# Children, Household Specialization and Relationship Quality

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**How do children and the associated time readjustments affect couples' relationship quality?**

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With declining financial reliance between partners, non-material factors gained importance within the value of being in a relationship [Lundberg and Pollak, 2007]

1. Individual well-being [Chiappori et al., 2018]
2. Couple decisions:
   - → Formation, dissolution and fertility [e.g., Browning et al., 2014]
   - → Child investments, household specialization [Chiappori and Weiss, 2007]

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   - → Validate measure: marital transition prediction and correlation between partners

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   - → Perform a dynamic difference-in-differences estimation around first child birth

- First child birth **significantly and persistently reduces** RQ
  - → By age four, RQ is 1/2 standard deviation below pre-birth value
- Impact both **mothers and fathers** equally

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- Gender-based **specialization** after birth, regardless of pre-birth arrangement
  - → Women increase housework and reduce labor market time
- Larger time **rearrangement** associated with larger decrease in RQ

# Literature and contribution

**Models of family formation and dissolution** [Blasutto, 2024; Brien et al., 2006; Browning et al., 2014; Chiappori, 2020; Eckstein et al., 2019; Gemici and Laufer, 2011; Goussé et al., 2017; Greenwood et al., 2017; Low et al., 2018; Voena, 2015; Weiss and Willis, 1997]

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**Consequences of having children** [Adda et al., 2017; Albanesi et al., 2023; Ahammer et al., 2023; Blau and Kahn, 2017; Bertrand et al., 2015; Bertrand, 2020; Clark et al., 2008; Cortés and Pan, 2020; Goldin, 2021; Kleven et al., 2019; Lillard and Waite, 1993; Svarer and Verner, 2008]

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**Household time allocation** [Aguilar-Gomez et al., 2019; Alon et al., 2020; Del Boca et al., 2020; Farré et al., 2020; Hupkau and Petrongolo, 2020; Lundberg and Rose, 2000; Lundberg, 2005; Sevilla and Smith, 2020; Siminski and Yetsenga, 2022]

- Document child-induced specialization regardless of *ex-ante* roles & implications for RQ

# Data and Measure

# Dataset and sample

- **Dataset:** Understanding Society, UK longitudinal household survey
  - + Relationship history since 1991 (British Household Panel Survey)
- **Population of interest:**

  Individuals in a couple that become parents
- **Sample:** Summary Statistics

  Individuals cohabiting with their partners that had their 1st child in 2009-2021 observed at least once before and after birth

  → Panel of 1,760 individuals and up to 6 waves

# Measure of Relationship Quality

Partner Questionnaire to both cohabiting partners **individually**:

| (a) Subjective assessments | (b) Couple time use |
|---|---|
| *How often do you... ?* | *How often do you... ?* |
| consider splitting | work together on a project |
| regret getting married | stimulating exchange of ideas |
| quarrel | calmly discuss something |
| get on each others nerves | kiss partner |
| *What is the... ?* | *Do you and your partner... ?* |
| degree of happiness w/ couple | engage in outside interests |

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**Factor analysis** to construct RQ using *all* available information

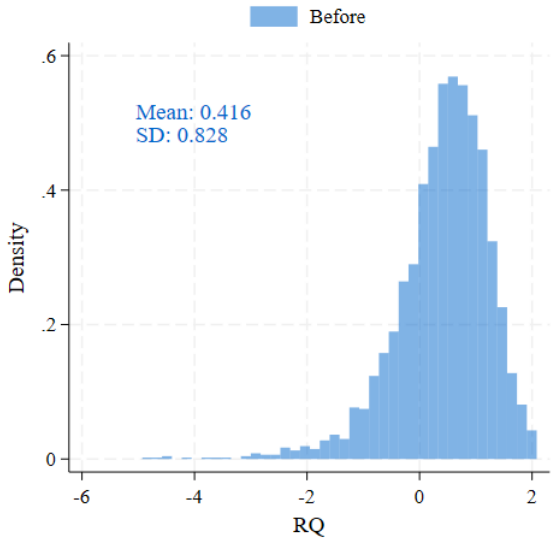
- Retain first factor $\rightarrow$ One-dimensional measure
- Explains 40.61% of the variation in the items

Scree Plot

Factor Loadings

# Distribution of the RQ measure in the sample

- Standardized
  - ⇒ Coefficients in standard deviations
- Higher values indicate better relationships




Never parents | Rank

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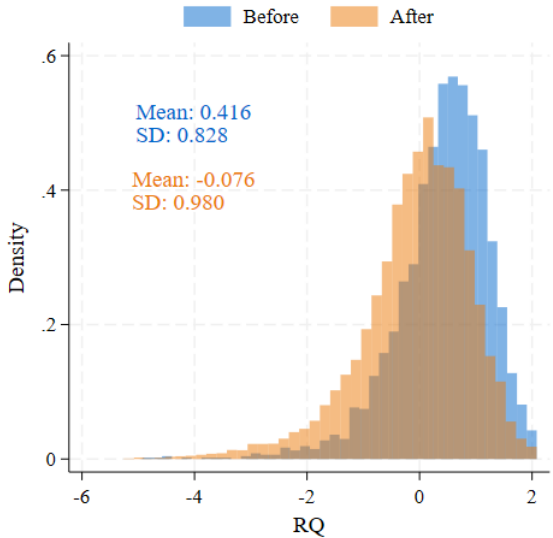


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- **Smooth evolution** over the life-cycle and with relationship tenure
  - → No jumps in average profiles

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- **Smooth evolution** over the life-cycle and with relationship tenure
  - → No jumps in average profiles
- Association with partners' **observable characteristics**
  - → Confirm associations drawn in the literature (marriage, assortative matching)

# Empirical Strategy

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We want to estimate the impact of first child birth on RQ

Dynamic difference-in-differences: two-way fixed effects specification

$$y_{i,t} = \alpha_i + \mu_t + \sum_j \mathbb{1}\{j = t - G_i\}\delta_j + u_{i,t}$$

- $G_i$: year when $i$'s first child was born (*treatment cohort*)
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→ Biased estimates using OLS: *forbidden* comparisons w/ already treated units

[e.g., De Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021; Roth et al., 2023]

# Empirical Strategy

## Using Callaway and Sant'Anna [2021] method

1. Compute "good" $2 \times 2$ difference-in-differences comparisons for each treatment cohort and event-time period Illustrate

   e.g., Compare 2010 cohort w/ 2011-2020 cohorts at event-time 0, 2016-2020 cohorts at event-time 5...

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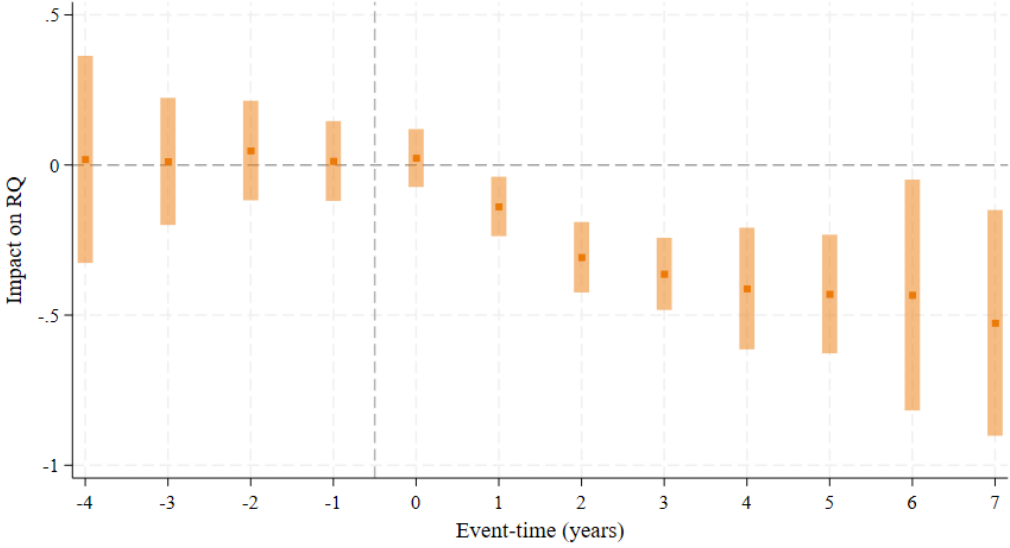
2. Aggregate ATT at the event-time level to obtain $\hat{\delta}_j$ — Illustrate, Homogeneity

# Impact of first child birth on RQ

# First child birth significantly and persistently reduces RQ



# The results are not driven by...

Skip

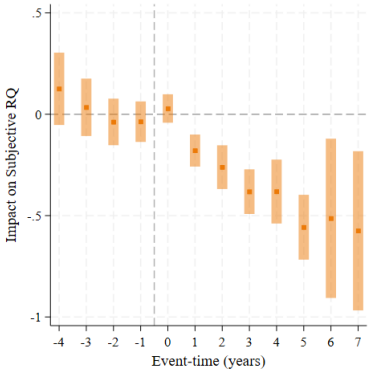
1. changes in time use items only or in item valuation after birth
   → Larger impact on subjective assessment items (happiness)
2. parents of more than one child
   → Parents of +1 child experience smaller decrease
3. only considering individuals who do become parents
   → Similar result using infertile individuals and never parents
4. attrition due to couple dissolution
   → Same magnitude excluding couples that end up dissolving
5. timing of birth, in terms of age and relationship tenure
   → Similar impact regardless of age/tenure at birth

More

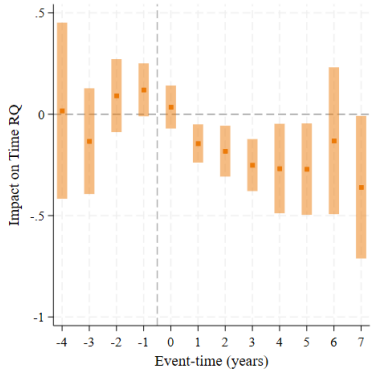
# 1. The results are not driven by changes in time use items only

## Construct separate measures for each block of items

(a) Subjective assessment




(b) Couple time use



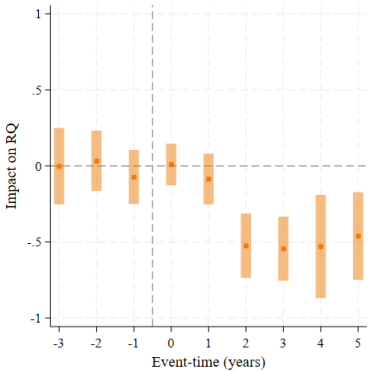

Factor Loadings | Distribution | By item: subjective assessment | By item: time use

# 2. The results are not driven by parents of more than one child

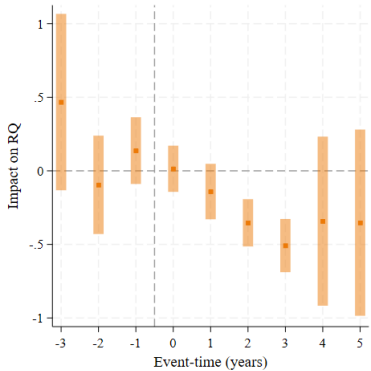
Separately by total amount of children at the end of the observation period

Second child

(a) One child

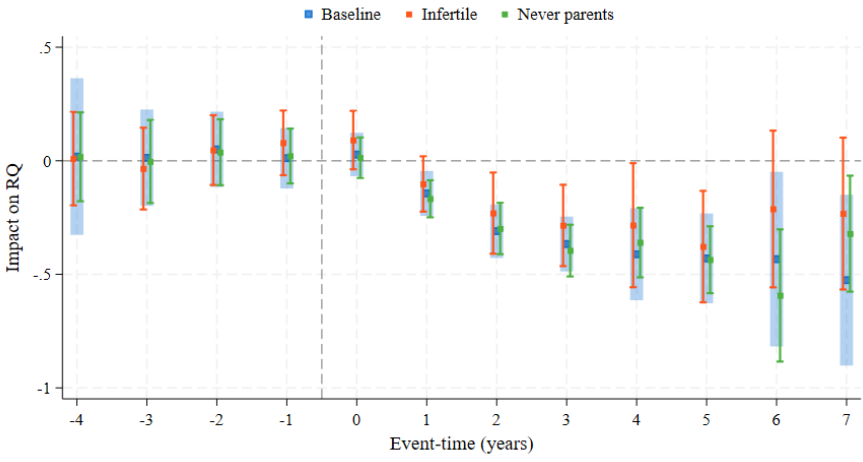



(b) More than one child



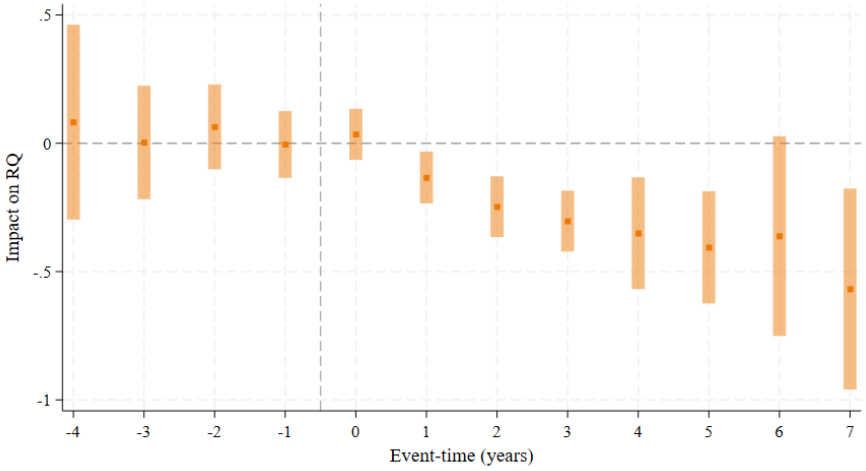
# 3. The results are not driven by using a sample of parents

## Alternative counterfactuals: infertile individuals and never parents



# 4. The results are not driven by separating couples

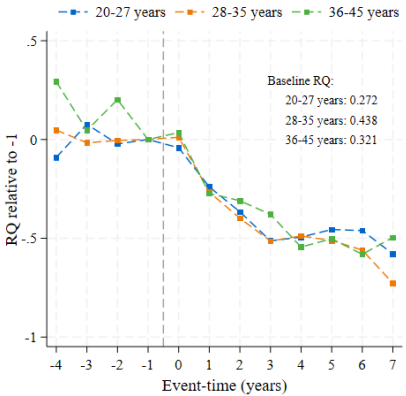
## Exclude individuals observed separating by the end of the observation period



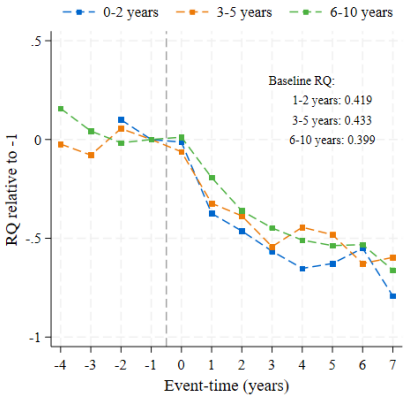
# 5. The results are not driven by differences in timing of birth

Average RQ at each event-time period by age and tenure at birth

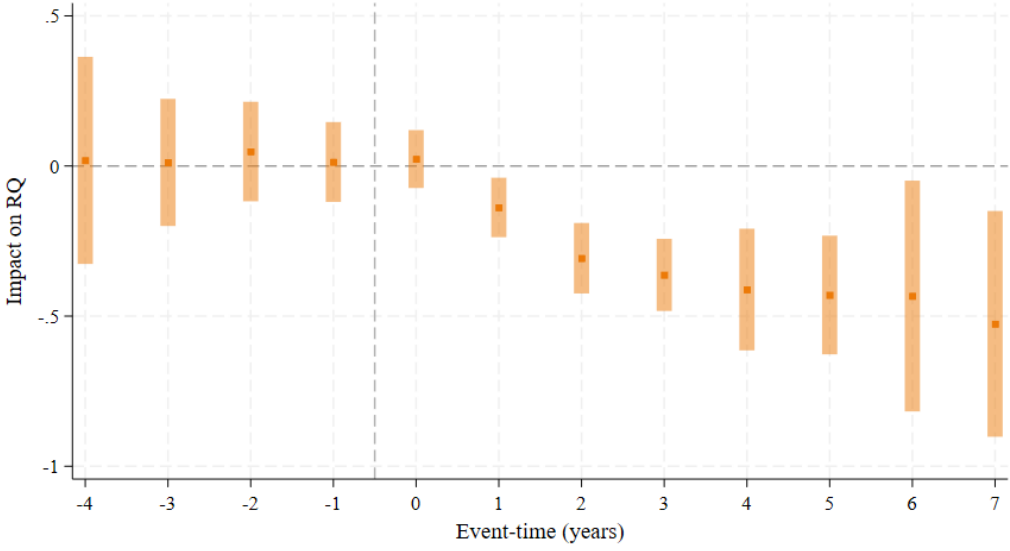
(a) Age bins




(b) Tenure bins



# What are the implications of this result?

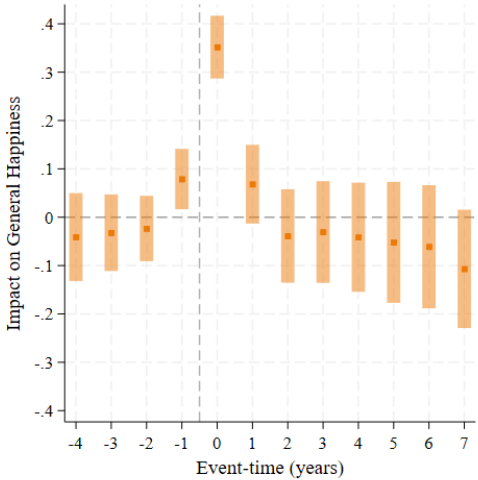


# Implications - Back-of-the-envelope calculations on divorce

| | *Dependent variable:* Couple dissolution | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Lagged RQ | -0.0106*** | -0.00833*** | -0.00698* |
| | (0.002) | (0.002) | (0.003) |
| Controls | | ✓ | ✓ |
| Individual FE | | | ✓ |
| R-squared | 0.007 | 0.054 | 0.050 |
| Observations | 17228 | 15555 | 15555 |

- Around 2% of the existing couples dissolve yearly in our sample
- 1/2 std dev ↓ in RQ associated w/ **17.5% higher probability of separation**

# Implications - General happiness and RQ



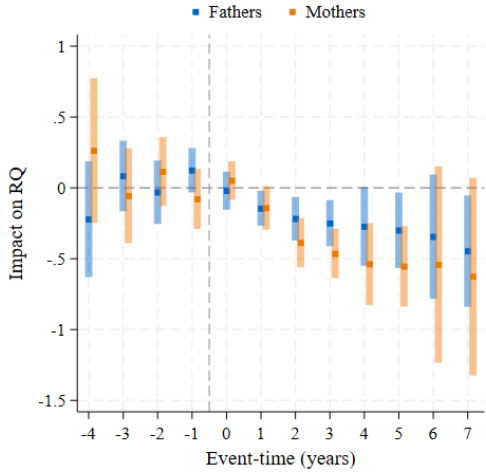

- *"Have you recently been feeling reasonably happy, all things considered?"*
- Very different from RQ:
  - Adapt to life events over time
  - Benefits of children balance out drawbacks in RQ

Other shocks: Unemployment

*Notes:* Using event-time t=-2 as baseline.

# Similar impact on mothers and fathers

- *Child penalty*: Impact mothers' outcomes only
  - Labor market
  - Housework time
  - Mental health
- Fathers' RQ decreases to a similar magnitude as mothers' Difference

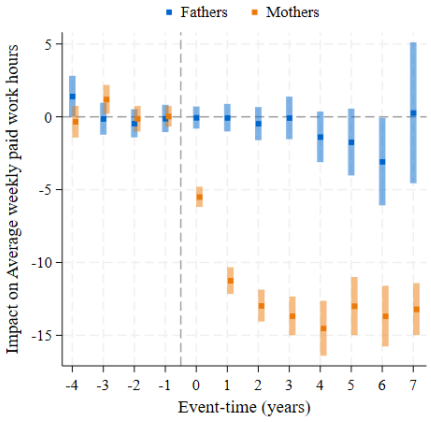


# Mechanism: Changes in Household Specialization

# How parents use their time changes after birth

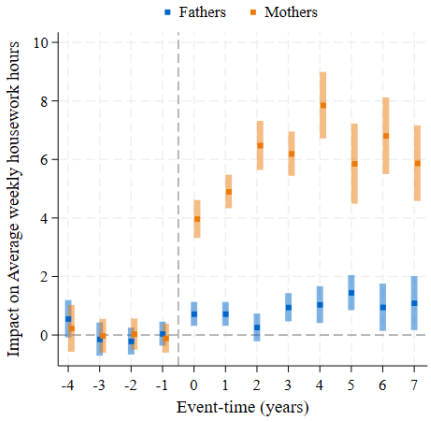
Leave policies

(a) Labor market work hours




*Pre-birth*: Men 32 hours, women 27 hours

(b) Housework hours




*Pre-birth*: Men 5 hours, women 8 hours

# Characterize couples based on pre-birth roles

Compute share out of household total done by women for each type of work $l$: Distrib.

$$\textit{female share}_l = \frac{\text{woman's hours}_l}{\text{man's hours}_l + \text{woman's hours}_l} \quad ; \quad l \in \{\text{market, house}\}$$

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Classify couples by split of work times **before** first child birth: Classes

- **Traditional**: Women specialize in housework and men in labor market work
  - $\rightsquigarrow$ $\textit{female share}_{\text{market}} \leq 0.45$ and $\textit{female share}_{\text{house}} \geq 0.55$

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Classify couples by split of work times **before** first child birth: Classes

- **Traditional**: Women specialize in housework and men in labor market work
- **Unbalanced**: Women take a larger share of both types of work
  - $\rightsquigarrow$ $\textit{female share}_{\text{market}} \geq 0.55$ and $\textit{female share}_{\text{house}} \geq 0.55$

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Classify couples by split of work times **before** first child birth: Classes

- **Traditional**: Women specialize in housework and men in labor market work
- **Unbalanced**: Women take a larger share of both types of work
- **Egalitarian**: No specialization, 50-50 split of both work types
  - $\rightsquigarrow$ $0.45 \leq \textit{female share}_{\text{market}} \leq 0.55$ and $0.45 \leq \textit{female share}_{\text{house}} \leq 0.55$

# Characterize couples based on pre-birth roles

Compute share out of household total done by women for each type of work $l$: Distrib.

$$\textit{female share}_l = \frac{\text{woman's hours}_l}{\text{man's hours}_l + \text{woman's hours}_l} \quad ; \quad l \in \{\text{market, house}\}$$

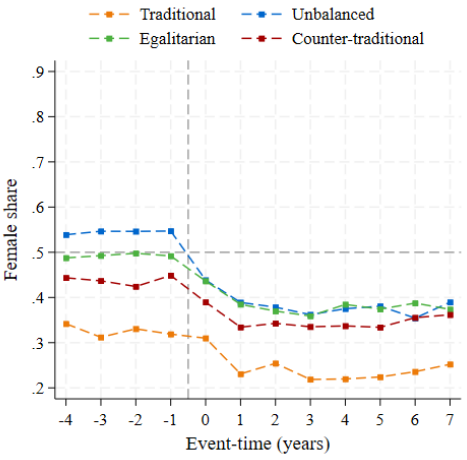
Classify couples by split of work times **before** first child birth: Classes

- **Traditional**: Women specialize in housework and men in labor market work
- **Unbalanced**: Women take a larger share of both types of work
- **Egalitarian**: No specialization, 50-50 split of both work types
- **Counter-traditional**: Men take a larger share of housework
  - $\rightsquigarrow$ $\textit{female share}_{\text{house}} \leq 0.45$

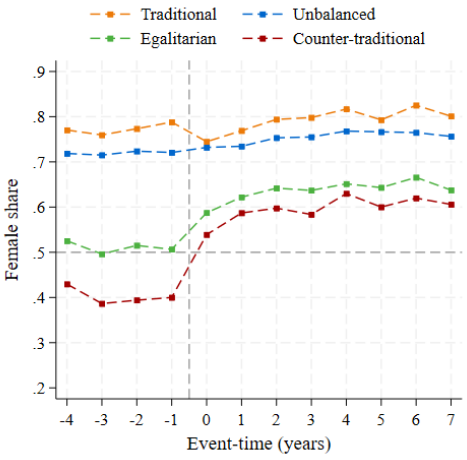
# Gender-based specialization after childbirth

Estimates | Time changes

(a) Labor market work hours



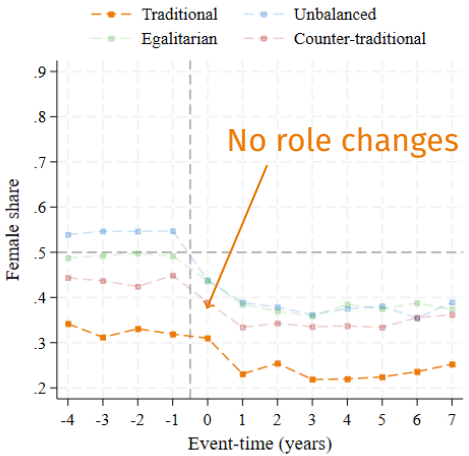

(b) Housework hours



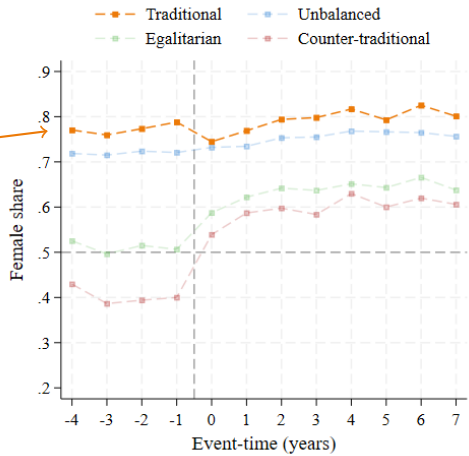
# Who experiences the largest changes?



(a) Paid market work hours



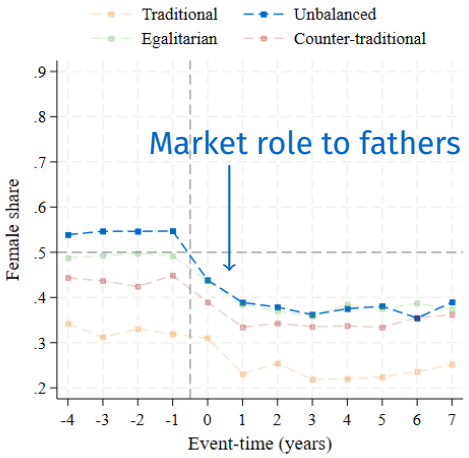

(b) Unpaid housework hours



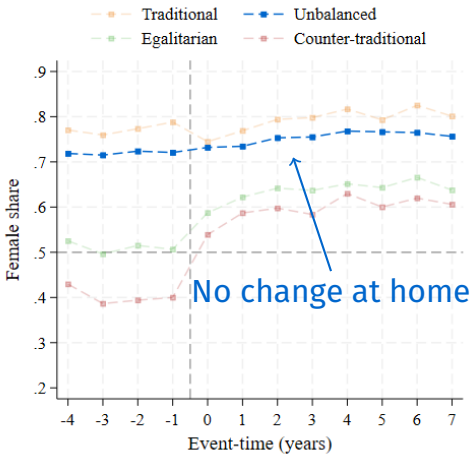
# Who experiences the largest changes?

Post | Estimates | Time changes

(a) Paid market work hours




(b) Unpaid housework hours

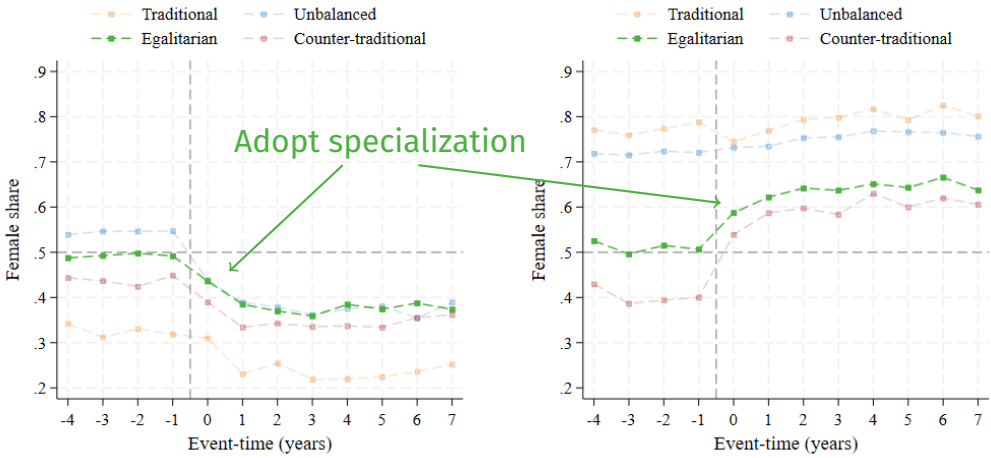


# Who experiences the largest changes?



(a) Paid market work hours

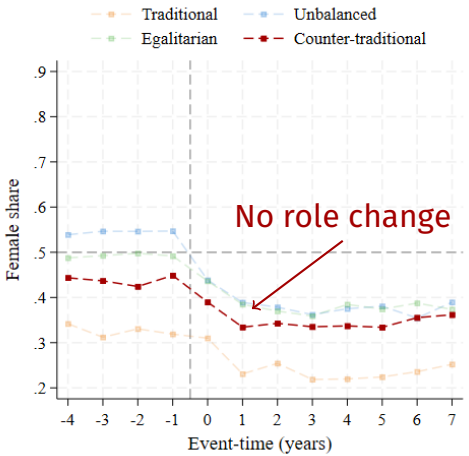
(b) Unpaid housework hours



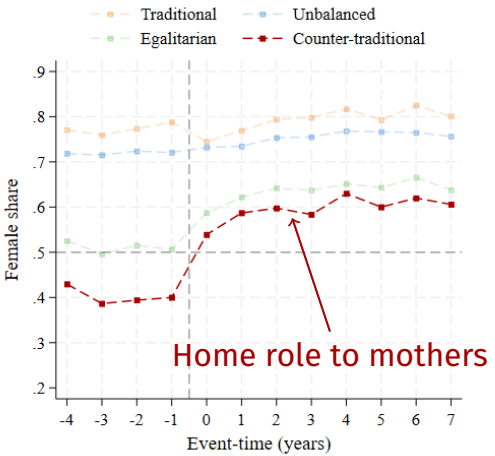
# Who experiences the largest changes?



(a) Paid market work hours




(b) Unpaid housework hours



# Who experiences the largest changes?

| | Market | Home |
|---|---|---|
| Traditional | No role change | |
| Unbalanced | To fathers | No change |
| Egalitarian | Adopt specialization | |
| Counter-traditional | No change | To mothers |

# Who experiences the largest changes?

| | Market | Home |
|---|---|---|
| Traditional | No role change | |
| Unbalanced | To fathers | No change |
| Egalitarian | Adopt specialization | |
| Counter-traditional | No change | To mothers |

Not behaving according to revealed comparative advantages pre-birth

→ Frictions in the labor market or identity considerations
[Akerlof and Kranton, 2000; Ichino et al., 2019]

→ Become prevalent after parenthood and **unanticipated**
[Kuziemko et al., 2018]

# RQ falls most for couples experiencing the largest changes

Static diff-in-diff estimates by couple type, using Callaway and Sant'Anna [2021]

| | Traditional | Unbalanced | Egalitarian | Counter-traditional |
|---|---|---|---|---|
| Baseline RQ | 0.345<br>(0.993) | 0.424<br>(0.749) | 0.568<br>(0.633) | 0.459<br>(0.784) |
| ATT | -0.107<br>(0.180) | -0.0992<br>(0.086) | -0.175*<br>(0.069) | -0.243**<br>(0.075) |
| Observations | 273 | 876 | 611 | 856 |

- Larger changes in housework associated with larger decreases in RQ
- Unanticipated changes: zero effect of second child birth

Average RQ | Percentage of baseline | Controls | By sex | Other mechanisms

# Conclusions

1. **Having a child reduces Relationship Quality significantly and persistently**
2. **Parents change how they use their time**
   - Gender-based household specialization
   - Larger reallocation of paid and unpaid work $\rightarrow$ Larger RQ decrease

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# Conclusions

1. **Having a child reduces Relationship Quality significantly and persistently**
2. **Parents change how they use their time**
   - Gender-based household specialization
   - Larger reallocation of paid and unpaid work $\rightarrow$ Larger RQ decrease

**Implications?** Policies encouraging a more egalitarian distribution of tasks post-birth could mitigate the negative impact on RQ

**Next project:** Integrate evidence into model of fertility & couple dissolution decisions

$\rightarrow$ Which policies can mitigate negative impact on RQ?

---

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# Appendix

# Models of couple formation and dissolution

Back to literature

Two types of gains from being in a couple [Becker, 1991]:

- material: being in a couple financially beneficial (economies of scale, risk sharing)
- non-material: more subjective and match specific

Theoretical treatments of non-material component, or match quality:

1. Stochastic component, non-persistent shocks at each period [Chiappori and Weiss, 2006, 2007; Gemici and Laufer, 2011; Bruze et al., 2015; Voena, 2015; Greenwood et al., 2017; Low et al., 2018]
2. Deterministic but unobserved, noisy signal updated each period [Brien et al., 2006; Blasutto et al., 2020; Antler et al., 2022; Blasutto, 2024]

⇒ Limited empirical guidance on how match quality determines couple decisions

# Empirical studies of match quality

Back to literature

- In Economics:
  - observed partner characteristics [Eckstein et al., 2019; Low, 2021; Weiss and Willis, 1997]
  - well-being, happiness and conflict [Bertrand et al., 2015; Chiappori et al., 2018]

  → *Incorporate relationship-specific information*

- In Psychology:
  - propose and test measures of marital satisfaction and stress [Spanier, 1976; Busby et al., 1995; Norton, 1983; Funk and Rogge, 2007; Joel et al., 2020]

  → *Comprehensive measure parsimoniously summarizing*

- Other disciplines associate match quality with
  - marital transitions, childbirth, health, financial resources, happiness, etc. [Perelli-Harris and Blom, 2022; Carlson and VanOrman, 2017; Rijken and Liefbroer, 2009; Fernandes-Pires et al., 2023; Halliday Hardie and Lucas, 2010; Meadows and Arber, 2015]

  → *Overcome data shortcomings: longitudinal, own responses, present values*

# Summary statistics the period before birth

Back to data

| | (1) Fathers | (2) Mothers |
|---|---|---|
| Age | 32.00 | 28.38 |
| | (6.323) | (6.058) |
| College educated (%) | 33.77 | 36.34 |
| | (47.30) | (48.11) |
| Active in labor mkt (%) | 86.97 | 84.25 |
| | (33.65) | (36.42) |
| Employed (%) | 82.48 | 78.09 |
| | (37.98) | (41.35) |
| Weekly work hours | 31.43 | 27.34 |
| | (17.04) | (16.11) |
| Gross monthly income | 2213.5 | 1569.2 |
| | (1620.7) | (1220.5) |
| Weekly housework hours | 5.157 | 8.583 |
| | (4.044) | (6.258) |
| RQ | 0.351 | 0.385 |
| | (0.860) | (0.895) |
| Observations | 2714 | 3260 |

| | (3) Couples |
|---|---|
| Tenure | 4.186 |
| | (3.311) |
| Married (%) | 42.56 |
| | (49.20) |
| Female share of paid work | 0.472 |
| | (0.210) |
| Monthly household income | 4045.0 |
| | (2988.5) |
| Female share of housework | 0.630 |
| | (0.204) |
| Observations | 4124 |

# Summary statistics of parents and never parents

Back to data

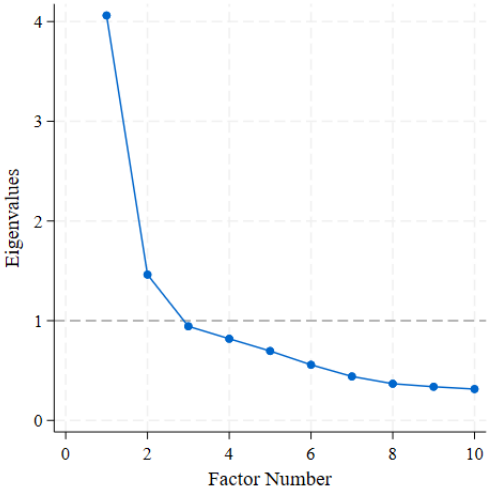
| | (1) Parents | (2) Childless* |
|---|---|---|
| Age | 32.08 | 40.10 |
| | (7.719) | (12.72) |
| College educated (%) | 30.91 | 33.61 |
| | (45.03) | (46.94) |
| Active in labor mkt (%) | 75.23 | 84.63 |
| | (34.08) | (33.41) |
| Employed (%) | 68.56 | 79.95 |
| | (37.50) | (37.21) |
| Weekly work hours | 23.17 | 27.66 |
| | (15.41) | (16.23) |
| Gross monthly income | 1833.2 | 1975.6 |
| | (1355.0) | (1511.2) |
| Weekly housework hours | 9.662 | 9.096 |
| | (7.301) | (8.275) |
| RQ Distribution | 0.00597 | 0.0995 |
| | (0.869) | (0.963) |
| Observations | 9573 | 7578 |

| | (3) Parents | (4) Childless* |
|---|---|---|
| Tenure | 6.600 | 11.32 |
| | (4.357) | (11.38) |
| Married (%) | 44.72 | 41.16 |
| | (45.91) | (48.08) |
| Female sh. paid work | 0.393 | 0.469 |
| | (0.224) | (0.266) |
| Monthly hh income | 3852.6 | 4546.5 |
| | (2240.4) | (2703.9) |
| Female sh. housework | 0.672 | 0.649 |
| | (0.170) | (0.239) |
| Observations | 6871 | 6469 |

*Individuals never having cohabiting own children, observed before age 45

# Scree plot of factor analysis

Back to measure




- The 1st factor explains 41% of the variation in the items
- The 1st and 2nd factors jointly explain 55% of the variation
- Jumps in the percentage explained are decreasing in size

# Factor loadings of RQ

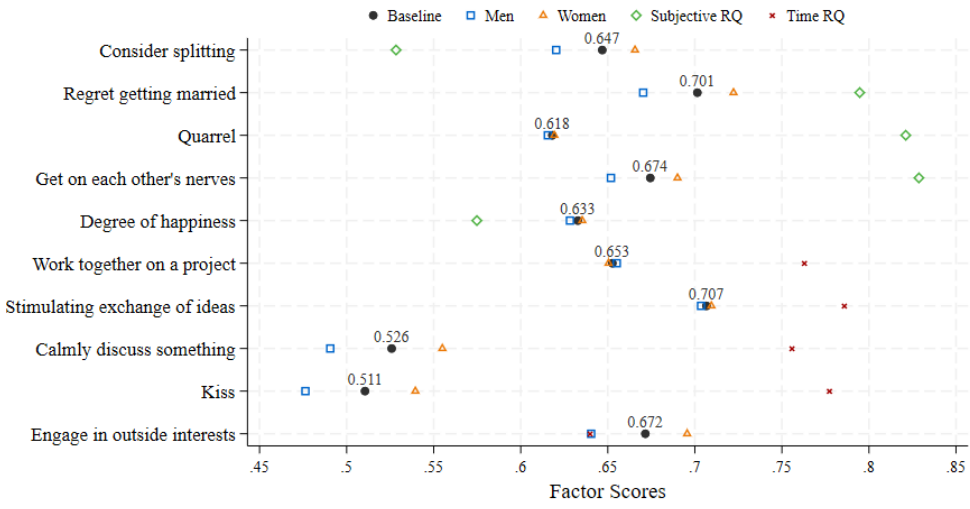
Back to measure

| (a) Subjective assessment | | (b) Couple time use | |
|---|---|---|---|
| *How often do you... ?* | | *How often do you... ?* | |
| consider splitting | 0.647 | work together on a project | 0.653 |
| regret getting married | 0.701 | stimulating exchange of ideas | 0.707 |
| quarrel | 0.618 | calmly discuss something | 0.526 |
| get on each others nerves | 0.674 | kiss partner | 0.510 |
| *What is the... ?* | | *Do you and your partner... ?* | |
| degree of happiness w/ couple | 0.633 | engage in outside interests | 0.672 |

- Factor loadings are the correlation coefficient between an item and the factor
- RQ (factor 1) has **eigenvalue 4.06**, the next factor 1.46, the rest are below 1
- RQ explains **40.61%** of the variation

# Factor loadings of RQ

Back to measure Back to results

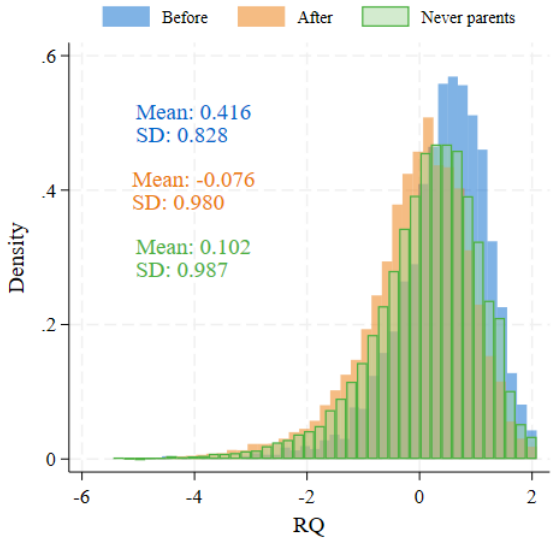


# Distribution of RQ for never parents

Back to distribution

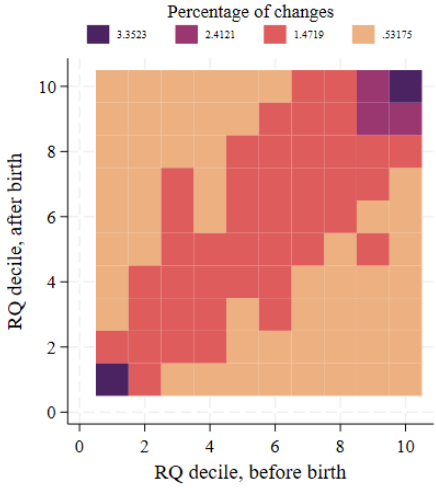
- Individuals never having cohabiting own children, observed before age 45

Summary Statistics



# RQ decile before and after birth

Back to distribution

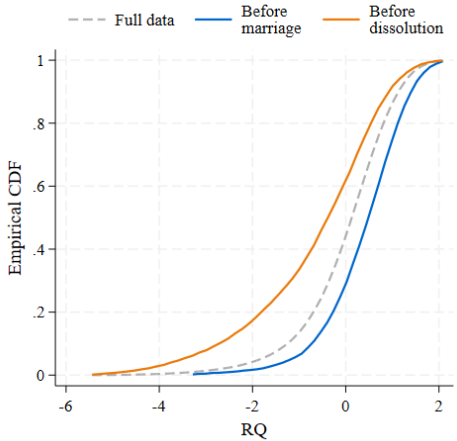


# Validity: Informativeness

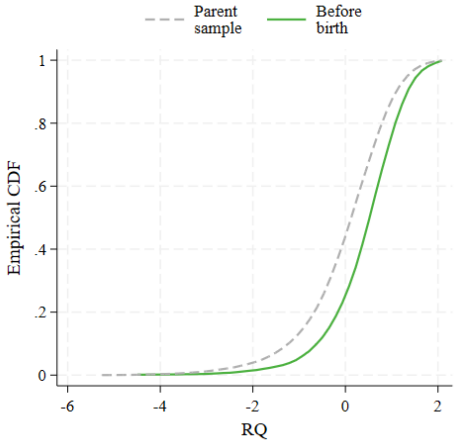
Back to measure

## Behavior Prediction

### (a) Marital transitions




### (b) Fertility decisions



# Validity: Informativeness

Back to measure

## Behavior Prediction

| | Separation | | Marriage | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Lagged RQ | -0.00876*** | -0.00634*** | 0.00309*** | -0.000371 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Controls | | ✓ | | ✓ |
| Individual FE | ✓ | ✓ | ✓ | ✓ |
| R-squared | 0.003 | 0.029 | 0.000 | 0.025 |
| Observations | 93854 | 84586 | 93854 | 84586 |

# Validity: Interpersonal comparability

Back to measure

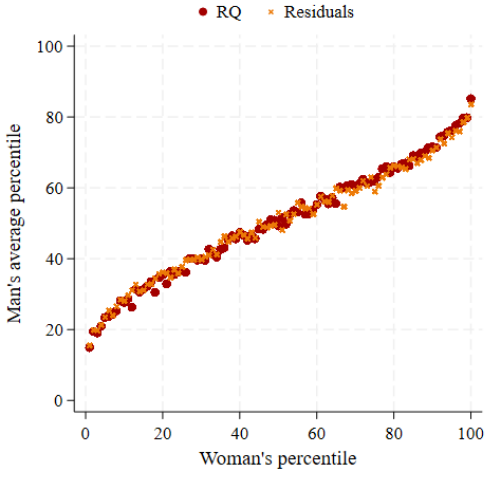
## Within Couple Correlation

| | Woman RQ | |
|---|---|---|
| | (1) | (2) |
| Man RQ | 0.613*** | 0.594*** |
| | (0.008) | (0.008) |
| Controls | | ✓ |
| Age × Tenure × Wave | | ✓ |
| R-squared | 0.320 | 0.334 |
| Observations | 42889 | 39525 |

# Validity: Interpersonal comparability

Back to measure

## Rank-Rank Correlation



# Validity: Interpersonal comparability

Back to measure

## Couple correlation by item

| | Woman | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) cons. split | (2) reg. marry | (3) quarrel | (4) on nerves | (5) happy | (6) work tog. | (7) ideas | (8) discuss | (9) kiss | (10) interests |
| Man | 0.418*** (0.010) | 0.323*** (0.010) | 0.464*** (0.007) | 0.401*** (0.007) | 0.289*** (0.006) | 0.327*** (0.006) | 0.276*** (0.006) | 0.286*** (0.006) | 0.544*** (0.006) | 0.448*** (0.006) |
| Cont. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| R2 | 0.192 | 0.104 | 0.227 | 0.175 | 0.112 | 0.141 | 0.116 | 0.109 | 0.354 | 0.226 |
| Obs. | 50314 | 50284 | 50282 | 50273 | 49519 | 50142 | 50089 | 50183 | 50107 | 41394 |

# Validity: Interpersonal comparability

Back to measure

## Couple correlation of subjective and time RQ

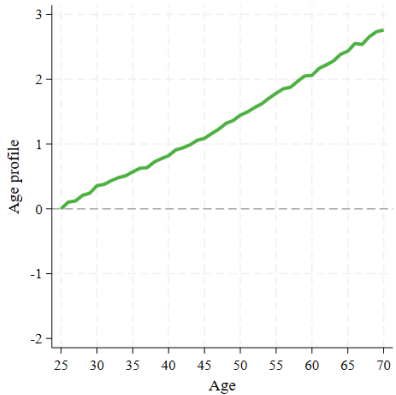
| | Woman outcome | | | | | |
|---|---|---|---|---|---|---|
| | RQ | | Subj. RQ | | Time RQ | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Man outcome | 0.613*** | 0.594*** | 0.570*** | 0.557*** | 0.486*** | 0.455*** |
| | (0.007) | (0.008) | (0.008) | (0.009) | (0.006) | (0.007) |
| Age × Tenure × Wave | | ✓ | | ✓ | | ✓ |
| Controls | | ✓ | | ✓ | | ✓ |
| R-squared | 0.320 | 0.334 | 0.281 | 0.291 | 0.218 | 0.242 |
| Observations | 42889 | 39525 | 53135 | 49137 | 44046 | 40542 |

# RQ measure: Life- and relationship-cycle profiles

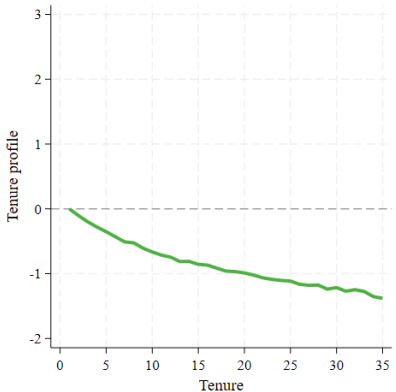
Back to measure

$$y_{i,t} = \phi_i + \lambda_t + \sum_a \mathbb{1}\{a = \text{age}_{i,t}\}\alpha_a + \sum_d \mathbb{1}\{d = \text{tenure}_{i,t}\}\gamma_d + u_{i,t}$$

(a) Life-cycle: $\alpha_a$



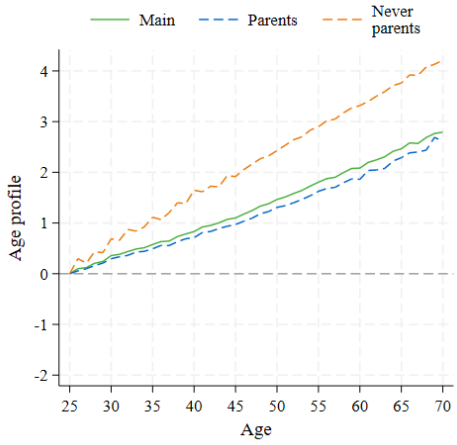

(b) Relationship cycle: $\gamma_d$



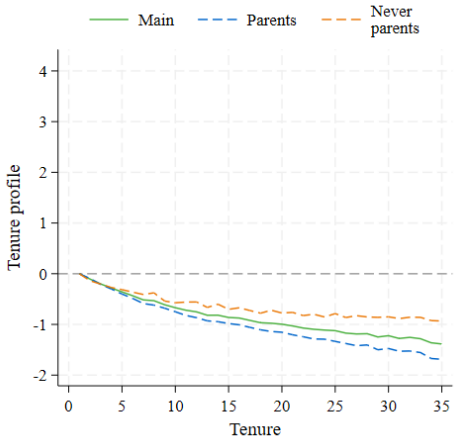
# RQ measure: Life- and relationship-cycle profiles

Back to measure

(a) Life-cycle: $\alpha_a$




(b) Relationship cycle: $\gamma_d$



# RQ measure: Observable characteristics

Back to measure

| | (1) | (2) |
|---|---|---|
| Women | -0.109*** | |
| | (0.007) | |
| College | 0.111*** | -0.016 |
| | (0.012) | (0.033) |
| Employed | 0.066*** | 0.008 |
| | (0.014) | (0.010) |
| Log Income | 0.014** | 0.000 |
| | (0.004) | (0.003) |
| Married | 0.257*** | 0.062** |
| | (0.018) | (0.020) |
| Children | -0.248*** | -0.078*** |
| | (0.015) | (0.013) |
| Urban | -0.058*** | -0.010 |
| | (0.013) | (0.021) |
| Age × Tenure × Wave | ✓ | ✓ |
| Individual FE | | ✓ |
| R-squared | 0.046 | 0.074 |
| Observations | 106826 | 106826 |

# RQ measure: Observable characteristics

Back to measure

| | (1) | (2) |
|---|---|---|
| Woman | -0.092*** | -0.112*** |
| | (0.009) | (0.012) |
| Woman college | 0.049* | 0.028 |
| | (0.022) | (0.024) |
| Man college | 0.043 | -0.000 |
| | (0.026) | (0.029) |
| Both college | 0.152*** | 0.139*** |
| | (0.020) | (0.022) |
| Woman × Woman college | | 0.042 |
| | | (0.024) |
| Woman × Man college | | 0.085** |
| | | (0.027) |
| Woman × Both college | | 0.024 |
| | | (0.020) |
| Age × Tenure × Wave | ✓ | ✓ |
| Controls | ✓ | ✓ |
| R-squared | 0.054 | 0.055 |
| Observations | 54160 | 54160 |

Back to empirical strategy

- **Issue:** The usual specification carries out *forbidden* comparisons: uses already treated as controls
- **Proposed method:**
  1. Compute cohort ATT estimates using only not-yet treated as controls in pairwise comparisons:

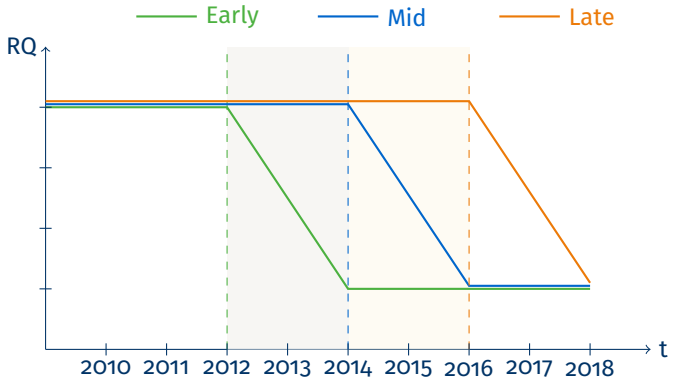
$$ATT(g,t) = \mathbb{E}[Y_{i,t} - Y_{i,g-1} | G_i = g] - \mathbb{E}[Y_{i,t} - Y_{i,g-1} | g' > t \geq g]$$

     $\rightarrow$ *Controls:* cohorts $g'$ that were treated after the period $t$

  2. Aggregate ATTs at the event-time level using as weights the share of each cohort at every event-time

# Illustration of comparisons - Consider 3 individuals:

Back to empirical strategy




| Controls for | 2013-2014 | 2015-2016 | 2017-2018 |
|---|---|---|---|
| early | ● ● | ● | ○ |
| mid | - | ● | ○ |
| late | - | - | ○ |

Back to empirical strategy

**A1. No anticipation** - *RQ does not predict when individuals have their first child*

Formally: If a unit is untreated in period $t$, its outcome does not depend on when it will be treated in the future

$$Y_{i,t}(g) = Y_{i,t}(\infty) \text{ for all } i \text{ and } t < g$$

- First child birth is not preceded by changes in RQ

Back to empirical strategy

**A2. Conditional parallel trends** - *In absence of treatment, RQ would have evolved in parallel for all cohorts g*

Formally: All adoption groups would have evolved in parallel in absence of treatment. For all $t \neq t'$ and $g \neq g'$:

$$\mathbb{E}[Y_{i,t}(\infty) - Y_{i,t'}(\infty)|G_i = g] = \mathbb{E}[Y_{i,t}(\infty) - Y_{i,t'}(\infty)|G_i = g']$$

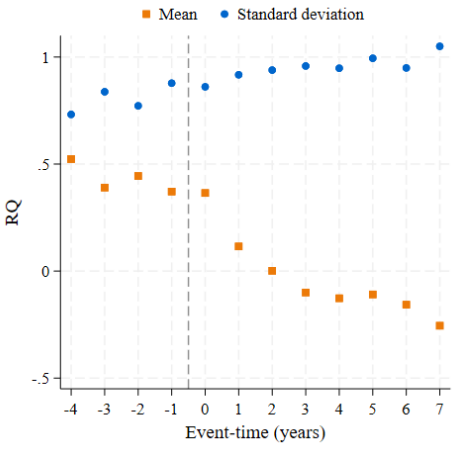
- Compare individuals that already had children with individuals that did not have children yet

# A1. No anticipation - Checks

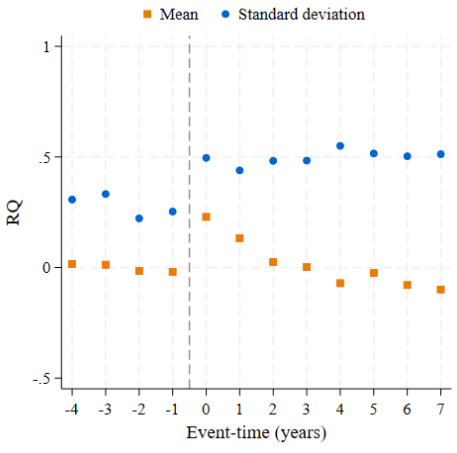
Back to empirical strategy

## No large variation in pre-birth year-to-year changes

(a) RQ levels



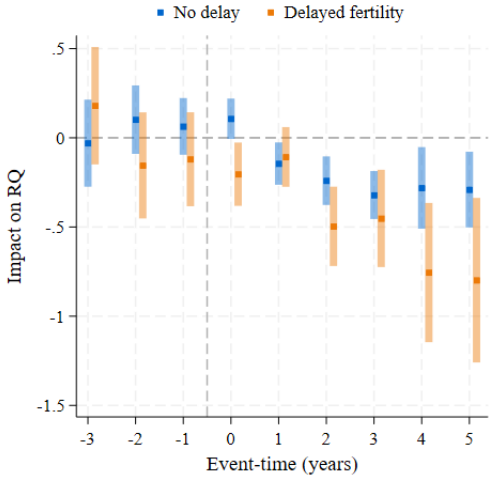

(b) Deviations from individual mean



# A2. Conditional parallel trends - Checks

Back to empirical strategy

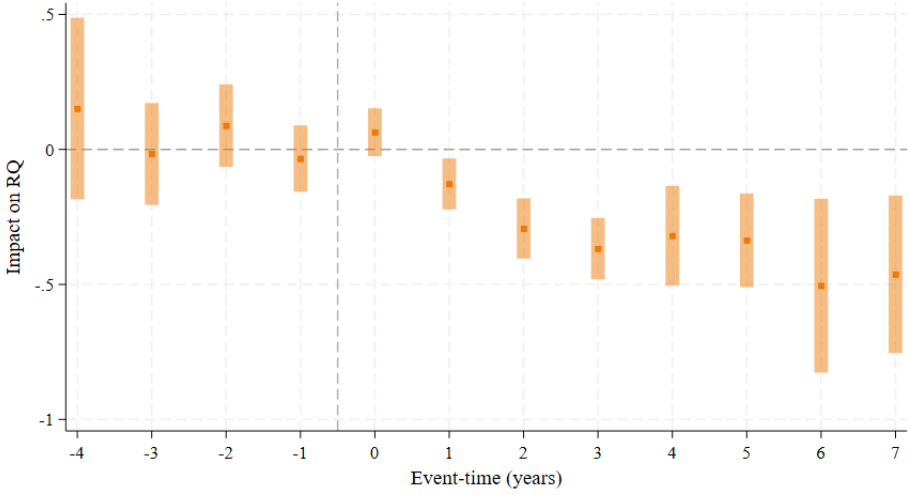
## No differences with delayed fertility



# A2. Conditional parallel trends - Checks

Back to empirical strategy

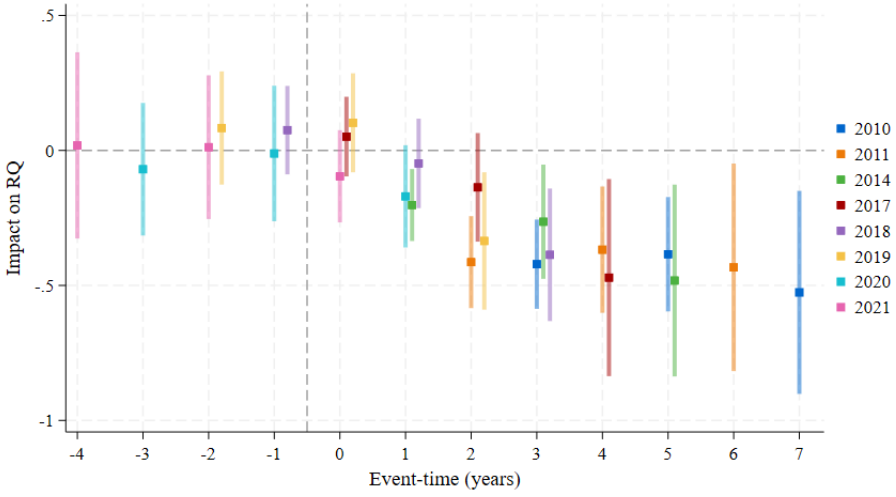
## Comparisons among individuals with similar ex-ante RQ



# A3. Homogeneous treatment effects - Checks

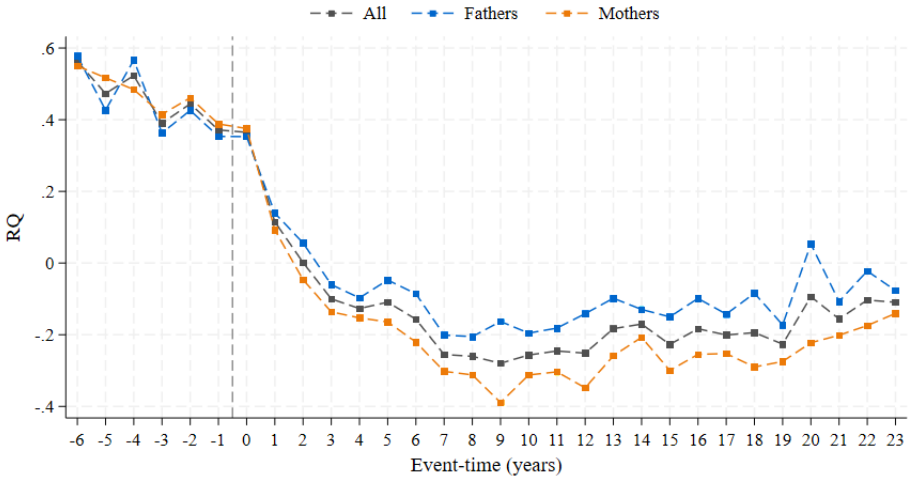
Back to empirical strategy

## No differences across cohorts



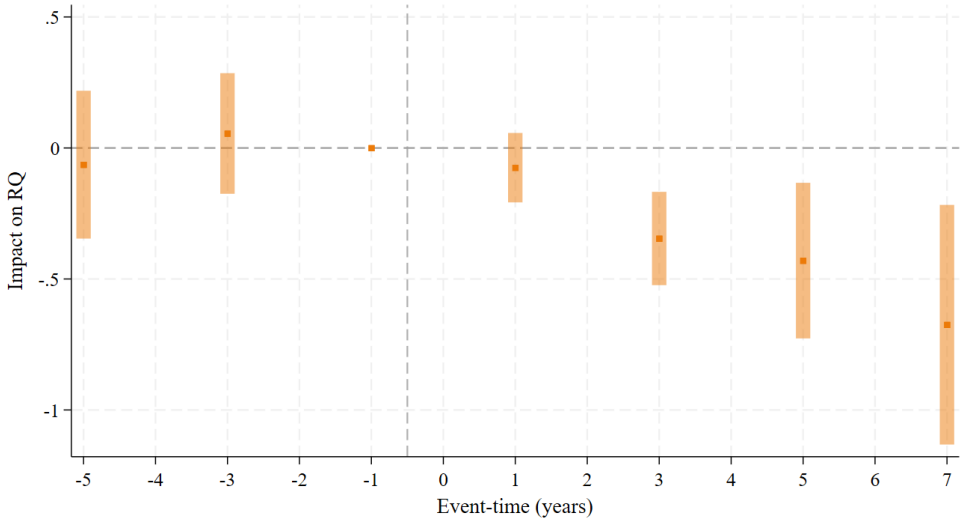
# Average RQ around first child birth

Back to empirical strategy Back to results



# Impact of first child birth on RQ: long comparison

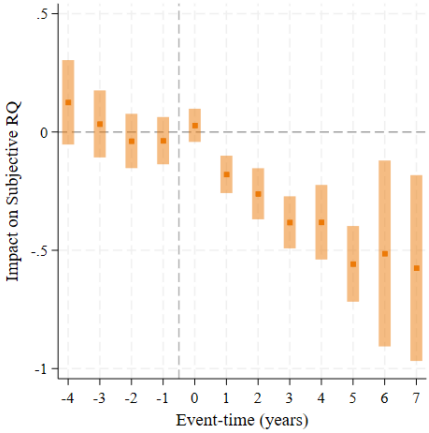
Back to results



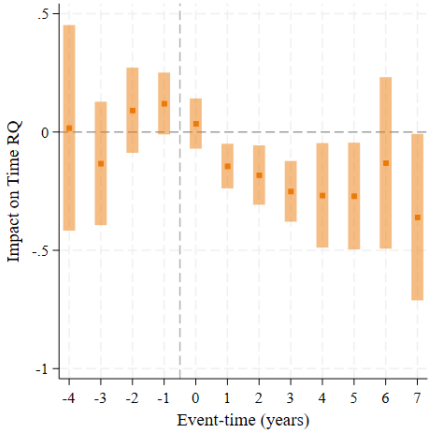
# 1. Time invariance of RQ: by item block

Back to results

## (a) Subjective assessment



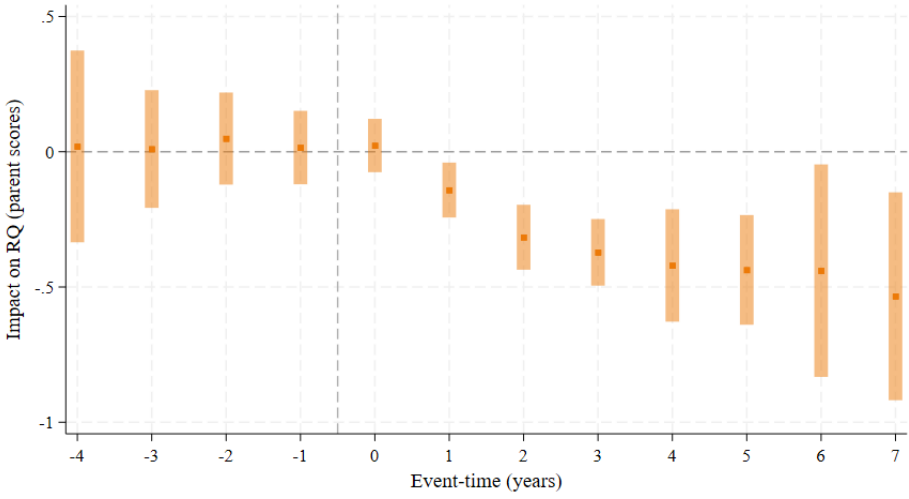

## (b) Couple time use




Factor Loadings
Distribution
By item: subjective assessment
By item: time use

# 1. Time invariance of RQ: using parent scores

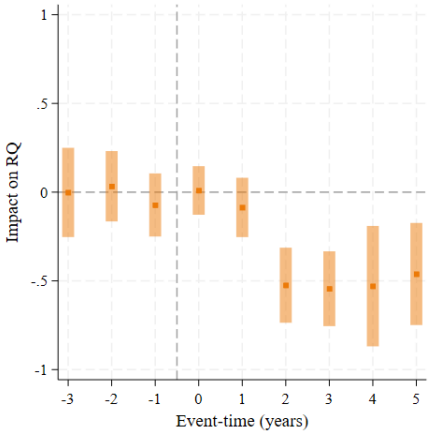
Back to results



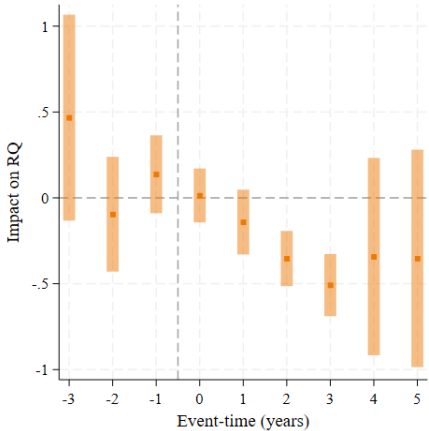
# 2. Subsequent fertility

Back to results

## (a) One child




## (b) More than one child



# 2. Subsequent fertility

Back to results

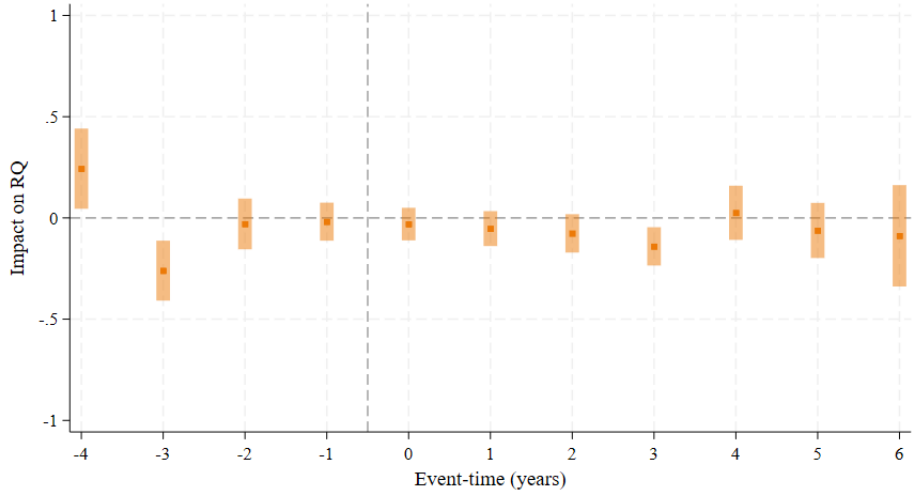
Individuals observed at the end of their fertility cycle

| | (1)<br>One child | (2)<br>More than one |
|---|---|---|
| ATT | -0.360*** | -0.212* |
| | (0.102) | (0.101) |
| Observations | 693 | 1041 |

# 2. Subsequent fertility

## Second child birth

Back to results



# Alternative counterfactuals

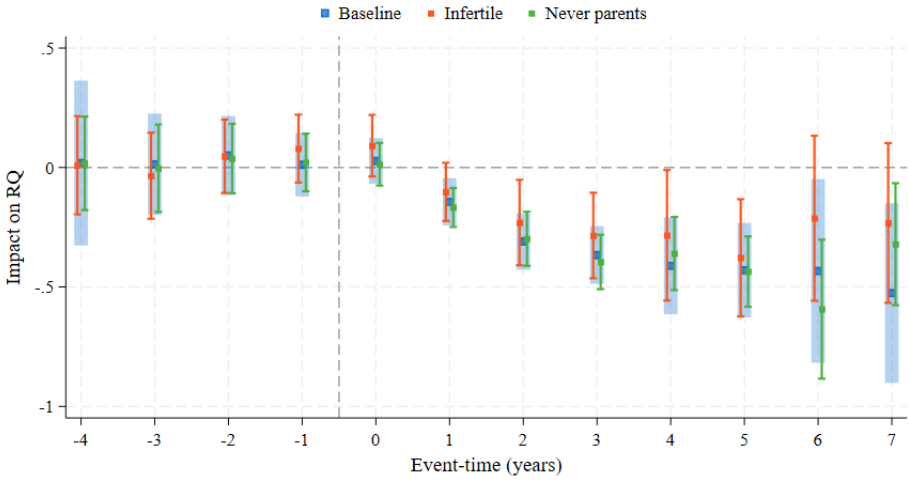
Back to results

1. **Infertile individuals:**
   - Individuals who experience pregnancy, but never a live birth
   - *Limitation:* Can only identify a subset of the infertile population
   - Parallel Trends Assumption: Had the pregnancy not succeeded, parents' RQ would have followed a similar trajectory

2. **Never parents:**
   - Never observed becoming pregnant or cohabiting with children
   - Empirical design assigns placebo births to never parents [Kleven et al., 2019]

# Alternative counterfactuals

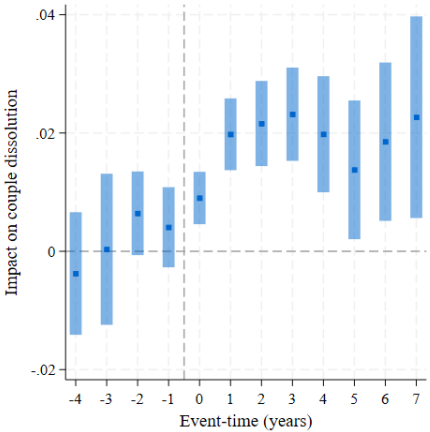
Back to results



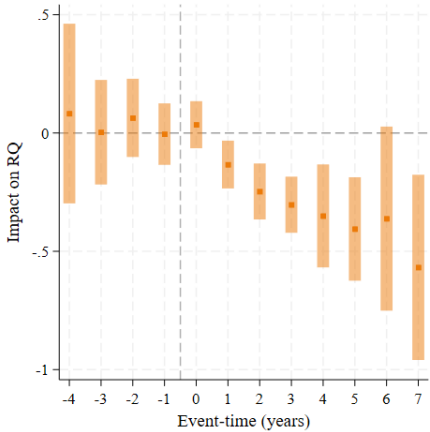
# 3. Selected sample

Back to results

(a) Divorce



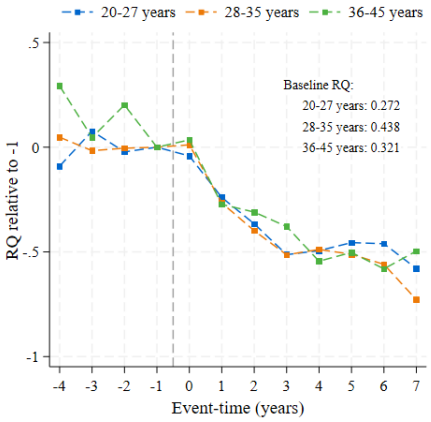

(b) Non-separating couples



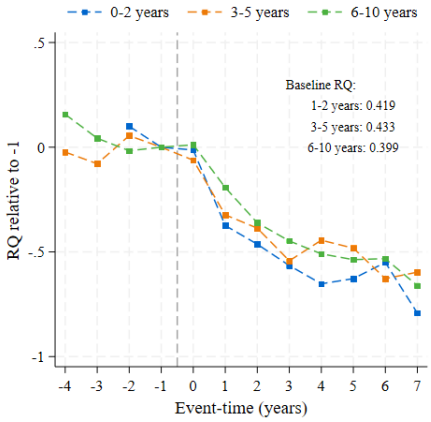
# 4. Timing of birth: Average RQ by age and tenure bin

Back to results

(a) Age bins

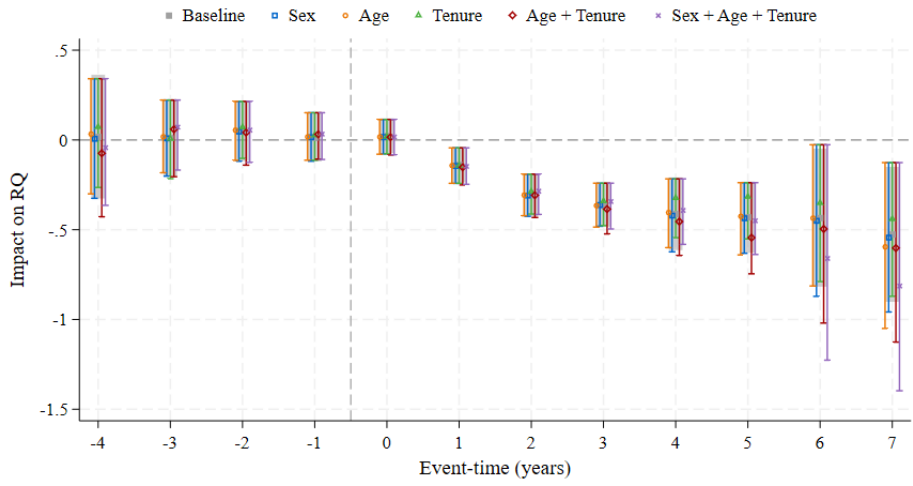



(b) Tenure bins



# 4. Timing of birth: Control for baseline

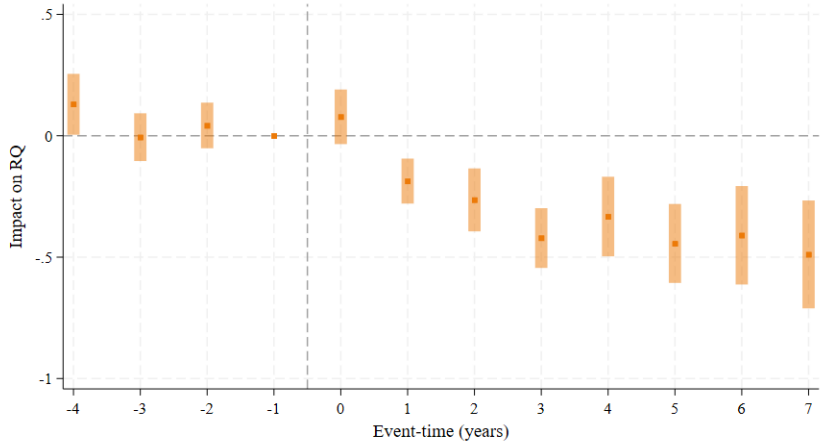
Back to results



# 4. Timing of birth: Using Kleven et al. [2019]

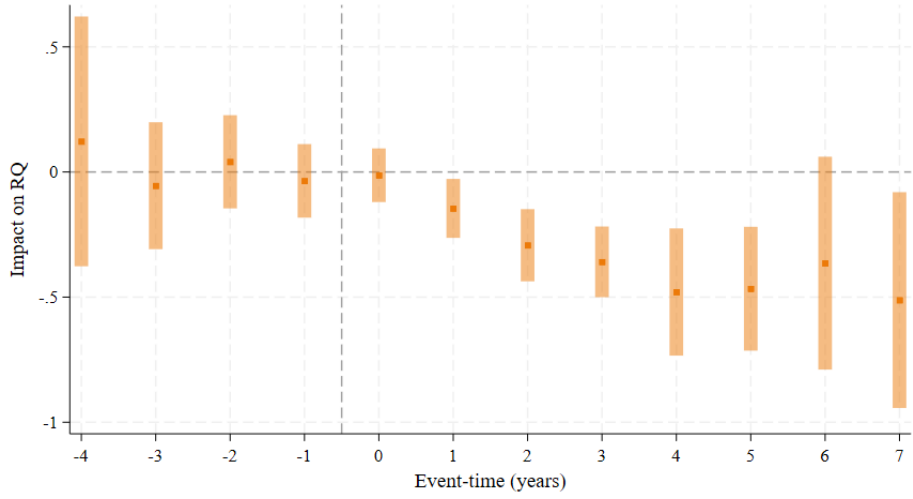
Back to results

$$y_{i,t} = \sum_{j \neq -1} \mathbb{1}\{j = t - G_i\}\delta_j + \sum_a \mathbb{1}\{a = \text{age}_{i,t}\}\alpha_a + \sum_d \mathbb{1}\{d = \text{tenure}_{i,t}\}\gamma_d + \sum_w \mathbb{1}\{w = \text{period}_t\}\psi_w + v_{i,t}$$



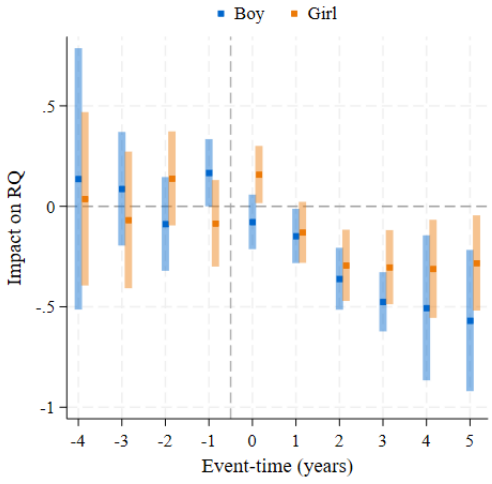
# Robustness: Couple average RQ

Back to results



# Robustness: First born boys vs. girls

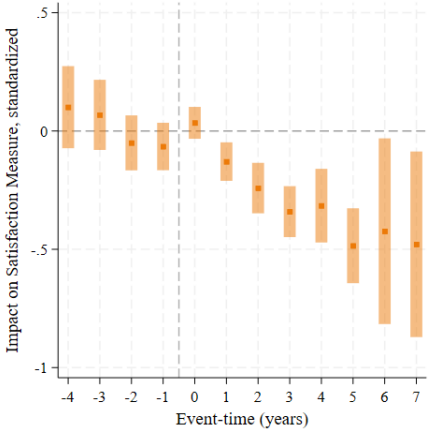
Back to results



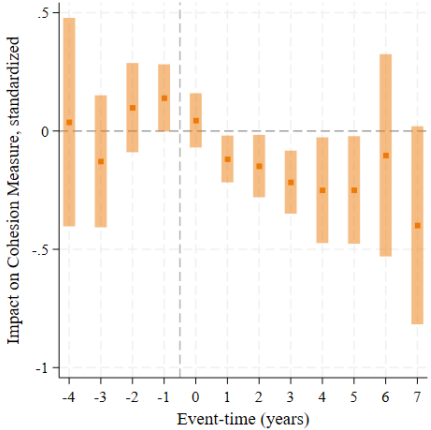
# Robustness: Psychology measures

Back to results

## (a) Satisfaction RDAS



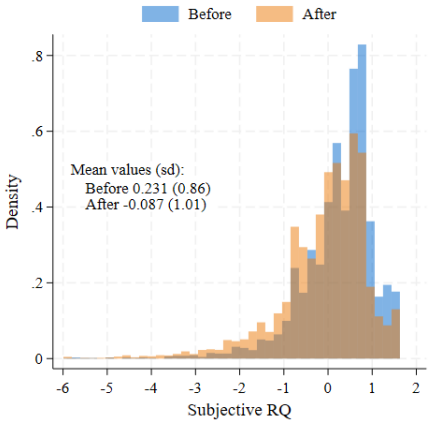

## (b) Cohesion RDAS



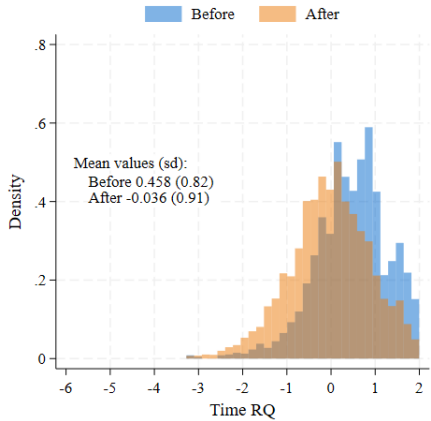
# Distribution of Subjective and Time RQ

Back to results

(a) Subjective RQ



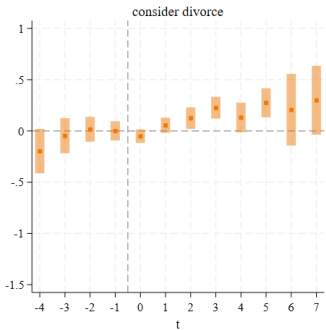

(b) Time RQ



# Impact per item: Subjective assessment

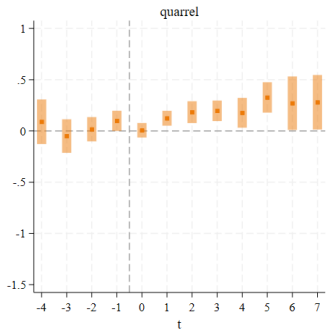
Back to results

(a) consider splitting




(b) regret getting married

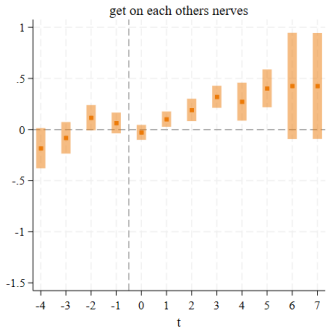

(c) quarrel



# Impact per item: Subjective assessment

Back to results

(a) get on each other's nerves

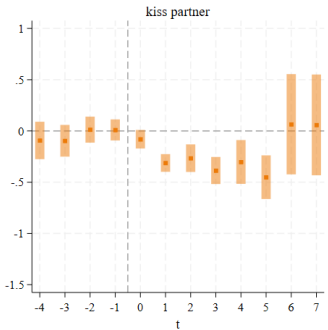



(b) degree of happiness

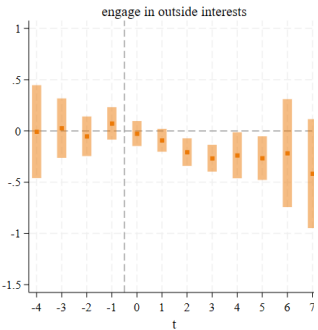
# Impact per item: Couple time use

Back to results

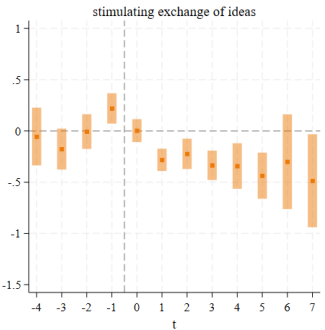
## (a) kiss




## (b) outside interests



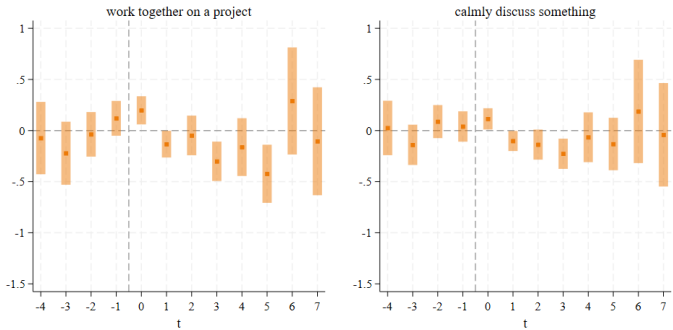

## (c) exchange ideas



# Impact per item: Couple time use

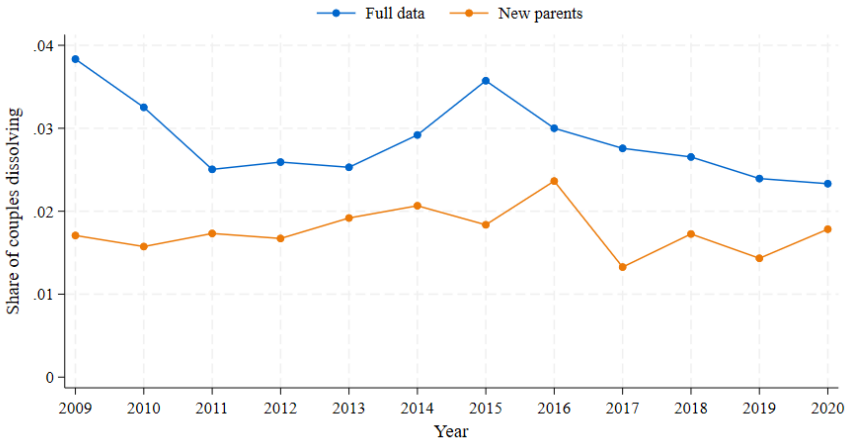
Back to results

(a) work together on a project (b) calmly discuss something



# RQ and couple dissolution

Back to results

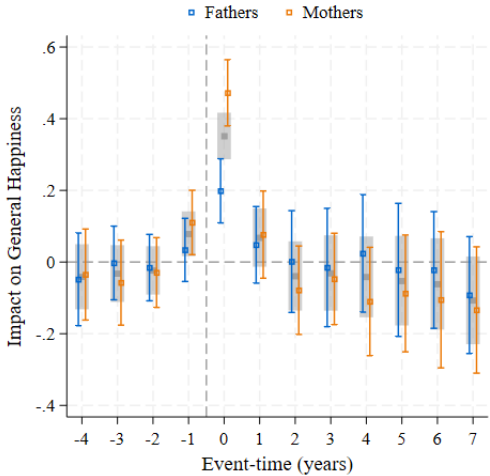



- On average, 1.44% of the married couples in fertility ages (20-45) living in England and Wales divorce every year in 2009-2021 [Office for National Statistics, 2022]

# General happiness: “Have you recently been feeling reasonably happy, all things considered?”

## Impact on mothers and fathers

Back to results



# General happiness and RQ

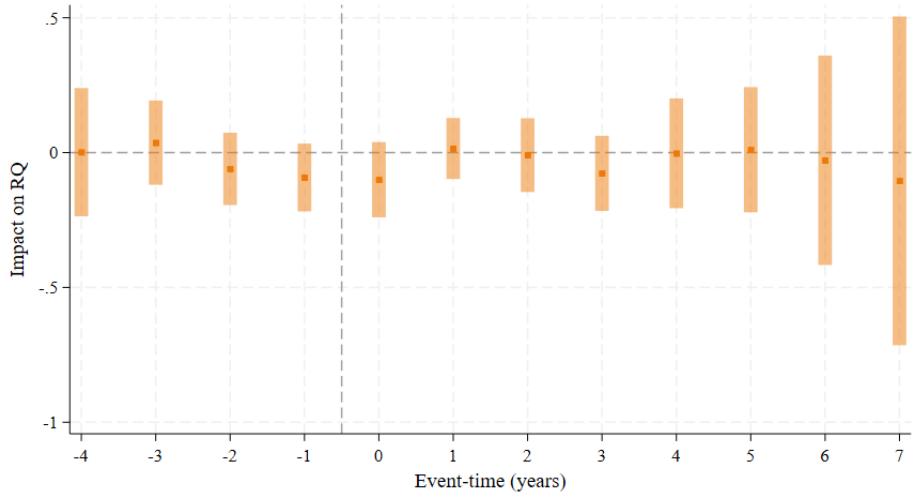
Back to results

## Association in sample of never parents

| | *Dependent variable:* General Happiness | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| RQ | 0.222*** | 0.206*** | 0.185*** |
| | (0.011) | (0.012) | (0.019) |
| Controls | | ✓ | ✓ |
| Individual FE | | | ✓ |
| R-squared | 0.047 | 0.069 | 0.033 |
| Observations | 18231 | 14953 | 14953 |

# Timing around unemployment event

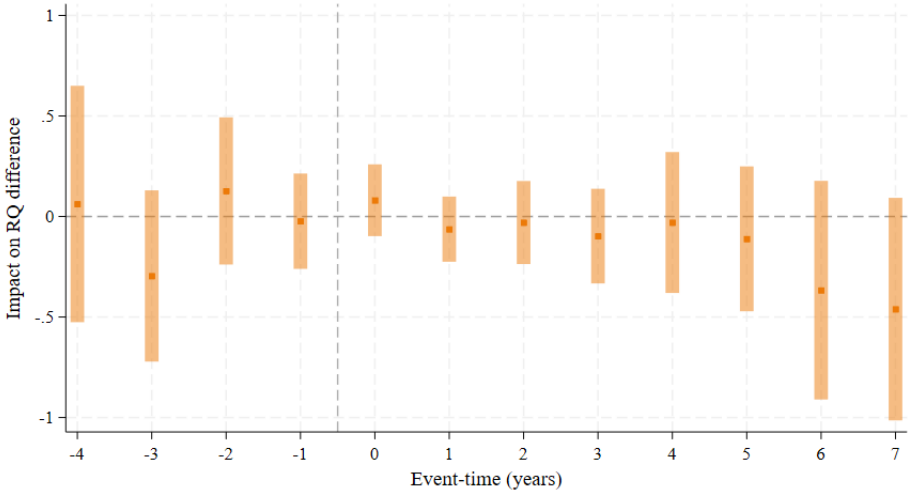
Back to results



# Gender differences in impact on RQ

Back to results

## RQ difference = Wife RQ - Husband RQ



# Parental leave schemes in the United Kingdom

Back to mechanism

Leave with employment rights protected: pay rises, holidays, return to work

**Statutory Maternity Leave (SML):**

- *Leave:* Up to 52 weeks, 2 compulsory
- *When:* Up to 11 weeks before expected week of birth
- *Pay:* Up to 39 weeks, 6 weeks at 90% and rest at £184.03 or 90% (lowest)

**Statutory Paternity Leave:**

- *Leave:* 1 or 2 weeks, continuously or separately since Apr-2024
- *When:* Within 56 days after birth
- *Pay:* £184.03 or 90% (lowest)

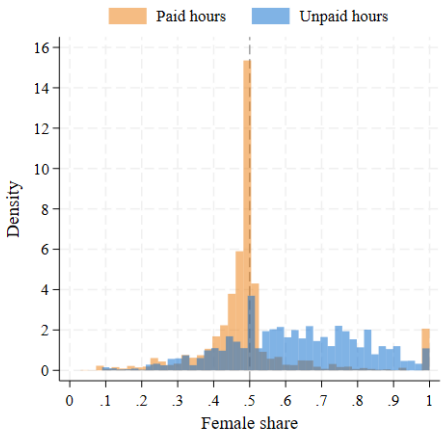
**Shared Parental Leave:**

- *Leave:* Up to 50 weeks from SML
- *When:* From 2 weeks after birth (compulsory SML)
- *Pay:* Up to 37 weeks from SML, £184.03 or 90% of household average (lowest)

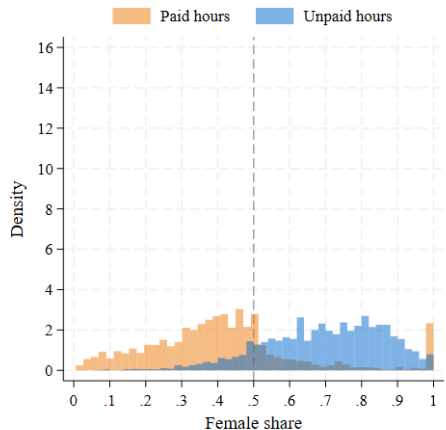
# Distribution of female shares

Back to mechanism

(a) Before birth

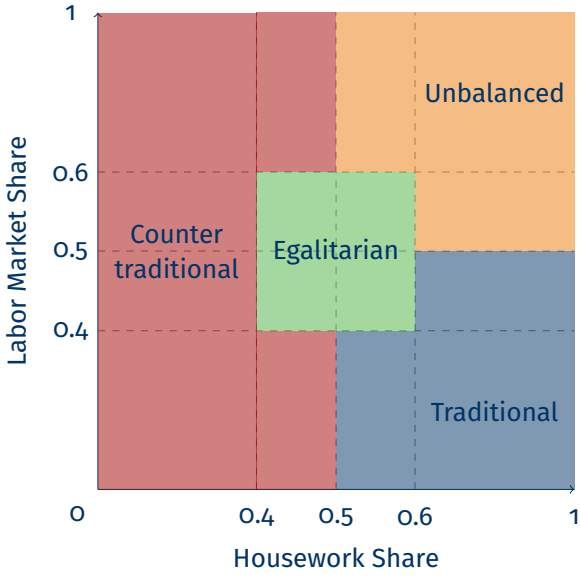



(b) After birth



# Couple classification

Back to mechanism



# Summary statistics by couple type, before birth

Back to mechanism

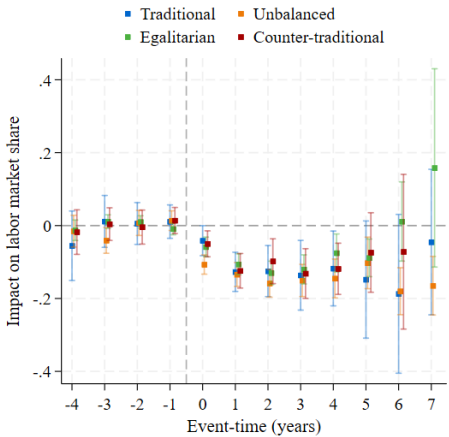
| | Traditional | Unbalanced | Egalitarian | Counter-tradit. |
|---|---|---|---|---|
| Age | 30.31 | 31.34 | 31.31 | 31.33 |
| | (5.746) | (5.139) | (4.870) | (5.383) |
| College educated (%) | 32.75 | 41.00 | 46.15 | 45.80 |
| | (46.98) | (49.21) | (49.90) | (49.87) |
| Active in labor mkt (%) | 92.03 | 95.65 | 99.83 | 94.74 |
| | (27.01) | (20.40) | (4.181) | (22.35) |
| Employed (%) | 87.66 | 94.23 | 98.95 | 92.92 |
| | (32.84) | (23.33) | (10.20) | (25.67) |
| RQ | 0.258 | 0.165 | 0.520 | 0.391 |
| | (1.006) | (0.736) | (0.585) | (0.853) |
| Tenure | 4.539 | 4.824 | 4.679 | 4.749 |
| | (3.267) | (3.085) | (2.816) | (2.995) |
| Married (%) | 65.73 | 70.36 | 65.68 | 68.23 |
| | (46.99) | (45.09) | (47.28) | (46.25) |
| Monthly household income | 3866.9 | 4220.8 | 4631.9 | 4500.1 |
| | (2290.6) | (2253.4) | (2266.8) | (2425.8) |
| Observations | 458 | 1058 | 572 | 551 |

# Household specialization: Impact of first child birth

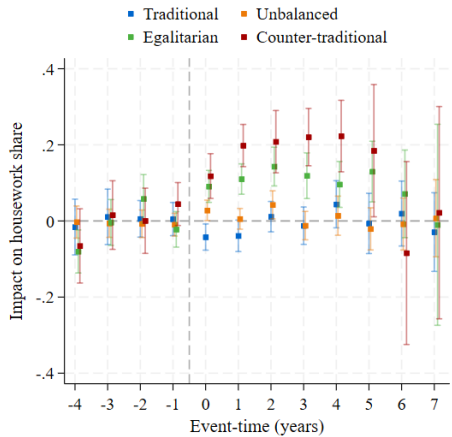
Back to mechanism

Using Callaway and Sant'Anna [2021] separately by group

(a) Paid work hours



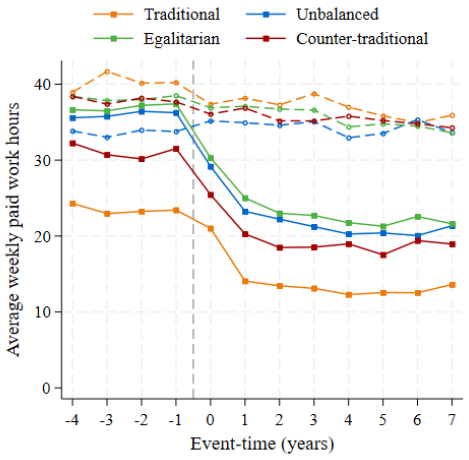

(b) Unpaid housework hours



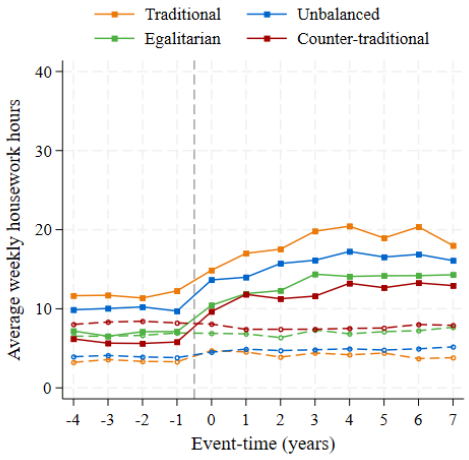
# Household specialization: Changes in time use

Back to mechanism

(a) Paid work hours




(b) Unpaid housework hours



# Post-birth separation and female LFP

Back to mechanism

| | Traditional | Unbalanced | Egalitarian | Counter-tradit. |
|---|---|---|---|---|
| Separate after birth (%) | 21.18 | 17.75 | 16.73 | 15.93 |
| Female LFP at base $t = -1$ (%) | 89.18 | 99.81 | 99.65 | 96.39 |
| Female LFP right after birth, $t = 1$ (%) | 67.83 | 86.74 | 93.33 | 83.82 |
| Female LFP at school age, $t = 5$ (%) | 79.57 | 93.37 | 96.14 | 87.87 |

# Staggered DiD - Static specification

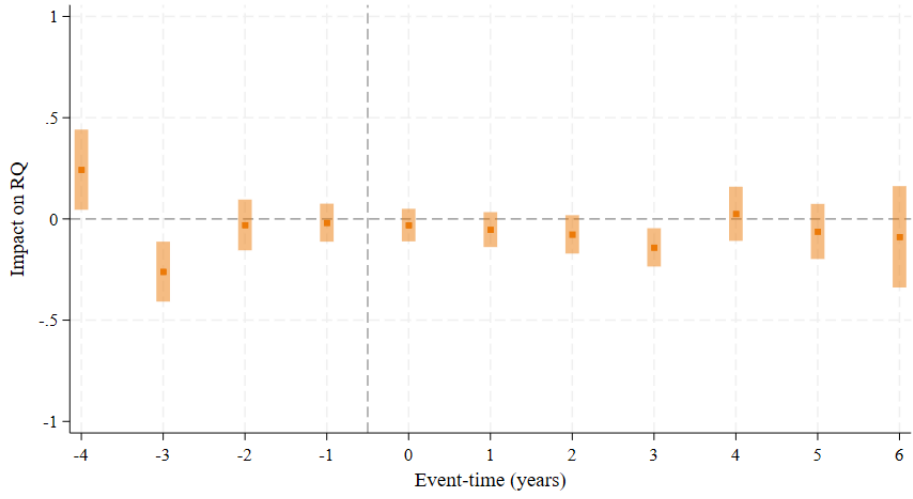
Back to mechanism

$$y_{i,t} = \alpha_i + \mu_t + \delta D_{i,t} + u_{i,t}$$

- $D_{i,t} = 1$ if $i$ has already had the first child in period $t$
- Estimated through Callaway and Sant'Anna [2021] separately by couple type
- *Assume:* Treatment effect homogeneity with time relative to event
  - Not plausible in this context

# Impact of second child birth on RQ

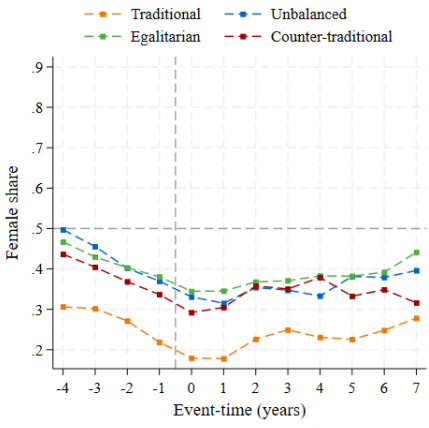
Back to mechanism



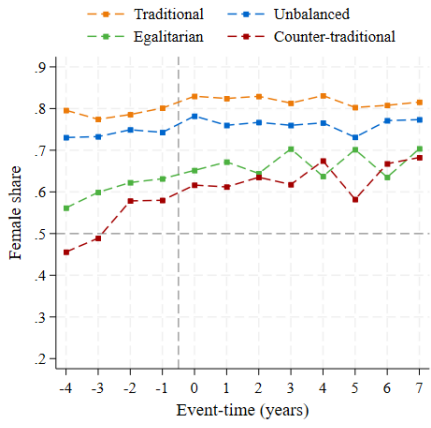
# Female share changes after second child birth

Back to mechanism

(a) Labor market work

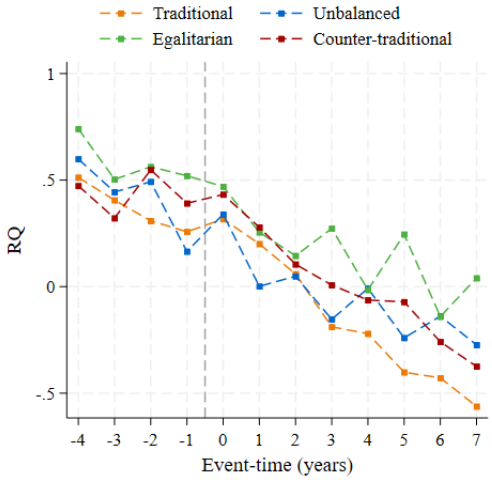



(b) Housework



# Average RQ by couple type

Back to mechanism



# Coefficient as a percentage of the pre-birth mean

Back to mechanism

| | Traditional | Unbalanced | Egalitarian | Counter-traditional |
|---|---|---|---|---|
| Baseline RQ | 0.345<br>(0.993) | 0.424<br>(0.749) | 0.568<br>(0.633) | 0.459<br>(0.784) |
| ATT | -0.107<br>(0.180) | -0.0992<br>(0.086) | -0.175*<br>(0.069) | -0.243**<br>(0.075) |
| Percentage<br>Post level | 31.01<br>0.238 | 23.40<br>0.325 | 30.81<br>0.393 | 52.94<br>0.216 |
| Observations | 273 | 876 | 611 | 856 |

# Controlling for observables

Back to mechanism

Education, labor force activity, employment, household income, marital status

| | Traditional | Unbalanced | Egalitarian | Counter-traditional |
|---|---|---|---|---|
| Baseline RQ | 0.345<br>(0.993) | 0.424<br>(0.749) | 0.568<br>(0.633) | 0.459<br>(0.784) |
| ATT | 0.314<br>(0.191) | -0.0750<br>(0.092) | -0.862*<br>(0.337) | -0.546***<br>(0.149) |
| Observations | 273 | 876 | 611 | 856 |

# Separately for men and women

## Classify by baseline housework split

Back to mechanism

| | Traditional | | Egalitarian | |
|---|---|---|---|---|
| | (1) Fathers | (2) Mothers | (3) Fathers | (4) Mothers |
| Baseline RQ | 0.350 | 0.459 | 0.415 | 0.423 |
| ATT | -0.0562 | -0.239* | -0.270*** | -0.377*** |
| | (0.116) | (0.117) | (0.061) | (0.082) |
| Observations | 499 | 524 | 1635 | 1782 |

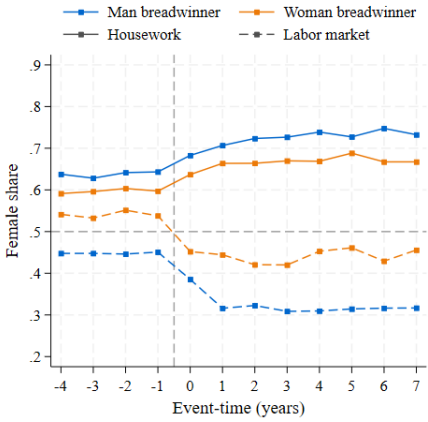
# Other potential mechanisms and post-birth outcomes

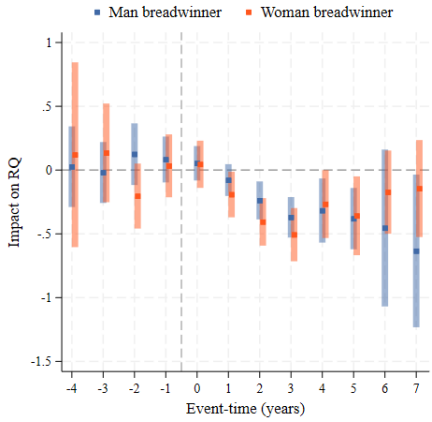
Back to mechanism

- Baseline breadwinner gender See
- Baseline household income quartile See
- Fathers taking paternity leave See
- Mothers return to work See

# Baseline breadwinner gender

Back to other mechanisms



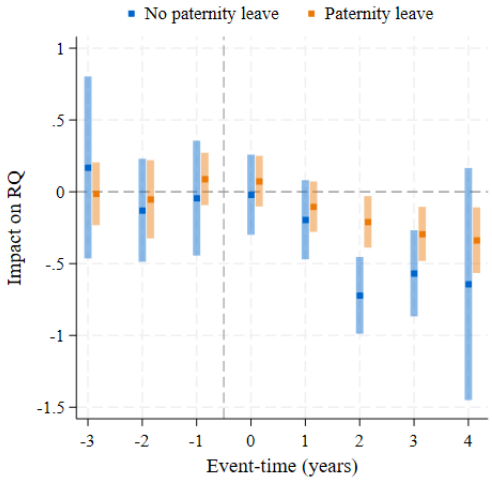
# Baseline household income quartile

Back to other mechanisms

| | (1) Bottom | (2) Second | (3) Third | (4) Top |
|---|---|---|---|---|
| ATT | -0.341* | -0.196** | -0.328*** | -0.262*** |
| | (0.147) | (0.071) | (0.077) | (0.070) |
| Baseline RQ | 0.212 | 0.444 | 0.477 | 0.490 |
| Observations | 941 | 1198 | 1163 | 1146 |

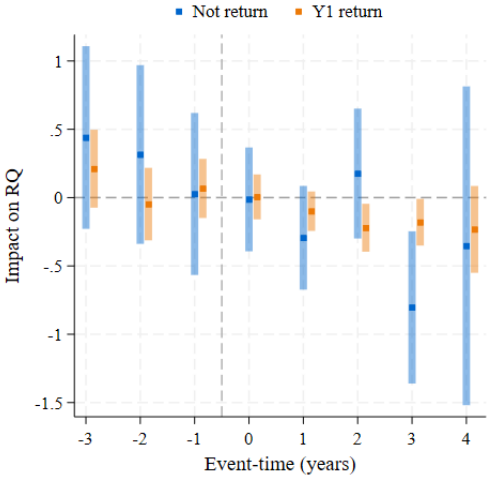
# Paternity leave

Back to other mechanisms



# Mothers return to work

Back to other mechanisms



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