Why Does the Magnitude of the Childcare Effect Differ Across Settings?

A Cross-Country Cutoff Analysis of the Impact of Childcare Enrollment on Maternal Labor Supply

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November, 12 2016.

Outline

- Research question and motivation
- Method
- Data
- Very preliminary results
- Future plans

Motivation 1: Shift in Question of Interest

- Previous literature
  - **Quasi-experimental estimates** of childcare effect
    - Overcome endogeneity problem
      - policy changes,
      - eligibility cutoffs
    - Contradictory results
      - No effect: Chevalier and Viitanen, 2005; Chone et al., 2003; Ribar, 1995
      - Significant effect: Connelly, 1992; Del Boca, 2002; Haan and Wrohlich, 2011; Kimmel, 1992; Lokshin, 2004
    - Likely reason of inconsistency: local estimates
      - Single-country estimations
      - Highly dependent on context
      - Cross-effects of other policies
  - **Cross-country analyses** of the effect of family policy and other institutions on maternal labor status
    - Few papers on institutional determinants of maternal labor supply
      - Boca, Pasqua, Pronzato (2009): FR, IT, DM, UK.
        - » Childcare availability, part-time job availability, family allowances have significant effect of prob. of employment
      - Cipolloni et al. (2014): 15 EU countries
        - » Institutions and policies explain 25% of the increase in female LFP in past 20 years
    - No childcare focus
      - No interaction of childcare and other factors
- **Shift in question in the literature:**
  - whether there is an impact **>>** how it differs across settings
    - Cascio, Haider, Nielsen, 2015
- **Our research question**:
  - How does the **effect** of childcare availability on maternal labor supply **depend on the institutional context**?

Summary: Previous evidence & context

Region	Country	Maternal employment rate (%)			Formal childcare coverage		Child-related leaves		Labor market flexibility	Preferences		Literature
		Child age 0-2	Child age 3-5	Child age 6-14	0-2 year olds (%)	3-5 year olds (%)	Leave for mothers (weeks)	Leave for fathers (weeks)	Part-time employ-ment (%)	Child suffers	Family life suffers	Quasi-experimental evidence available
CEE	Hungary	12	63	75	9	88	160	1	9	54,7	77	Lovasz-Szabo-Morvai, 2015
	Bulgaria	38	62	76	7	80	110	2	3	46,6	75	No
	Czech Rep.	20	70	87	6	76	110	0	10	.	60	No
	Estonia	24	80	85	24	90	166	2	13	55	59	No
	Poland	54	65	74	8	69	52	2	11	56,9	68	No
	Romania	55	60	68	4	78	61	1	11	51,6	65	No
	Slovak Rep.	15	56	80	5	72	164	0	7	44,4	58	No
	Slovenia	73	80	84	44	89	52	2	15	44,1	61	No
Southern Europe	Greece	50	48	53	21	48	43	0	13	65,3	75	No
	Italy	52	54	56	28	95	48	0	32	61,8	72	No
	Spain	55	57	59	41	97	16	2	26	46,5	72	Nollenberger and Rodríguez-Planas, 2015
Western Europe and Americas	France	61	74	79	51	100	21	28	31	41,0	51	Givord and Marbot, 2015
	Germany	52	70	78	25	95	35	9	47	49,8	60	Bauernschuster and Schlotter, 2015
	Netherlands	75	75	78	60	94	21	26	77	44,4	46	Bettendorf et al., 2015
	Sweden	.	.	.	47	94	38	10	38	31,0	32	Lundin et al., 2008
	Canada	67	72	79	.	46	27	0	26	57,3[12]	.	Baker et al., 2008; Haeck et al., 2015; Lefebvre and Merrigan, 2008
	United States	56	62	70	.	66	0	0	17	.	.	Cascio, 2009; Fitzpatrick, 2010

Motivation 2: How context matters?

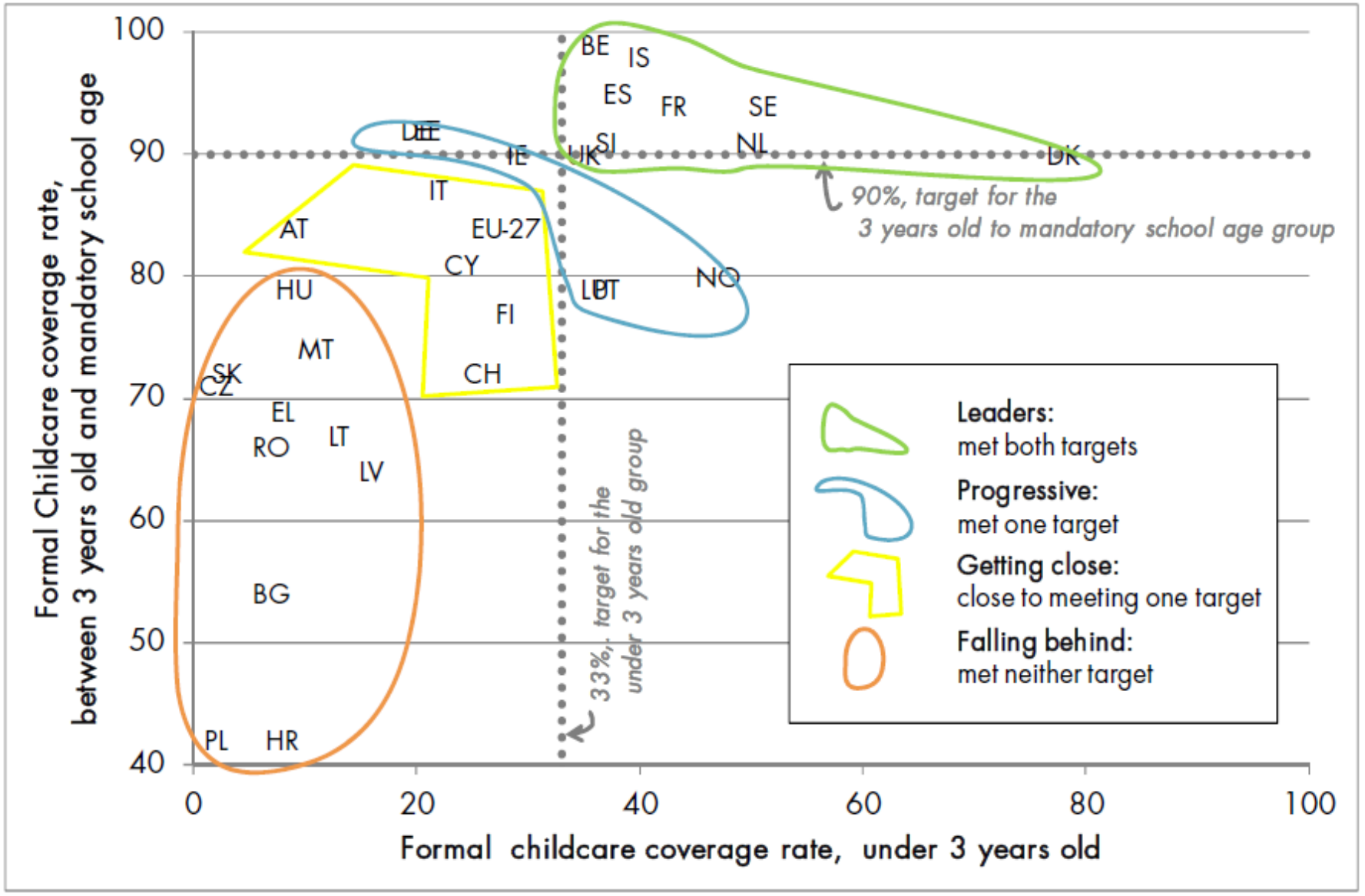
- Implications of previous evidence:
  - **Potential impact** at a given child age is dependent on the **existing level of maternal labor supply**
    - Already high: no/small effect
      - France, Sweden, US at age 5
    - Still low: larger effect
      - Spain, 1996 Germany, Hungary
  - **Interdependencies with institutional elements**
    - Leaves, labor market flexibility, norms
    - Suggested but not explicitely tested
- Our goal:
  - Provide estimates of the childcare effect conditional on institutional context
    - Does chidcare have a larger effect if local norms support maternal labor supply?
    - Are childcare and work flexibility substitutes or complements?
  - Utilize:
    - **Exogenous variation in childcare** availability within countries
      - birthdate-based eligibility cutoffs
    - **Cross-country variation in institutional setting**

Motivation 3: Policy relevance

- EU Childcare coverage targets (Barcelona)
  - Costliest for exactly the poorer, low-coverage CEE countries
  - Potential for large impact on maternal labor supply
  - Other institutional/cultural factors particular to this region may limit effectiveness
  - Very few quasi-experimental evidence from this region

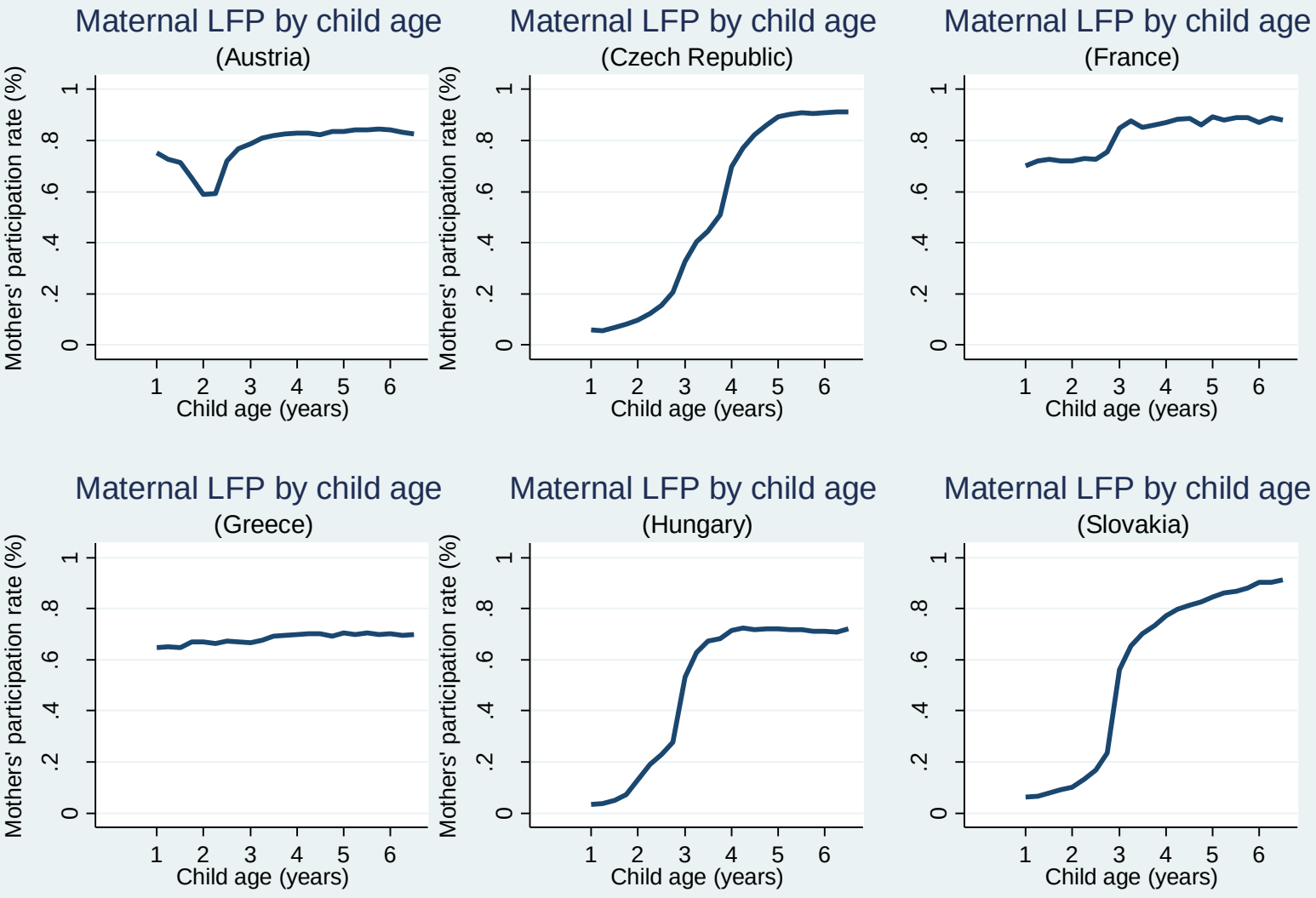
- Goal: provide estimates of the effect that allow us to take institutional and cultural context into account

➔ Better evaluation of potential impact of expansion


Formal Childcare coverage rate, between 3 years old and mandatory school age
100
90
80
70
60
50
40
0
20
40
60
80
100
Formal childcare coverage rate, under 3 years old
BE
IS
ES
FR
SE
SI
NL
DK
IE
UK
IT
AT
EU-27
CY
LU
NO
FI
CH
HU
MT
SK
CZ
EL
RO
LT
LV
BG
PL
HR
90%, target for the 3 years old to mandatory school age group
33%, target for the under 3 years old group
Leaders:
met both targets
Progressive:
met one target
Getting close:
close to meeting one target
Falling behind:
met neither target

How to think of post-birth maternal labor supply

- Typical labor market return pathways
- Break points of institutions along the way



Steps of the analysis

1. Database
   - 1.1 Use EU-LFS
   - 1.2 Determine where childcare **eligibility cutoffs** exist
     - Set up an expert network for this purpose
   - 1.3 Policy database
     - relevant family policies, institutions and attitudes

2. Descriptive analysis
   - **Document differences** in maternal labor market return process by country
   - Major changes in relevant factors (e.g. parental leave)

3. Empirical analysis: Cutoff-based model
   - 3.1 Single country
   - 3.2 Pooled model: cross-country estimates
     - childcare effects conditional on relevant institutional factors

Country	Part of the sample	Expert cutoff	EU-SILC cutoff	OECD data available	Panel in LFS
Austria	1	1	1	1	1
Czech Republic	1	1	1	1	1
France	1	1	N/A	1	1
Greece	1	1	1	1	1
Hungary	1	1	1	1	1
Slovakia	1	1	N/A	1	1
Estonia	0.5	N/A	1	1	1
Italy	0.5	N/A	1	1	1
Latvia	0.5	0.5	1	1	1
Lithuania	0.5	1	0.5	1	1
Portugal	0.5	N/A	1	1	1
Poland	0.5	0	N/A	1	1
Slovenia	0.5	0	N/A	1	1
Ireland	0	0	N/A	1	1
Germany	0	0	N/A	1	0
Netherlands	0	N/A	N/A	1	1
Romania	0	N/A	0	0	0
Spain	0	1	1	1	1
Switzerland	0	N/A	N/A	1	1
Belgium	0	0	0.5	1	0
Bulgaria	0	0	0.5	0	0
Croatia	0	1	N/A	0	0
Cyprus	0	N/A	N/A	0	0
Denmark	0	N/A	1	1	0
Finland	0	0	1	1	0
Iceland	0	N/A	1	1	0
Luxembourg	0	1	1	1	0
Malta	0	N/A	N/A	0	0
Norway	0	1	1	1	0
Sweden	0	0	1	1	0
United Kingdom	0	1	N/A	1	0

1.3 Policy database

- Up to now, more than 70 potential data sources for institutional variables collected
- We plan to include information from the following data sources:
  - Mutual Information System on Social Protection (MISSOC) - MISSOC Comparative Tables Database
  - OECD Social Expenditure Database (SOCX)
  - OECD Family Database
  - Multilinks Database on Intergenerational Policy Indicators
  - Family Policy Database - PF3.4 Childcare support
  - Eurofund European Working Conditions Survey
  - European Quality of Life Survey
  - European Social Survey
  - International Social Survey Programme
  - European Values Study
  - ILO Conditions of Work and Employment Programme
  - International Network on Leave Policies &Research
  - Eurostat: Social Protection Expenditure
  - Eurostat -- General and regional stats -- Regional demographic stats -- Census 2001
  - EU-SILC
  - OECD Income Distribution Database
  - The European Institute for Gender Equality (EIGE)
  - EU LFS

Institutional variables

Variable	Description	Source	By country	By year	By age of youngest child
Child benefit (%)	Family cash benefit as a proportion of median working-age household income	OECD Family Database	x	x	x
Part-time jobs (%)	Part-time employment of females (20-50)	EU-LFS	x	x	
Leave length (yr)	Length of paid leave (years after birth)	OECD Family Database	x		
Family > Work	Importance of family relative to work (20-50 female answers) 100 = Family is very important, work is not at all important 0 = Both are equally important -100 = Family is not at all important, work is very important	European Values Study	x	x	

3.1 Single country estimates

- Utilize country-specific childcare cutoff rules
  - Compare mothers of children born before and after the cutoff point
  - Assignment rule:
    - Control : mother of a child born before the cutoff (not eligible to kindergarten)
    - Treatment: mother of a child born after the cutoff (eligible to kindergarten)
- Potential problems and solutions:
  - Only birth quarter is available, the windows around the cutoff are at least 3 months wide => age effect can bias the results
    - Solution: all mothers are observed in the quarter after the 3rd birthday of the child (age effects are thus controlled for) => treatment and control mothers' children are of the same age on avg.
  - Mothers are observed in different quarters => potential seasonal bias
    - Solution: include sample of mothers of 4-5-year-olds to take up seasonal effects
- Sample:
  - Cutoff countries:
    - Austria, France, Hungary, Czech Republic, Slovakia, Greece
  - Mothers of youngest child of age 3-5
  - Aged 20-55
  - Non-immigrants (born in the country)
    - To make sure that country-specific norms and beliefs apply

Institutional context

Country	Childcare enrollment at age 2	Childcare enrollment at age 3	Total paid leave length (weeks)	Total leave - average replacement rate	Cash benefits at age 3	Share of parttime jobs	Norms (preschool child suffers if mother works)
Austria	17%	60%	60	85	12%	73%	56%
France	51%	98%	42	45	11%	36%	34%
Hungary	9%	74%	160	44	59%	11%	52%
Czech Republic	6%	60%	110	51	46%	11%	46%
Slovakia	5%	60%	164	32	39%	6%	41%
Greece	21%	67%	43	54	5%	9%	62%

3.1 Single-country results

$$L_{yi} = \beta T_{yi} + \alpha_y + X'_{yi}\pi_1 + \xi_{cyi}$$

	Austria	Czech Rep.	France	Greece	Hungary	Slovakia
Cutoff date	March 1	Jan 1	Jan 1	March 1	Jan 1	Jan 1
T	.034	.090	.084	.036	.135	.162
P-value	.244	.001	.002	.179	.000	.000
Controls	x	x	x	x	x	x
N	771	978	878	1255	1596	629
r2	.219	.375	.198	.194	.307	.208
Nursery coverage	17%	6%	51%	21%	9%	5%
Kindergarten coverage	60%	60%	98%	67%	74%	60%
Difference	44%	54%	47%	45%	65%	56%

3.2 Pooled estimates: Idea & method

- Idea
  - Put all the cutoff countries into one regression
  - Define treatment and control as before
  - See if the treatment effect varies with institutional factors
- Sample:
  - Mothers of youngest child of age 3
  - Aged 20-50
  - Non-immigrants (born in the country)
    - To make sure that country-specific norms and beliefs apply
- Dependent variable: labor supply increase within a pair, BUT:
  - maternal labor market return process is very different across countries

3.2 How to compare employment increase among countries

- Countries differ a lot
  - in their long-term maternal participation rates (with a school-aged youngest child)
  - in economic and labor market conditions and the timing of economic cycles
- Thus we have to include an information about long-term maternal participation rate to account for these differences
- Relative participation rate:

$$r_{cy,a} = \overline{L_{cy,a}} / \overline{L_{cy}}$$

  - Where $L_{cy,a}$is the participation rate of females in country c with (youngest) child of age a in year y, and $L_{cy}$is the participation rate of mothers with (youngest) children of age between 8 and 15 years in country c and year y
  - $r_{cy,a}$ is a sort of an inverse distance variable, which indicates how far mothers are from their potential rate of participation at a given child age.
  - The smaller $r_{cy,a}$ (the further mothers are from their long-term participation rate), the larger the potential impact of childcare enrollment on participation.
- In order to have enough observations in the regressions, the others are sorted into more refined groups (g)
  - g: country, year, treatment status, completed education, mother's age at birth, number of children
- So: dependent variable is

$$r_g = \overline{L_g^{(3)}} / \overline{L_g^{(8-15)}}$$

  - Where g denotes the group of observations with the same country, year and schooling level
  - Variable $r_{g,a}$ shows how much closer one particular group *g* of mothers (with youngest child aged a) is to its long term participation rate compared to its counterpart group g with a child one year younger (a-1)

3.2 Pooled estimates: Preliminary results

$$r_g = \gamma_y + \beta_1 T_g + \beta_2 I_g + \beta_3 T_g * I_g + \gamma' X_g + \xi_g$$

Robust SE, clustered by country
(but: will need a small sample correction!)

	(1)	(2)
T	0.040	-0.208**
	(0.027)	(0.016)
Child benefit (%)	-0.795**	-0.224
	(0.146)	(0.116)
Part-time jobs (%)	0.414*	0.388*
	(0.148)	(0.132)
Leave length (yr)	0.020	0.012
	(0.049)	(0.046)
Family > Work	-3.405*	-5.114**
	(0.997)	(1.167)
T*Child benefit (%)		-0.906**
		(0.192)
T*Part-time jobs (%)		0.030
		(0.030)
T*Leave length (yr)		0.013
		(0.007)
T*Family > Work		3.245**
		(0.309)
r2	0.330	0.347
aic	144.204	126.392
N	714.000	714.000
Year FE	yes	yes
Controls	yes	yes

Significance: * 5% ** 1%

Discussion

- The overall results seem reasonable:

$$\beta = \frac{\partial r}{\partial T}$$
$$= 0 + \text{-}0.906 * \overline{Child\ benefit} + 0.030 * \overline{Part\text{-}time\ jobs} + 0.013 * \overline{Leave\ length}$$
$$+ 3.245 * \overline{Family > Work} = \mathbf{0.12}$$

- Being born before the cutoff increases relative participation rate by about 12 pp.
  - Childcare coverage increases from 28.7% to 67.2%
  - Wald ratio = 0.31

  10pp increase in childcare enrolment rate increases LFP by 3.1 pp

- This result is comparable to the previous results in the literature.
  - Nollenerger, Rodríguez-Planas (Spain) 2015: 2pp
  - Lovasz, Szabo-Morvai, 2015 (Hungary): 1.8pp
  - Bauernschuster, Schlotter, 2015 (Germany): 3.5pp

Thank you!