What Works for Working Couples?

Work Arrangements, Child Penalty & Home Production

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  - ▶ Women face a child penalty, men don't

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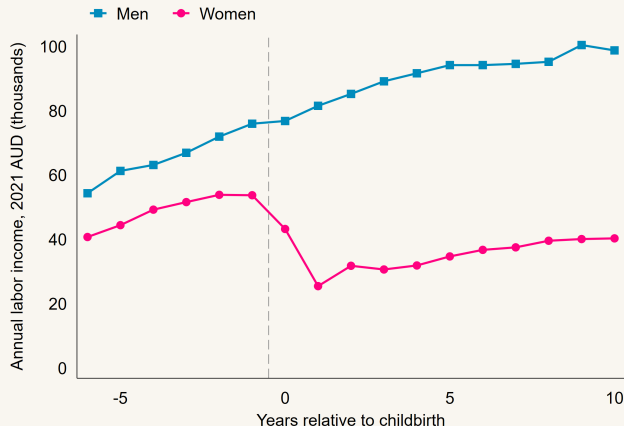 - ▶ Women face a child penalty, men don't

Figure: Annual labor earnings (2021 AUD, '000). *Source:* HILDA

Why?
- Children require time
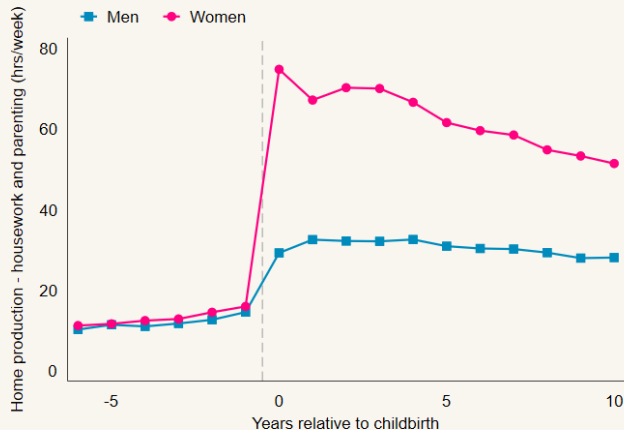
Why?

- Children require time

- This time demand falls on women

Figure: Weekly hours spent on home production (housework and caring for children). *Source:* HILDA

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RESEARCH QUESTIONS

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Research Questions

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2. Does Intrahousehold Bargaining Matter for the Child Penalty?
   ▶ What happens to a mother's and her partner's home production when she increases her labor supply?
   ▶ What can we infer about comparative advantage, preferences, gender norms?

Setting: Australia, 2001-2019 `vs other countries`

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► Parents of kids under school age are entitled to request a "change in working arrangements" and employer can refuse only "on reasonable business grounds"

► Examples of protected requests:
  ■ changes in patterns of work (like split shifts)
  ■ changes in hours of work (like start/finish times)
  ■ changes in location of work (like work from home)

DATA: HILDA

Household, Income and Labour Dynamics in Australia

- Representative sample of Australian population (sample size $\sim 20,000$)

- Ongoing longitudinal annual panel that started in 2001

- Variables of interest
  - ▶ Family structure
  - ▶ Job characteristics
  - ▶ Labor market vars (earnings, work hours, occupation)
  - ▶ Time use (housework split)

- ~ 1200 women have their first child in our sample years

Fair Work Act and "Permanent Part Time"

- Before 2009, permanent contract with short hours were mostly not available
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  - Option generally not even mentioned in collective agreements ("awards")
  - Instead, jobs with less-than-full-time hours were under casual contracts

- This was seen as a hindrance to female employment
  - Call for "Permanent Part-Time"
  - The discourse around the Fair Work Act specifically concerned this Quote

FEATURES OF CASUAL JOBS

- Among the most frequent occupations among people with casual contracts are sale assistant, hospitality worker, education professional

- For permanent contract, most frequent occupations are specialist managers, education professionals, health professionals

- Causal jobs are more likely to have an "on call" structure, and less likely to have regular schedule Graphs

- Distribution of hourly wages is similar in the two types of jobs

- 74 % of mothers in causal contracts would like to work more hours than they do (vs 22% of mothers in permanent contracts)

The 2009 Fair Work Act Shifted (Some) Work Arrangements

Preliminary and qualitative evidence

SUGGESTIVE EVIDENCE I: POST-FAIR WORK ACT, LESS-THAN-FULL-TIME JOBS ARE MORE PERMANENT
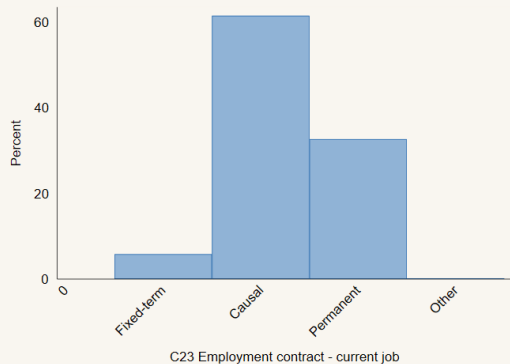
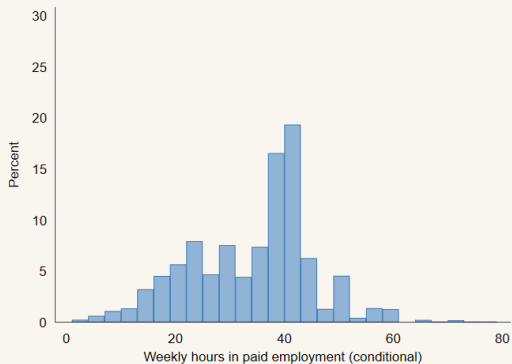**(a)** Type of contract if < 35 hours/week, pre-2009, mothers only
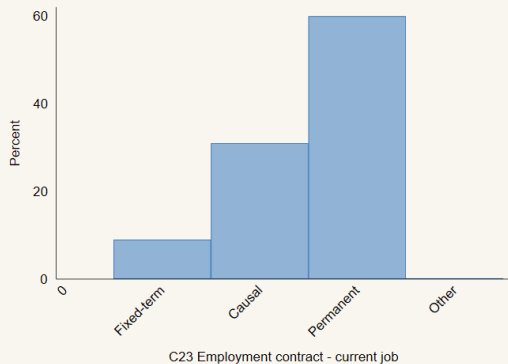
(b) Type of contract if < 35 hours/week, post-2009, mothers only

SUGGESTIVE EVIDENCE II: POST-FAIR WORK ACT, THERE ARE PERMANENT JOBS WITH LESS-THAN-FULL-TIME HOURS
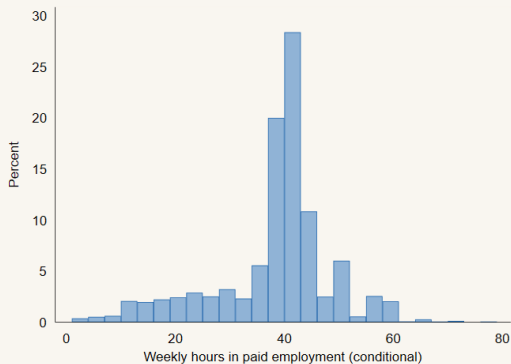
(a) Hours if permanent contract, pre-2009, mothers only

(b) Hours if permanent contract, post-2009, mothers only

The 2009 Fair Work Act Shifted (Some) Work Arrangements

Definitions and Empirical Strategy

- **Reduced hours:** Work 25-34 hours per week (*think: 80% of full time*)
  - 17% of all women and 6% of all men

- **Regular schedule:** Work M-F on a regular daytime schedule `Definition`
  - 42% of all women and 53% of all men

- **Flexibility:** agreement with "My working times can be flexible" (yes/no) `More`
  - 49% of all women and 52% of all men

- **Work from Home:** Hours worked from home in a typical week `More`
  - 2.31 on avg for all women and 2.48 for all men

NATURAL SPECIFICATION

$$Y_{it} = \beta_C \times \underbrace{\mathbb{1}\{C(i,t) < 6\}}_{i\text{'s child is below 6}} + \beta_{C,post} \times \mathbb{1}\{C(i,t) < 6\} \times \underbrace{\mathbb{1}\{t > 2009\}}_{\text{year } t \text{ is post-2009}} + \underbrace{\alpha_i + \delta_t + \gamma_{h(i)}}_{\text{ID, time, age FEs}} + \epsilon_{it}$$

- $C(i,t)$: age of i's child in year t
- Treated: (Parent of < 6 year old)*(post-2009)
- Controls: Non-parents & parents of older children

$$Y_{it} = \sum_{a \in A} \left(\beta_{C_a} \times \underbrace{\mathbb{1}\{C(i,t) \in a\}}_{i\text{'s first child is in age range } a} + \sum_{j \neq 2009} \beta_{C_{a,j}} \times \mathbb{1}\{C(i,t) \in a\} \times \mathbb{1}\{t = j\} \right) + FEs + \epsilon_{it}$$

- Age ranges $a \in A$: 0-2, 3-5, 6-8, 9-10, 10+
- Run separately by gender
- Coefficients of interest are $\beta_{C_{a,j}}$: difference in year j between parents of first children in age range a and analogous parents in 2009
- Fixed effects: individual, time and age of the parent

The 2009 Fair Work Act Shifted (Some) Work Arrangements

Empirical results

First child 0-2 years old
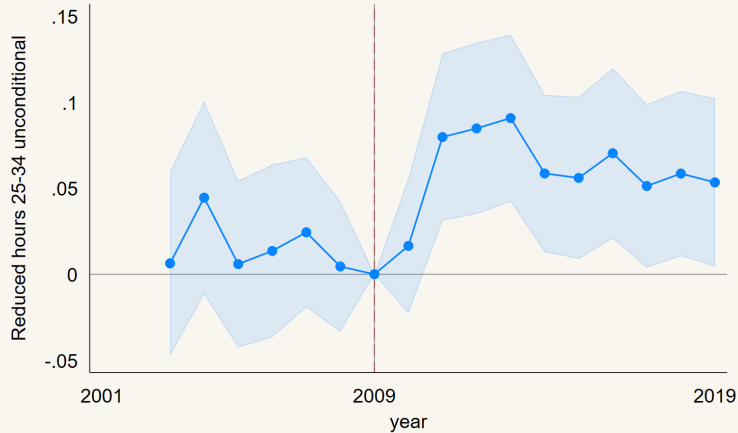
Mean reference group: 0.05.
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First child 0-2 years old

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  - ▶ Possibility of reducing hours while keeping a permanent contract

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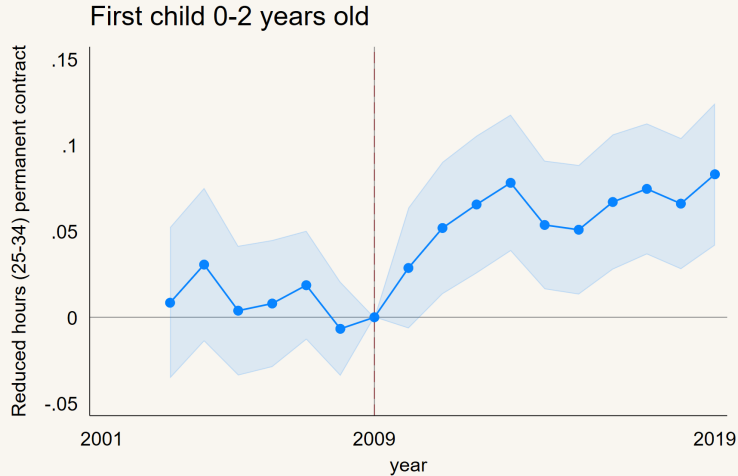
EFFECTS OF THE FAIR WORK ACT ON WORK ARRANGEMENTS

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  - ▶ Unclear effect on WFH (noisy and inconclusive) `Graph`

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- For fathers, nothing changes after the Fair Work Act Regular schedule Table

Note: The Fair Work Act did not observably affect selection into childbearing Fertility Balance tab

Reduced Form Results: The 2009 Fair Work Act Reduced the Female Child Penalty in Labor Supply and Home Production

Comparative statics relative to the law:
What Happens When The First Child Is Born, Before vs After The Law
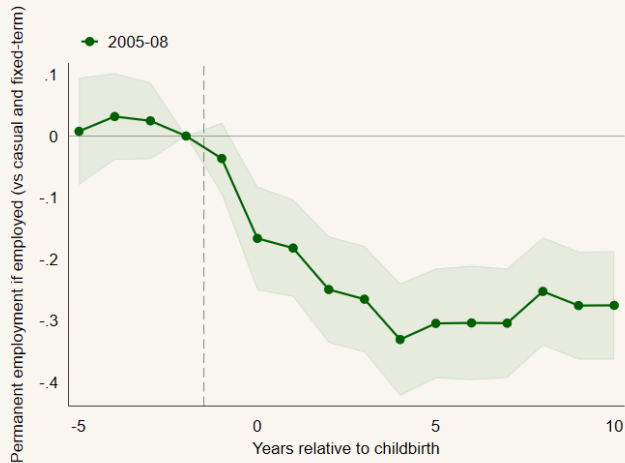
Figure: Permanent Employment if Employed (vs Casual and Fixed-term)
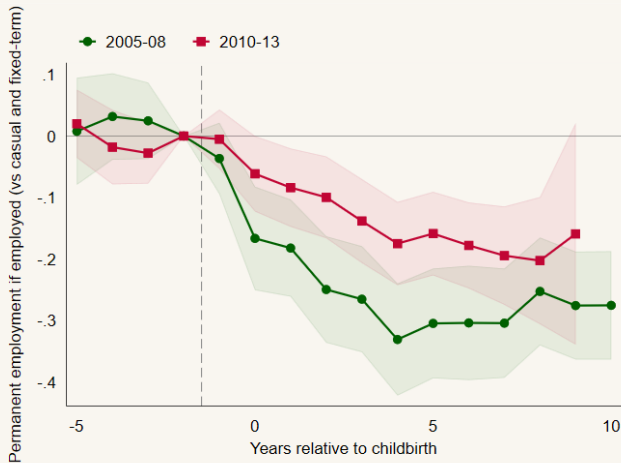
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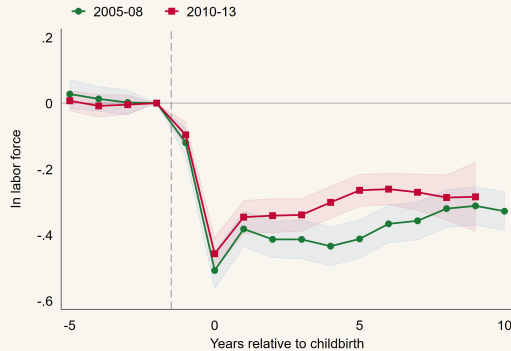
(a) Labor Force Participation, Women
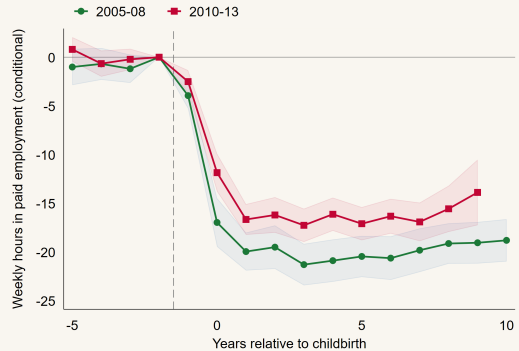
(b) Weekly Hours of Work Conditional on Working
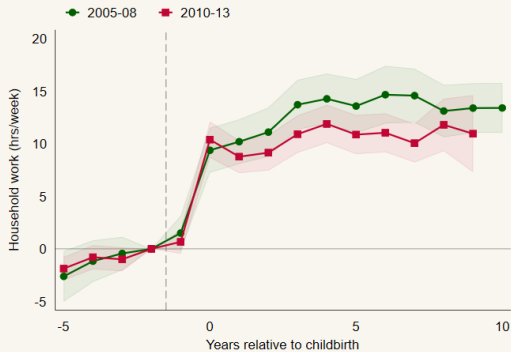
(a) Housework [Hours/week], Women

(b) Parenting [Hours/week], Women Men

Reduced Form Results: The 2009 Fair Work Act Reduced the Female Child Penalty in Labor Supply and Home Production

Comparative statics relative to the law:
Exposure Design

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Exposure to the Fair Work Act - Intuition

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- Exposure non-monotonic in prevalence of casual contract
    - → jobs with intermediate levels of "casual prevalence" most exposed

Job = Occupation-by-industry (2 digits each, $\sim 1,000$ jobs)

Casual prevalence = Fraction of individuals with a casual contract pre-2009
  ▶ Robust to using only observations of men in the whole sample period

Graph Distribution Non-monotonicity

- Assign mothers level of casual prevalence of job they have two years before childbirth

- Compare child penalty pre-post reform by different levels of exposure

- Sample sizes: $\sim$ 125 mother per tercile in the early cohort (2005-2008) and $\sim$ 220 per tercile in the late cohort (2010-2013)
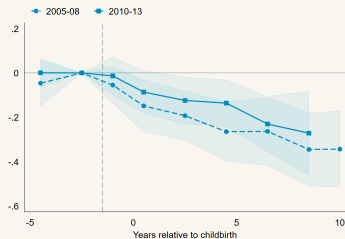
Pre-birth job in bottom tercile
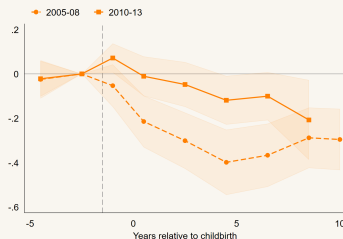
Middle tercile [most exposed]
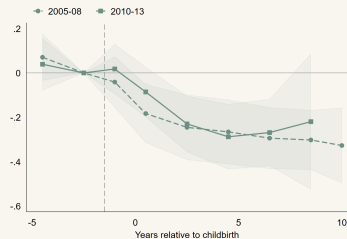
Top tercile

Figure: Permanent Employment if Employed (vs Casual and Fixed-term), Women by terciles of prevalence of casual contracts in occupation-by-industry
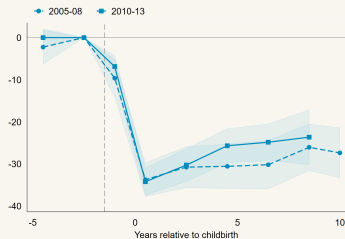
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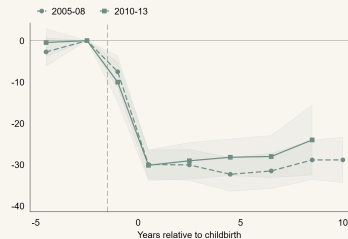
Top tercile

Figure: Weekly Hours of Paid Work (incl. Commute), Women
by terciles of prevalence of casual contracts in occupation-by-industry

Partners
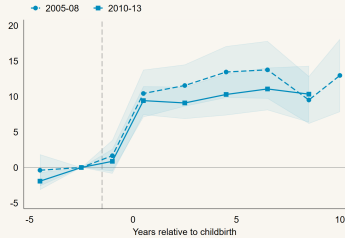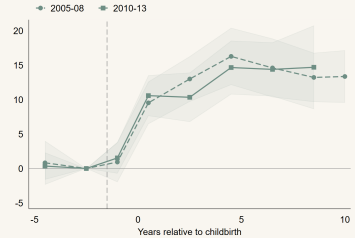
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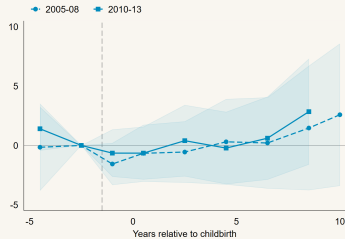
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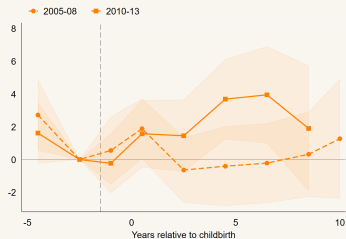
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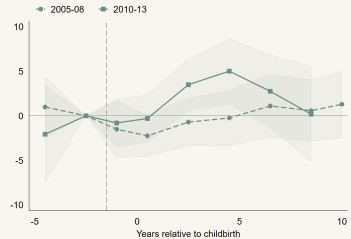
Top tercile

Figure: Weekly Hours of Housework, Men
by terciles of prevalence of casual contracts in occupation-by-industry
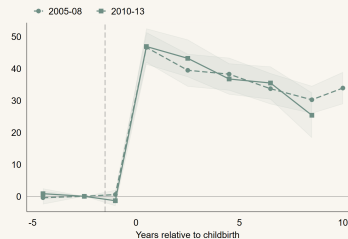Note: for men, treatment status depends on female partner
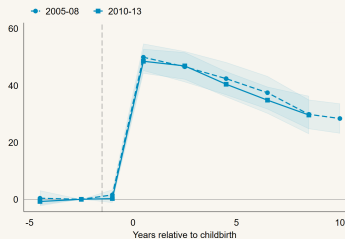
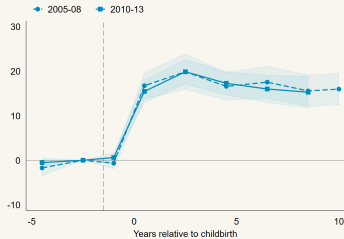Pre-birth job in bottom tercile of casual contracts
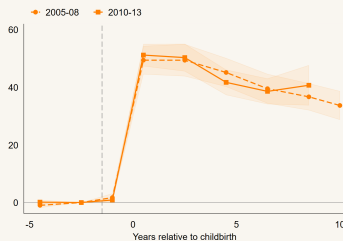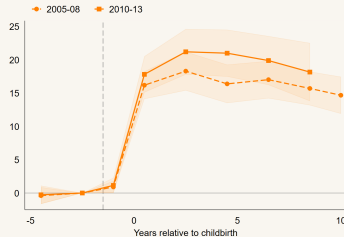
Middle tercile [most exposed]

Top tercile

Figure: Weekly Hours Spent Playing With or Caring Of Own Children, Women by terciles of prevalence of casual contracts in occupation-by-industry
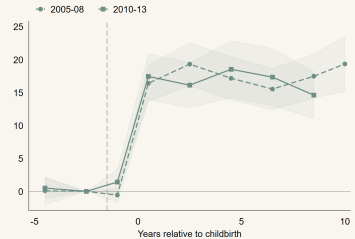
Pre-birth job in bottom tercile of casual contracts

Middle tercile [most exposed]

Top tercile

Figure: Weekly Hours Spent Playing With or Caring Of Own Children, Men
by terciles of prevalence of casual contracts in occupation-by-industry
Note: for men, treatment status depends on female partner

Mothers in jobs most exposed to the law:

- ↑ hours of work (both intensive and extensive)
- Slightly ↓ housework and $=$ parenting
- ⇒ ↑ personal and family income but ↓ leisure and sleep

Their partners:

- ↑ a bit housework (about 50% of female decrease) and ↑ increase parenting

Conclusions

Next steps

Conceptual framework

- What type of decision-making model is more compatible with our results on couples?

- What parameter values for comparative advantage in home production or preference for own's career rationalize them?

- We are working on a model in which jobs are a bundle of working hours and a "regularity amenity", and couples decide how much each spouse is going to contribute to labor supply and home production

- Fair Work Act is represented via a change in the institutional constraints that allows individuals to reduce their labor supply after childbirth without renouncing the amenity of a permanent contract (and regular schedule)

- Fully solve the model in the two environment (before and after 2009)

- The reform, as a change in the institutional constraint, can allow us to estimate
    - the utility cost of irregular/casual jobs
    - how substitutable are the different parental inputs in the home production function
    - what is the intrahousehold decision-making model

- Use these estimate to make a statement such as: "empirical estimates imply that if both men and women cared about each other careers equally, women would have to be *x* times as productive in home production to justify the observed time allocation"

We study the 2009 Fair Work Act in Australia, and find that

- it ↑ the probability of being on a permanent contract and on a regular schedule for mothers
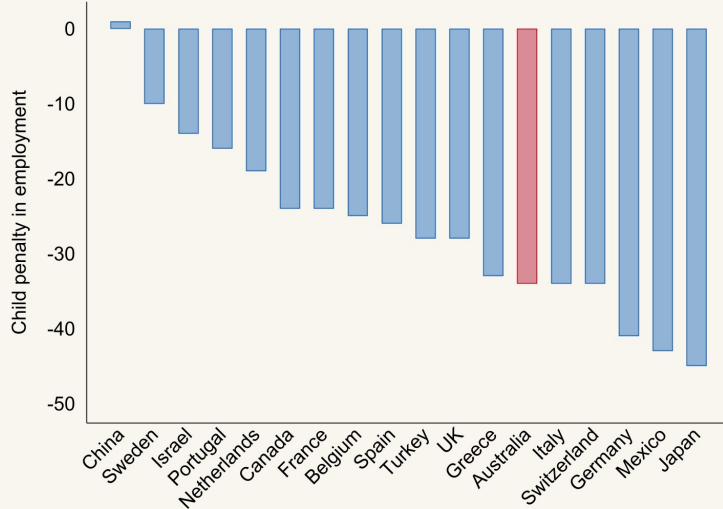- it consequently ↑ maternal labor supply

Using the law as a shock choice set, we find that

- easier labor market opportunities for women lead to some rearrangement of home production within the couple

THANK YOU!
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Child Penalty in Employment, Australia vs Other Countries

[...] until recently many awards did not provide for part-time workers to be engaged on anything but a casual basis. But with changing attitudes in the union movement, and legislative reforms, the concept of permanent part-time employment has become well accepted. [...] Although permanent part-time employment is now an option, however, there is no general obligation on an employer [...]. The NES provide a right to request a move to part-time employment, in order to accommodate a responsibility for the care of children.

Back
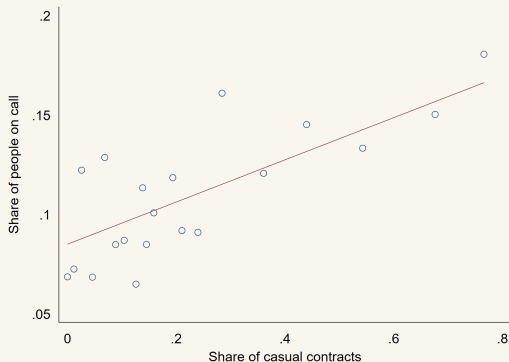
(a) Jobs with higher shares of casual contracts also have a higher share of people on call

**(b)** Jobs with higher shares of casual contracts also have a lower share of people on regular schedules

Back

▶ On which days of the week do you usually work in your main job?

(1) Monday to Friday
(2) Nine day fortnight
(3) Days vary from week to week
(4) Days vary from month to month
(5) Other

▶ Which of these best describes your current work schedule in your main job?

(1) A regular daytime schedule
(2) A regular evening shift
(3) A regular night shift
(4) A rotating shift (changes from days to evenings to nights)
(5) Split shift (two distinct periods each day)
(6) On call
(7) Irregular schedule
(8) Other

■ Regular Schedule: (1) to both questions

- "My working times can be flexible" (yes/no)

- "I am entitled to flexible start/finish times"

- Hours worked from home

- Any hours worked from home

- Hours worked from home conditional on any

- Entitlement to work from home
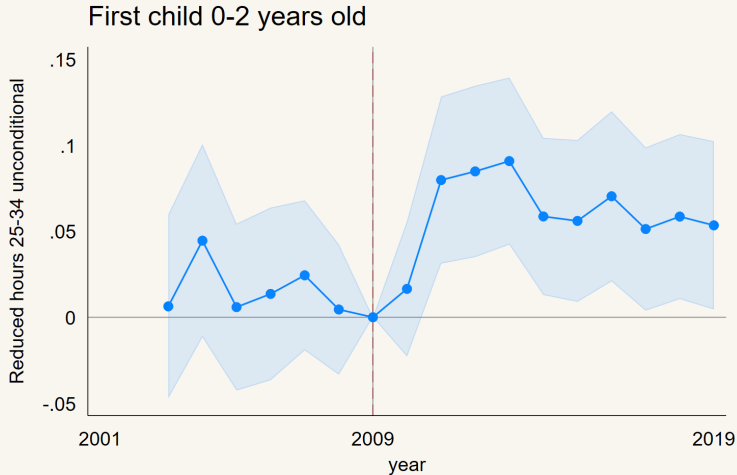
First child 0-2 years old

Mean reference group: 0.05.
Vertical red dashed line is last year with no children of cohort born after passage of law.

Back

First child 3-5 years old
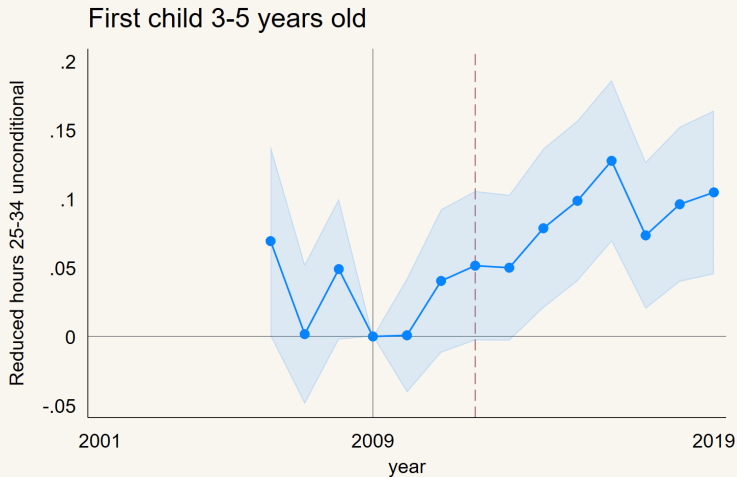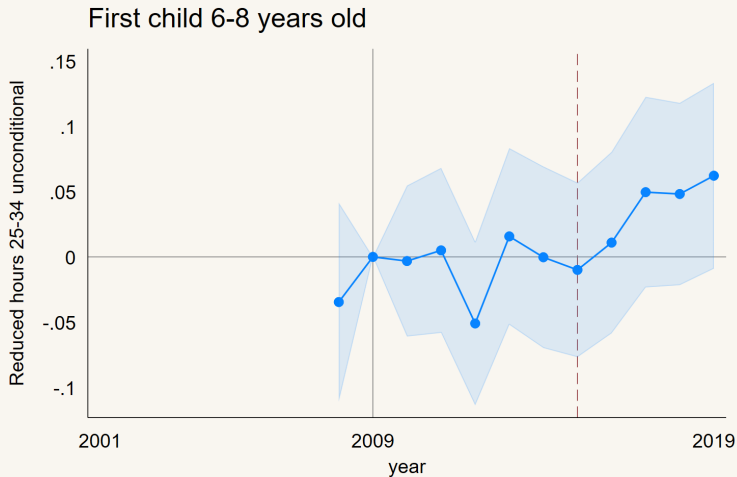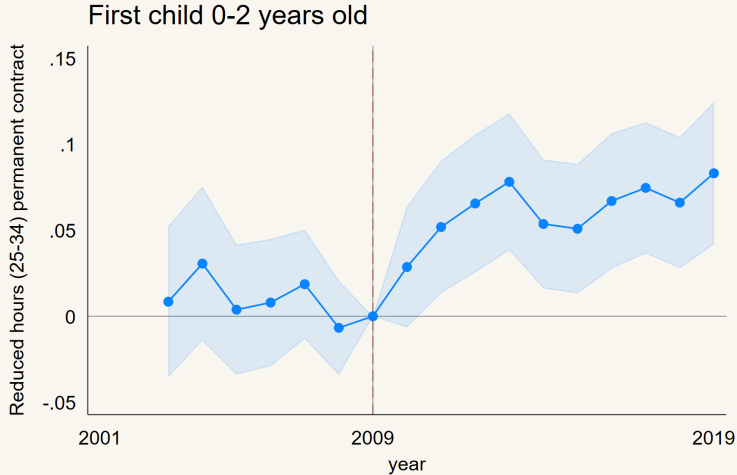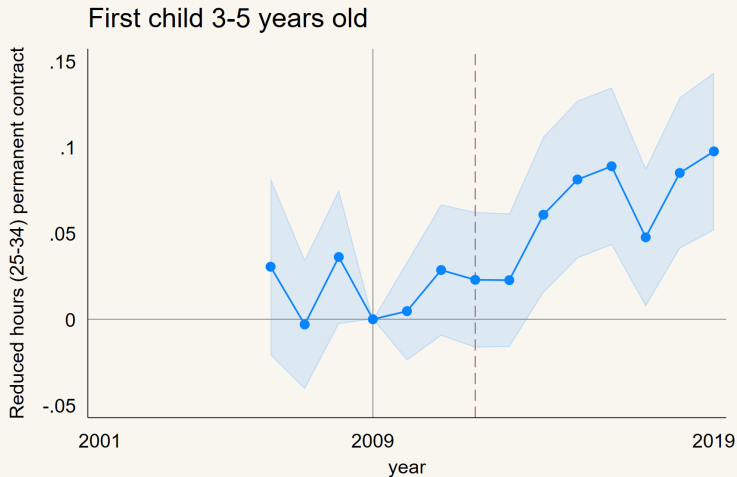
Mean reference group: 0.07.
Vertical red dashed line is last year with no children of cohort born after passage of law.

Back

First child 6-8 years old
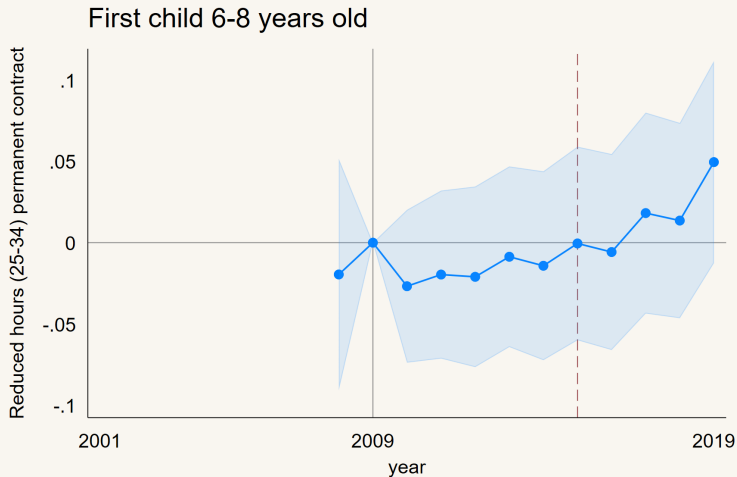
Mean reference group: 0.10.
Vertical red dashed line is last year with no children of cohort born after passage of law.

Back

First child 0-2 years old

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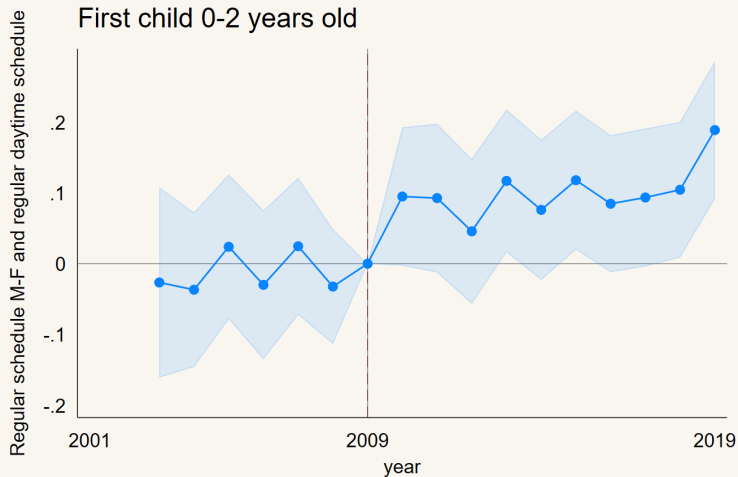
Mean reference group: 0.04.
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First child 6-8 years old
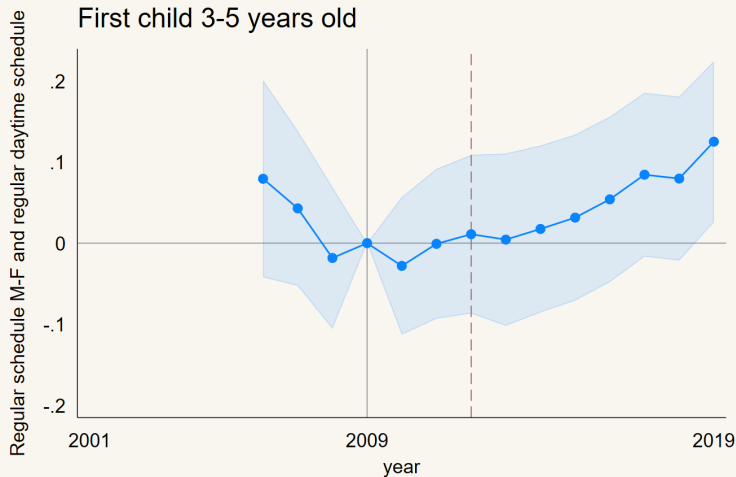
Mean reference group: 0.08.
Vertical red dashed line is last year with no children of cohort born after passage of law.

Back

	(1) Reduced hours (25-34) unconditional	(2) Reduced hours (25-34) permanent contract	(3) Regular schedule (M-F and regular daytime schedule)	(4) My working times can be flexible (yes-no)	(5) Entitled to flexible start/finish times	(6) Hours work from home
First child 0-2 $\times$ 1st birth after 2010	0.0423*** (0.0118)	0.0499*** (0.00887)	0.104*** (0.0235)	-0.0615* (0.0303)	0.00500 (0.0236)	0.508+ (0.294)
First child 3-5 $\times$ 1st birth after 2013	0.0534*** (0.0142)	0.0484*** (0.0111)	0.0578* (0.0266)	-0.0106 (0.0282)	0.0205 (0.0256)	0.880* (0.387)
First child 6-8 $\times$ 1st birth after 2016	0.0422* (0.0172)	0.0306* (0.0139)	0.0906** (0.0310)	-0.0120 (0.0299)	0.0305 (0.0266)	1.248** (0.440)
Pre-period mean:						
First child aged 0-2	0.0692	0.0365	0.266	0.587	0.636	2.574
First child aged 3-5	0.0943	0.0526	0.282	0.579	0.638	2.823
First child aged 6-8	0.119	0.0759	0.299	0.556	0.617	3.140
Observations:						
N	123900	129179	83526	61095	64853	88671
N Individuals	12504	13174	9780	8257	8489	10530

Standard errors in parentheses
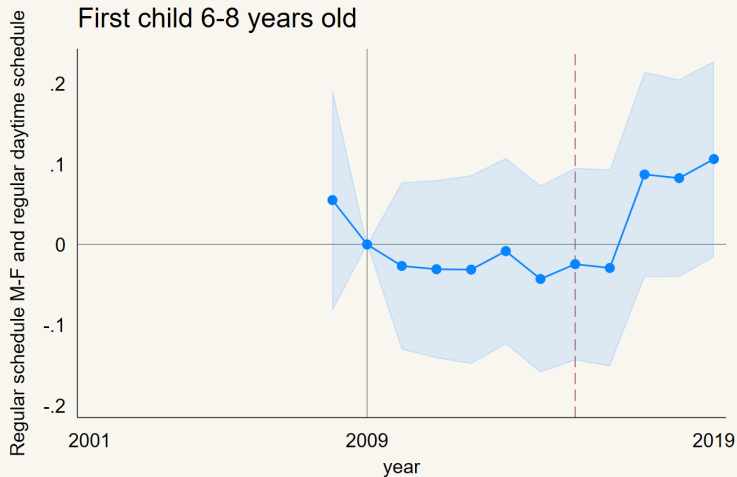+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

First child 0-2 years old

Mean reference group: 0.26.
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 3-5 years old

Mean reference group: 0.26.
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 6-8 years old
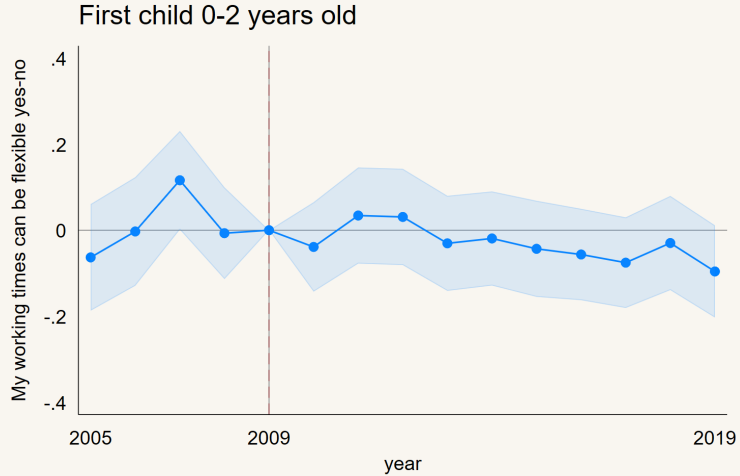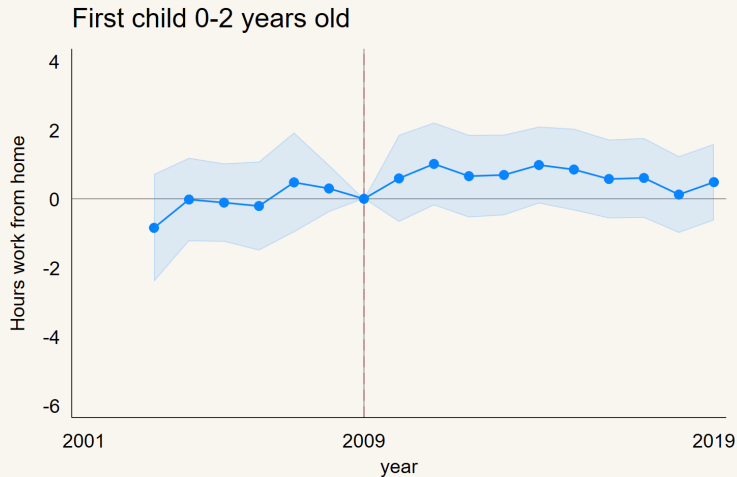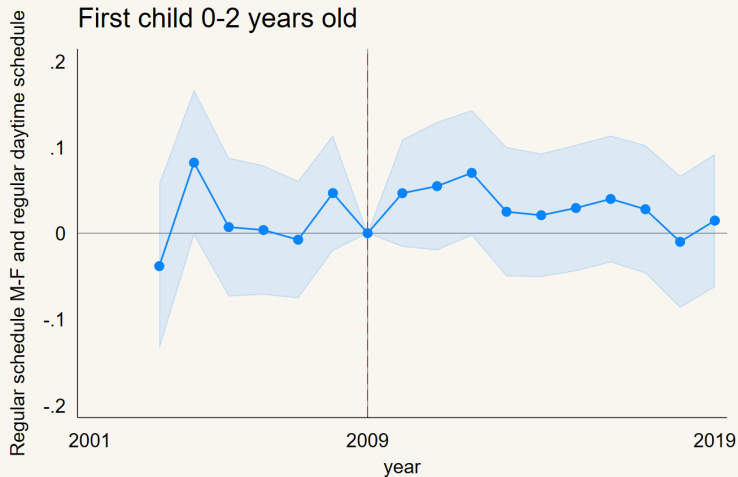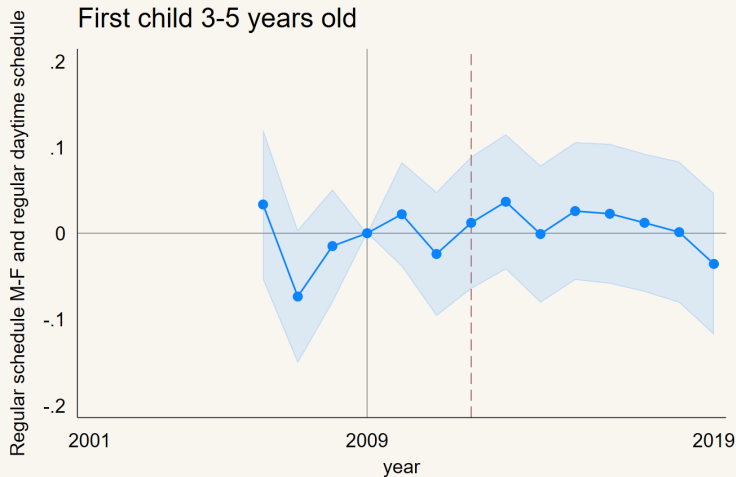
Mean reference group: 0.38.
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 0-2 years old

Mean reference group: 0.62.
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 0-2 years old

Mean reference group: 2.66.
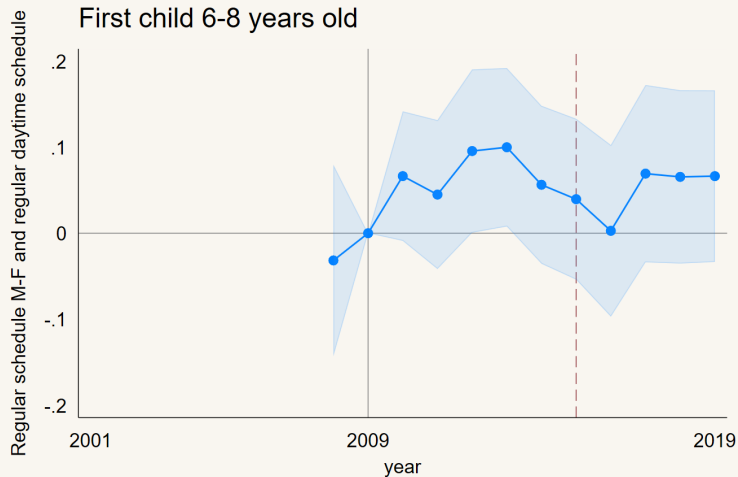Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 0-2 years old

Mean reference group: .
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 3-5 years old

Mean reference group: .
Vertical red dashed line is last year with no children of cohort born after passage of law.

First child 6-8 years old

Mean reference group: .
Vertical red dashed line is last year with no children of cohort born after passage of law.

	(1) Reduced hours (25-34) unconditional	(2) Reduced hours (25-34) permanent contract	(3) Regular schedule (M-F and regular daytime schedule)	(4) My working times can be flexible (yes-no)	(5) Entitled to flexible start/finish times	(6) Hours work from home
First child 0-2 × 1st birth after 2010	-0.0120 (0.00812)	-0.00227 (0.00438)	0.0154 (0.0184)	0.0273 (0.0217)	0.0249 (0.0207)	0.0123 (0.257)
First child 3-5 × 1st birth after 2013	-0.00935 (0.00914)	0.000675 (0.00631)	0.0151 (0.0215)	0.0189 (0.0229)	-0.0444* (0.0219)	-0.191 (0.337)
First child 6-8 × 1st birth after 2016	0.0115 (0.00962)	0.00290 (0.00579)	-0.00850 (0.0259)	-0.00566 (0.0254)	0.000884 (0.0251)	0.0148 (0.442)
Pre-period mean:						
First child aged 0-2	0.0467	0.0148	0.555	0.510	0.587	2.446
First child aged 3-5	0.0455	0.0187	0.589	0.519	0.645	2.880
First child aged 6-8	0.0339	0.0159	0.618	0.581	0.665	3.475
Observations:						
N	113454	122455	89605	62311	66164	98520
N Individuals	11995	13011	10063	8200	8397	11182

Standard errors in parentheses
$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
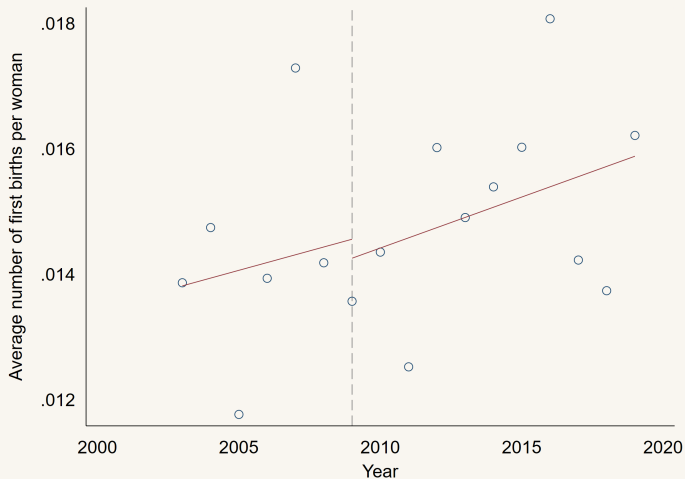
Figure: Fraction of women having their first child by year

	Early cohort (2003-2008)			Late cohort (2010-2017)			
	N	Mean	SD	N	Mean	SD	Diff.
Age at first birth	434	28.74	(6.09)	800	29.04	(5.50)	0.30
In labor force	428	0.93	(0.26)	797	0.93	(0.25)	0.00
Weekly work hours (cond.)	375	39.19	(10.86)	700	38.17	(10.61)	-1.03
Log weekly work hours employment	375	3.61	(0.40)	700	3.58	(0.42)	-0.03
Log(1+weekly wage)	434	5.46	(2.41)	800	5.74	(2.52)	0.29
Part-time if employed	375	0.21	(0.40)	700	0.20	(0.40)	-0.00
Permanent employment	353	0.71	(0.45)	668	0.75	(0.43)	0.03
Overtime (> 38 hrs/week)	434	0.47	(0.50)	800	0.43	(0.50)	-0.04
Overtime (> 50 hrs/week)	434	0.12	(0.33)	800	0.09	(0.29)	-0.03
Regular schedule	375	0.59	(0.49)	700	0.63	(0.48)	0.04
M-F	375	0.62	(0.49)	700	0.65	(0.48)	0.02
Has bachelor degree	428	0.38	(0.49)	797	0.39	(0.49)	0.01

Stars indicate statistical significance (+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

$$Y_{it} = \alpha_i + \delta_t + \beta_{h(i)} + \sum_{\substack{k=-5, \\ k \neq -2}}^{10} \left\{ \gamma_k \times \mathbb{1}\{t - E(i) = k\} \right\} + \epsilon_{it}$$

$E(i)$ Year of birth of i's first child

$\alpha_i, \ \delta_t, \beta_{h(i)}$ Individual, time, and age FEs

γ_k Effect k periods from childbirth $\rightarrow$ Child Penalty in year k (difference k periods from childbirth between mother and her pre-birth self)

- Controls: never-parents
- Estimated using Sun and Abraham (2020)
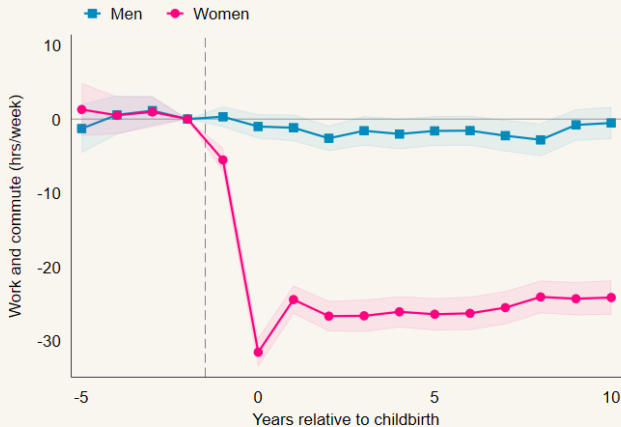
Figure: Weekly Hours of Paid Work (incl. Commute) Margins
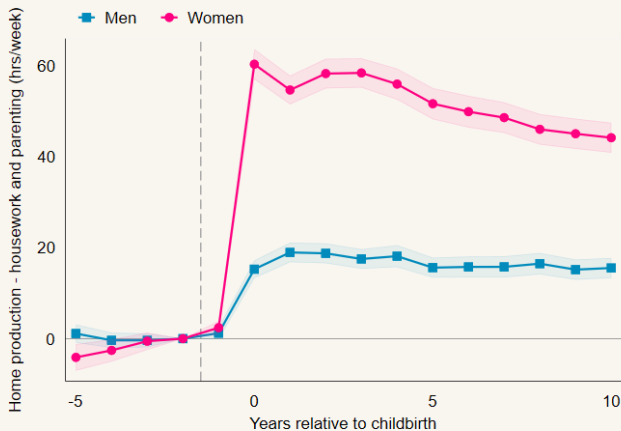
Figure: Weekly Hours of Home Production (Housework + Parenting) `Separate`
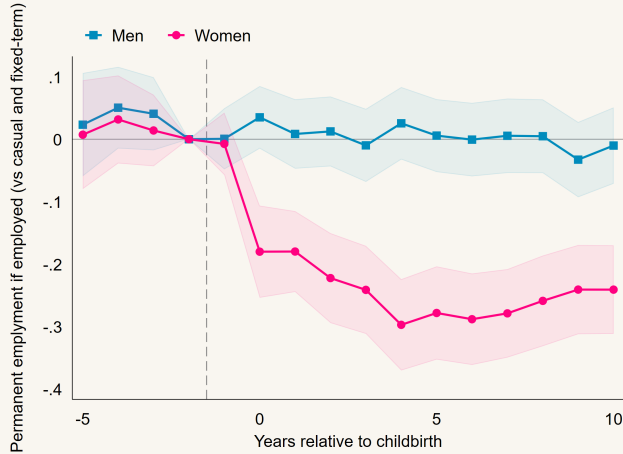
Figure: Permanent Employment if Employed (vs Casual and Fixed-term)
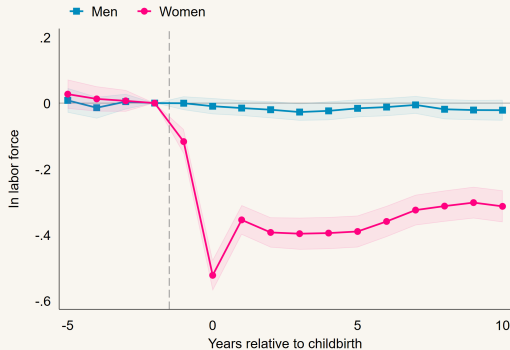
(a) Labor Force Participation

(b) Weekly Hours of Work Conditional on Working
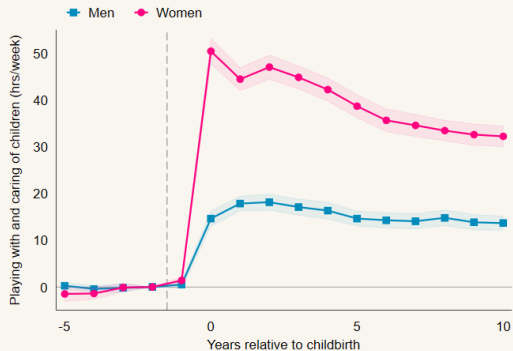
(a) Housework [Hours/week]

(b) Parenting [Hours/week]
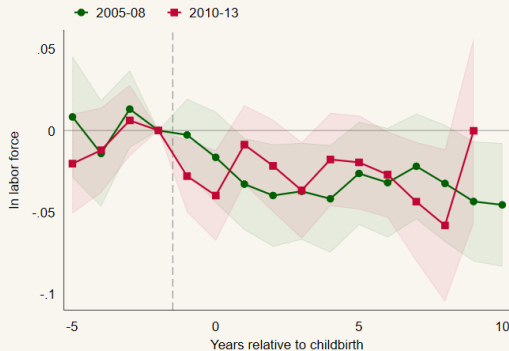
(a) Labor Force Participation, Men
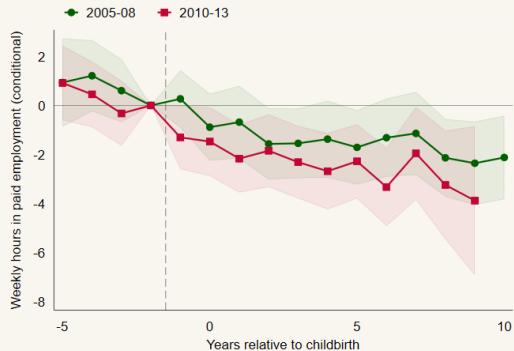
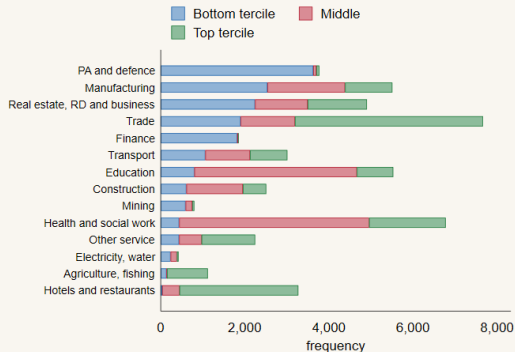**(b)** Weekly Hours of Work Conditional on Working
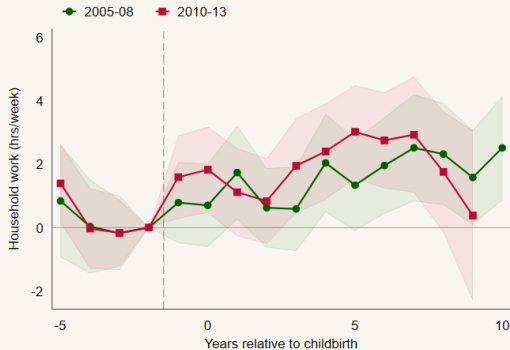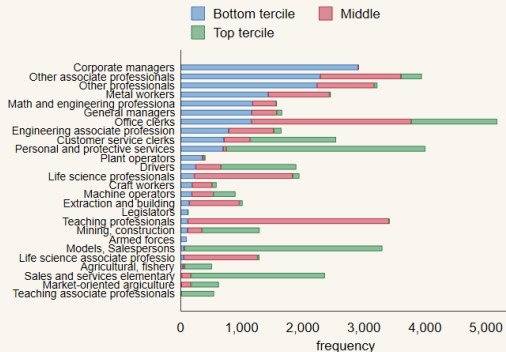
(a) Housework [Hours/week], Men
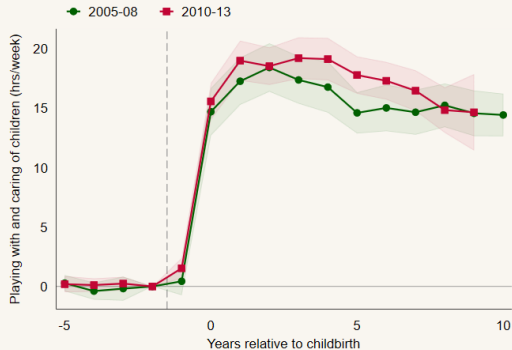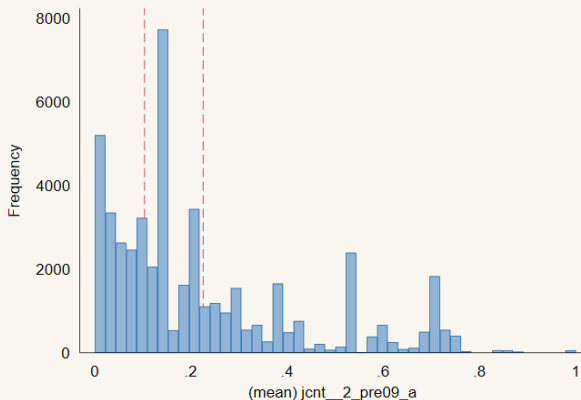
(b) Parenting [Hours/week], Men

INDUSTRIES AND OCCUPATIONS BY FRACTION ON CASUAL CONTRACTS

(a) Industries

(b) Occupations

Back

The vertical dashed lines correspond to the 33rd and the 66th percentile

Figure: Distribution of "casual prevalence": fraction of casual contracts in an occupation-by-industry
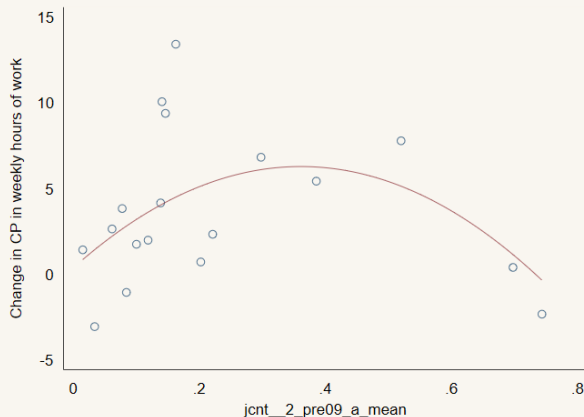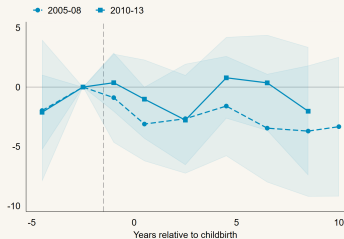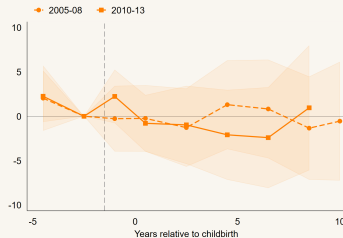
Figure: Child penalty in working hours (0-5 years post birth): change 2010-2013 births from 2005-2008 births as function of fraction of casual contracts in an occupation-by-industry
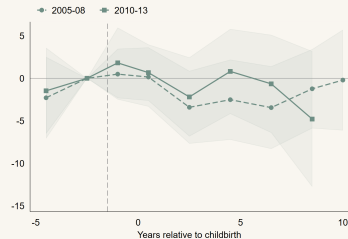
Pre-birth job in bottom tercile of casual contracts

Middle tercile [most exposed]

Top tercile

Figure: Weekly Hours of Paid Work (incl. Commute), Men
by terciles of prevalence of casual contracts in occupation-by-industry
Note: for men, treatment status depends on female partner

Breen Creighton and Andrew Stewart. *Labour Law. Fifth Edition.* The Federation Press, 2010.

Claudia Goldin. A grand gender convergence: Its last chapter. *American Economic Review*, 104(4):1091–1119, 2014.

Henrik Kleven, Camille Landais, Johanna Posch, Andreas Steinhauer, and Josef Zweimüller. Do Family Policies Reduce Gender Inequality? Evidence from 60 Years of Policy Experimentation. Technical Report w28082, National Bureau of Economic Research, 2021.

Henrik Kleven, Camille Landais, and Gabriel Leite-Mariante. The Child Penalty Atlas, August 2023. URL https://www.nber.org/papers/w31649.

Liyang Sun and Sarah Abraham. Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, 2020.