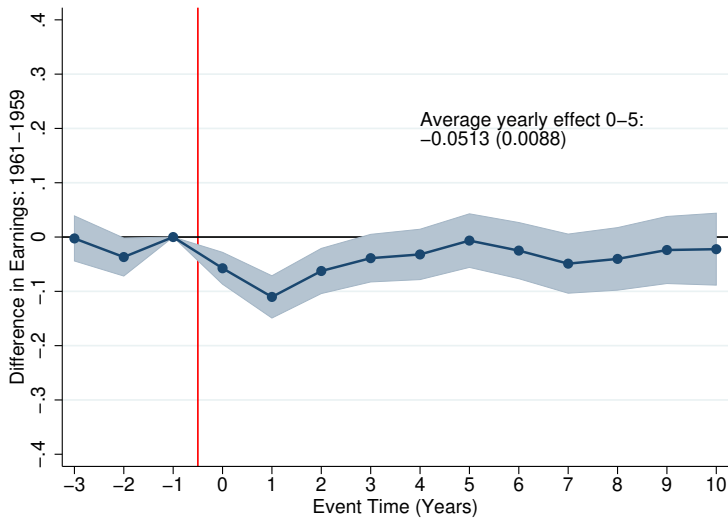
# Parental Leave: The 1961 Reform

- ▶ Introduction of 1 year Parental Leave
  - ▶ Starting in January 1961
  - ▶ PL comes with 1 year Job Protection [1961 Reform Details](#)
  - ▶ Interesting in context of US debate
- ▶ Data:
  - ▶ REV: Pension system register with info on careers since 1949
- ▶ Strategy: Diff-in-Diff
  - ▶ Grandfathering (no RD) [1961 Reform Take-Up](#)
  - ▶ Compare 1959 births to 1961 births
  - ▶ Identification: no trends in child penalties by birth-cohort

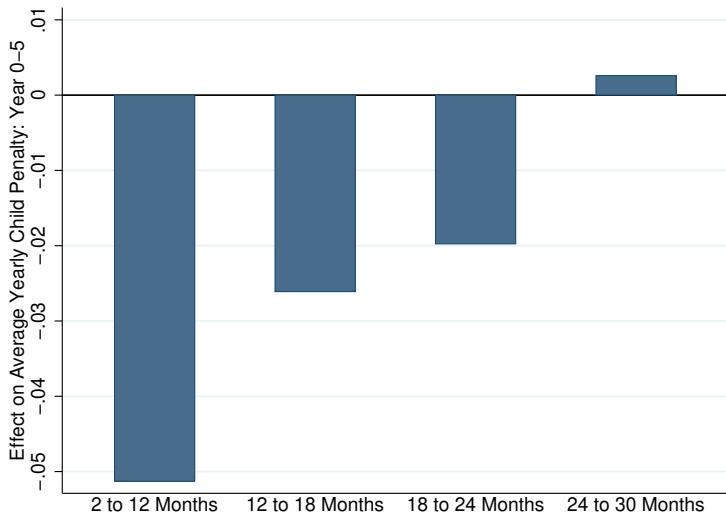
# 1961 Reform: Dynamic Employment Effects



# 1961 Reform: Dynamic Earnings Effects



# Parental Leave Expansions: Effects by Duration





# Impact of Child Care Provision

# Granular Measures of Child Care Provision

- ▶ For each municipality X year, granular information on all nurseries & kindergarten:
  - ▶ Location, opening hours, # of teachers, contracts (part-time/full time), and legal max # of children per teacher
- ▶ Create 2 indices of child care provision at municipality level:
  - ▶ **Index 1-2 (Nursery Care)**

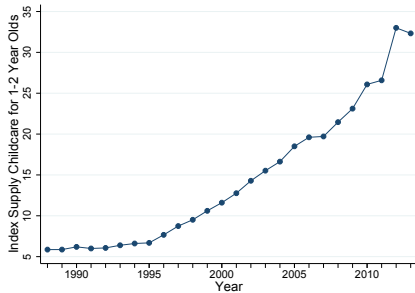
$$\text{Index 1-2} = \frac{\# \text{ FTE Child Care Spots for Children Age 1-2}}{\# \text{ Children of Age 1-2}}$$

- ▶ **Index 3-5 (Pre-School Care)**

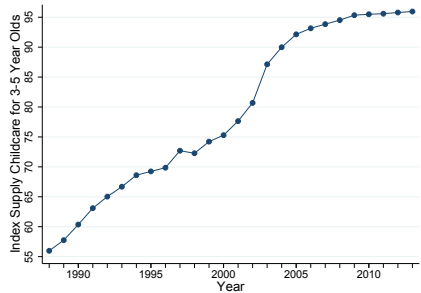
$$\text{Index 3-5} = \frac{\# \text{ FTE Child Care Spots for Children Age 3-5}}{\# \text{ Children of Age 3-5}}$$

# Index of Child Care Provision Over Time

## Child Care Index 1-2

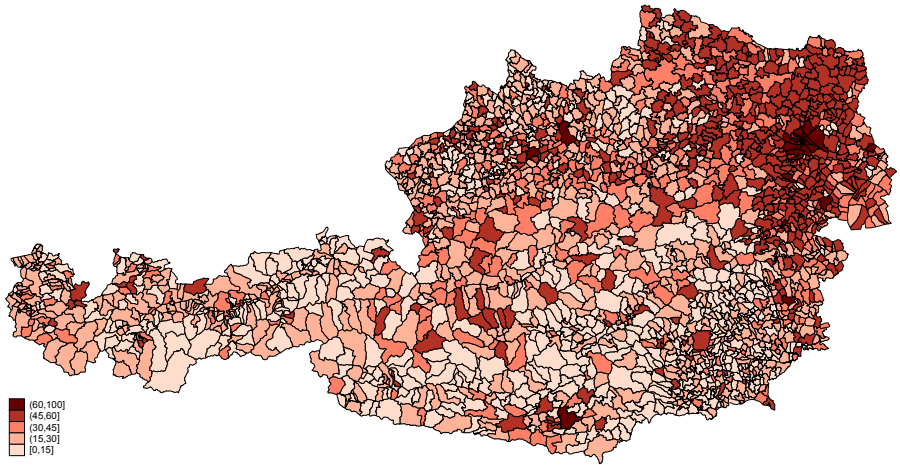


## Child Care Index 3-5



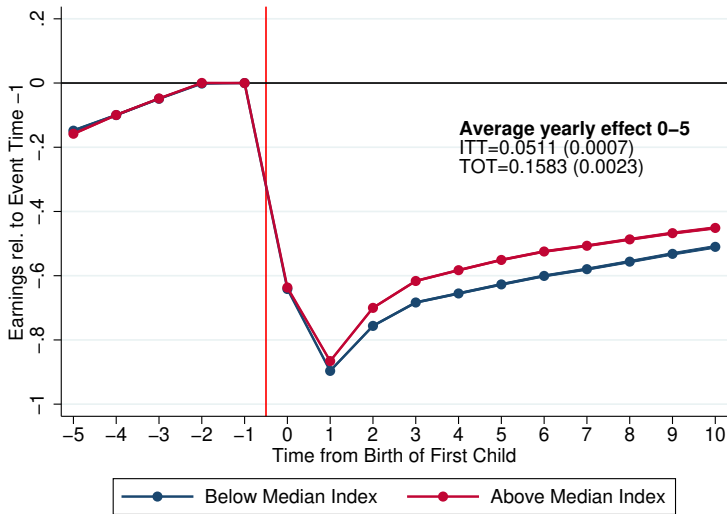
# Spatial Variation in Child Care Provision

Index 1-5 - 1990



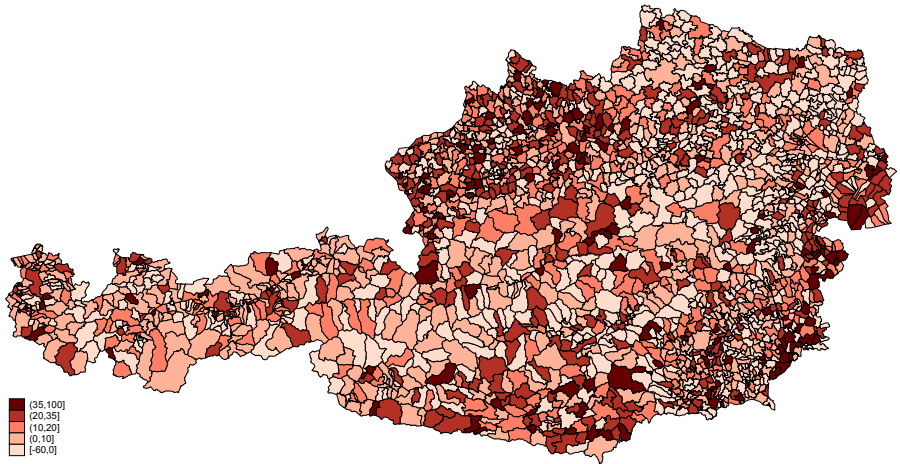
# Child Penalty by Level of Child Care Provision

Below vs Above Median Index 1-5 in 1990



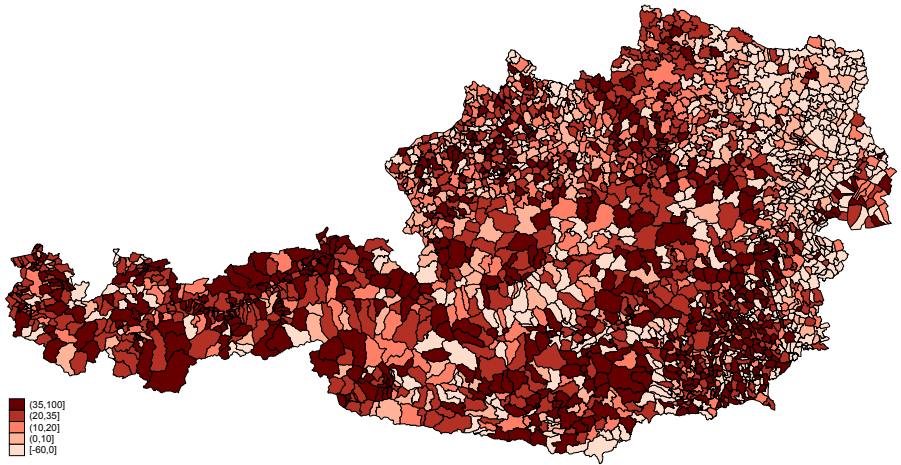
# Spatial Variation in Child Care Expansion

Change in Index 1-5 Between 1990 and 2000



# Spatial Variation in Child Care Expansion

Change in Index 1-5 Between 2000 and 2010

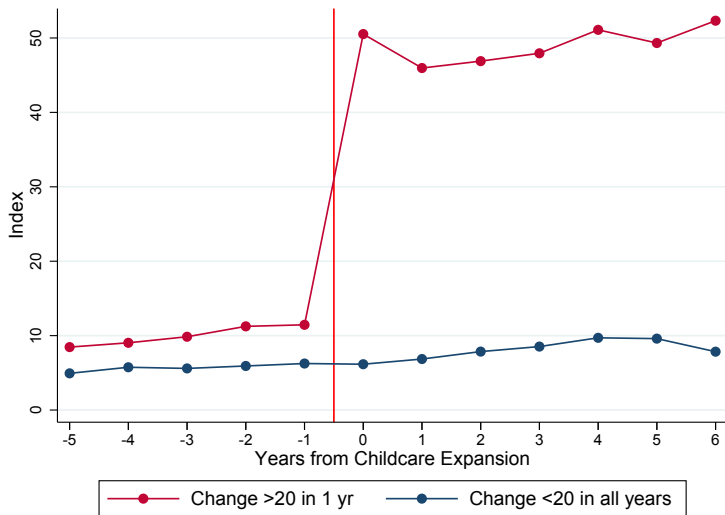


# Exploiting Local Child Care Expansions

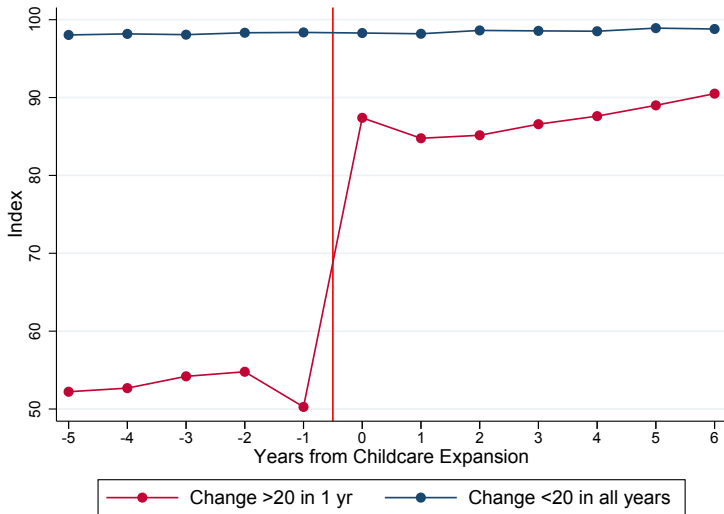
- ▶ Spatial variation is conceptually appealing
  - ▶ Macro vs micro effect
  - ▶ No comparison btw women with vs w/o young children (biased by dynamic effects)
  - ▶ But spatial variation often endogenous
- ▶ Isolate episodes of large and sudden increases in child care provision at municipality level
  - ▶ Index increase  $> 20$  in a single year
  - ▶ Driven by large supply shocks (new facility, new teachers)
- ▶ Compare dynamic outcomes of women in treated municipalities to similar women (IPW) in control municipalities
- ▶ Compare expansions of nursery care (year 1-2) vs pre-school care (year 3-5)



# Nursery Care Expansion (Year 1-2)

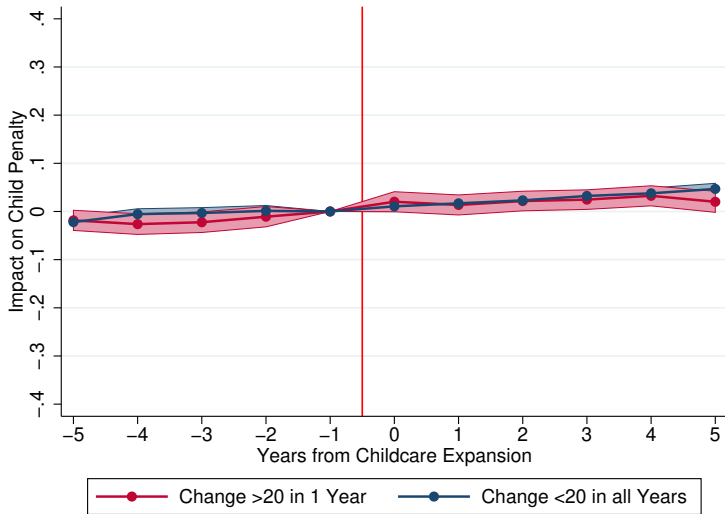


# Pre-School Care Expansion (Year 3-5)



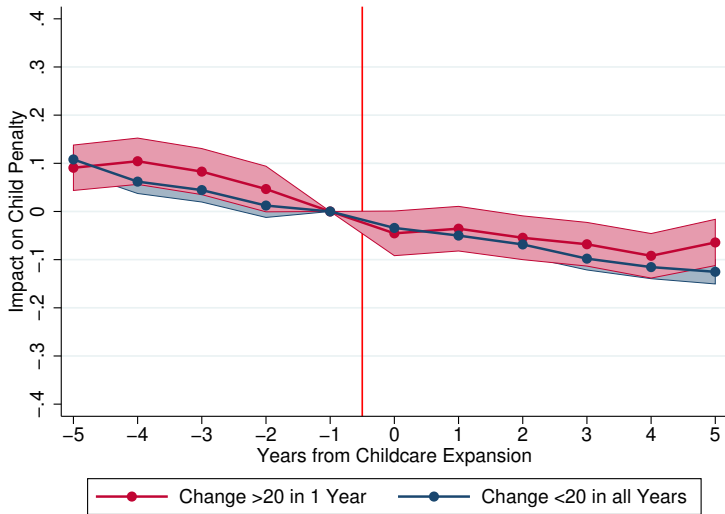
# Nursery Care Expansion

Earnings 1 Year Before Birth



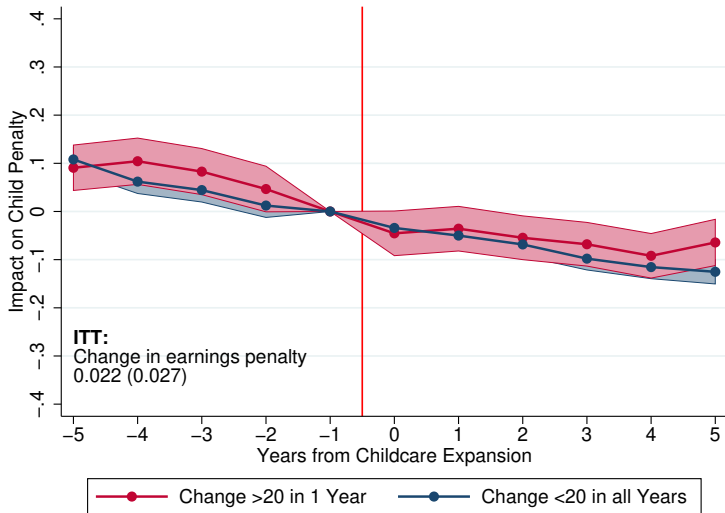
# Nursery Care Expansion

Earnings in Year 1 & 2 Post Birth



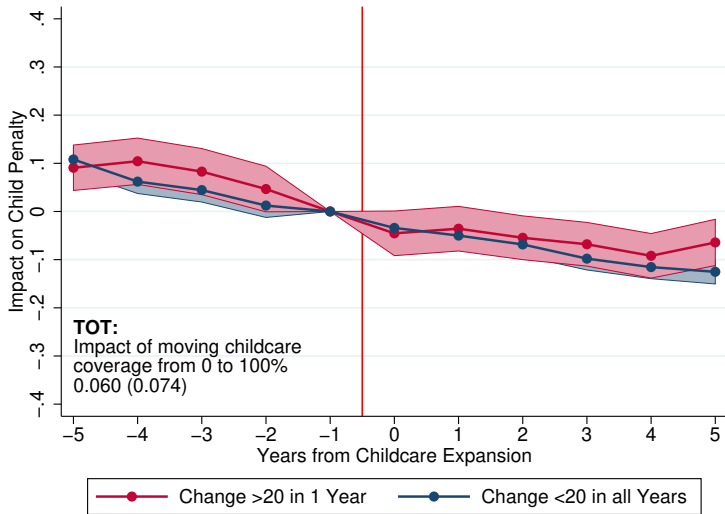
# Nursery Care Expansion

Earnings in Year 1 & 2 Post Birth



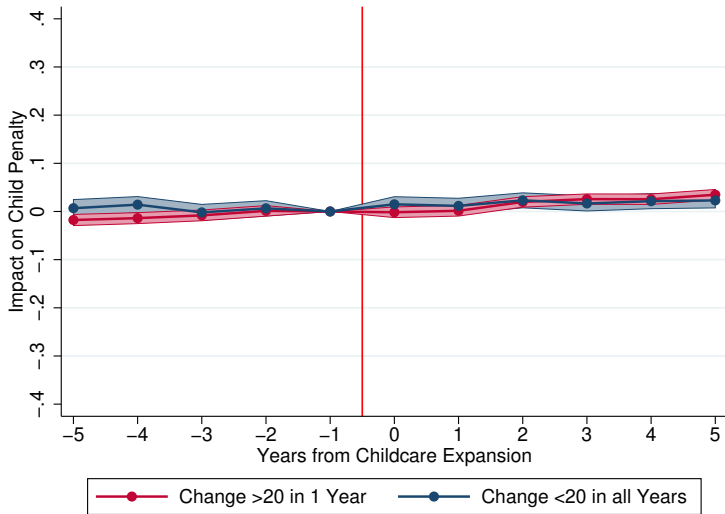
# Nursery Care Expansion

Earnings in Year 1 & 2 Post Birth



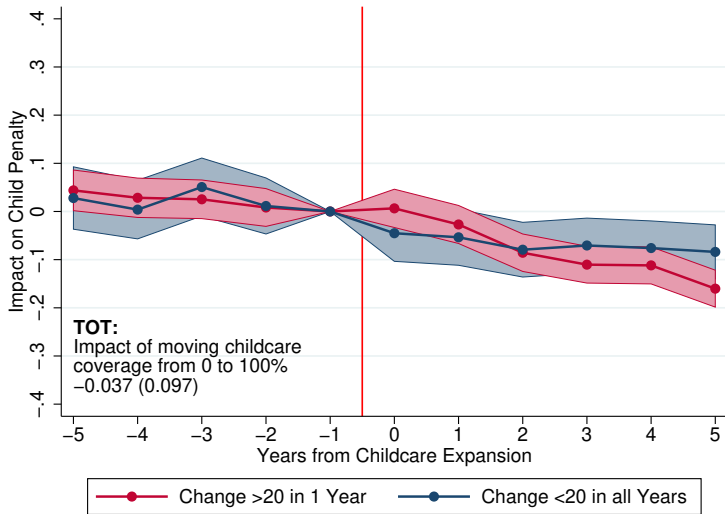
# Pre-School Care Expansion

Earnings 1 Year Before Birth



# Pre-School Care Expansion

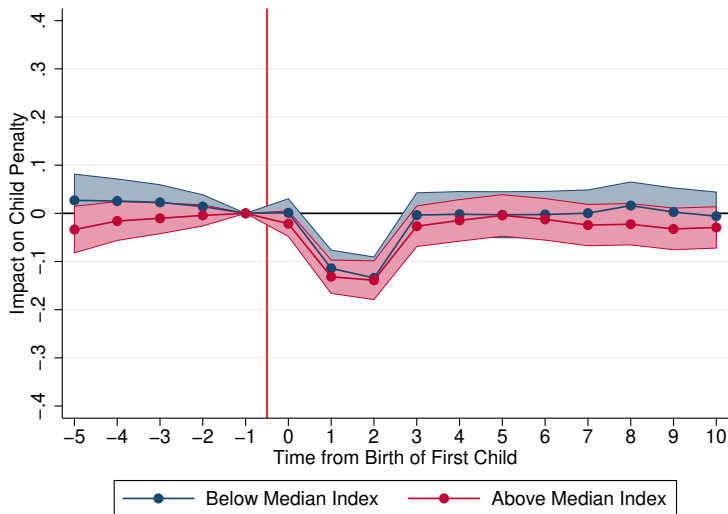
Earnings 3 to 5 Years Post Birth



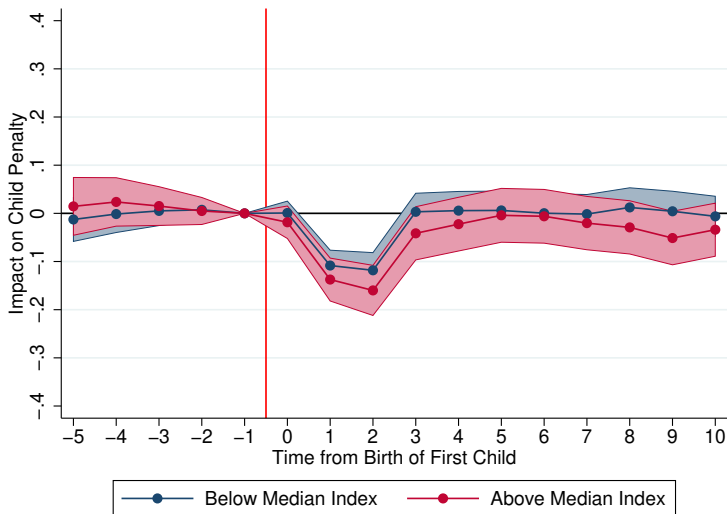


## Interaction Effects?

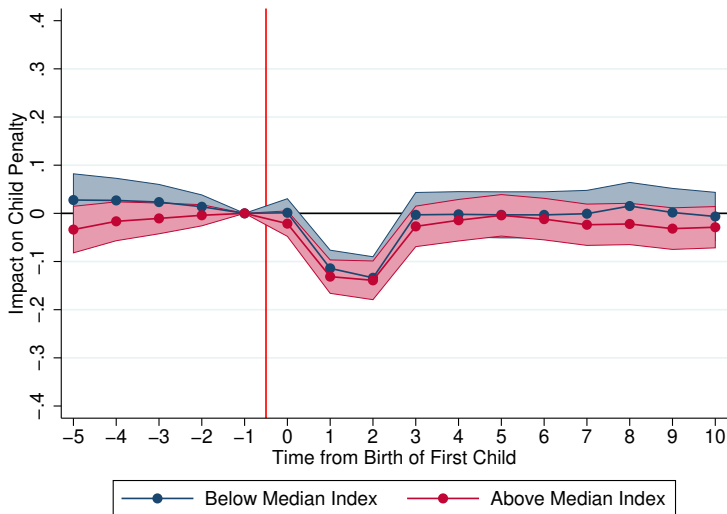
# Effects of 1990 Parental Leave Reform by Level of Child Care Provision (Index 1-5)



# Effects of 1990 Parental Leave Reform by Level of Child Care Provision (Index 1-2)



# Effects of 1990 Parental Leave Reform by Level of Child Care Provision (Index 3-5)



## Discussion & Implications

# Gender Inequality: What Have Family Policies Done?

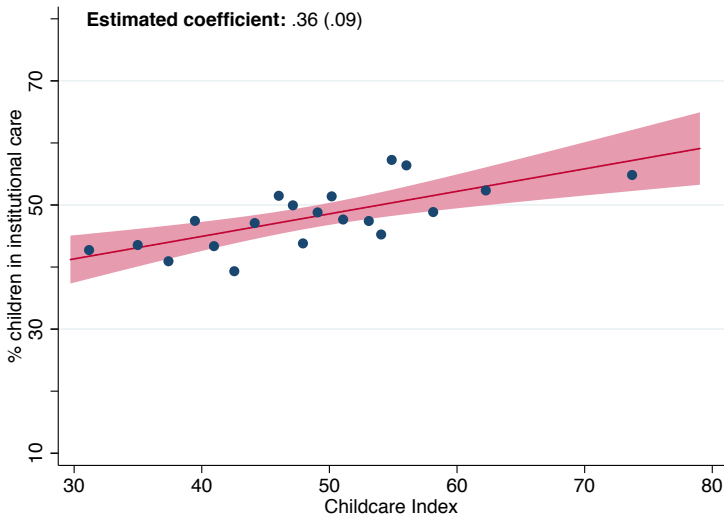
- ▶ OB decomposition of long run cross-sectional gender gap in earnings
  - ▶ Child-related inequality vs other factors
- ▶ Child penalties by birth cohort over the very long run
  - ▶ Remarkably stable over past 50 years! Penalties over 50 yrs
- ▶ Overall decline in gender inequality
  - ▶ Mostly due to other factors (education, etc.)
  - ▶ Child-related inequality very stable, explains growing share of GG Decomposition
- ▶ Limited role of policies on long term gender inequality
  - ▶ Counterfactual decompositions

# Why Aren't Policies More Effective?

- ▶ Take-up of institutional child care not conducive to higher labor supply. Why?
  - ▶ Crowd-out of child care substitutes?
  - ▶ High cost of LS?
    - ▶ Frictions / constraints
    - ▶ Preferences / choices / high value of maternal care
- ▶ Use external information from Census in 1995 and 2002
  - ▶ Information on time use and child care
  - ▶ Match with child care index at the political district level ( $\approx 100$ )
  - ▶ Cross-sectional variation
    - ▶ Control for selection using observables (Age & Education)

# Correlation Btw Child Care Index & Take-Up

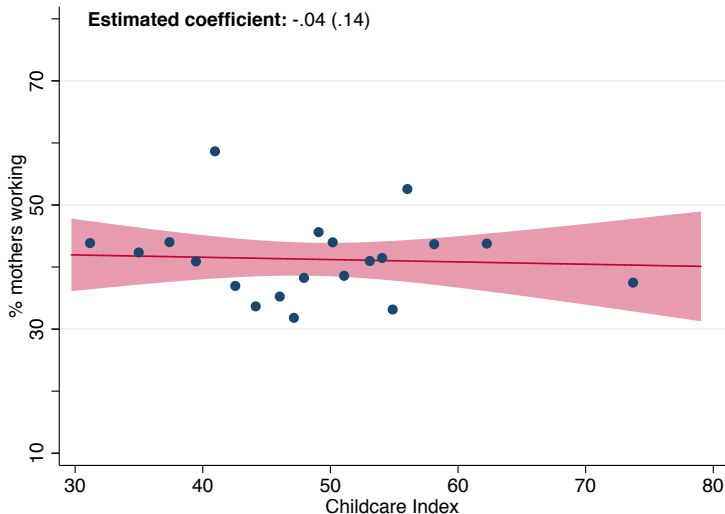
## With Controls





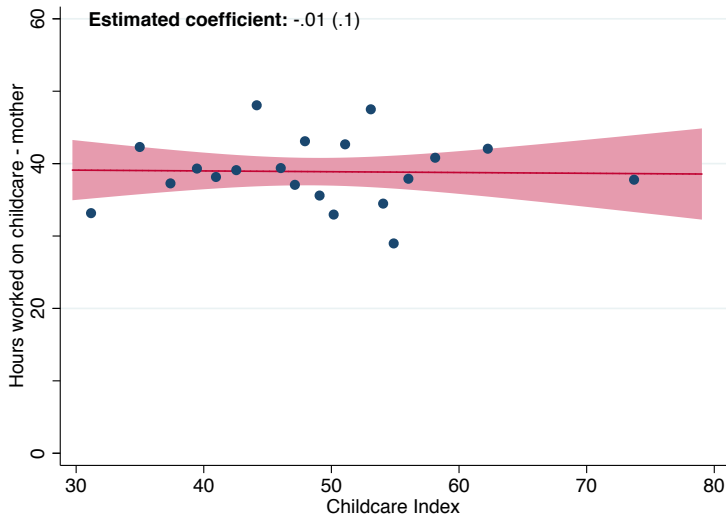
# Correlation Btw Child Care Index & Employment

## With Controls



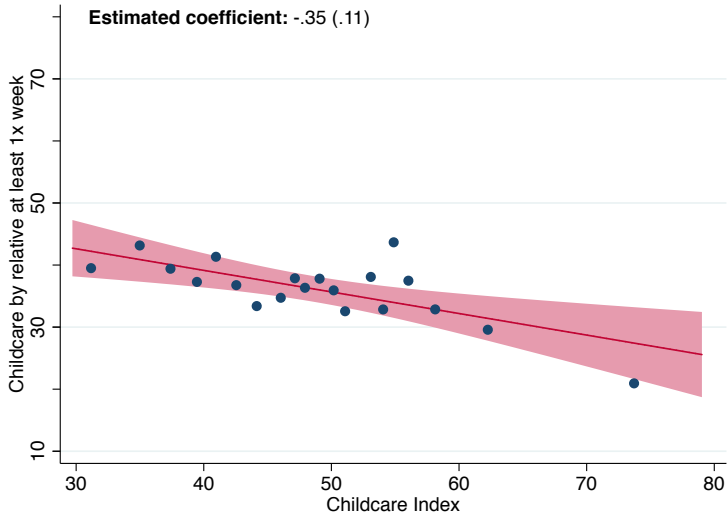
# Correlation Btw Child Care Index & Maternal Care

## With Controls



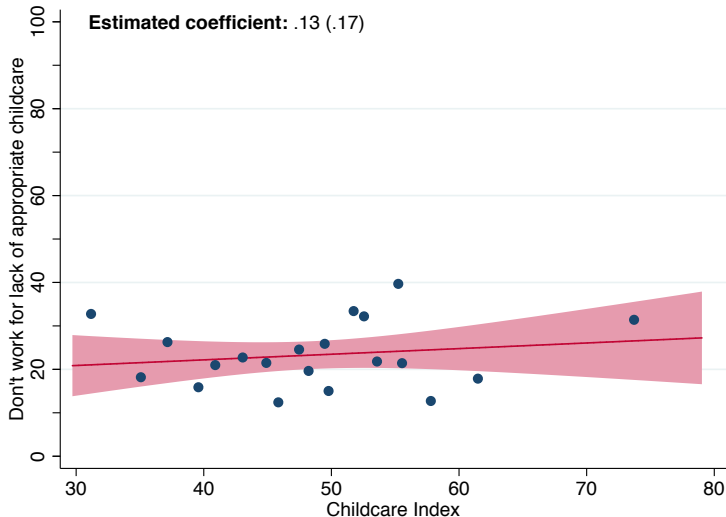
# Correlation Btw Child Care Index & Alternative Care

## With Controls



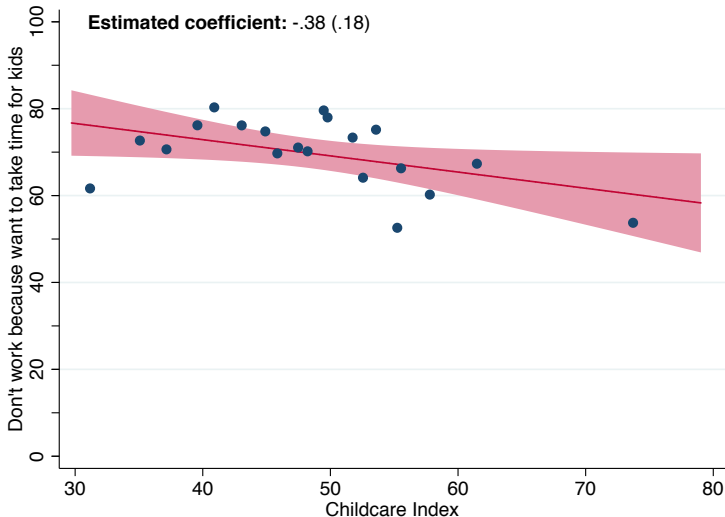
# Correlation Btw Index & Child Care Constraints

Non-Working Mothers - With Controls



# Correlation Btw Index & Preference for Maternal Care

Non-Working Mothers - With Controls



# Conclusions

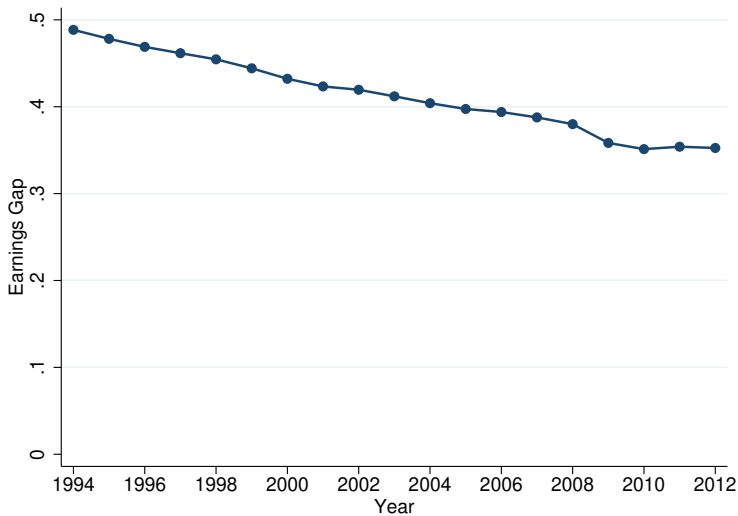
# Gender Inequality: Limited Role for Policies?

- ▶ Considerable interest in ability of early childhood policies to shape dynamics of gender inequality
- ▶ We study:
  - ▶ Effects of key bundle of early childhood policies
  - ▶ On full dynamics of relative earnings within HH
  - ▶ In context of large gender inequality & child penalties
- ▶ Family policy has had little effect on gender inequality
  - ▶ Small short run negative effect of PL. No long run effects
  - ▶ Insignificant effect of child care access
  - ▶ No interacted effects
- ▶ Why is more child care not conducive to more labor supply?
  - ▶ Role of choices seems important Life Satisfaction
  - ▶ Role of norms in explaining these choices Corr. Penalty vs Norm

## Additional Figures

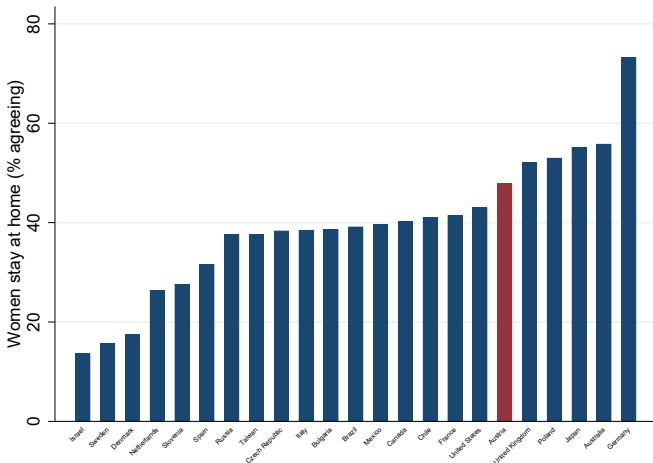


# Total Gender Gap in Earnings - Austria (1994-2012)



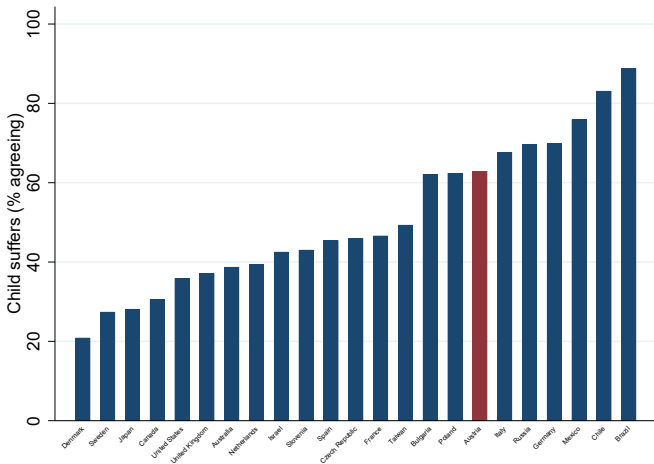
# “A Woman Should Stay Home When She Has a Child Under School Age”?

Do You Agree With the Statement



# “When a Mother Works for Pay, Her Children Suffer”?

Do You Agree With the Statement



# Event Study Approach

- ▶ Consider men and women who have their first child at event time 0
- ▶ For men and women ( $g = m, w$ ), we regress

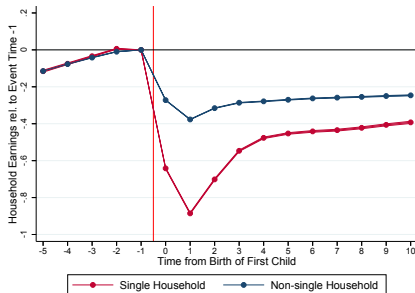
$$Y_{ist}^g = \sum_{j \neq -1} \alpha_j^g \cdot \text{EVENT}_{ij} + \text{age/year dummies}$$

where  $Y_{ist}^g$  is the outcome for individual  $i$  in year  $s$  at event time  $t$ , and event coefficients  $\alpha_j^g$  measure impact relative to event time -1

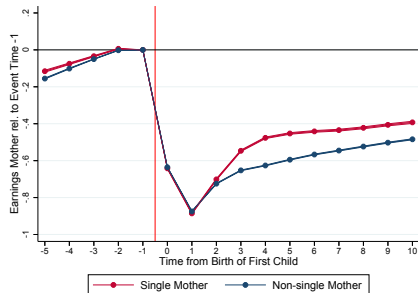
- ▶ We show  $P_t^g = \hat{\alpha}_t^g / E \left[ \tilde{Y}_{ist}^g \mid t \right]$  over time where  $\tilde{Y}_{ist}^g$  is the predicted outcome when omitting the event dummies

# Child Penalty by Family Structure

## Household Level

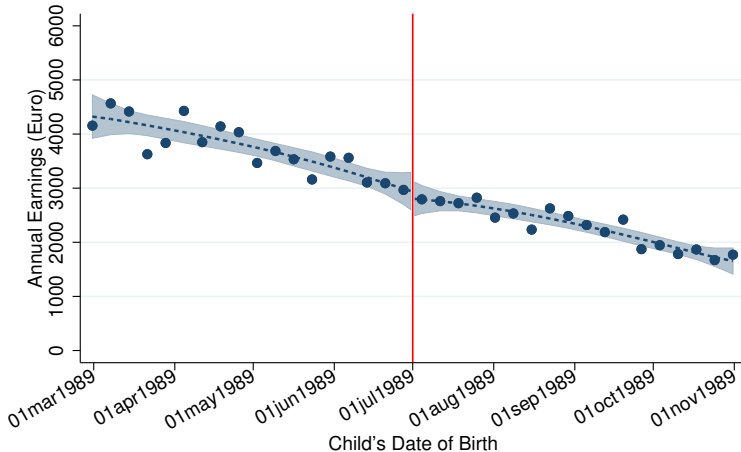


## Individual Level



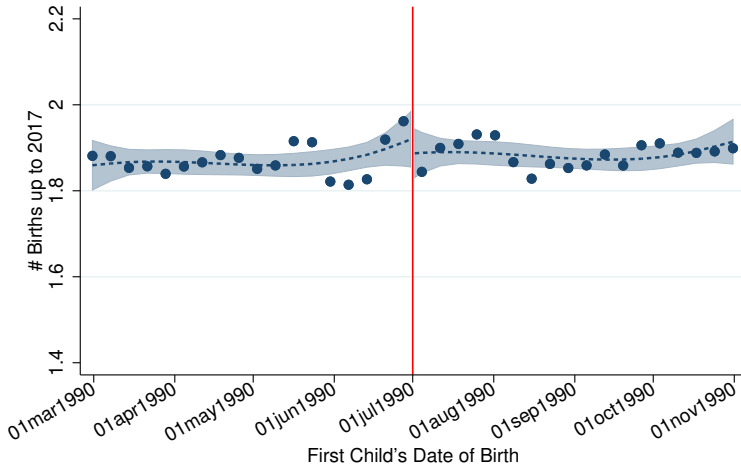
[Back](#)

# 1990 Reform: 1989 Placebo Births



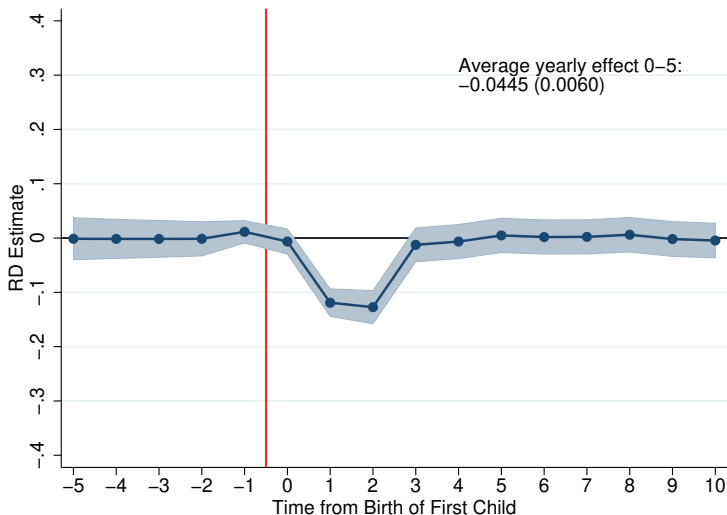
RD Estimate:  $-129.8$  (245.8)  
Div. by Counterfactual:  $-0.0090$  (0.0171)

# 1990 Reform: Subsequent Fertility



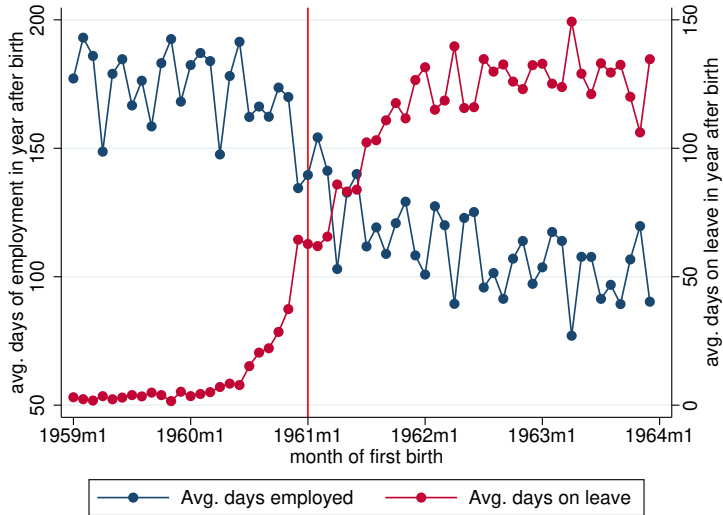
RD Estimate:  $-0.0353$  ( $0.0452$ )

# 1990 Reform: Dynamic Effects - 1 Child Only

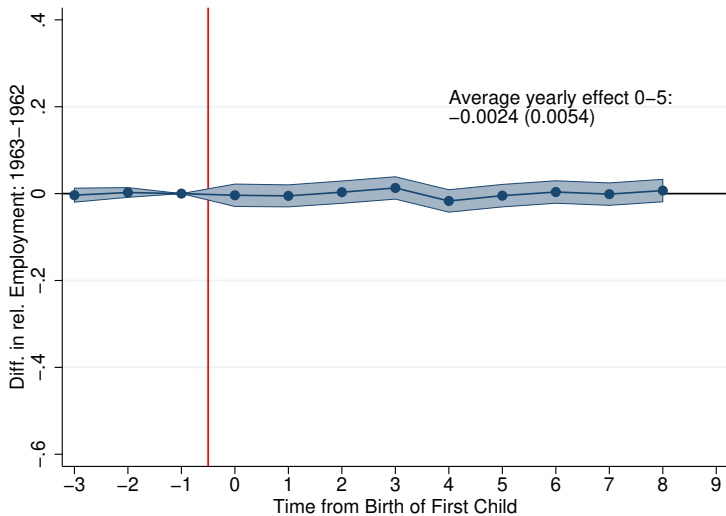




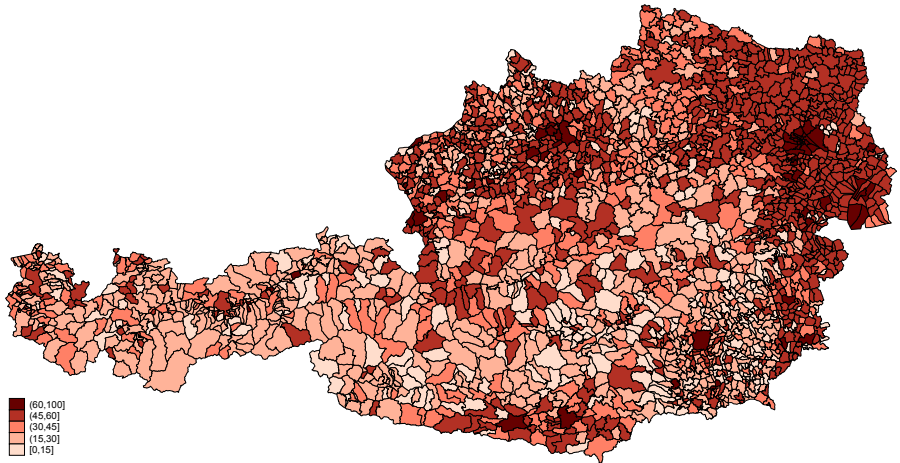
# 1961 Reform: Take-Up



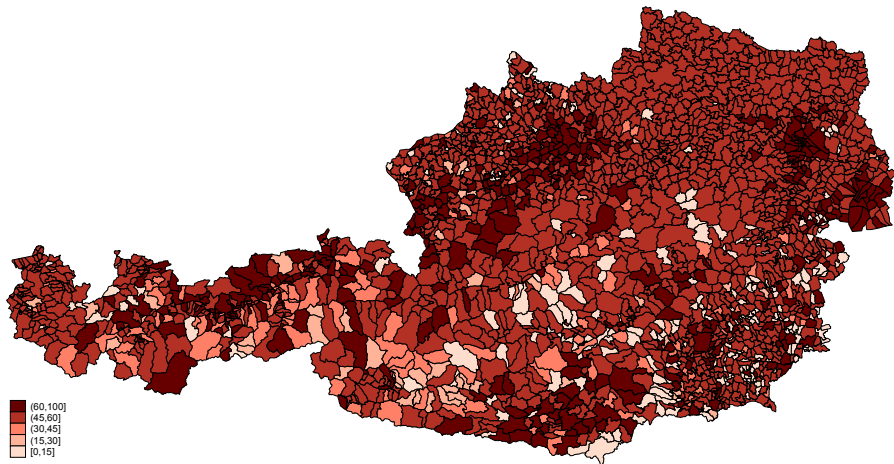
# 1961 Reform: Robustness to Trends



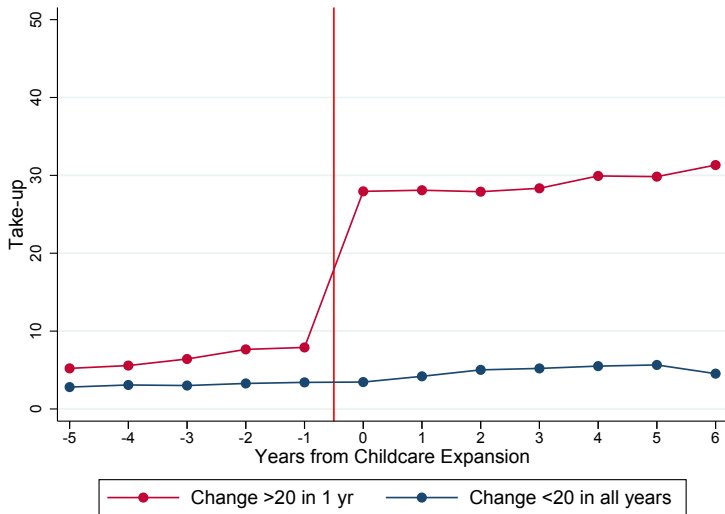
# Spatial pattern of index 1-5 - 2000



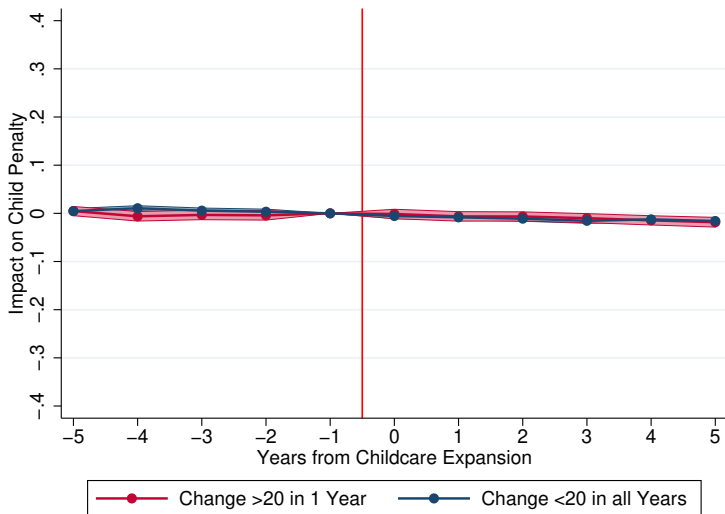
# Spatial pattern of index 1-5 - 2010



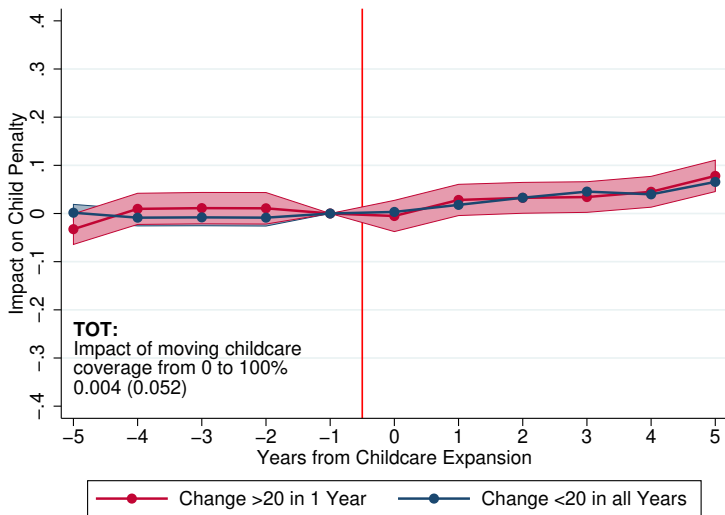
# Event study: Index 1-2, take up



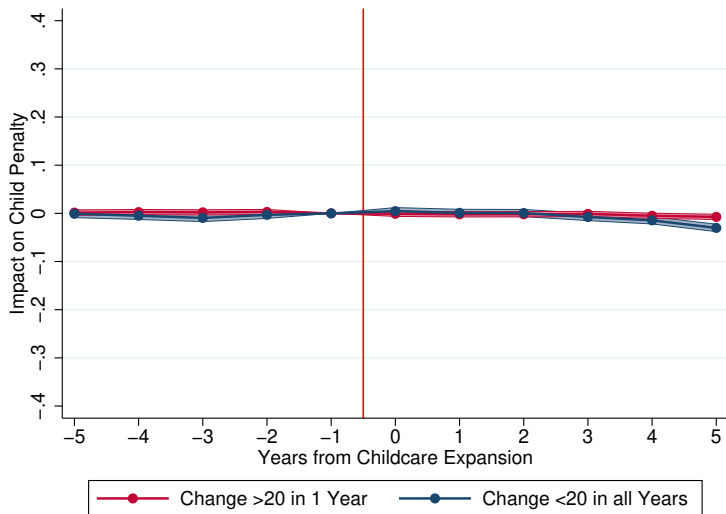
## Event study: Index 1-2 employment placebo (1 year before event)



# Event study: Index 1-2 cumulative employment 1-2

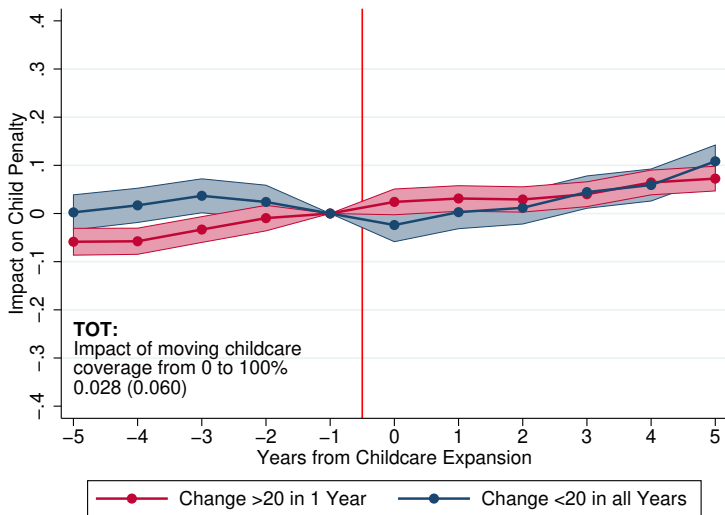


## Event study: Index 3-5 employment placebo (1 year before event)

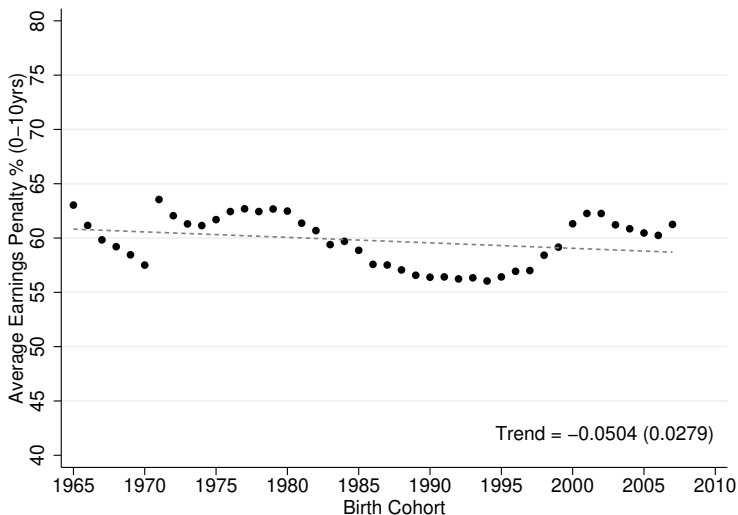




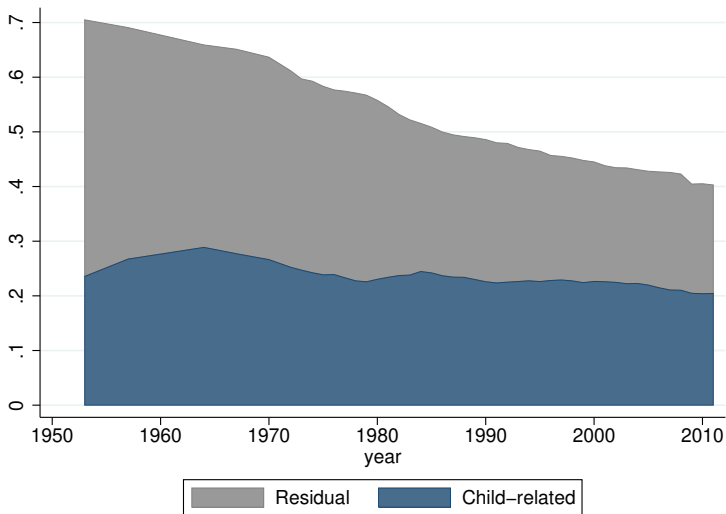
# Event study: Index 3-5 cumulative employment 3-5



# Child Penalty by 1st Birth Cohort 1965-2008

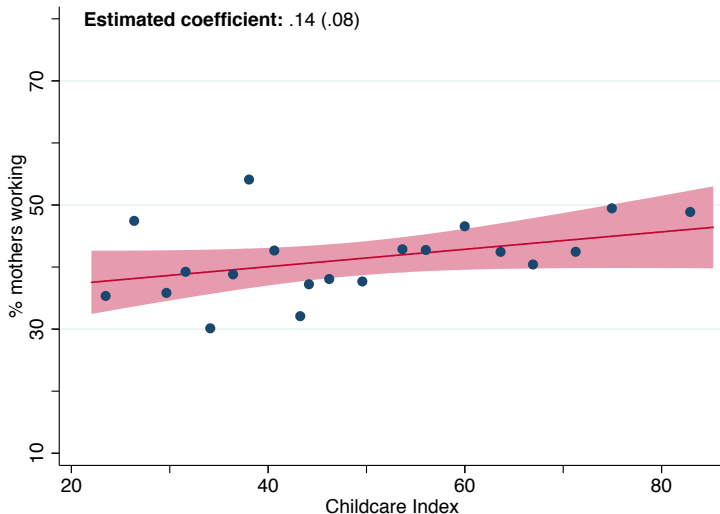


# Gender Gap in Earnings 1955-2012



# Correlation Btw Child Care Index & Employment

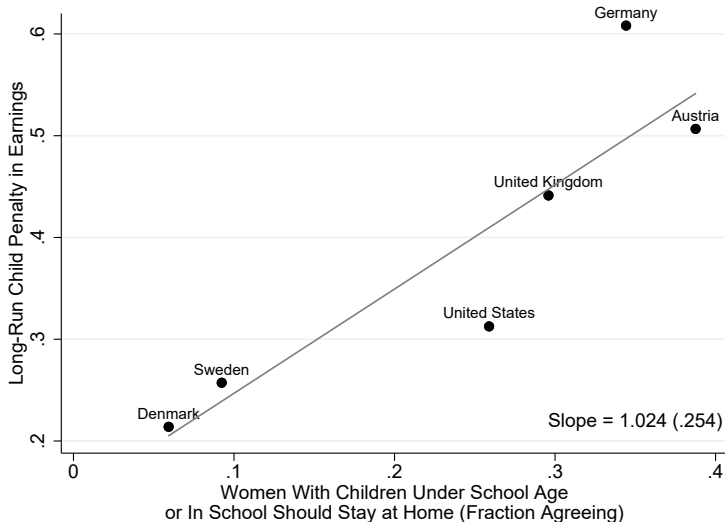
No Controls



# Event Study of Life Satisfaction Around Child Birth



# Correlation Btw Penalty and Elicited Gender Norm



## Related Literature

- ▶ Literature on career costs of children
  - ▶ ...
- ▶ Literature on labor supply responses to parental leave policies
  - ▶ Magne, etc.
- ▶ Literature on labor supply responses to child care
  - ▶ Macro effects: Child care expansions
  - ▶ Micro effects: eligibility variation
  - ▶ Mixed results. Mostly focus on contemporaneous labor supply