

Lecture 2: The Geography of Child Penalties

Henrik Kleven
Princeton University, NBER, and CEPR

Zeuthen Lectures
Copenhagen, September 2021

Towards a World Map of Child Penalties

- ▶ Recent evidence: gender inequality is closely linked to children
 - ▶ Child penalties are large and persistent
 - ▶ Eliminating child penalties $\approx$ eliminating gender inequality
- ▶ This evidence comes from a small set of developed countries
 - ▶ How universal are the findings?
- ▶ Building a global database of child penalties
 - ▶ Requires a modified approach to reflect data availability
 - ▶ Draw US map and world map

Estimating the Impact of Children

A Brief History of Approaches

- ▶ **Early literature:** OLS regressions of outcomes on children
 - ▶ Concern: endogeneity of fertility choices
- ▶ **Modern literature:** Instruments for child birth
 - ▶ Limitation: external validity and statistical power
- ▶ **Post-modern literature:** Event studies of child birth
 - ▶ Limitation: requires large panel data
- ▶ **Today's lecture:** Pseudo-event studies of child birth
 - ▶ Advantage: feasible with widely available cross-sectional data

Pseudo-Event Study Approach: Method and U.S. Evidence

Pseudo-Event Study Approach: Data

- ▶ Use cross-sectional data and matching to create a pseudo-panel around child birth
 - ▶ Run event study specification from Kleven, Landais & Søgaaard (2019)
 - ▶ Validate the approach using panel data
- ▶ Cross-sectional data sources:
 - ▶ Current Population Survey (CPS): 1968-2020 [5.2 million HH]
 - ▶ American Community Survey (ACS): 2000-2019 [21.9 million HH]
- ▶ Panel data sources:
 - ▶ Panel Study of Income Dynamics (PSID): 1969-2017 [8,073 HH]
 - ▶ National Longitudinal Survey of Youth (NLSY): 1979-2016 [8,770 HH]

Parents Are Positively Selected

Why Naïve Cross-Sectional Approaches Don't Work

	Men		Women	
	Child	No Child	Child	No Child
Employment	0.89	0.79	0.71	0.80
Earnings	54,001	28,650	24,136	24,943
Fraction College	0.30	0.25	0.28	0.34
Fraction Married	0.87	0.25	0.72	0.34
Fraction White	0.72	0.67	0.67	0.70
Age	38.64	32.55	37.30	32.90

* Includes individuals aged 20-50 pooling all years of CPS and ACS data

Parents Are Positively Selected

Selection Revealed by Men

	Men		Women	
	Child	No Child	Child	No Child
Employment	0.89	0.79	0.71	0.80
Earnings	54,001	28,650	24,136	24,943
Fraction College	0.30	0.25	0.28	0.34
Fraction Married	0.87	0.25	0.72	0.34
Fraction White	0.72	0.67	0.67	0.70
Age	38.64	32.55	37.30	32.90

* Includes individuals aged 20-50 pooling all years of CPS and ACS data

Pseudo-Event Study Approach: Method

- ▶ Denote event time relative to the first childbirth by t
 - ▶ For those with children, we observe event times $t \geq 0$
 - ▶ For those without children, we don't observe event times $t < 0$
- ▶ Consider parent i observed at event time 0 in year y with age a and characteristics X_i
- ▶ Parent i is exactly matched to
 - ▶ A non-parent j observed in year $y - s$ with age $a - s$ and characteristics $X_j = X_i \Rightarrow$ observation for $t = -s$
 - ▶ X_i includes gender, marital status, education, race, and state

Event Study Specification

- ▶ **Regression for each gender:**

$$Y_{it} = \alpha' D_{it}^{Event} + \beta' D_{it}^{Age} + \gamma' D_{it}^{Year} + \nu_{it}$$

where α is a vector of child impacts at each event time t

- ▶ **Percentage impact on gender g :**

$$P_t^g \equiv \frac{\hat{\alpha}_t^g}{E \left[\tilde{Y}_{it}^g \mid t \right]}$$

where $\tilde{Y}_{it}^g$ is the counterfactual outcome absent children

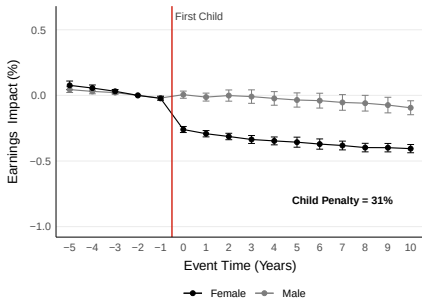
- ▶ **Child penalty:**

$$\text{Child Penalty}_t \equiv P_t^m - P_t^w$$

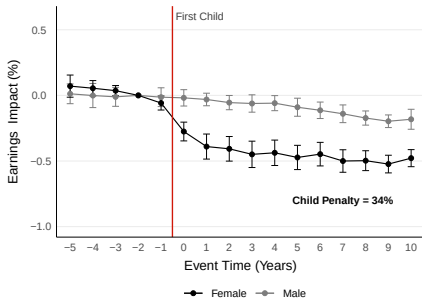
Earnings Penalties

Pseudo-Event Study vs Actual Event Study

Cross-section (CPS and ACS)



Panel (PSID and NLSY)

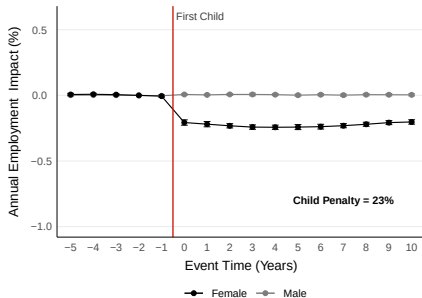


Selection

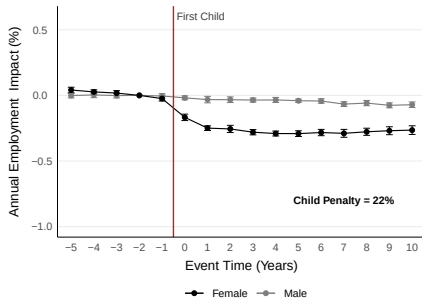
Employment Penalties

Pseudo-Event Study vs Actual Event Study

Cross-section (CPS and ACS)



Panel (PSID and NLSY)



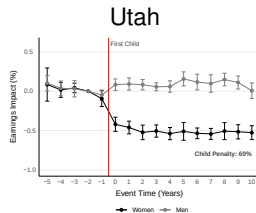
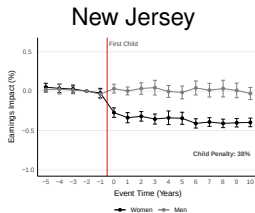
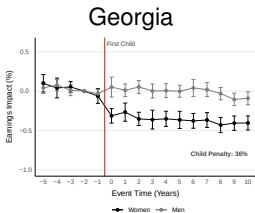
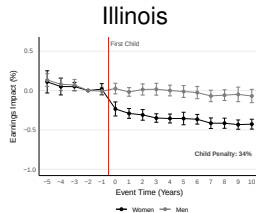
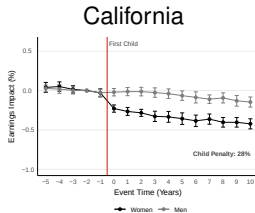
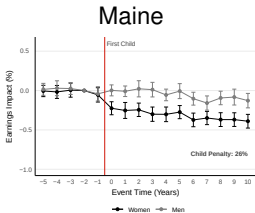
Selection

Weekly Employment

Child Penalties over Space and Time

Selected States

Earnings Penalties

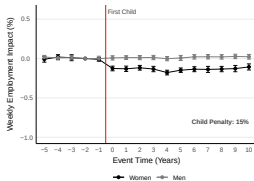


Spatial Dimensions

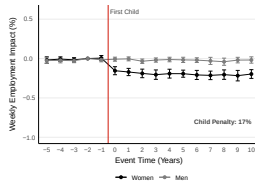
Selected States

Weekly Employment Penalties

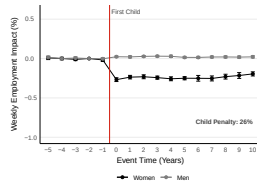
North Dakota



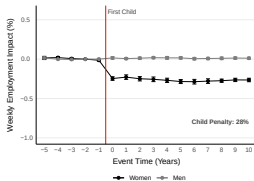
Washington D.C.



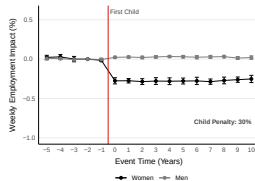
Texas



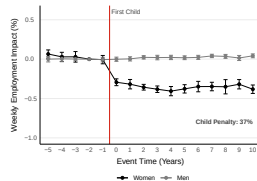
California



New York



Utah

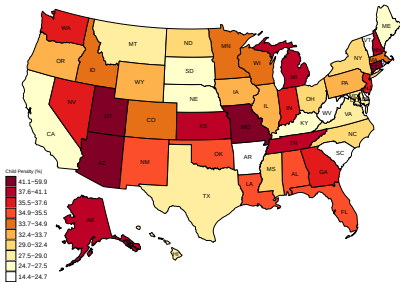


Spatial Dimensions

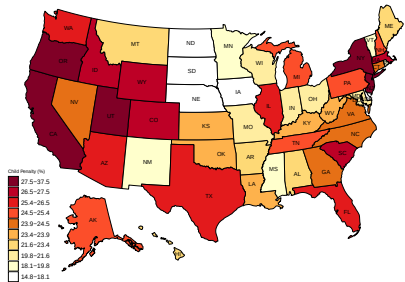
Counterfactual

Heat Maps of Child Penalties

Earnings



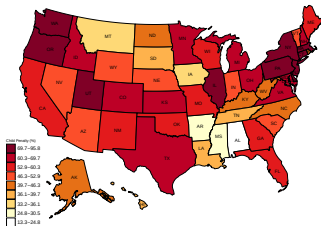
Weekly Employment



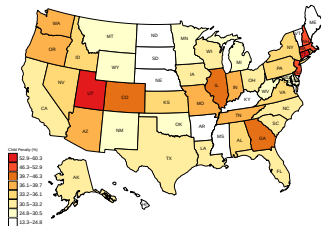
Raw Gender Gaps

Heat Maps of Child Penalties

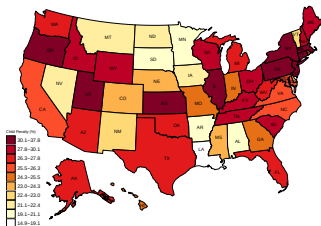
Earnings Before 2000



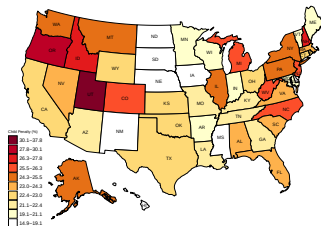
Earnings After 2000



Weekly Employment Before 2000



Weekly Employment After 2000

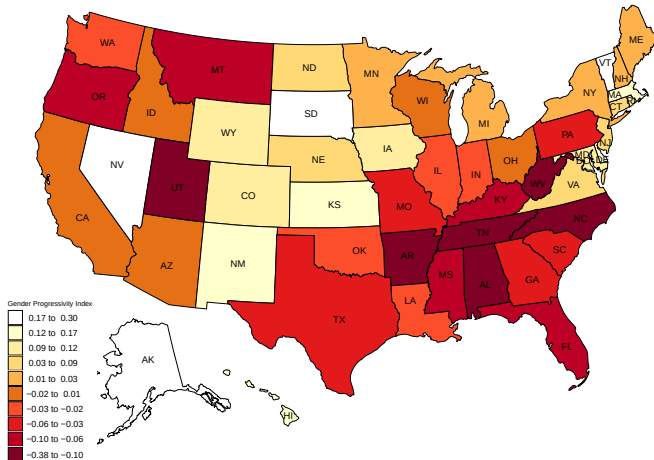


Child Penalties vs Gender Norms

Measuring Gender Norms

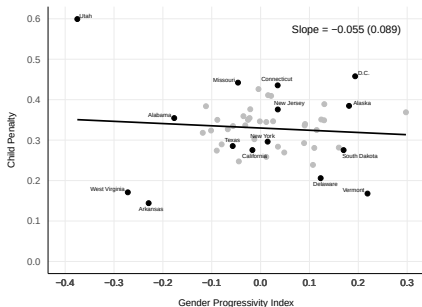
- ▶ Use General Social Survey (GSS) from 1972-2016
- ▶ Use three questions available in all decades:
 - ▶ Do you strongly agree, agree, disagree, or strongly disagree with:
 - ▶ *It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family*
 - ▶ *A working mother can establish just as warm and secure a relationship with her children as a mother who does not work*
 - ▶ *A preschool child is likely to suffer if his or her mother works*
- ▶ Create **Gender Progressivity Index** based on the average of (standardized) responses to these three questions

Heat Map of Gender Norms in the US

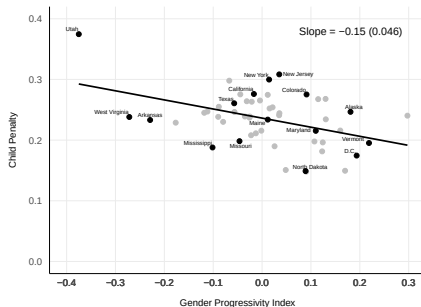


Child Penalties vs Gender Norms Across States

Earnings

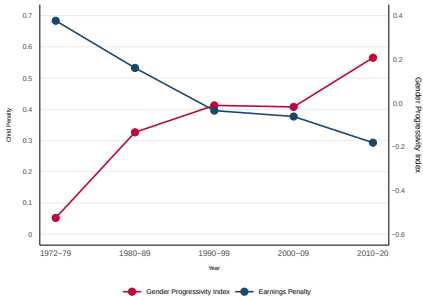


Weekly Employment

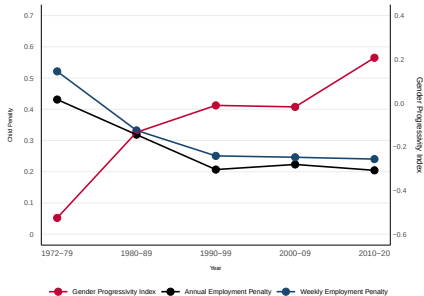


Child Penalties vs Gender Norms over Time

Earnings



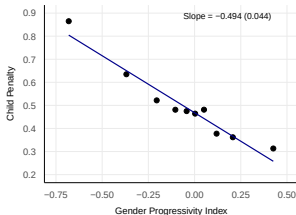
Employment



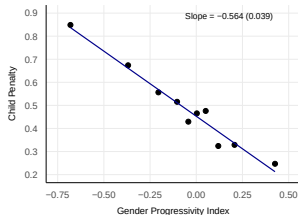
Penalties vs Norms over Space and Time

Earnings Penalty

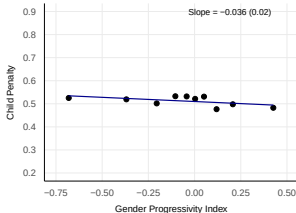
Raw Data



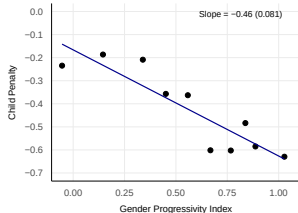
State Fixed Effects



**State and Time Fixed Effects
(Difference-in-Differences)**



**Long Differences
(Difference-in-Differences)**



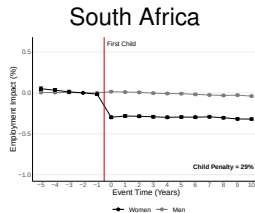
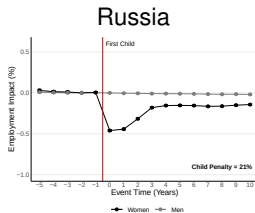
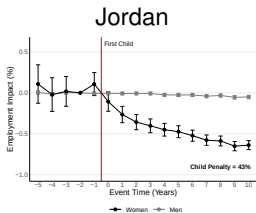
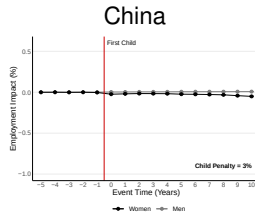
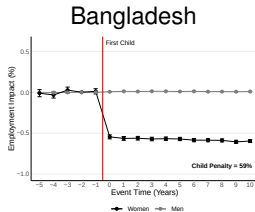
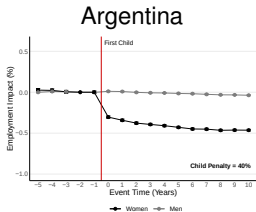
Towards a World Atlas

Building a Global Database

- ▶ Use pseudo-event study approach developed for the US to build a global database of child penalties
 - ▶ Joint with Camille Landais
- ▶ **Panel data (7 countries):**
 - ▶ Administrative data: Austria, Denmark, Sweden, Switzerland
 - ▶ Survey data: Australia (HILDA), Germany (GSOEP), UK (BHPS)
- ▶ **Cross-sectional data (114 countries):**
 - ▶ IPUMS (63 countries):
Census records on large samples
 - ▶ Luxembourg Income Study (28 countries)
 - ▶ Demographic and Health Surveys (22 countries)
 - ▶ Country-specific sources: United States (CPS/ACS)

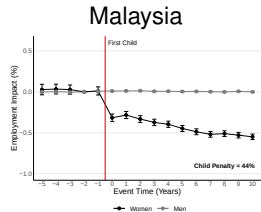
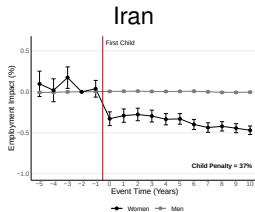
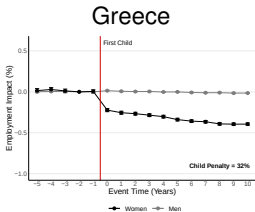
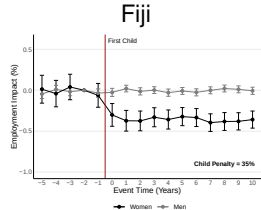
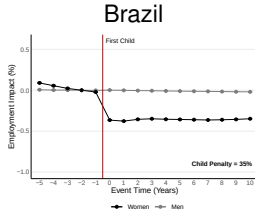
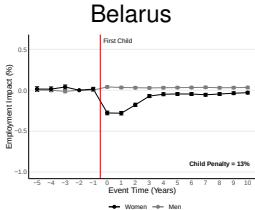
Child Penalties Around the World

Employment Penalties by Country



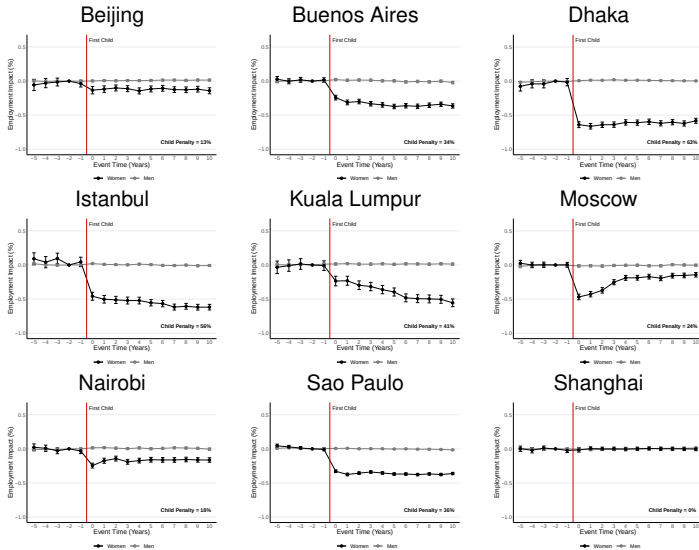
Child Penalties Around the World

Employment Penalties by Country



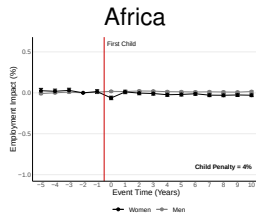
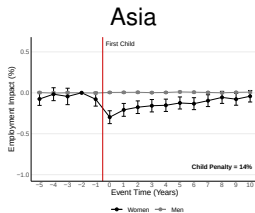
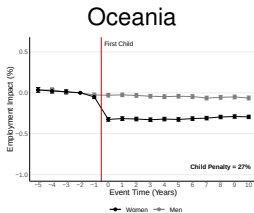
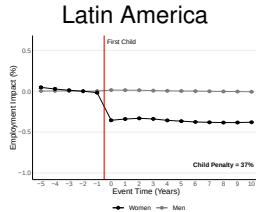
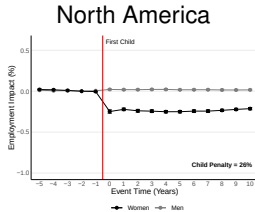
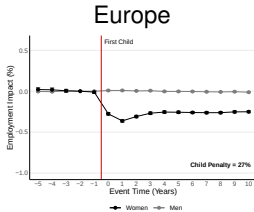
Child Penalties Around the World

Employment Penalties by City



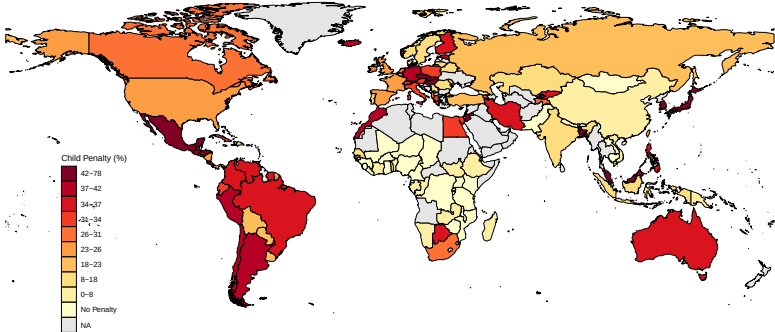
Child Penalties Around the World

Employment Penalties by Continent



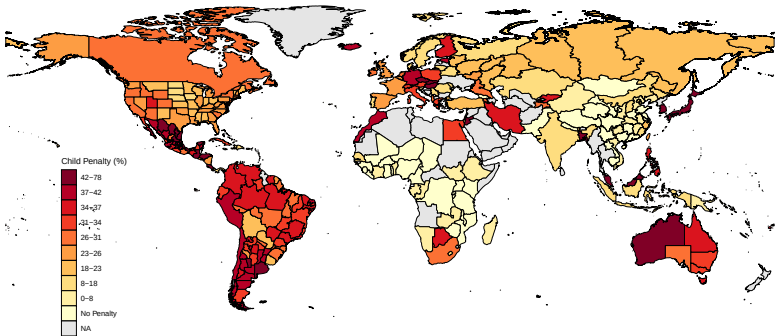
World Map of Child Penalties

Employment Penalties



World Map of Child Penalties (Detailed)

Employment Penalties



Europe

Latin America

China & Russia

Agriculture

Conclusion

Conclusion

- ▶ Child penalties are (almost) universal
 - ▶ The exceptions are Central Africa and China
- ▶ There is enormous variation in magnitudes
 - ▶ Prima facie evidence against biological explanations
 - ▶ Institutions and general equilibrium effects
- ▶ Future research agenda
 - ▶ Expanding and improving the child penalty map
 - ▶ Improving our understanding of what explains the variation in the homemaker-breadwinner institution

Appendix

Pseudo-Event Study Methodology

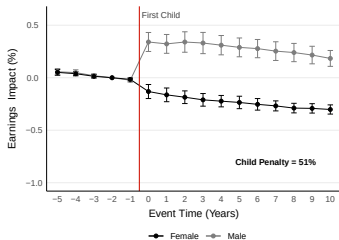
Using Matching to Create a Pseudo-Panel

	All Men			Matched Men		
	Child	No Child	Difference	$t = 0$	$t = -1$	Difference
Employment	0.89	0.79	0.10	0.92	0.91	0.01
Earnings	54,001	28,650	25,351	55,136	49,136	6,000
Fraction College	0.30	0.25	0.05	0.45	0.47	-0.02
Fraction Married	0.87	0.25	0.62	0.88	0.88	-0.00
Fraction White	0.72	0.67	0.05	0.75	0.80	-0.05
Age	38.64	32.55	6.09	31.78	30.78	0.99

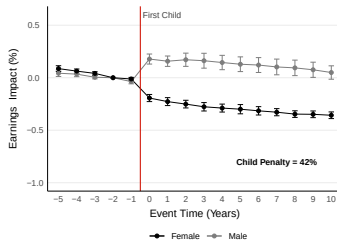
Earnings Penalties

Matching and Selection

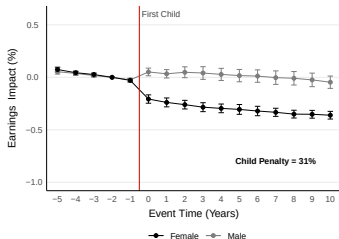
Match on Year, Age, Gender



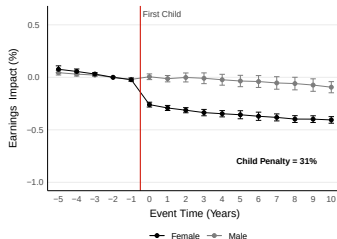
Add Education



Add Marital Status



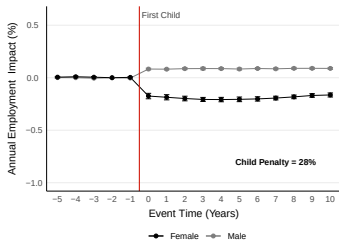
Add Race and State



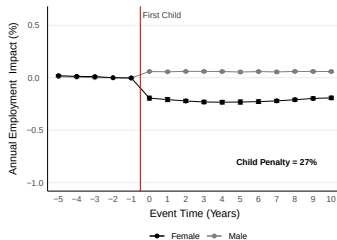
Employment Penalties

Matching and Selection

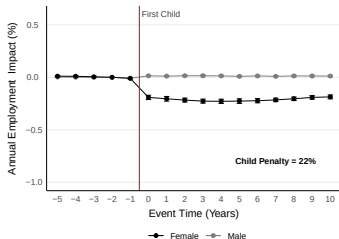
Match on Year, Age, Gender



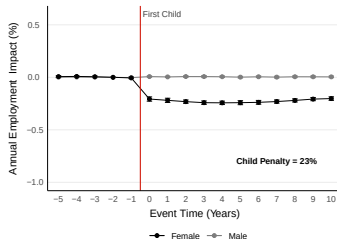
Add Education



Add Marital Status



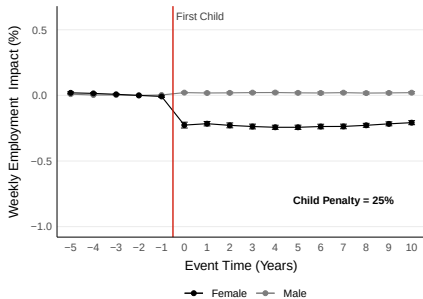
Add Race and State



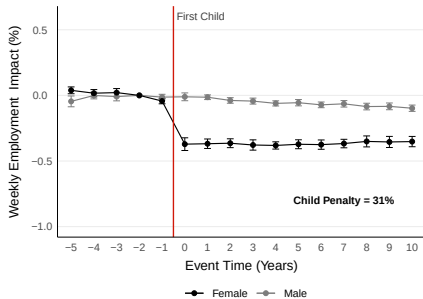
Weekly Employment Penalties

Pseudo-Event Study vs Actual Event Study

Cross-section (CPS and ACS)



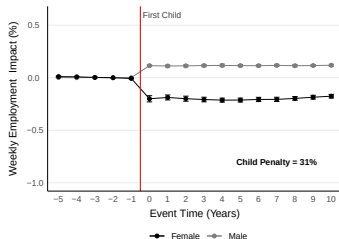
Panel (PSID and NLSY)



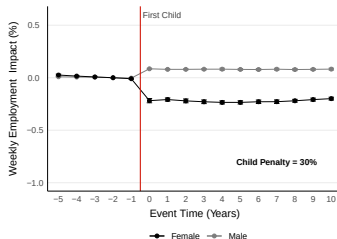
Weekly Employment Penalties

Matching and Selection

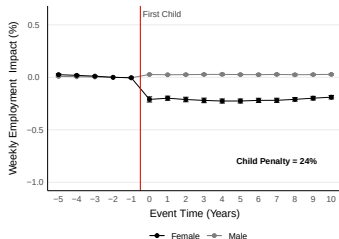
Match on Year, Age, Gender



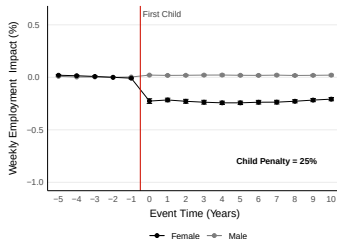
Add Education



Add Marital Status



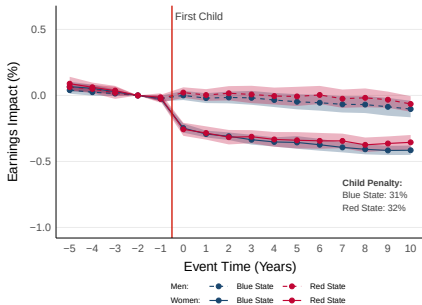
Add Race and State



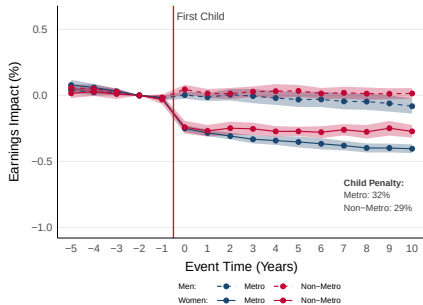
Other Spatial Dimensions

Earnings Penalties

Red vs Blue States



Metro vs Non-Metro Areas

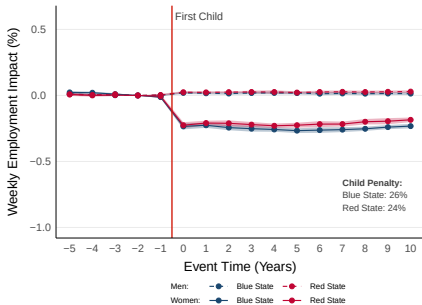


[Back](#)

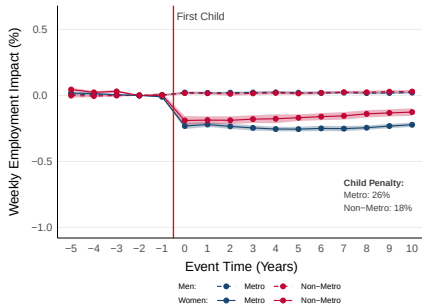
Other Spatial Dimensions

Weekly Employment Penalties

Red vs Blue States



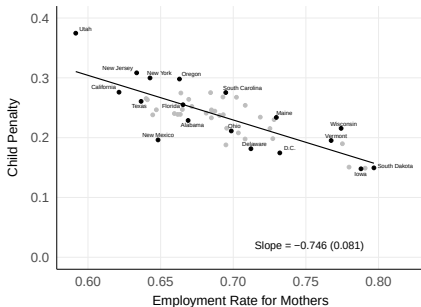
Metro vs Non-Metro Areas



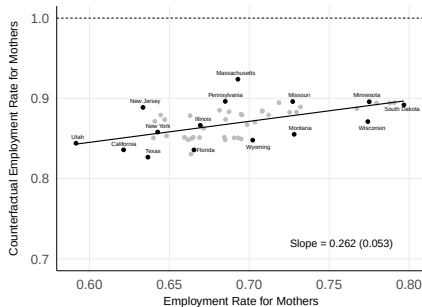
[Back](#)

Counterfactual Employment Rates

Child Penalties

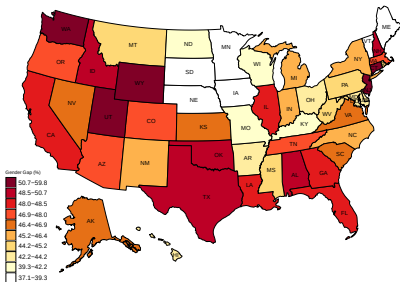


Counterfactual Employment Rates

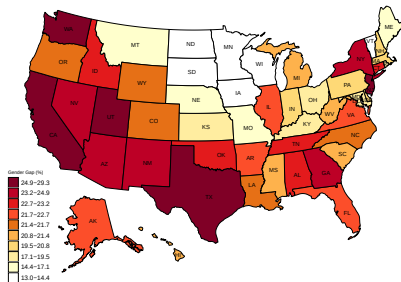


Heat Maps of Raw Gender Gaps

Earnings



Weekly Employment

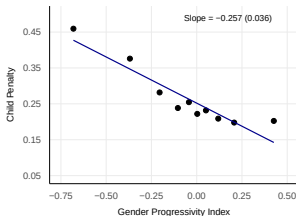


Back

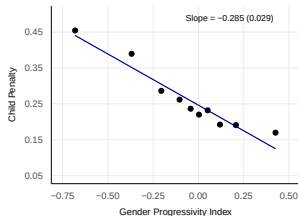
Penalties vs Norms over Space and Time

Annual Employment Penalty

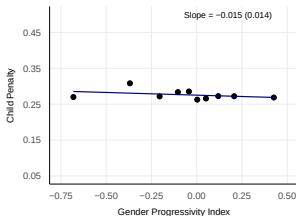
Raw Data



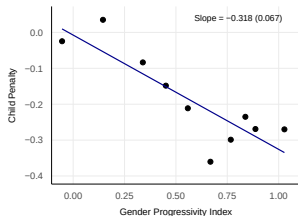
State Fixed Effects



**State and Time Fixed Effects
(Difference-in-Differences)**



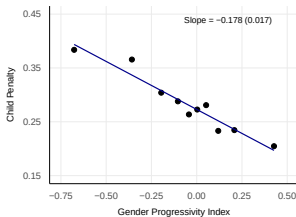
**Long Differences
(Difference-in-Differences)**



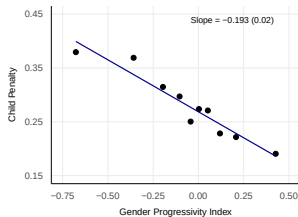
Penalties vs Norms over Space and Time

Weekly Employment Penalty

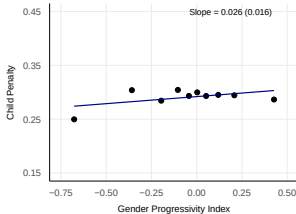
Raw Data



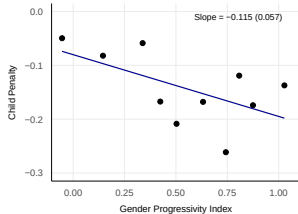
State Fixed Effects



**State and Time Fixed Effects
(Difference-in-Differences)**

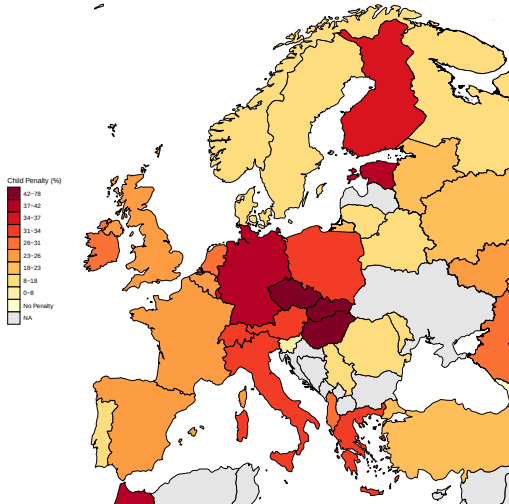


**Long Differences
(Difference-in-Differences)**



Child Penalties in Europe

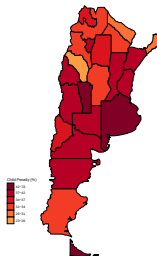
Employment Penalties



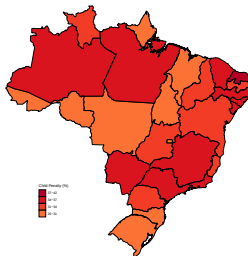
Child Penalties in Latin America

Employment Penalties

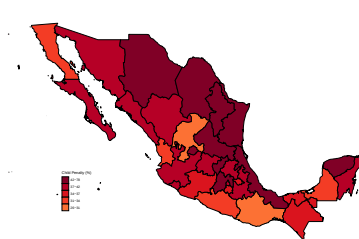
Argentina



Brazil



Mexico

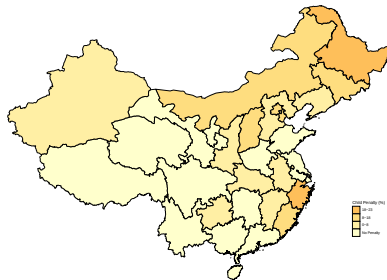


[Back](#)

Child Penalties in China & Russia

Employment Penalties

China

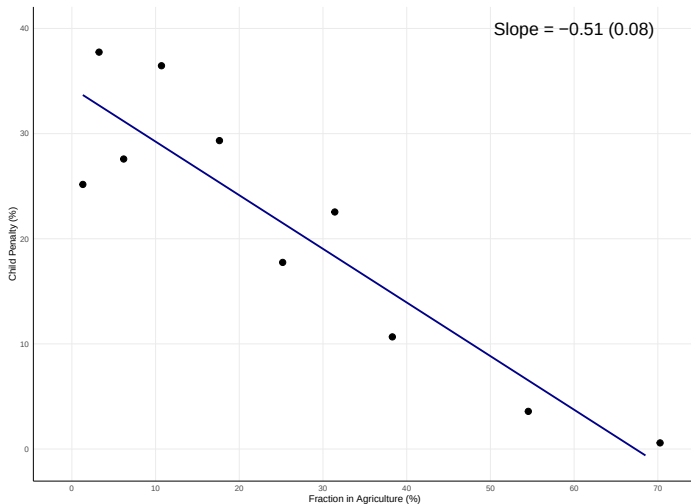


Russia



Child Penalty vs Fraction in Agriculture

Cross-Country Bin Scatter



Child Penalty vs Fraction in Self-Employment

Cross-Country Bin Scatter

