

# Children, Household Specialization and Relationship Quality<sup>\*</sup>

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## Abstract

We investigate how having children impacts the quality of couples' relationships, a proxy of the non-material gains from being in a relationship. Using a novel measure of relationship quality (RQ), we perform a dynamic difference-in-differences estimation around the birth of the first child. We find a sharp and lasting decrease in RQ immediately after birth. We attribute this effect to changes in household specialization. Traditional gender-based specialization prevails after birth, regardless of the baseline distribution of tasks within the couple. Leveraging heterogeneous changes in household specialization after birth, we find that couples undergoing larger rearrangements also suffer larger RQ drops.

**Keywords:** Fertility, Marital decisions, Time allocation, Household specialization

**JEL Codes:** J12, J13, J22, D13

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# 1 Introduction

Having children changes peoples' lives. With more responsibilities at home, including housework and childcare, couples need to reorganize how they allocate their time. Mothers experience a significant reduction in the time spent in the labor market (Goldin, 2021), home production is readjusted accordingly (Aguilar-Gomez et al., 2019; Siminski and Yetsenga, 2022), and leisure and resting become second order for both parents (Aguilar and Hurst, 2007; Costa-Font and Flèche, 2020). Despite these significant adjustments that couples undergo when having children, the deeper consequences that parenthood and these accompanying changes may have on couples have received limited attention.

This paper studies the impact of having children on the quality of couples' relationships. Relationship quality is a measure of the non-material benefits that individuals derive from their relationships, and is widely used in the theoretical literature of family economics as a component of utility that influences marital decisions. While models studying family formation and dissolution widely consider the notion of relationship or match quality, its underlying determinants are little understood (Browning et al., 2014; Chiappori, 2020). To our knowledge, only a few papers have attempted to empirically measure relationship quality to guide such models (Weiss and Willis, 1997; Chiappori et al., 2018).

Studying relationship quality in the context of children is of particular relevance for several reasons. Firstly, theoretical assessments have highlighted that the quality of the parental relationship plays a critical role in decisions regarding investments in child education. In this context, children are considered public goods and investments in them rely on the perceived stability of the parental relationship, dictated by match quality (Chiappori and Weiss, 2006, 2007). Secondly, poor relationship quality can lead to couple dissolution. This negatively influences children's long-term outcomes directly through parental separation (Gruber, 2004; Björklund et al., 2007), but even before separation, from exposure to a low-quality parental relationship (Piketty, 2003; Björklund and Sundström, 2006). Understanding the changes in relationship quality when a child is born can improve our knowledge of these issues and provide insights into avenues to mitigate the negative impact.

To investigate the effect of having children on parents' relationships, we construct a novel measure of relationship quality (RQ). We use a questionnaire from Understanding Society, a household longitudinal panel in the United Kingdom, which collects information about relationships with cohabiting partners. The questionnaire items provide insights into subjective assessments about the relationship, such as the degree of happiness with the couple or the frequency with which they consider splitting, and couple time use, like how often they work together on a project or kiss. This rich set of information allows us to gain a nuanced understanding of the non-material benefits from being in the current relationship. To capture the multiple dimensions of couples' relationship quality in a parsimonious way, we combine the

responses to the questionnaire in a factor analysis and construct the RQ measure. We conduct several validation exercises that ensure the capacity of this measure to predict marital outcomes such as couple dissolution and marriage decisions.

We leverage variation in the timing of the birth of the first child to estimate the dynamic impact of having children on the quality of parents' relationships. Using a dynamic difference-in-differences approach, we remove individual unobserved heterogeneity and focus on the evolution of RQ with time relative to birth. We estimate this specification following the method proposed by [Callaway and Sant'Anna \(2021\)](#).

We find a sharp and steady decrease in RQ in the four years after the birth of the first child. This decline stabilizes at approximately half a standard deviation below pre-birth levels. Illustratively, the RQ of individuals who ranked in the 75<sup>th</sup> percentile of RQ before having their first child is reduced to median RQ within the first four years after birth. This impact lasts for the entire seven-year period examined. The magnitude and persistence of the estimated effect are sizeable when considering the large and positive association between RQ and couple dissolution, and in comparison to the effect that fertility has on general happiness. Notably, the effect on general happiness is positive, although about half the size of the impact on RQ, and it is short-lived, lasting only one period. Considering RQ a component of happiness exclusively attached to the couple and distinct from the happiness derived from having a child, we interpret the impact on happiness as the sum between a decrease in happiness from one's partner and an increase in happiness from the child. Moreover, the impact of childbirth on RQ is larger than other major life events, such as becoming unemployed, which has virtually no impact on RQ.

The causal interpretation of these results is contingent on two assumptions: limited anticipation and conditional parallel trends. We provide evidence supporting the plausibility of these assumptions. Crucially, we observe flat trends in RQ in the periods leading up to birth, which is not masking any significant heterogeneity in pre-trends. Moreover, delays in fertility, such as miscarriages or the need for fertility treatments, do not lead to differences in the impact of childbirth on RQ.

We establish the robustness of our findings addressing four potential concerns. First, we demonstrate that our results are not solely driven by a reduction in time spent together as a couple by conducting separate analyses on the different item blocks, all of which are impacted by the arrival of the first child. Second, we rule out the possibility that subsequent children drive the lasting impact on RQ repeating the analysis separately for couples with different total number of children. Third, we address concerns about potential selection bias associated with the unavailability of RQ data after a couple dissolves, showing that attrition from the sample due to separation is minimal and that the results do not change repeating the analysis solely on couples who do not dissolve. Lastly, we verify that the timing of birth, in terms of parental age and relationship tenure, does not influence our results.

In light of these findings, we delve into the mechanisms at play. The birth of a child triggers

a substantial transformation in how couples manage their time ([Goldin, 2021](#)). This rearrangement, often unanticipated by parents ([Kuziemko et al., 2018](#)), may serve as a mediating factor in the decline of RQ following the birth of the first child.

We start by documenting that the arrival of a child introduces significant and unprecedented changes in how couples allocate their time, substantially increasing the demand for routine housework, which does not include childcare. This increase is almost fully borne by women, who devote six additional hours to housework every week on average, which is offset by a corresponding reduction in their labor market participation. At the same time, men’s housework time increases in one weekly hour, on average, while their labor market time use remains largely unaffected.

To measure the extent of household specialization, we compute the female share of the total paid and unpaid work hours within the couple and categorize couples into distinct groups based on the division of responsibilities before birth. We establish that, regardless of the division of paid and unpaid work before child birth, all types of couples adopt gender-based household specialization after child birth. While prior studies have identified an average effect on household specialization, our research is the first to reveal that this trend prevails across various degrees of pre-birth household specialization. This finding is not consistent with household specialization being a product of comparative advantages within the couple, pointing to the existence of labor market frictions or identity considerations after birth ([Akerlof and Kranton, 2000](#); [Ichino et al., 2019](#)).

Leveraging the documented heterogeneity in the redistribution of labor and home production after first child birth, we study how changes in household specialization induced by children may mediate the effects on relationship quality. In doing so, we conduct a separate analysis for different couple types based on their degree of specialization before birth. We find that couples experiencing the largest changes in the share of housework done by women tend to experience more pronounced declines in RQ.

Our findings support the notion that household specialization driven by the arrival of children may have adverse implications for couples’ relationship quality. These results have implications for the design and choice of policies aimed at promoting fertility. Policies that aim to support more equitable distributions of responsibilities within households may mitigate this negative effect. Such policies have been linked to favorable female labor market outcomes ([Olivetti and Petrongolo, 2017](#)) and have been shown to increase men’s contribution to housework ([Farré and González, 2019](#)). Moreover, [Avdic and Karimi \(2018\)](#) find that such policies may anticipate couple separation, possibly due to a quicker revelation of the fully unravelled decrease in RQ. Therefore, implementing these policies could yield both immediate benefits, by improving parents’ RQ, and long-term advantages, by perpetuating more equitable arrangements in the relationships of future generations.

**Related literature.** This paper connects to the extensive literature on the economics of family formation and dissolution. Standard models studying family formation and dissolution commonly integrate the concept of relationship or match quality into the decision-making process (Weiss and Willis, 1997; Browning et al., 2014; Chiappori and Mazzocco, 2017; Chiappori, 2020). However, the underlying determinants of this variable are little understood.<sup>1</sup> Empirical efforts to guide such models are limited, proposing general characteristics of partners or subjective well-being as proxies for match quality (Weiss and Willis, 1997; Chiappori et al., 2018). The use of a measure that explicitly integrates information about relationships has the potential to yield a more precise and reliable assessment in this context, shedding light on the process followed by this variable, in terms of its evolution over the life cycle, and on how it reacts to life events.

Previous studies in psychology have introduced alternative measures of marital satisfaction.<sup>2</sup> These variables have previously been studied in sociology in relation to childbirth. For instance, Carlson and VanOrman (2017) study the relationship quality trajectories of married and unmarried parents, only after birth. The combination of a larger sample and longitudinal data allows us to employ causal identification methods that were previously unfeasible. Furthermore, we propose a comprehensive measure of relationship quality that incorporates information previously employed in psychology measures in a parsimonious way (Busby et al., 1995).

This paper adds to our understanding of the consequences of having children. Seminal papers in gender economics have documented the differential effect of fertility on women relative to men on several labor market outcomes (Blau and Kahn, 2017; Bertrand, 2020; Goldin, 2021). A great volume of work has focused on accounting for the share of the gender wage gap explained by fertility and on studying the channels through which it operates (Goldin, 2014; Adda et al., 2017; Kleven et al., 2019b; Cortés and Pan, 2020; Cavapozzi et al., 2021; Kleven, 2022; Albanesi et al., 2023), in different countries (Kleven et al., 2019a, 2023) and across different cohorts (Goldin, 2021). Other work has discussed the deeper implications of having children on outcomes like identity (Akerlof and Kranton, 2000, 2010; Bertrand et al., 2015), well-being (Dolan et al., 2008; Clark et al., 2008; Blanchflower, 2009; Ferrer-i Carbonell, 2013) and mental health (Ahammer et al., 2023).<sup>3</sup> More closely related to our work, Lillard and Waite (1993) and Svarer and Verner (2008) investigate the consequences of having children on relationship

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<sup>1</sup>The models of couple formation and dissolution incorporate match quality in two ways: through a match quality parameter and through partner quality. A set of papers have modelled relationship quality as a parameter that is known in the current period but that receives stochastic shocks in the future (Chiappori and Weiss, 2006; Gemici and Laufer, 2011; Bruze et al., 2015; Low et al., 2018; Voena, 2015). Others consider it to be deterministic but unobserved, where couple members only get a noisy signal each period about true quality (Brien et al., 2006; Blasutto et al., 2020). A second strand of models consider match quality to be contingent on partner quality in terms of different socio-economic characteristics (Greenwood et al., 2017; Low, 2021).

<sup>2</sup>Joel et al. (2020) carries out an exhaustive comparison of different indicators of relationship quality.

<sup>3</sup>The papers cited on identity and well-being do not directly address the influence of children on those outcomes, but they simply discuss their potential implications.

tenure and dissolution probabilities. This paper adds to this area of research by examining the causal effect of having a child on an outcome that impacts not only the couple members but also future outcomes of their children, who may be exposed to a poor-quality parental relationship (Piketty, 2003; Björklund and Sundström, 2006) or parental divorce (Gruber, 2004; Björklund et al., 2007).

Finally, this paper contributes to our understanding of household time allocation, which is a long standing issue (Lundberg and Rose, 2000; Lundberg, 2005). This topic has gained even greater relevance during and after the COVID-19 pandemic, which introduced unprecedented disruptions to housework and childcare (Sevilla and Smith, 2020; Hupkau and Petrongolo, 2020; Alon et al., 2020; Farré et al., 2020; Del Boca et al., 2020). The dynamic impact of the birth of the first child on paid and unpaid work has previously been studied by Aguilar-Gomez et al. (2019) in Mexico and Siminski and Yetsenga (2022) in Australia. We replicate their findings for the United Kingdom and extend them to uncover heterogeneity in this impact based on household time arrangements before birth. Furthermore, we use these findings to shed light on the impact of this reallocation in couple outcomes.

**Roadmap.** The rest of the paper is organized as follows. [Section 2](#) describes the data and presents our measure of relationship quality. [Section 3](#) describes the empirical strategy and discusses identification. [Section 4](#) presents the main results and considers their robustness. [Section 5](#) explores changes to household specialization as the potential mechanism at play. [Section 6](#) concludes.

## 2 Data and Measures

The analysis is based on data from Understanding Society, a longitudinal household survey in the United Kingdom representative of the country’s population ([University of Essex, Institute for Social and Economic Research, 2022](#)). Information regarding the primary outcome spans from 2009 to 2021 and is based on data collected about couples in waves 1, 5, 7, 9 and 11. We source additional data from the British Household Panel Survey (BHPS), which predates Understanding Society and covers the period from 1991 to 2008. Crucially, the BHPS allows us to identify both past and current partners, along with detailed characteristics of the relationships, including tenure.

### 2.1 Measure of Relationship Quality

Understanding Society conducts a 10-question survey every other data collection wave. These questions revolve around individuals’ relationships with their cohabiting partners, including questions like “How often do you and your partner quarrel?”. Respondents rate these questions



on a scale from “All of the time” to “Never” on a six-point Likert scale. The survey also includes questions regarding relationship happiness and shared interests. [Table 1](#) contains the full set of questions.<sup>4</sup> These questions are asked individually to all respondents living with a partner, regardless of marital status. This data is available in alternating waves spanning from 2009 to 2021.<sup>5</sup>

Table 1: Questions in the Understanding Society Partner module.

(a) Subjective assessment	(b) Couple time use
<i>How often do you... ?</i>	<i>How often do you... ?</i>
discuss or consider splitting	work together on a project
regret that you married or lived together	have stimulating exchanges of ideas
quarrel	calmly discuss something
get on each other’s nerves	kiss your partner
<i>What is the... ?</i>	<i>Do you and your partner... ?</i>
degree of happiness of your relationship	engage in outside interests together

*Notes:* This table displays the full set of questions in the Understanding Society Partner module. This self-completion questionnaire is included in waves 1, 5, 7, 9 and 11, and spans the period from 2009 to 2021. We divide these questions in (a) subjective assessments of the relationship and (b) couple time use, depending on the information they convey. The first four questions in each block are responded in terms of frequency in a six-point Likert scale, the happiness question is answered in terms of degree in a seven-point scale and the responses to the outside interest question correspond to amounts in a five-point scale.

We categorize the items in [Table 1](#) in two blocks based on the information they convey: (a) subjective assessments of the relationship and (b) couple time use items. The items in the first block contain information related to the degree of happiness and conflict in the relationship, or individual perceptions that may not be shared by both partners. In the second block, the items refer to joint activities and how couples spend their time together. Including both types of items provides a nuanced overview of the relationship.

To construct the main outcome, we first transform all the items such that lower values correspond to poorer couple behaviors. Using responses from the complete dataset, we conduct a factor analysis and retain the first factor as the comprehensive measure of relationship quality (RQ). All items have positive loadings and the factor accounts for 40.49% of the variation in the data.<sup>6</sup> The resulting variable is standardized with a mean of zero and a standard deviation of one. In this context, higher values of RQ indicate higher quality relationships.

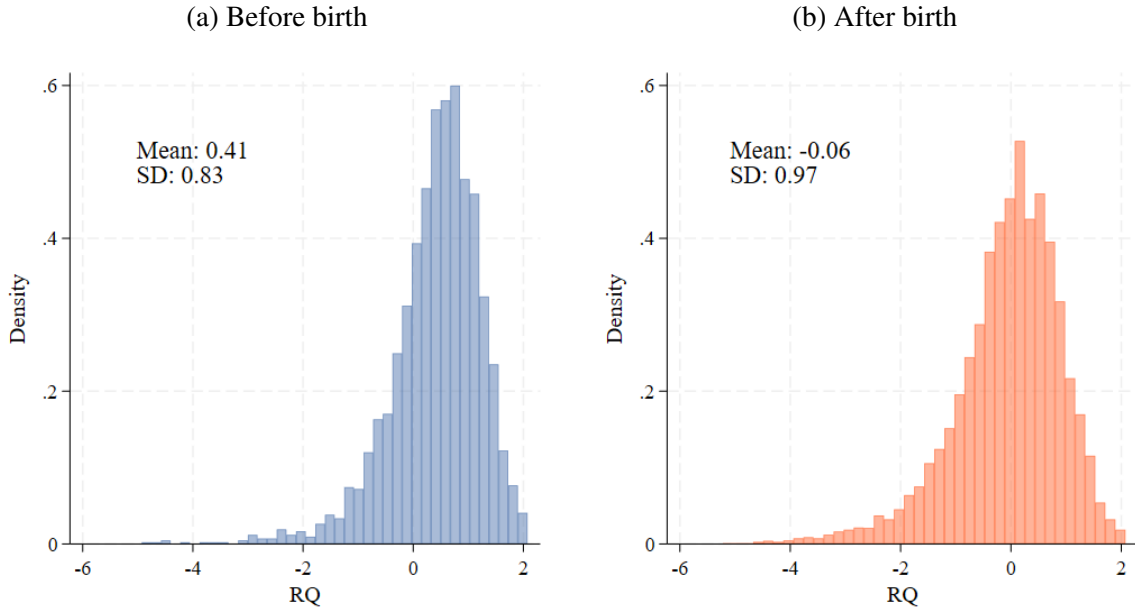
[Figure 1](#) presents the distribution of RQ in the sample of individuals who become parents, separately for the periods (a) before and (b) after the birth of their first child. In both cases, the

<sup>4</sup>This questionnaire, excluding the questions on happiness and kissing, was originally used in psychology research to construct the cohesion and satisfaction subscales of the Revised Dyadic Adjustment Scale ([Busby et al., 1995](#)). [Appendix A.1](#) provides the exact phrasing of the questions and the response options of the questionnaire.

<sup>5</sup>An implementation error in wave 3, makes the item “Do you and your partner engage in outside interests together?” incompatible with the rest of the waves. Hence, we cannot construct the outcome using this wave.

<sup>6</sup>The retained factor has an eigenvalue of 4.05, while the next one has an eigenvalue of 1.45. All the factor loadings are reported in [Table A.1](#).

Figure 1: Distribution of RQ in the sample.



*Notes:* This figure plots the distribution of RQ in the sample of individuals who become parents for the periods (a) before and (b) after the birth of their first child. The mean RQ in the complete data is 0 and its standard deviation is 1.

distribution is skewed towards the left, indicating a higher frequency of high-quality relationships. The average RQ before birth is remarkably higher than the average for the complete data and highly concentrated. After birth, instead, the mean RQ drops below the full-data average. This is preliminary evidence of a decrease in RQ after having a child.

**Validity of the measure.** Given the novelty of the measure, we conduct a series of tests to verify that RQ provides sensible information about the quality of a relationship in [Appendix A.3](#). We follow the life satisfaction literature and aim to validate two fundamental theoretical assumptions: (i) measurability and (ii) interpersonal comparability ([Ferrer-i Carbonell and Frisvold, 2004](#)). The validation exercises are computed using all the available information on RQ (full data), instead of restricting to parents like in remainder of the paper.

First, we evaluate the measurability of RQ by assessing its capacity to predict couples' decisions. Specifically, we test whether the distribution of RQ in periods preceding marital transitions (marriage and separation) differs from the distribution in the full data. We further explore the association between RQ and couple dissolution in the regression analysis in [Table A.3](#).<sup>7</sup> We find that, in the full data, a standard deviation increase in RQ is associated with a 0.6 percentage point lower probability of splitting in the subsequent period. Similarly, we compare the distribution of RQ before the birth of the first child with our complete analysis sample.

<sup>7</sup>We regress a binary variable that equals one on the period before dissolution on RQ, and control for age, sex, college education, employment status, log monthly income, presence of children, relationship tenure, marital status, area of residence and period.



We find strong evidence that, before couple dissolution, the distribution of RQ is below the distribution for the complete data. The opposite is true for periods preceding marriage and fertility events. Hence, our results are consistent with the theoretical assumption of measurability.

Second, we substantiate the interpersonal comparability of the measure, that is, we evaluate whether there is a degree of commonality in the concept captured by RQ. We study the correlation of responses between partners by regressing women’s RQ on their partner’s RQ. Our analysis reveals a high level of correlation across responses, which is robust to controlling for individual and couple characteristics. This evidence supports the notion of objectivity in the measured concept.

Additionally, we verify that the evolution of RQ is smooth with age and relationship tenure. We do so by estimating a two-way fixed effects regression that includes age and tenure non-parametrically. This allows us to obtain the age and tenure profiles of RQ in the complete data. Both profiles are largely smooth and do not present any noticeable jumps. While the age profile is an increasing and almost linear, the tenure profile of RQ displays a rapidly decrease over the first relationship years to only slow down at longer tenures.

## 2.2 Household specialization

Household specialization refers to how each couple member contributes to home and market production. Understanding Society provides information on the the number hours worked in the labor market and the number of hours spent on routine housework by each individual in a week.<sup>8</sup> Using this information, we compute the share of home and market production out of the couple total carried out by women as a proxy to household specialization. We refer to this as the *female share* of unpaid and paid hours. A 50% share of both types of work indicates no specialization, larger shares imply female specialization and lower ones male specialization.

Figure E.1 plots the distribution of the female share of paid and unpaid hours (a) before and (b) after the birth of the first child. Before birth, there exists considerable variation in household specialization. The distribution of the paid hours share is centered around 50%, whereas the distribution of unpaid work is more evenly spread, primarily above the 50% mark. However, after the birth of the first child, both distributions experience significant changes. The mass of paid hours shifts below the 50% threshold, while the share of unpaid hours becomes more concentrated above this point.

We classify couples according to the female share of paid and unpaid hours *before* the birth of their first child. We distinguish four types of couples: (i) traditional couples, where women

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<sup>8</sup>Specifically, the questions posed are “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?” and “Thinking about your (main) job, how many hours, excluding overtime and meal breaks, are you expected to work in a normal week?”, respectively. The responses to these questions are available for approximately half of the sample of parents. Following Borra et al. (2021) we do not consider childcare part of routine housework. Time use information on childcare is unavailable.

contribute mostly to housework and men to paid work; (ii) unbalanced couples, where women take the largest share of work in both cases, (iii) egalitarian couples, where the split of both types of work is equal across couple members; and (iv) counter-traditional couples, where men take the largest share of housework.<sup>9</sup>

## 2.3 Sample restrictions and descriptives

The population of interest consists of individuals in cohabiting relationships, whether married or not, who experience parenthood. Our analysis focuses on the subset of individuals who become parents for the first time within the observation period. To ensure the robustness of our sample, we impose several criteria. First, we restrict our analysis to individuals who were aged 18 to 45 (women) or 50 (men) when they first became parents. Second, we exclude couples cohabiting with children from previous relationships. Third, we use only heterosexual couples. The resulting sample is an unbalanced panel of 1,600 individuals observed up to 5 times.

Table 2 describes the analysis sample in the period preceding childbirth. The left panel summarizes individual characteristics separately for fathers and mothers. Fathers are, on average, 32 years old and mothers are four years younger. Fewer mothers than fathers are either active in the labor market or employed. Mothers spend four hours less on labor market work and three and a half more hours on housework than fathers. The RQ of both is above the complete data average. The second panel gives an overview of couple characteristics. Respondents cohabit for four years before having their first child, on average. Consequently with the time use description, mothers take a share of paid work slightly below 50% and a share of housework above 60%.

Table E.1 summarizes the same characteristics separately for the different types in terms of household specialization.<sup>10</sup> Traditional couples are formed by less educated partners and are on average poorer than the rest of the types. Traditional couples comprise the largest difference in paid and unpaid work hours, differing by 18 and 9 hours, respectively.

## 3 Empirical Strategy

Our primary objective is identifying the causal effect of first child birth on RQ. We leverage variation in the timing at which individuals have their first child and take a dynamic difference-

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<sup>9</sup>The distribution to labor market work is classified as equal if the female share of paid work lies between 45% and 60%, whereas an egalitarian distribution of housework is based on a female share of unpaid work between 45% and 55%. Female shares above those intervals are indicative of a larger contribution of women to that sort of production, and shares below that refer to a larger contribution of men.

<sup>10</sup>The reduced sample sizes in this table reflect the limited availability of responses to the time use questions and the unbalanced sample, where not all individuals can be observed on the period right before birth.

Table 2: Summary statistics for the period before the birth of the first child.

(a) Individual characteristics			(b) Couple characteristics	
	(1) Fathers	(2) Mothers		(3) Couples
Age	32.01 (6.377)	28.36 (6.075)	Tenure	4.206 (3.331)
College educated (%)	33.16 (47.09)	36.05 (48.02)	Married (%)	42.01 (49.15)
Active in labor mkt (%)	87.86 (32.64)	84.54 (36.16)	Monthly household income	3976.6 (2574.4)
Employed (%)	83.38 (37.18)	78.10 (41.35)	Female share of paid work	0.469 (0.207)
Weekly work hours	31.79 (16.82)	27.38 (16.11)	Female share of housework	0.632 (0.204)
Weekly housework hours	5.139 (4.051)	8.566 (6.258)		
RQ	0.345 (0.866)	0.372 (0.908)		
Observations	2611	3131	Observations	3944

*Notes:* This table presents mean values of a set of individual and couple characteristics in the sample the period before the birth of the first child. Standard errors in parentheses.

in-differences (DiD) approach. We estimate the following two-way fixed effects (TWFE) regression model:

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

where  $y_{i,t}$  denotes the RQ of individual  $i$  in period  $t$ . We denote as  $G_i$  the year in which the first child was born to individual  $i$ . Thus,  $t - G_i$  denotes time since  $i$ 's first child was born. We refer to this as event-time. Equation 1 includes the full set of event-time dummies, as well as individual and period fixed effects. We estimate this regression using the estimator proposed by Callaway and Sant'Anna (2021).<sup>11</sup> We use this method to overcome the issues derived from estimating two-way fixed effects regressions through ordinary least squares (OLS) pointed out in the new *differences-in-differences* literature.<sup>12</sup> We cluster the standard errors at the couple level.

The causal interpretation of the estimated event-time dummies as average treatment effects

<sup>11</sup>We provide an extensive summary of this methodology in Appendix B. We implement it using the `csdid` Stata package.

<sup>12</sup>A large portion of the recent econometrics literature has devoted its attention to the problematic deriving from estimating TWFE regression models in a context of staggered treatment introduction and have proposed solutions to overcome the derived biases (De Chaisemartin and d'Haultfoeuille, 2020; Callaway and Sant'Anna, 2021; Goodman-Bacon, 2021; Sun and Abraham, 2021; Borusyak et al., 2022; Gardner, 2022; Roth et al., 2023).

on the treated (ATT) relies on two assumptions. First, changes in RQ do not predict when individuals have their first child (*no anticipation*).<sup>13</sup> This assumption would be violated if couples decided to have children in response to some periods of high RQ, for example.<sup>14</sup> Second, in absence of treatment (having a child) RQ would have evolved similarly regardless of the period when couples had their first child (*parallel trends*). Although we cannot directly test whether these assumptions are satisfied, we provide evidence about their plausibility in [Appendix B](#).

First, we verify that the evolution of RQ is flat in the periods preceding the birth of the first child, which would be evidence in favor of both assumptions. However, flat pre-trends may arise from averaging out couples with varying circumstances: some may decide to have a child to address relationship issues, while others may do so because of their happiness. We provide evidence that this is not the case showing that the standard deviation of RQ is not larger during the periods preceding birth. Second, we show that parents who experienced interruptions in fertility, such as those who have used fertility treatments or faced involuntary pregnancy interruptions, do not differ from those who did not. Finally, we do not find evidence of heterogeneity in treatment effects for parents whose first children were born in different years.

## 4 Impact of Children on Relationship Quality

[Figure 2](#) depicts the estimated event-time dummy coefficients from [Equation 1](#), along with 95% confidence intervals. These coefficients correspond to the effect of the birth of the first child on RQ at each period relative to birth. Since RQ is a standardized measure, the estimates are interpreted in terms of standard deviations. The available information allows us to look at four periods before the birth of the first child and up to seven periods after.

The coefficients corresponding to periods before birth are not significantly different from zero. These flat pre-trends are consistent with the assumptions that the decision to have a child is not endogenous to changes in RQ and that, in absence of treatment, RQ would have evolved in parallel for individuals having their first child in different periods. The coefficient corresponding to the period of birth is also statistically non-distinguishable from zero. This means that RQ does not immediately react to the birth of the first child.

There is a significant decrease in RQ during the first four years after birth. At this time, the decrease in RQ stabilizes at around half a standard deviation. As an illustration, individuals ranked in the 75<sup>th</sup> percentile of the RQ distribution before the birth of their first child are pushed down to median RQ over this time period. This negative impact stabilizes after four years and

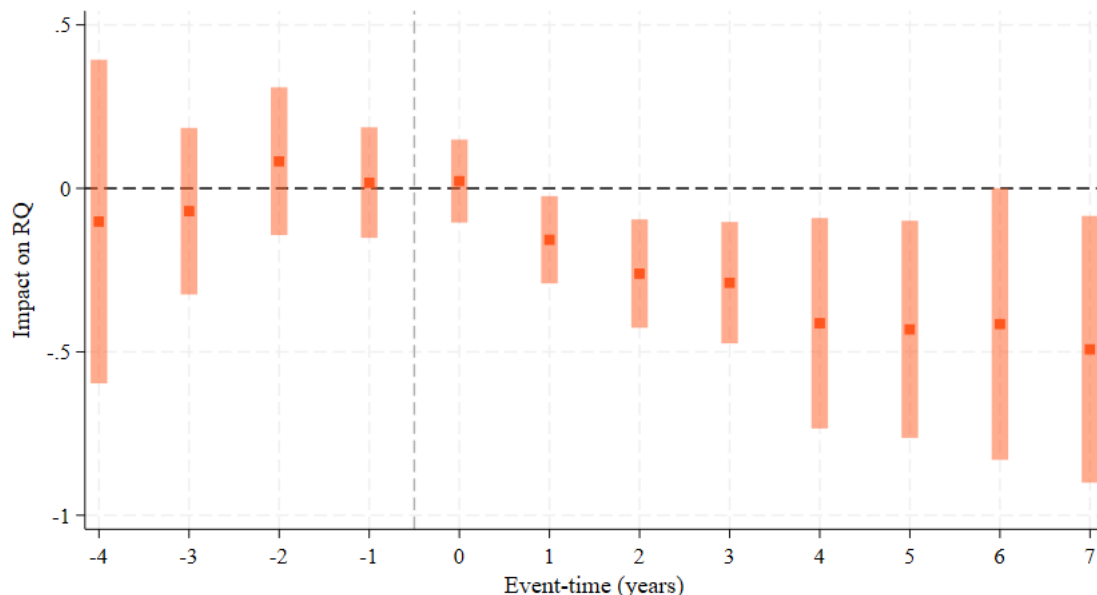
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<sup>13</sup>This assumption can be relaxed to limited anticipation if the anticipation horizon can be specified. We relax this assumption in complementary analyses to allow for outcomes to react during pregnancy.

<sup>14</sup>Importantly, this assumption relates to *changes* in RQ before treatment. This differs from the finding in [Figure A.2](#) (b) that the average *level* of RQ is higher before having a child.

until seven years after child birth. This suggests that, although having a child shifts RQ down, it does not change the evolution of this variable over time.

Figure 2: Dynamic effect of first child birth on RQ.



*Notes:* This graph plots the event-time dummy coefficients obtained from estimating [Equation 1](#) with RQ as an outcome and using the method proposed by [Callaway and Sant'Anna \(2021\)](#), and the 95% confidence intervals. Standard errors are clustered at the couple level.

**Implications for couple dissolution.** To better understand the relevance of these results, we compute a back-of-the-envelope calculation of the implications for couple dissolution. In [Section 2](#) we provide evidence of the capacity of RQ to predict marital transitions, finding lower values of RQ preceding couple separation. The regression analysis in [Table A.3](#) indicates that, in the parent sample used in the main analysis, a standard deviation increase in RQ is associated with a 0.7 percentage point lower probability of separation.

The magnitude of this coefficient highlights the relevance of RQ in dictating couple dissolution. Based on that, the observed half standard deviation decline in RQ following childbirth would be correlated with a 0.35 percentage point higher probability of separating. This association, while illustrative, is notable given that 2% of the existing couples in our data separate each year.<sup>15</sup> Furthermore, this result is in line with the findings of previous research on the impact of children on couple dissolution ([Lillard and Waite, 1993](#); [Svarer and Verner, 2008](#)).

As argued in [Browning et al. \(2014\)](#), RQ is just one aspect of how the presence of children influences couple dissolution decisions. Having a child tends to raise separation costs

<sup>15</sup>[Figure C.1](#) plots the share of couples that dissolve out of all the couples observed each year in the complete data and in the new parent sample. According to the Office for National Statistics, on average 1.44% of the married couples in fertility ages (20-45 year-olds) living in England and Wales divorce every year, during the period 2009-2021 ([Office for National Statistics, 2022](#)). We do not have the equivalent data for cohabiting couples.

for parents while also increasing the value of maintaining the relationship through the creation of economies of scale within the couple, which would reduce the probability of dissolution. While exploring these factors jointly is crucial given the detrimental effects that separation can have on children, studying them separately may be equally relevant, especially considering the adverse effects of being exposed to a low parental RQ.

**General happiness and RQ.** We next study the effect of the birth of the first child on general happiness to obtain a more comprehensive picture of the impact of children on individual utility. RQ can be interpreted as part of the utility exclusively attached to the couple, distinct from the utility derived from having a child. Therefore, the impact of childbirth on happiness and RQ would not necessarily align in the same direction.

In [Figure C.2](#) (a) we repeat the main analysis using standardized general happiness.<sup>16</sup> We find that the birth of the first child induces an immediate increase in general happiness during the pregnancy and birth periods. However, the absolute magnitude of this impact is smaller than the one documented for RQ, amounting to about half of it. Moreover, the impact on general happiness only lasts one period, not mirroring the persistence observed in the impact on RQ.<sup>17</sup>

The depicted patterns align with the hypothesis that happiness encompasses a component attached to the couple (RQ) and another attached to the child. The main finding of this paper indicates that the couple component decreases after birth. Hence, the fact that the sum of both components - couple and child - does not decrease suggests that the child component is positive. Conclusively, while the event of childbirth may indirectly reduce happiness, entailing negative consequences for RQ, this evidence suggests that the direct contribution of children to happiness is not negative.

**Other measures and shocks.** We compare the magnitude and persistence of our main finding with the effect of this event on other subjective outcomes at the individual level. [Figure C.2](#) (b) displays the results for subjective well-being.<sup>18</sup> This effect, although also negative, only amounts to a tenth of the magnitude of our main finding, and dissipates one period after birth. [Ahammer et al. \(2023\)](#) use a similar approach to study the impact on mental health and find a significant increase in antidepressant prescriptions for the sub-population of individuals that visit the psychiatrist. They find a greater effect on mothers, which they attribute to the higher

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<sup>16</sup>The question used is “Have you recently been feeling reasonably happy, all things considered?”.

<sup>17</sup>There is a decreasing trend in general happiness after birth. [Blanchflower and Oswald \(2004\)](#) find that general happiness is U-shaped in age, reaching the minimum at ages 37-41 in the United Kingdom. In our sample, the average age at birth is 30, as seen in [Table 2](#). Thus, the documented decline corresponds to a life-cycle trend that our methodology does not allow accounting for.

<sup>18</sup>The subjective well-being measure combines the responses to the 12 General Health Questionnaire, related to physical and mental health. Some of the questions relate to sleep and being under strain, which are mechanically affected by having a child. Previous literature has discussed the association between children and well-being, although not in a causal way ([Dolan et al., 2008](#); [Clark et al., 2008](#); [Blanchflower, 2009](#); [Ferrer-i Carbonell, 2013](#)).

childcare burden borne by them.

Finally, we examine the significance of the birth of the first child as a distinct shock to RQ by comparing it to another major life event: becoming unemployed. Previous studies have found a positive correlation between male unemployment and divorce probabilities (Jensen and Smith, 1990; Charles and Stephens, 2004; Eliason, 2012; Doiron and Mendolia, 2012). Figure C.3 displays the results obtained from computing our main estimation around unemployment events on RQ.<sup>19</sup> Unlike childbirth, unemployment is not significantly associated with changes in RQ, which contrasts with the findings on divorce.

These insights can inform models of family formation and dissolution in multiple ways. As mentioned earlier, RQ is defined as a measure of the non-material benefits of being in a relationship. The difference between the association of unemployment with RQ and with divorce may indicate that, while the job loss of a partner reduces the material gains from being in a relationship with them, it may not have such impact on non-material gains. Furthermore, our main finding evidences the smooth and path-dependent nature of RQ, which could guide the modelling of the distribution of this factor in these family formation and dissolution models.

## 4.1 Robustness

In Appendix D we address four potential concerns that could affect the interpretation of our results. First, we explore whether the impact on RQ is driven by specific items within the measure. This could result from an uneven response of items across different blocks, or from a change in how the items are valued after the birth of a child. Second, we consider whether the persistent impact on RQ is solely due to subsequent children or if it represents a lasting effect of the first child's arrival. Third, we take into account the limitation that RQ cannot be observed after a couple dissolves, which may introduce some selection bias that could distort our results. Fourth, we examine whether the timing of child birth, in terms of the age of the parents and the duration of the relationship, has any influence on our findings.

**Time invariance of RQ.** Our first concern is whether the decrease in RQ might be solely attributed to specific items within the measure, particularly those related to couple time use. This concern arises from the fact that, after the birth of the first child, the available time for couples to spend together decreases significantly due to the new responsibilities that occupy a significant portion of their time. This could directly reduce RQ, potentially being the only driver of the documented decrease.

To explore this, we repeat the factor analysis excluding the time use items and using solely

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<sup>19</sup>We focus on the first instance of unemployment for an individual within our observation period and exclusively consider individuals who have experienced unemployment as our control group. We do not make any causal claims about these results.



the items containing subjective assessments of the relationship. [Figure D.1](#) (a) plots the results of conducting our main analysis on the resulting measure. The documented decrease is much more pronounced than what we observed on RQ. For completeness, we repeat this procedure using only the time use items in [Figure D.1](#) (b). In this case, the impact is less pronounced and not statistically different from zero after three years. This suggests that our primary finding is not only driven by reduced time together, but is mainly influenced by changes in how individuals assess their relationship.

However, the possibility remains that individuals change how they value different items within the RQ measure after becoming parents. To address this, we construct a new RQ measure using data solely from individuals who are already parents. We use those observations to obtain the factor loadings in the factor analysis and construct the measure for the entire sample. [Figure D.2](#) displays the results of our main analysis using this measure, showing that our primary result remains consistent.

**Subsequent fertility.** Our analysis focuses exclusively on the birth of the first child. It is unclear whether the persisting impact on RQ represents a lasting effect of the first child’s arrival or if it is merely a consequence of subsequent children. In [Figure D.3](#) we split the analysis sample in two groups: (a) individuals with only one child or (b) those with subsequent children. About 45% of individuals in our sample are observed having an only child. The impact occurs slightly faster and is somewhat more pronounced for individuals with more than one child, but they experience a recovery four years after the first child’s birth. Thus, we cannot attribute the documented persistence on RQ to parents of more than one child.

However, this analysis masks censorship in the sample, as many individuals have not reached the end of their fertility cycle at the last observation. We restrict the analysis to individuals observed at age 40 or older, which better approximates their lifetime fertility. This restriction remarkably reduces the sample and does not allow for a dynamic analysis. [Table D.1](#) displays the static DiD results obtained through the usual estimation method. Note that the obtained ATT is an average of the impact all periods after, where periods with more observations get higher weights ([Callaway and Sant’Anna, 2021](#)). The results suggest that subsequent children further impact parental RQ.

**Selected sample.** Due to the nature of RQ, it cannot be observed once a couple dissolves, potentially introducing selection bias that could distort our results. We investigate the attrition from the sample due to separation, by estimating the impact of birth on the likelihood of separation. Note that, by construction of the sample, we do not observe couples dissolving before the first child is conceived. Thus, the results should not be interpreted as causal. [Figure D.4](#) (a) indicates that dissolution probabilities are around 2.5% over the periods analyzed after birth,

suggesting that the attrition from the sample is not a significant concern.<sup>20</sup> We repeat the analysis excluding from the sample couples who separate over the observation period, as shown in [Figure D.4](#) (b). These results largely mirror our primary findings, alleviating concerns about selection bias.

**Age and tenure at birth.** In addition to the birth of the first child, the timing of this event may significantly affect RQ ([Kleven et al., 2019b](#)). We explore this by separately examining individuals who had children at different ages and relationship tenures. [Figure D.5](#) presents the average RQ at each event-time period by (a) age bin and (b) tenure bin, normalizing RQ to zero in the period before birth. While baseline RQ levels differ for individuals who had children at different ages, the post-birth evolution of RQ remains consistent across groups.

Baseline levels also differ across tenure groups. In this case, individuals who had their first child at the earliest stages of their relationship experience a greater decrease in RQ, stabilizing at about 0.2 standard deviations below the other tenures. However, this more substantial decrease could be partially attributed to the general trend of RQ decreasing during the early stages of a relationship, as seen in [Figure A.4](#).

To ensure the robustness of our main findings, we include these variables as controls, as presented in [Figure D.6](#). Note that [Callaway and Sant’Anna \(2021\)](#) does not allow to study the dynamic impact of age and tenure on RQ, since it only allows to control for pre-birth levels of covariates. The differences for all sets of controls remain minimal until six years after the birth of the first child. At that point the coefficients of the specification including both age and tenure becomes larger. Thus, our main results could be interpreted as a lower bound.

To account for potential dynamic effects across age and tenure, we employ the event-study analysis as popularized by [Kleven et al. \(2019b\)](#). This method involves estimating the impact through OLS while substituting individual fixed effects with the full set of age and relationship tenure dummies. The results displayed in [Figure D.7](#) indicate that our main finding is sustained even accounting for the dynamic evolution of RQ with age and tenure.

**Additional checks.** We test the robustness of our findings in other ways. First, motivated by the literature on the impact of children on labor market outcomes, we study potential gender differences in our results. In [Figure D.8](#) we repeat the main analysis on men and women, separately, and find that the impact of having a child on RQ becomes slightly larger for mothers four years after birth. However, and unlike most other outcomes studied, childbirth impacts RQ for both men and women. Second, we analyze heterogeneity in the results by child sex. Previous literature has found differences in the time use and the gender norm attitudes of parents after the birth of their first child ([Lundberg, 2005](#); [Grinza et al., 2017](#)). We document that there are no such differences in the impact on RQ in [Figure D.9](#).

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<sup>20</sup>Note that this dissolution rate is very similar to the trends documented in [Figure C.1](#).

## 5 Mechanism: Changes in Household Specialization

The birth of a child introduces a significant and unprecedented shift in how couples allocate their time. New responsibilities related to childcare emerge, and the demand for routine housework substantially increases. Couples must adapt to these additional tasks by redistributing the time each member allocates to paid work in the labor market and unpaid work within the household. This division of responsibilities dictates the roles that each partner assumes within the relationship, such as the primary earner or the caregiver. Research shows that men’s labor market outcomes remain largely unaffected by the arrival of a child, while women significantly reduce their labor force participation and working hours (e.g., [Kleven et al., 2019b](#); [Goldin, 2021](#)) and take on longer home production times ([Aguilar-Gomez et al., 2019](#); [Siminski and Yetsenga, 2022](#)).

[Kuziemko et al. \(2018\)](#) show that the magnitude of these changes is often unforeseen. Women, particularly high educated ones, underestimate the impact of having a child on their labor market outcomes and do not envision themselves as full-time housewives after motherhood. We argue that the unanticipated, structural changes in the division of paid and unpaid work times within the couple may be mediating the deterioration in relationship quality that follows the birth of the first child.

To investigate this, we first study how household specialization changes following birth, in terms of the contribution of each partner to paid and unpaid work. We then examine how the documented changes in household specialization translate into changes in RQ, categorizing couples based on their initial distribution of tasks and assessing whether the effects of childbirth vary depending on those couple categories.

### 5.1 Impact of children on household specialization

We start by documenting how mothers and fathers adjust their time use in response to the arrival of a child, focusing on the time spent by each partner on paid employment and unpaid housework, as defined in [Section 2](#).<sup>21</sup> [Figure 3 \(a\)](#) plots the findings on paid work and [Figure 3 \(b\)](#) does it for unpaid work.

The impact of the birth of the first child on working time substantially differs for mothers and fathers. As shown in [Table 2](#), fathers spend about 32 hours in paid work weekly before birth, while mothers work roughly five hours less. There is a steep reduction in the number of hours worked by mothers immediately after birth, reaching and stabilizing at a 12 hour

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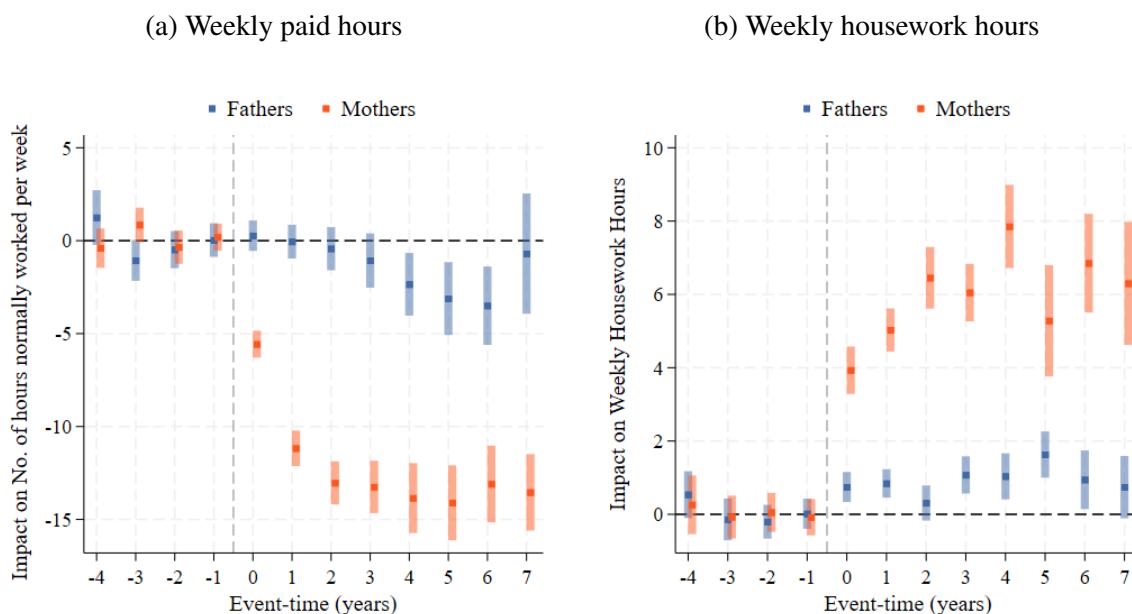
<sup>21</sup>We acknowledge the trends of employment and home production over the life cycle and include age as a control in [Equation 1](#) to account for any potential bias. The causal interpretation of these results is subject to the same identifying assumptions as in [Section 3](#), with the nuance that the parallel trends assumption needed is conditional on age. However, the [Callaway and Sant’Anna \(2021\)](#) method can only account for baseline levels of this variable, overlooking non-linear trends. Thus, we may still observe trends attributable to the life-cycle.

reduction in two years. In contrast, fathers display only a minimal decrease in their working hours later in the child's life, which could be the product of a life-cycle trend unaccounted for in our analysis.

Turning our attention to housework time, one year after the birth of their first child mothers increase their weekly unpaid work by about five hours in comparison to their pre-birth baseline of eight hours. This increase is sustained for about four years, stabilizing around seven hours above the baseline. Fathers increase their housework time from five to six weekly hours. Although small, this increase is statistically significant. Our findings are consistent with previous results on the impact of having children on labor market outcomes (Kleven, 2022) and home production (Aguilar-Gomez et al., 2019; Siminski and Yetsenga, 2022).

Overall, following the birth of their first child, women give up one and a half days of full-time work and take on nearly a full day of unpaid work weekly. Conversely, men increase their housework time by one hour and maintain their labor market hours.<sup>22</sup> These findings indicate that women assume most of the additional housework generated by children, effectively changing how they use their time. Furthermore, this new allocation alters the established roles within the couple, widening gender gaps in home and labor market duties, and assigning new production responsibilities to each partner.

Figure 3: Impact of first child birth on paid and unpaid hours.



*Notes:* This figure plots the impact of first child birth on weekly (a) paid work and (b) housework hours separately for men and women. We estimate Equation 1 using unpaid and paid hours as outcomes and including age as a control to partially out any potential life-cycle bias. We use the estimator proposed by Callaway and Sant'Anna (2021). The plotted coefficients are the effects on each lead item and lag around the event. The 95% confidence intervals are plotted.

To study changes in roles and household specialization, we look at the evolution of the

<sup>22</sup>Andrew et al. (2021) document that mothers also spend more time on childcare than fathers do.

relative contribution of women to market and home production. To that end, we compute the female share of the total paid and unpaid work hours within the couple and use the pre-birth values of these two shares to classify couples into four categories, as outlined in [Section 2](#): traditional, unbalanced, egalitarian and counter-traditional. The pre-birth values of the female shares provide information about the roles previously adopted by each partner and the existing degree of household specialization, which could be indicative of comparative advantages within the couple.

We investigate the association between the birth of the first child and these shares for each type of couple separately. [Figure 4](#) (a) plots the average female share of paid work at each period relative to birth. The contribution of women to paid work decreases after birth in all types of couples, accounting for less than half of the household total. Unbalanced couples experience the largest changes, with the female share decreasing by almost 15 percentage points. The contribution of women to paid work stabilizes at similar levels in egalitarian and counter-traditional couples, at around 35% of the household total, representing a decrease of approximately 10 percentage points. Traditional couples are the least affected by parenthood in this dimension, although the female share of paid work remains low compared to the other groups.

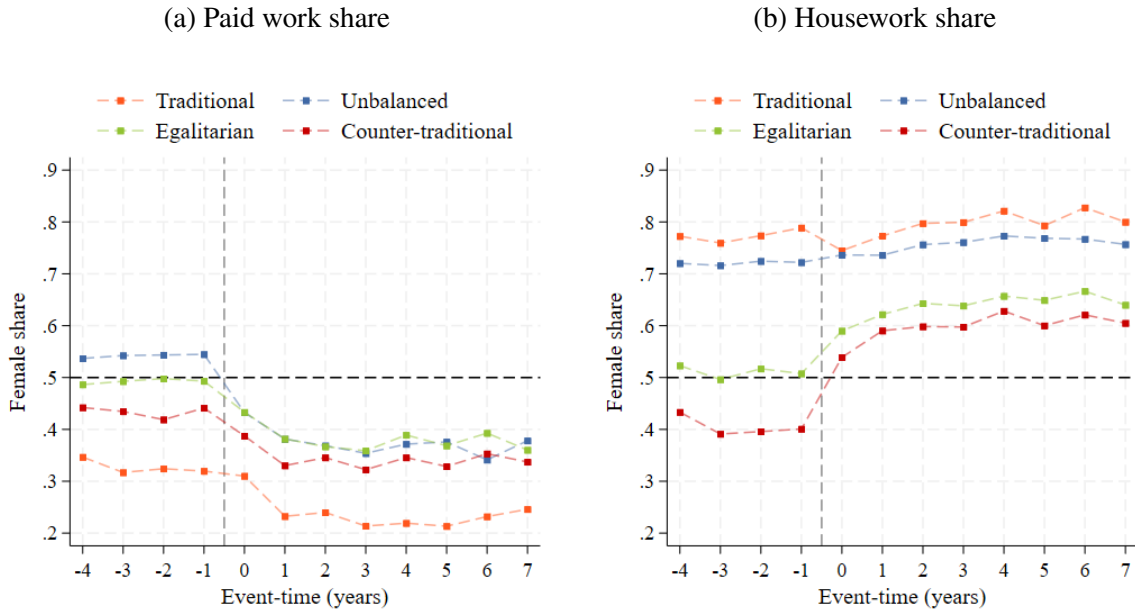
[Figure 4](#) (b) displays the same figure for the female share of unpaid hours. Regardless of the initial housework allocation, women in all couples assume a larger share of unpaid work than men do after birth. Counter-traditional and egalitarian couples experience the largest changes, increasing the female shares by approximately 20 and 15 percentage points, respectively. Women’s contribution accounts for more than 60% in these couples. In contrast, traditional and unbalanced couples, where the female share of housework already constitutes more than three quarters of the total before birth, do not experience significant changes.

This evidence suggests that couples of all types adjust their degree of household specialization after childbirth, transitioning towards more traditional, gender-based roles. However, the specific changes they undergo to establish these new roles and division of duties vary considerably. Traditional couples experience the smallest changes, sustaining the predominant roles of men in the labor market and of women in home production. Unbalanced couples do not change the distribution of housework, but the predominant role in the labor market is transferred from mothers to fathers. Notably, women in unbalanced couples are the only ones reducing their total time contribution after birth. Egalitarian couples experience substantial changes in the division of both types of work, abandoning the equal distribution of tasks. After birth, women adopt a dominant role at home whereas men specialize in the labor market. Finally, counter-traditional couples experience the largest changes in the division of housework. Men abandon their predominant role in this sphere, which is taken on by women, but preserve or strengthen their role in the labor market.

In traditional models of the household, paid and unpaid work are assumed to be allocated among household members based on the degree of substitutability between the labor and do-

mestic inputs of the different members (Becker, 1991). Our findings challenge the plausibility of this assumption. If the distribution of tasks before the birth of the first child is indicative of potential comparative advantages within the couple, then the exchange of responsibilities documented after is not optimally responding to the degree of skill substitutability. Instead, our results suggest the presence either of frictions in the labor market, for instance in the shape of statistical discrimination against mothers (Petit, 2007; Becker, 2010) or of identity considerations of individuals (Akerlof and Kranton, 2000; Ichino et al., 2019; Farré et al., 2020). This evidence suggests that such factors become prevalent with parenthood, confirming the difficulties that individuals may face to anticipate changes in roles and in household specialization (Kuziemko et al., 2018). We argue that this mismatch in expectations might affect RQ.

Figure 4: Impact of first child birth on female time shares.



Notes: These graphs plot the average female shares of (a) paid work and (b) housework time at each time around the birth of the first child by couple type.

## 5.2 Household specialization and relationship quality

Leveraging the heterogeneity in the reallocation of market and home tasks uncovered in Figure 4, we study how changes in household specialization induced by the birth of the first child may mediate the effects on RQ. To do so, we repeat the main analysis on the impact of child birth on RQ separately for each couple type. The reduced sample size of each group separately does not allow us to carry out a dynamic analysis as stated in Equation 1. Thus, we adopt a static approach and estimate the following regression for each couple type:

$$y_{i,t} = \alpha_i + \mu_t + \delta D_{i,t} + u_{i,t} \quad (2)$$



where  $D_{i,t}$  is a binary variable equal to one if individual  $i$  already had a child at time  $t$ , and  $\alpha_i$  and  $\mu_t$  denote the full set of individual and time dummies.

We estimate this regression using the estimator proposed by [Callaway and Sant'Anna \(2021\)](#). The causal interpretation of  $\delta$  in a static setting requires the additional assumption that treatment effects are homogeneous with time relative to birth.<sup>23</sup> The results in [Figure 2](#) evidenced heterogeneity in treatment effects with time relative to childbirth, meaning that this assumption is not plausible in our context. Due to this and since we cannot disentangle the impact of the birth of the first child from unobserved characteristics of each couple type, we do not make causal claims about these results.

In [Table E.1](#) we present the baseline levels of RQ for each type of couple. All couples report RQ values above the average in the full dataset. The highest pre-birth RQ levels are observed in egalitarian couples, followed by counter-traditional ones. The lowest levels of RQ are found in unbalanced couples, although they are quite similar to those of traditional couples. The greatest difference in RQ between partners is observed in traditional couples, with men reporting lower values.<sup>24</sup> [Table 3](#) contains the results from estimating [Equation 2](#) separately for each couple type. All the estimated coefficients are negative, meaning that the negative impact of first child's birth is sustained across couple types. However, the coefficient is only significantly different from zero for individuals in egalitarian and counter-traditional couples.<sup>25</sup> As seen in [Figure 4](#), these are also the couples experiencing the largest changes in household specialization, where women start adopting primary roles in housework and men specialize in paid work after birth. The smallest coefficient corresponds to individuals in unbalanced couples. Although these couples experience the largest drop in the female share of paid hours, the distribution of housework remains largely constant. Furthermore, overall time is more evenly distributed between partners after birth.

There are two factors that could jointly explain these results. First, RQ might be sensitive to unequal distributions of the total household production time. Unbalanced couples, where women shoulder the bulk of labor and home responsibilities before birth, are the only ones distributing overall time more evenly between partners after they become parents. Although the time rearrangements they undergo are substantial, the increased equality in the contribution to household production may be attenuating the associated tensions and the decrease in relationship quality.

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<sup>23</sup>As explained in [Appendix B](#), the static aggregation constitutes a weighted average of the treatment effects for different treatment cohorts at different times relative to treatment. These weights are assigned based on the number of observations in each time bin, with more populous bins receiving higher weights. Hence, without this assumption, the estimates would be skewed towards the event-times with a larger number of observations.

<sup>24</sup>[Equation 2](#) assumes that the impact of first child birth on RQ is linear for all types of couples, and hence it does not depend on the pre-birth values of RQ.

<sup>25</sup>Note that the event-time periods with a larger number of observations are those closest to the time of birth. As seen in [Figure 2](#), the dynamic impact of children on RQ is increasing with time since birth. Thus, these estimates should be considered a lower bound to the full impact.



Table 3: Impact of first child birth on RQ by couple type.

	(1) Traditional	(2) Unbalanced	(3) Egalitarian	(4) Counter-traditional
ATT	-0.149 (0.183)	-0.107 (0.092)	-0.218** (0.078)	-0.353*** (0.097)
Observations	267	817	515	665

*Notes:* This table reports the results from estimating Equation 2 using Callaway and Sant’Anna (2021) separately for each couple type. Standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Second, the redistribution of housework may be the key factor triggering the deterioration of couples’ relationships, by being less foreseeable than changes in labor market time. While labor interruptions and protecting mothers in the labor market are a central concern of the most common fertility policies, changes in home production are arguably less salient. Thus, the unforeseen and unequal distribution of housework may have a dominant role in decreasing relationship quality.

## 6 Concluding Remarks

This paper investigates the causal relationship between having children and RQ, a proxy of the non-material gains from being in a relationship. The arrival of children triggers a series of decisions related to time allocation in both the labor market and at home. These decisions have implications not only for individual well-being, but also for the quality of the couple’s relationship. While having children can lead to increased overall happiness, it does not necessarily guarantee happiness in every aspect of one’s life.

We find that having a child significantly reduces RQ, and that this effect endures over time. In other words, the level of RQ is shifted downward after the birth of a child, maintaining the pre-existing life-cycle trend. This impact on RQ is substantial and persistent compared to other life events, such as unemployment, and other well-being indicators, like general happiness.

The paper posits that the arrival of children increases the demands on couples, including childcare responsibilities and additional housework. Consistent with existing literature, we find that women largely bear the increased housework at the expense of their participation in the labor market, a consequence not typically foreseen by mothers before childbirth. We exploit heterogeneity in changes to household specialization to explore the extent to which these changes mediate the impact of child birth on RQ. The results indicate that couples undergoing the most significant changes in household specialization also experience the greatest declines in RQ.

These findings open avenues for further research on the consequences of having children. From a policy perspective, several measures addressing the impact of children on various out-

comes have been explored. Policies like paternity leave, shared parental leaves, and childcare provisions have been shown to enhance female labor market outcomes, potentially by redistributing household tasks and responsibilities more equitably among couple members. Our findings suggest that such policies may mitigate the negative effects of children on RQ, an outcome closely tied to couple dissolution and the decisions surrounding investments in children, which ultimately influence their future well-being.

Moreover, this paper introduces a novel factor for consideration in the study of decisions to have children. As noted earlier, the impact on relationship quality is, to some extent, unforeseen when deciding to have the first child. Nevertheless, the observed decline in RQ and the associated utility losses, despite potential utility gains from the child itself, may become a significant factor in deciding to have subsequent children. This factor could contribute to explaining the decline in fertility observed on the intensive margin.

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## A RQ measure

### A.1 Self-Completion Partner Module

**Text:** *For each of the following questions, please indicate which best describes your relationship with your partner at the moment. Please select only one answer per question.*

*How often do you have a stimulating exchange of ideas?*

- |   |                        |
|---|------------------------|
| 1 | Never                  |
| 2 | Less than once a month |
| 3 | Once or twice a month  |
| 4 | Once or twice a week   |
| 5 | Once a day             |
| 6 | More often             |

*How often do you calmly discuss something?*

- |   |                        |
|---|------------------------|
| 1 | Never                  |
| 2 | Less than once a month |
| 3 | Once or twice a month  |
| 4 | Once or twice a week   |
| 5 | Once a day             |
| 6 | More often             |

*How often do you work together on a project?*

- |   |                        |
|---|------------------------|
| 1 | Never                  |
| 2 | Less than once a month |
| 3 | Once or twice a month  |
| 4 | Once or twice a week   |
| 5 | Once a day             |
| 6 | More often             |

*How often do you discuss or consider divorce, separation or terminating your relationship?*

- |   |                     |
|---|---------------------|
| 1 | All of the time     |
| 2 | Most of the time    |
| 3 | More often than not |
| 4 | Occasionally        |
| 5 | Rarely              |
| 6 | Never               |

*Do you ever regret that you married or lived together?*

- |   |                     |
|---|---------------------|
| 1 | All of the time     |
| 2 | Most of the time    |
| 3 | More often than not |
| 4 | Occasionally        |
| 5 | Rarely              |
| 6 | Never               |

*How often do you and your partner quarrel?*

- |   |                     |
|---|---------------------|
| 1 | All of the time     |
| 2 | Most of the time    |
| 3 | More often than not |
| 4 | Occasionally        |
| 5 | Rarely              |
| 6 | Never               |

*How often do you and your partner "get on each other's nerves"?*

- |   |                     |
|---|---------------------|
| 1 | All of the time     |
| 2 | Most of the time    |
| 3 | More often than not |
| 4 | Occasionally        |
| 5 | Rarely              |
| 6 | Never               |

*Do you kiss your partner?*

- |   |                     |
|---|---------------------|
| 1 | All of the time     |
| 2 | Most of the time    |
| 3 | More often than not |
| 4 | Occasionally        |
| 5 | Rarely              |
| 6 | Never               |

*Do you and your partner engage in outside interests together?*

- |   |                  |
|---|------------------|
| 1 | All of them      |
| 2 | Most of them     |
| 3 | Some of them     |
| 4 | Very few of them |
| 5 | None of them     |

*The responses below represent different degrees of happiness in your relationship. The middle point, "happy", represents the degree of happiness of most relationships. Please select the number which best describes the degree of happiness, all things considered, of your relationship.*

1	Extremely unhappy
2	Fairly unhappy
3	A little unhappy
4	Happy
5	Very happy
6	Extremely happy
7	Perfect

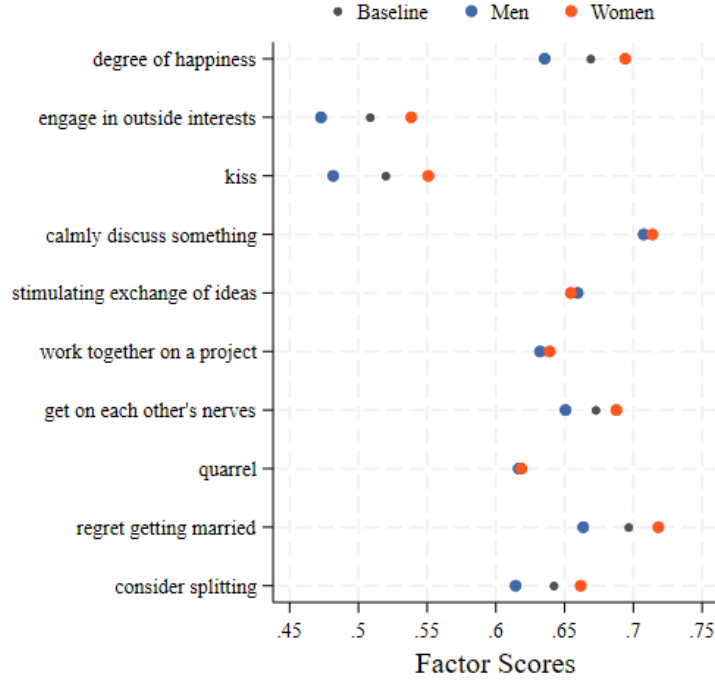
## A.2 Factor Analysis

Table A.1: Factor loadings of RQ.

(a) Subjective assessment		(b) Couple time use	
<i>How often do you... ?</i>		<i>How often do you... ?</i>	
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
<i>What is the... ?</i>		<i>Do you and your partner... ?</i>	
degree of happiness w/ relationship	0.633	engage in outside interests	0.672

*Notes:* This table reports the factor loadings resulting from computing a factor analysis on the 10 items in the Understanding Society Partner module. The first factor is the measure of relationship quality used in the analysis, which we call RQ. It has eigenvalue 4.06 and explains 40.61% of the variation in the data. The left panel shows the subjective assessment items and the right panel displays the couple time use items.

Figure A.1: Factor loadings by sex.



*Notes:* This graph displays the factor loadings from computing a factor analysis on the complete data, only on women and only on men. The eigenvalues are 4.05, 3.82 and 4.23 for each sample, respectively.

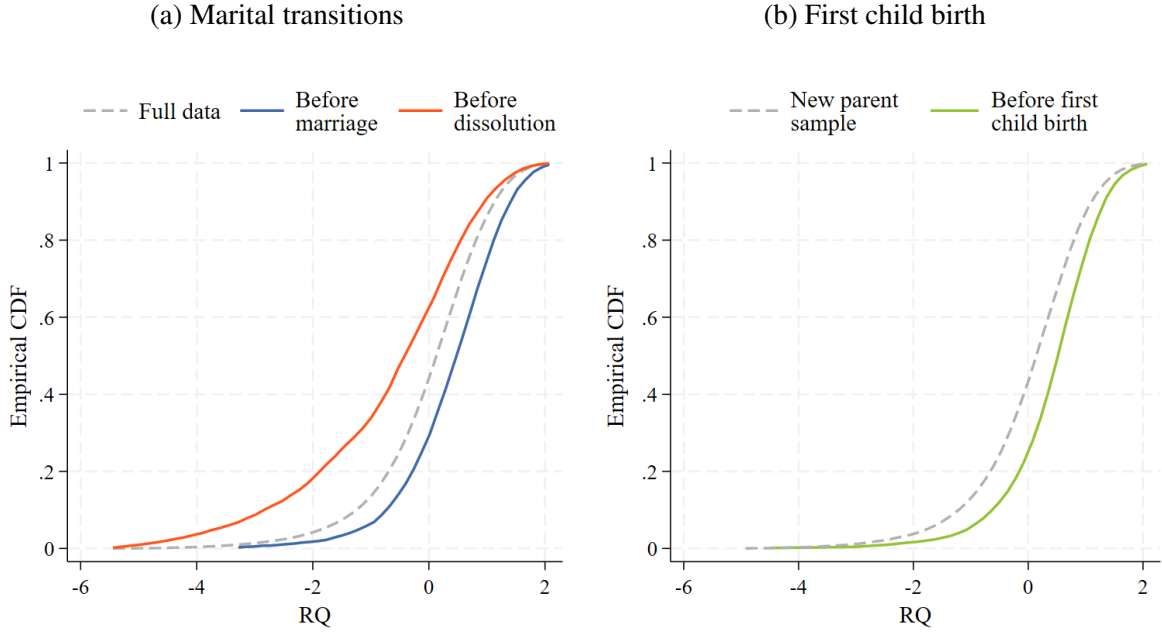
### A.3 Validity

Given the novelty of the measure, we conduct a series of tests to verify that RQ provides sensible information about the quality of a relationship. We follow the life satisfaction literature (Ferrer-i Carbonell and Frijters, 2004) and substantiate two fundamental theoretical assumptions: measurability and interpersonal comparability. Additionally, we verify that RQ evolves smoothly overtime and does not experience abrupt jumps.

**Measurability.** First, we verify that the information provided by RQ is meaningful. To do so, we assess the predictive capacity of RQ for couple decisions: (a) marriage and separation and (b) fertility decisions. Marriage increments separation costs, serving as a commitment mechanism. Hence, couples transitioning into marriage should report higher levels of RQ. In contrast, separations typically result from poor-quality relationships. Thus, we expect lower than average RQ levels on couples on the brink of dissolution. Finally, we hypothesise that couples deciding to have a child exhibit higher RQ levels.

To evaluate the predictive power of RQ on these decisions, we compare the distribution of the measure in the period before the decision with the overall distribution of RQ. Figure A.2 plots the empirical cumulative distribution function (CDF) of RQ for different samples. Panel (a) compares the overall distribution of RQ in the complete data with distribution one period

Figure A.2: Measurability: behavior prediction.



*Notes:* This figure displays the empirical CDF of RQ for different samples. Panel (a) presents the distribution in the complete data, one period before marriage and one period before dissolution. Panel (b) displays the distribution in the complete analysis sample of individuals becoming parents for the first time and the distribution one period before birth.

before marriage and one period before dissolution. As anticipated, the distribution preceding marriage is shifted to the right, indicating that individuals report higher RQ values before marriage across the entire distribution. Conversely, the distribution before dissolution is significantly shifted to the left. Individuals report lower RQ before dissolution across the entire distribution. Interestingly, the pre-dissolution distribution exhibits a more substantial deviation from the overall distribution than the pre-marriage distribution. This indicates that negative deviations in RQ have a more pronounced influence on marital decisions than positive deviations.

Figure A.2 (b) compares the distribution of RQ within the analysis sample of individuals becoming parents for the first time. We compare the general distribution of RQ in this sample to the distribution of the measure one period before the birth of the first child, at the time of conception. This distribution is slightly shifted to the right in comparison to the benchmark.

To formally test the differences between these distributions, we compute a two-sample Kolmogorov-Smirnov equality-of-distributions test. This test is designed to verify whether two samples are drawn from the same population and, thus, follow the same distribution. Table A.2 presents the D-statistics and p-values derived from this test for the samples considered. We find that the pre-divorce and pre-marital samples exhibit significantly smaller and significantly larger values than the full sample, respectively. Additionally, the pre-child sample contains significantly larger values than the complete sample of first-time parents. In aggregate, the test outcomes indicate that all three samples stem from distributions distinct from the benchmarks.

Table A.2: Two-sample Kolmogorov-Smirnov test.

	$d_0 = \text{Full sample}$		$d_0 = \text{New parent sample}$
	$d_1 = \text{Before separation}$	$d_1 = \text{Before marriage}$	$d_1 = \text{Before first child}$
$d_0 > d_1$	0.000 (1.000)	0.1741 (0.000)	0.0004 (0.999)
$d_0 < d_1$	-0.2192 (0.000)	0.0000 (1.000)	-0.0685 (0.000)
Combined	0.2192 (0.000)	0.1741 (0.000)	0.0685 (0.000)

*Notes:* This table displays the results of two-sample Kolmogorov-Smirnov tests on different samples. The reported coefficients are the resulting D-statistics and p-values (in parentheses).

We delve deeper in the correlation between RQ and couple dissolution in the regression analysis in Table A.3. We regress a binary variable that equals one on the period before dissolution on RQ, and control for age, sex, college education, employment status, log monthly income, presence of children, relationship tenure, marital status, area of residence and period. We carry this analysis out separately in the full data and in the sample of parents used for the main analysis. All else equal, a standard deviation increase in RQ is associated with approximately a 0.7 percentage point higher probability of separation.

Table A.3: Correlation between RQ and couple dissolution.

	Full data			Parent sample		
	(1)	(2)	(3)	(4)	(5)	(6)
RQ	-0.00782*** (0.001)	-0.00919*** (0.001)	-0.00680*** (0.001)	-0.00895*** (0.002)	-0.00911*** (0.002)	-0.00736** (0.003)
Controls		✓	✓		✓	✓
Individual FE			✓			✓
Observations	104563	93026	93026	14096	12719	12719
$R^2$	0.006	0.031	0.026	0.007	0.031	0.044

*Notes:* This table displays the descriptive results from regressing a binary variable that equals one on the period before dissolution on RQ. The controls used are age, sex, college education, employment status, log monthly income, presence of children, relationship tenure, marital status, area of residence and period. Columns 1-3 do so using all available data on RQ, and columns 4-6 use the parent sample constructed for the main analysis. Standard errors clustered at the couple level in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The periods preceding marital transitions and fertility decisions are characterized by significant deviations from the average RQ. We conclude that RQ provides valuable information about couple behaviour, which is largely dictated by the quality of the relationship. This finding is consistent with the theoretical assumption of measurability.

**Interpersonal comparability.** Second, there should exist some degree of commonality in the concept of RQ across individuals. We test this by assessing the level of correlation of RQ



between the members of a couple. [Table A.4](#) displays the descriptive results from regressing women's RQ on their partners' RQ. Column (1) presents the partial correlation between partners' RQ and Column (2) introduces a relevant set of individual characteristics. Man RQ is a highly significant predictor of woman RQ. In fact, it is the largest in magnitude, being almost five times larger the second largest: being married.

Table A.4: Regression of woman RQ on man RQ.

	Woman RQ	
	(1)	(2)
Man RQ	0.608*** (0.008)	0.593*** (0.008)
College		0.057*** (0.014)
Married		0.126*** (0.022)
Urban		-0.022 (0.013)
Constant	-0.058*** (0.006)	-0.130 (0.102)
Age		✓
Tenure		✓
Wave		✓
Observations	37380	36851
$R^2$	0.3139	0.3237

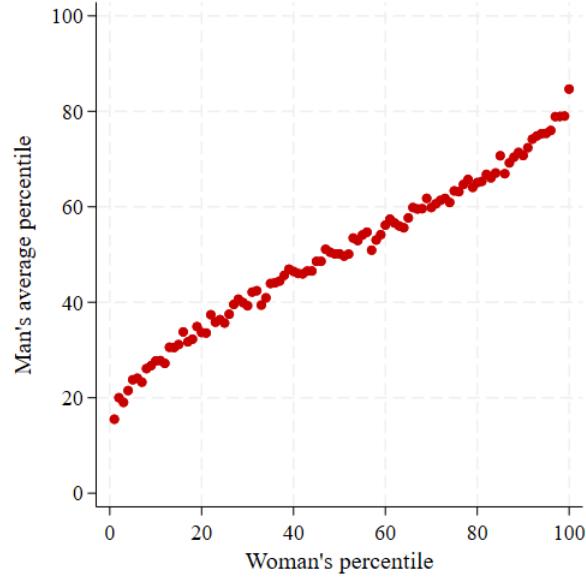
*Notes:* This table displays the descriptive results from regressing women's RQ on their (male) partners' RQ. We control non-parametrically for age, relationship tenure and data collection wave. Standard errors clustered at the couple level in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

We look at the non-linear relation between the RQ of both couple members through a rank-rank plot. [Figure A.3](#) displays the average RQ percentile rank of men per woman's percentile rank. Although there is no perfect correlation between the two, there is a clear positive relation. Perfect correlation would result in a 45 degree line. The slope is steepest for the top and bottom percentiles, being of around one point. It flattens out at the center of the distribution by almost half. This indicates that extreme assessments of the quality of the relationship are shared much more intensely than intermediate ones.

**Smooth evolution.** We study the evolution of RQ over time by looking at this measure progresses with age and relation tenure. We estimate the following regression:

$$y_{i,t} = \alpha_i + \mu_t + \sum_a \mathbb{1}\{a = \text{age}_{i,t}\} \gamma_a + \sum_d \mathbb{1}\{d = \text{tenure}_{i,t}\} \lambda_d + \mathbf{X}_{i,t} \beta + u_{i,t}$$

Figure A.3: Rank-rank correlation of RQ across couple members.

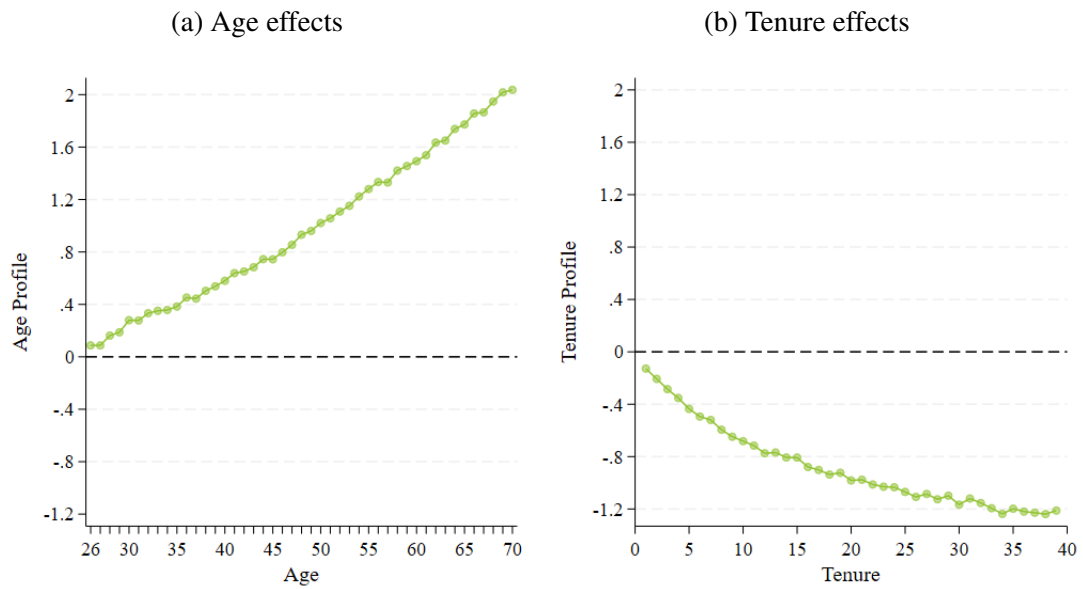


*Notes:* This figure plots the average husband RQ percentile per wife RQ percentile.

where  $y_{i,t}$  denotes RQ of individual  $i$  at time  $t$ , we include full sets of age and relationship tenure dummies, and  $\mathbf{X}_{i,t}$  includes a set of individual controls. We use a two-way fixed effects approach to eliminate unobservable individual heterogeneity, which contain cohort effects, as well as period effects. Doing so, we preserve only the variation that can be attributed to an additional year of age or tenure. Since we include both variables non-parametrically, the estimated coefficients provide the age and tenure profiles of RQ.

Figure A.4 (a) plots the age profile of RQ, in comparison to the baseline of 25 years. Whilst this is clearly observational, aging has a positive effect on RQ. Additional years of age induce increasingly larger levels of RQ. These increments are highly smooth and almost linear. Figure A.4 (b) does the same for tenure, taking new relationships as a baseline. RQ steeply decreases with tenure during the first ten to fifteen years. It stabilizes for sufficiently long relationships. As with age, additional years of tenure reduce RQ smoothly, without significant jumps.

Figure A.4: Age and tenure effects on RQ.



*Notes:* This figure plots the age and relationship tenure profiles of RQ. These are obtained estimating a non-parametric regression of age and tenure on RQ through fixed effects. Panel (a) takes 25 as the baseline age and panel (b) takes 1 as the baseline tenure.

## B Empirical Strategy

We take a dynamic difference-in-differences (DiD) approach to study the causal impact of children on RQ. This methodology exploits sharp changes in individual outcomes after the birth of their first child and allows for treatment heterogeneity with time relative to birth. In essence, it allows us to estimate the impact of having a child at each period relative to birth. Furthermore, it exploits differences in the timing of child birth to dynamically construct a control group.

We use a sample of individuals who become parents to study the impact of the birth of the first child (treatment) on RQ (outcome). This has two important implications. First, the treatment is staggered because different individuals have their first child in different periods. This divides the sample into different treatment adoption cohorts, depending on the calendar year when they become parents. Second, having a sample of new parents implies that everyone in the sample is treated at some point. This means that, in each period, we compare individuals who just had a child with individuals who have not become parents yet and with individuals who have been parents for more than one period.

We estimate the dynamic two-way fixed effects (TWFE) regression in [Equation 1](#). The econometrics literature has pointed out several problems derived from estimating such specifications through OLS in contexts of staggered treatment adoption (see [Goodman-Bacon, 2021](#), for a review). There are two main issues that threaten the causal interpretation of the obtained estimates. First, it requires assuming homogeneity of treatment effects across treatment cohorts. The violation of this assumption induces negative weights when computing the estimates of the average treatment effects, resulting in biased estimates. Second, it carries out *forbidden* comparisons between individuals changing status from control to treated and cohorts that have already been treated for more than one period. As we explain below, we take an alternative approach in our estimation.

### B.1 [Callaway and Sant’Anna \(2021\)](#) method

The method proposed by [Callaway and Sant’Anna \(2021\)](#) overcomes the issues related to TWFE estimation by clearly separating identification, estimation and aggregation. This method is applicable in settings where a panel dataset is available and the binary and absorbing treatment is adopted in a staggered manner. We feel comfortable assuming that having a child is a binary (having a child or not) and absorbing treatment (having a child forever). The only situation where this treatment would not be absorbing is in the case of child death, which is a very rare occurrence in the data. Additionally, the treatment is adopted in a staggered way since individuals have children in different periods, i.e., there are different treatment adoption cohorts.

**Identification.** The building block of this method are the average treatment effects on the treated (ATT) for each treatment adoption cohort  $g$  and at each period  $t$ , denoted as  $ATT(g, t)$ . Identifying these requires two assumptions:

- A1. Limited anticipation.** If a unit is untreated in period  $t$ , its outcome in that period does not depend on when it will be treated in the future. In our context, we need to assume that changes in RQ before the birth of the first child do not predict when individuals have their first child. Note that “limited” anticipation implies that the method allows for some preceding reaction, but an assumption needs to be made on the amount of periods before treatment.
- A2. (Conditional) parallel trends based on “not-yet treated”.** All treatment cohorts would have evolved in parallel in absence of treatment. In our context, individuals’ RQ would have evolved in parallel regardless of the period when they had their first child. Importantly, the method allows for the looser assumption of parallel trends conditional on covariates.

Those two assumptions allow to construct the counterfactual for each  $ATT(g, t)$  using (i) the period before treatment as the baseline period, and (ii) all treatment cohorts that have not been treated by  $t$  as controls. Therefore, the control group at each  $t$  for the same cohort  $g$  varies because at each subsequent period new cohorts enter treatment status.

**Estimation.** Each  $ATT(g, t)$  is estimated as a  $2 \times 2$  difference-in-differences coefficient using the baseline period and the control group described. The estimation can be done in three ways, which use information from different parts of the data generating process: using outcome regression, inverse probability weighting, or doubly robust estimands. Refer to [Callaway and Sant’Anna \(2021\)](#) for detailed information on the estimation methods. We use the last method, since it constitutes the combination of the other two.

**Aggregation.** The  $ATT(g, t)$  estimates are the building blocks used to summarize the treatment effects across treatment adoption cohorts, periods or time relative to treatment. In each case, aggregation involves carefully chosen and estimable weights for the different  $ATT(g, t)$ . Our main aggregation involves obtaining the ATT at each event-time. Crucially, since the control group varies at each  $ATT(g, t)$ , the aggregated figure will internalize compositional changes. This may prevent the causal interpretation of the aggregated coefficients, unless homogeneity across treatment adoption cohorts is assumed. In this scenario, we need to assume that the impact of the birth of the first child is the same regardless of the year of birth.

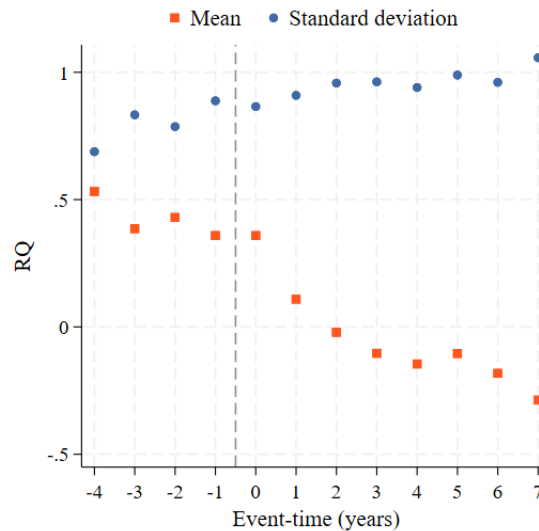
## B.2 Identification

Although we cannot directly test whether the assumptions above are satisfied, we can provide evidence in favor of their plausibility.

The **limited anticipation** assumption would be violated if individuals decided to have children in response to either negative or positive shocks to RQ. Figure 2 indicates that, on average, there is no evidence that the birth of the first child is preceded by deviations in RQ, since all the point estimates before the event are not statistically different from zero. However, this could be masking heterogeneity in the evolution of RQ before first child birth, averaging individuals that decide to have children after a positive or a negative RQ deviation. If that were the case, the standard deviation of RQ would be larger over the periods before the event.

Figure B.1 plots the mean and the standard deviation of the level of RQ at each event time. Consistent with Figure 2, average RQ is virtually flat before birth and steeply decreasing after. The standard deviation is smallest before the birth of the first child, supporting the evidence against anticipation, and it steadily increases after.

Figure B.1: Sample mean and standard deviation of RQ around first child birth.



*Notes:* This graph plots the sample average and the sample standard deviation of the level of RQ at each period around the birth of the first child.

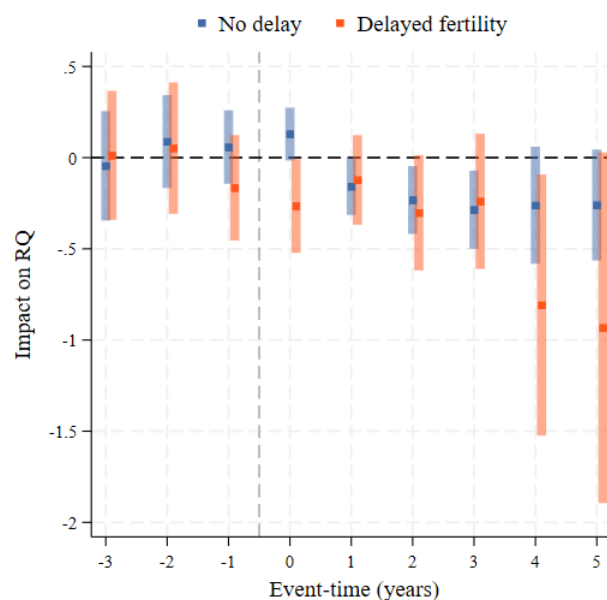
**Conditional parallel trends** cannot be tested, since it involves conjectures about unrealized scenarios. The flat pre-trends displayed in Figure 2 are also suggestive evidence in favor of this assumption. We compute a formal test that the coefficients corresponding to all pre-treatment periods are statistically equal to zero and we cannot reject this hypothesis.

A related potential limitation to this approach is that we cannot observe intended fertility, but only the realized. We consider individuals who experienced a delay in the birth of the first child separately, by looking at those reporting to have had a miscarriage or to have used fertility

treatments. Unfortunately, we cannot pin down exactly when these individuals first wanted to have a child, just that they experienced a delay. About 9% of each treatment cohort experiences a delay in fertility in our sample. [Figure B.2](#) displays the estimation results separately. The impact only really differs in the period of birth, where parents without a delay experience a slight increase in RQ, while delayed parents display a decrease. The point estimates are similar, but the precision is quite low in the estimates for parents who experienced delayed fertility.

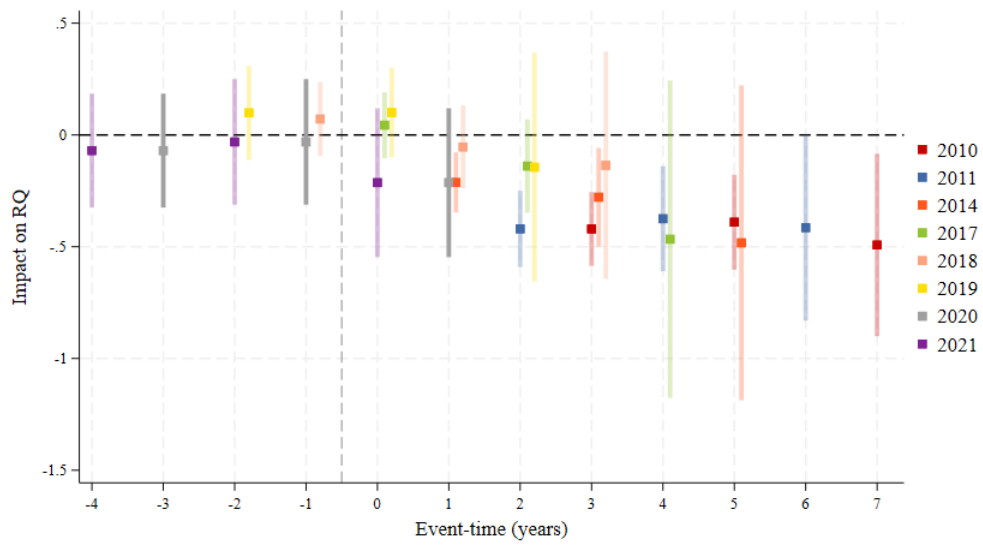
A final condition needed for the time aggregation displayed as our main result is **homogeneity of treatment effects across cohorts**. In [Figure B.3](#) we plot the dynamic impact of the birth of the first child separately per treatment cohort. Given our sample size, the estimates are quite noisy at this level of disaggregation. The point estimates are quite similar across cohorts.

Figure B.2: Delayed birth of the first child.



*Notes:* This graph displays the impact of the birth of the first child on RQ separately for individuals who experienced a delay and individuals who did not. We identify as delayed parents those who report having used fertility treatments or having had miscarriages before birth.

Figure B.3: Impact by treatment cohort.



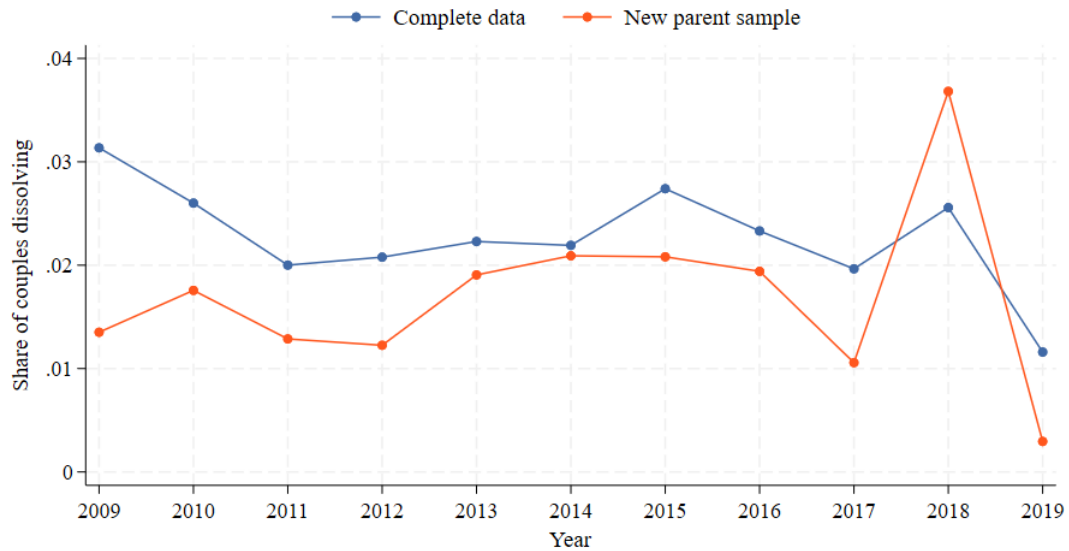
*Notes:* This graph displays the dynamic impact of the birth of the first child by treatment cohort, depending on the calendar year of birth.



## C Related Results

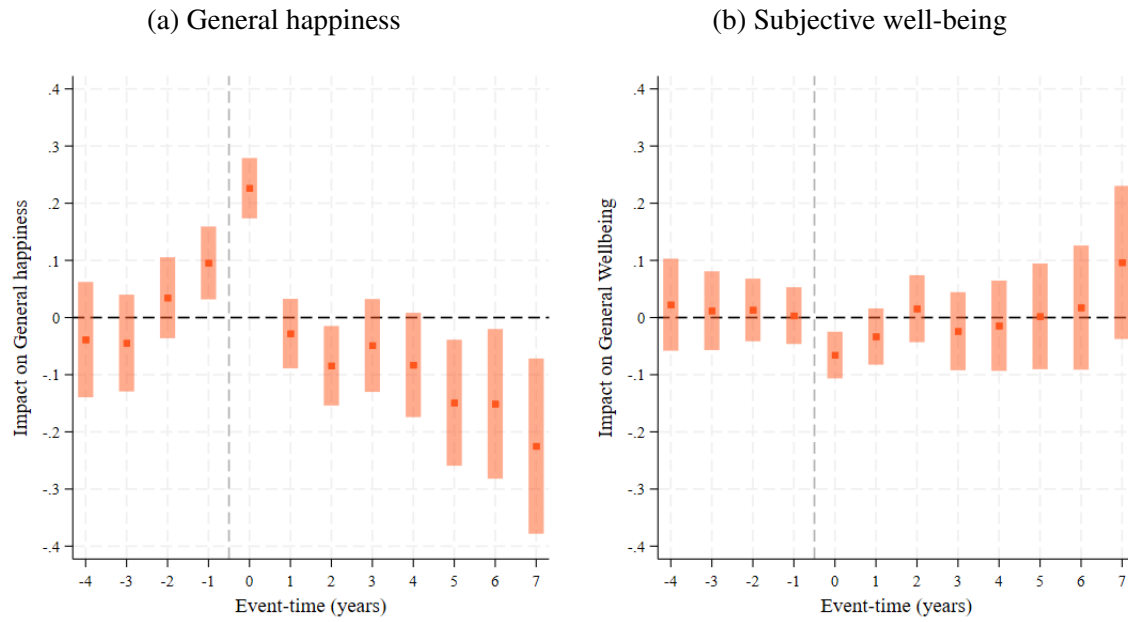
### C.1 RQ and divorce

Figure C.1: Yearly couple dissolutions in data.



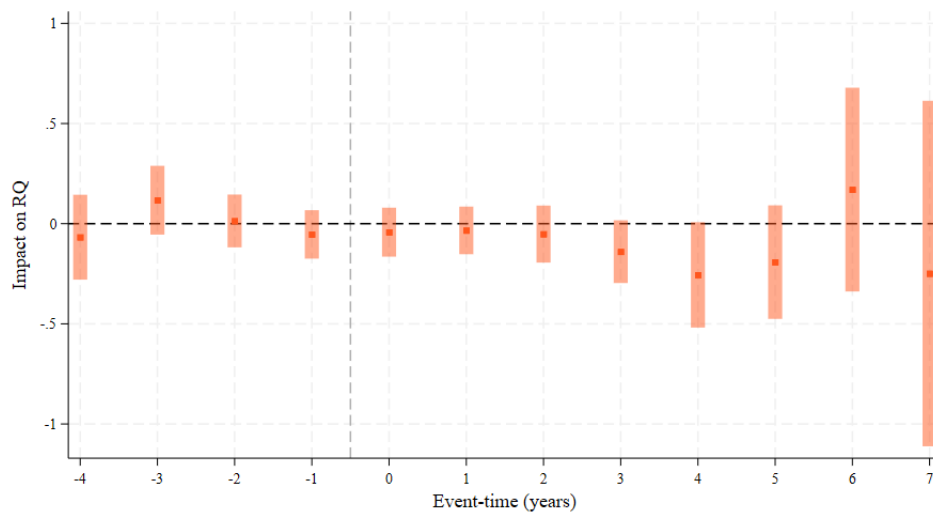
*Notes:* This figure plots the share of couples which dissolve out of all the couples observed each year in the complete data and in the new parent sample. According to [Office for National Statistics \(2022\)](#), on average 1.44% of the married couples in fertility ages (20-45 year-olds) living in England and Wales divorce every year, during the period 2009-2021.

Figure C.2: Impact of children on general happiness and subjective well-being.



Notes: This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method using (a) general happiness and (b) subjective well-being as outcomes. The question used for general happiness is “Have you recently been feeling reasonably happy, all things considered?”. The responses are given in a four-point Likert scale. Subjective well-being is constructed by Understanding Society combining the answers to the 12 questions of the General Health Questionnaire. We standardize both measures, so the results are given in standard deviations.

Figure C.3: Impact of unemployment on RQ.

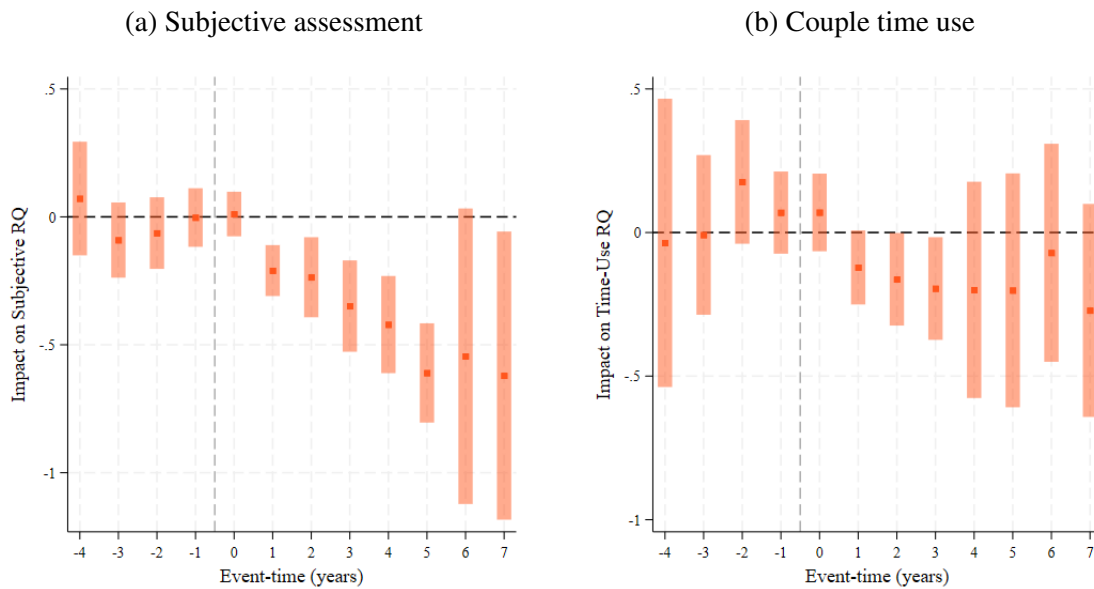


Notes: This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) around unemployment events.

## D Robustness

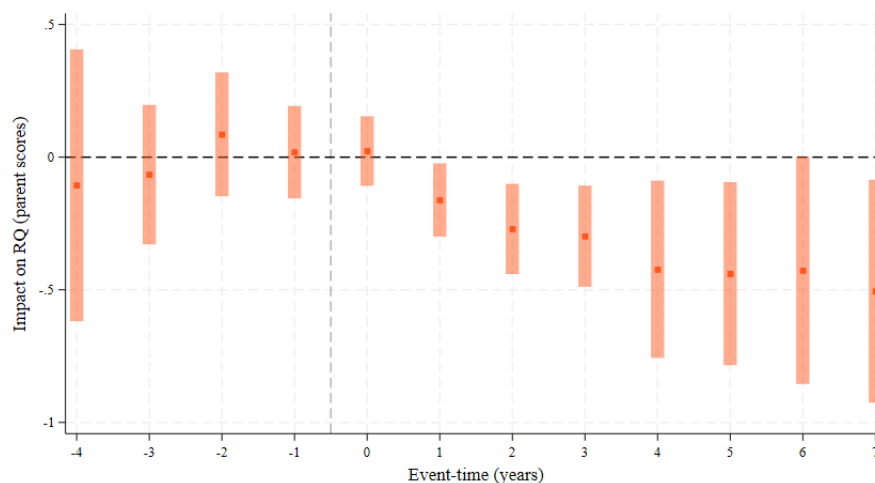
### D.1 Time invariance of RQ

Figure D.1: RQ by item block.



*Notes:* This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method. The outcomes are the resulting measures obtained from carrying out a factor analysis on (a) the subjective assessment and (b) the couple time use items in Table 1 separately.

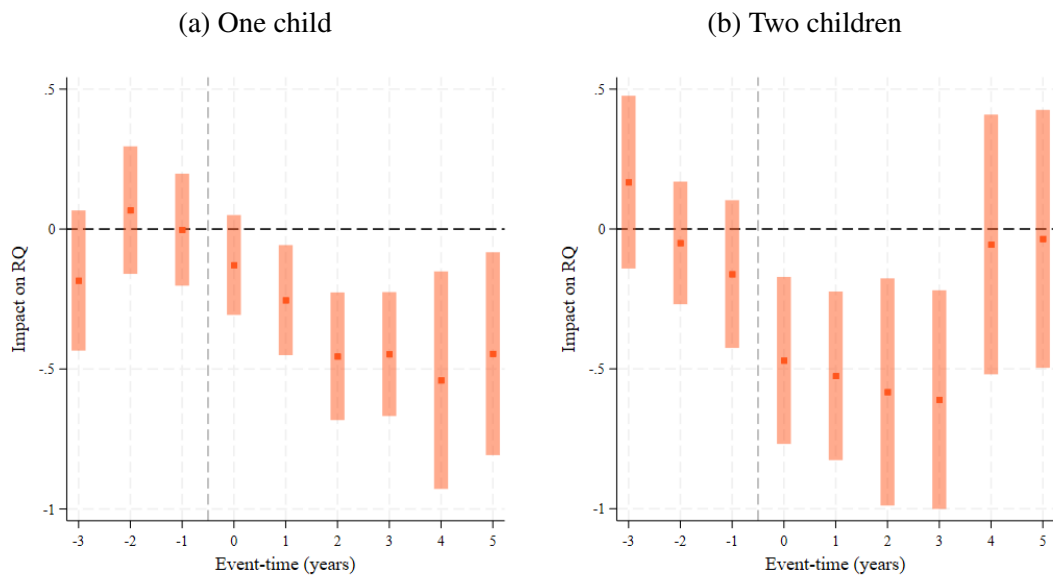
Figure D.2: Impact of children on RQ using factor scores after birth.



*Notes:* This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method. The outcome is the resulting measure obtained from carrying out a factor analysis on the items in Table 1 using only observations corresponding to individuals who already became parents.

## D.2 Total realized fertility

Figure D.3: Impact by final number of children.



Notes: This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method separately for (a) individuals who only have one child and (b) individuals having two or more children by the end of the observation period.

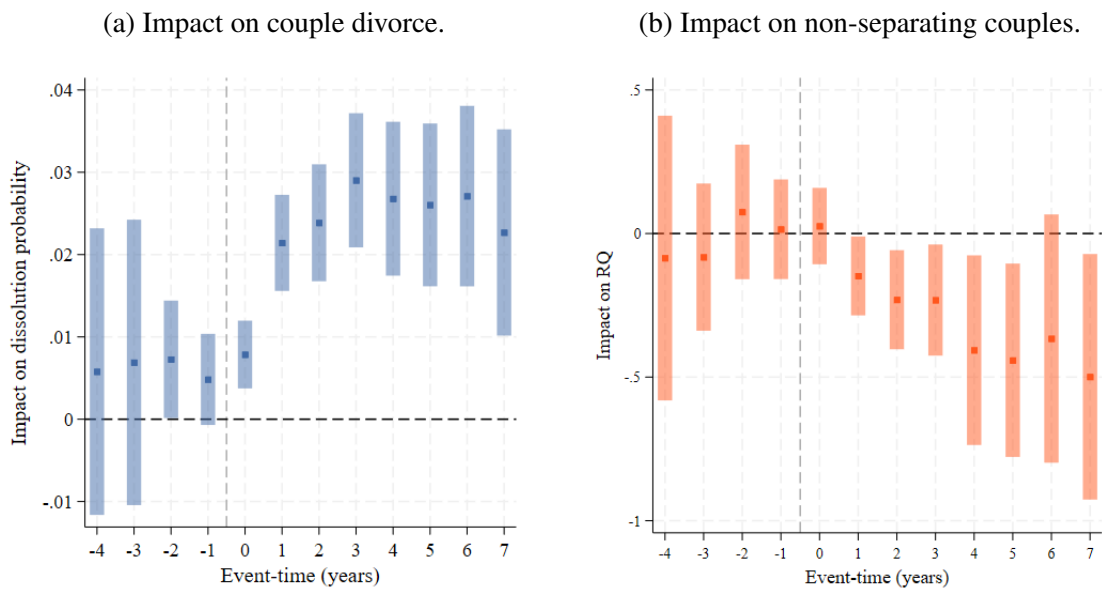
Table D.1: Impact by total realized fertility.

	(1)	(2)
	One child	More than one
ATT	-0.242 (0.131)	-0.470** (0.146)
Observations	584	671

Notes: This table displays the static difference-in-differences estimates obtained through the Callaway and Sant'Anna (2021) method separately for (a) individuals who only have one child and (b) individuals having two or more children by the time they are 40 or older. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### D.3 Selected sample

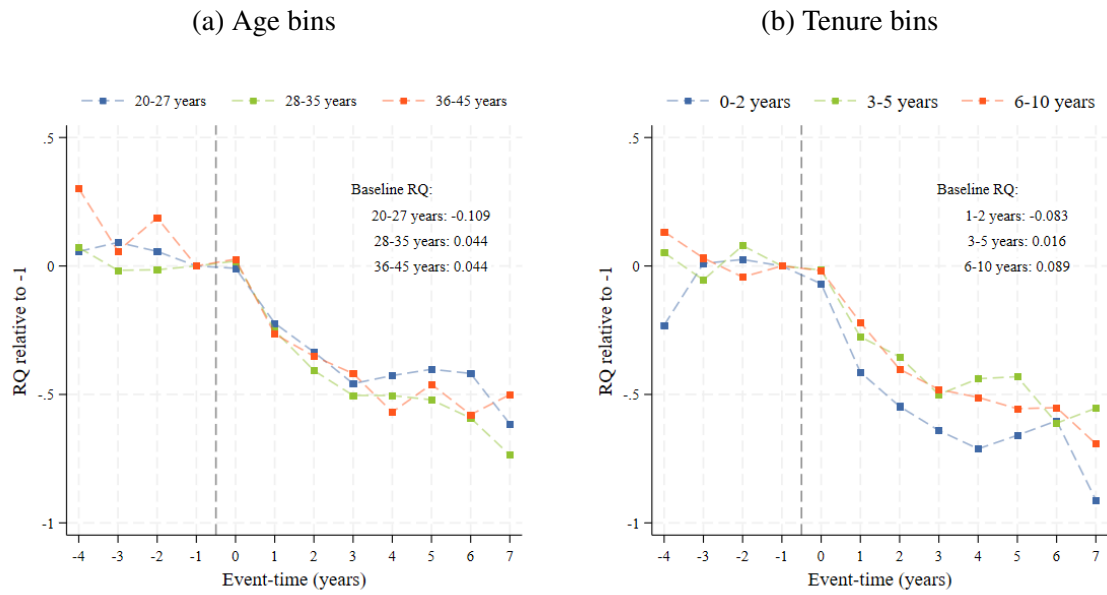
Figure D.4: Sample selection on separating couples.



*Notes:* This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method. The outcomes are (a) separation probabilities and (b) RQ on the subset of couples who do not separate during the observation period. Note that, by construction of the sample, individuals cannot separate before the time when the child is conceived.

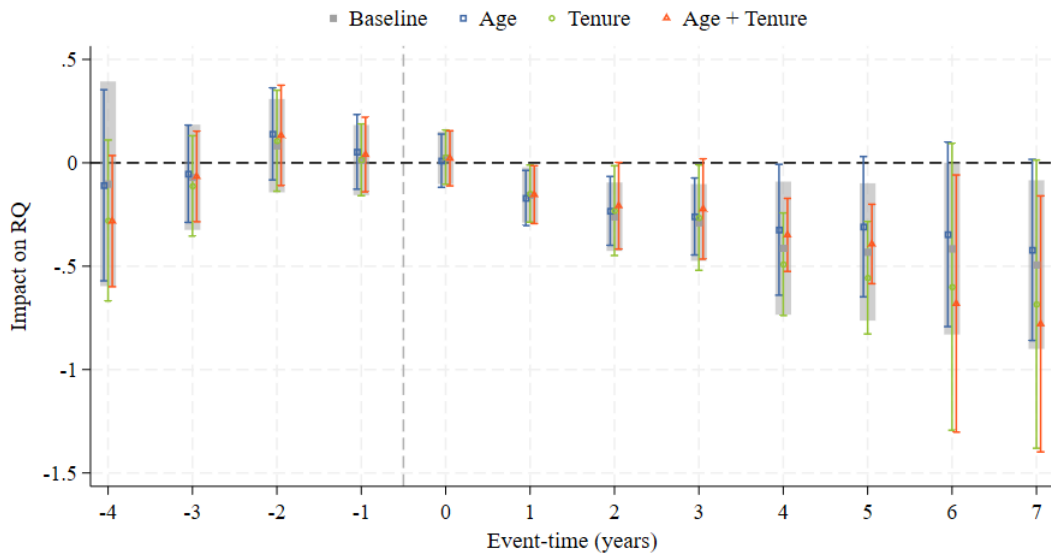
## D.4 Age and tenure at birth

Figure D.5: Average RQ per event-time period.



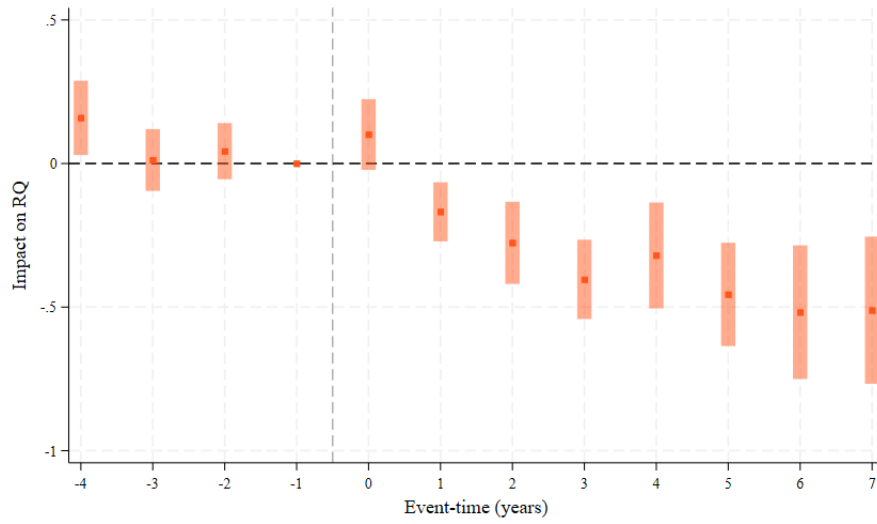
Notes: This figure plots the average RQ at each event-time period, normalizing the value on the period before the birth of the first child (-1) to zero, by (a) age and (b) tenure bin.

Figure D.6: Impact of RQ using different sets of controls.



Notes: This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method for different sets of controls. This method only allows to account for the values of the covariates on the periods before the event.

Figure D.7: Impact of first child birth on RQ using [Kleven et al. \(2019b\)](#).

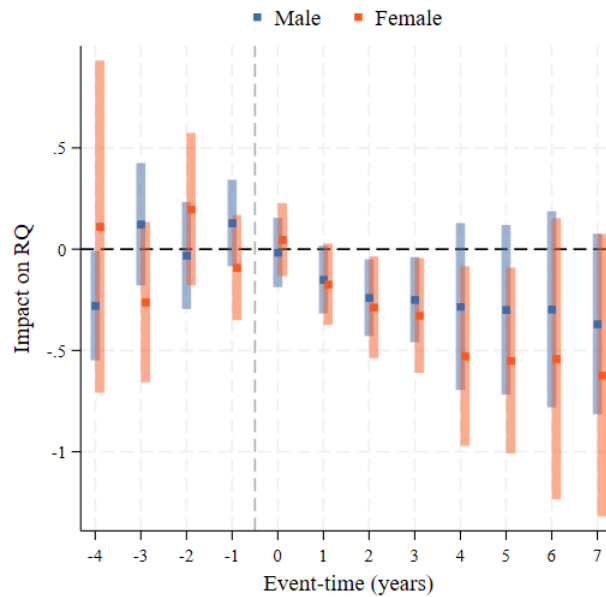


*Notes:* This figure plots the coefficients corresponding to the event-time dummies resulting from estimating an event-study specification as popularized by [Kleven et al. \(2019b\)](#), to account for the dynamic effects of age and tenure:

$$y_{i,t} = \mu_t + \sum_{j \neq -1} \mathbb{1}\{j = t - G_i\} \delta_j + \sum_a \mathbb{1}\{a = \text{age}_{i,t}\} \alpha_a + \sum_d \mathbb{1}\{d = \text{tenure}_{i,t}\} \gamma_d + u_{i,t}$$

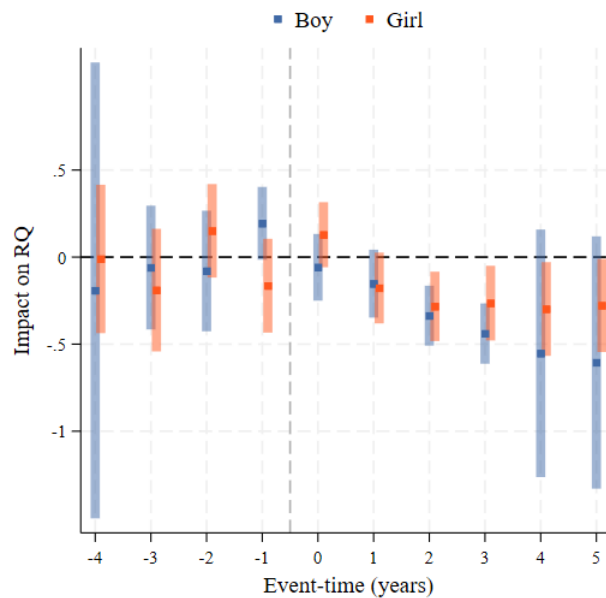
## D.5 Additional checks

Figure D.8: Impact of first child birth on RQ for mothers and fathers.



*Notes:* This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method separately for mothers and fathers.

Figure D.9: Impact of having a first-born boy or girl.



*Notes:* This figure plots the results from estimating Equation 1 through the Callaway and Sant'Anna (2021) method separately for first-born boys and girls.



## E Household Specialization

Table E.1: Summary statistics before the birth of the first child, by couple type.

	Traditional		Unbalanced		Egalitarian		Counter-tradit.	
	Fathers (1)	Mothers (2)	Fathers (3)	Mothers (4)	Fathers (5)	Mothers (6)	Fathers (7)	Mothers (8)
(a) Individual characteristics								
Age	31.61 (5.932)	28.82 (4.978)	32.42 (5.394)	30.33 (4.669)	32.35 (5.263)	30.33 (4.318)	32.77 (5.794)	29.76 (4.627)
College educated (%)	32.44 (46.92)	33.92 (47.45)	37.72 (48.51)	44.79 (49.78)	41.28 (49.32)	51.42 (50.07)	40 (49.08)	50.38 (50.09)
Active in labor mkt (%)	98.68 (11.42)	85.46 (35.33)	93.44 (24.79)	98.46 (12.33)	99.64 (5.965)	100 (0)	97.38 (16.01)	92.51 (26.37)
Employed (%)	97.37 (16.04)	77.97 (41.53)	91.12 (28.47)	98.26 (13.08)	99.64 (5.965)	98.23 (13.22)	95.88 (19.91)	90.64 (29.19)
Weekly work hours	40.06 (10.65)	23.51 (15.67)	34.02 (12.58)	36.39 (6.818)	38.49 (3.560)	37.51 (3.988)	38.14 (11.63)	31.42 (12.70)
Weekly housework hours	3.269 (2.530)	12.26 (6.363)	3.828 (2.964)	9.739 (4.946)	6.932 (3.424)	7.145 (3.444)	8.192 (4.126)	5.832 (3.923)
RQ	0.0959 (1.030)	0.403 (1.015)	0.201 (0.753)	0.180 (0.728)	0.544 (0.558)	0.528 (0.589)	0.358 (0.954)	0.463 (0.788)
Observations	228	227	518	519	281	282	267	267
(b) Couple characteristics								
Tenure	4.546 (3.266)		4.821 (3.109)		4.640 (2.819)		4.710 (3.006)	
Married (%)	65.43 (47.09)		71.17 (44.86)		66.31 (47.16)		69.33 (45.69)	
In urban areas (%)	80.85 (39.56)		75.21 (43.27)		78.15 (41.46)		75.58 (43.09)	
Female share of paid work	0.320 (0.190)		0.545 (0.156)		0.493 (0.0259)		0.441 (0.179)	
Monthly household income	3801.0 (2263.2)		4235.2 (2278.0)		4670.1 (2304.6)		4468.9 (2385.1)	
Female share of housework	0.789 (0.133)		0.722 (0.146)		0.508 (0.102)		0.401 (0.167)	
Observations	230		522		282		269	

*Notes:* This table presents mean values of a set of individual and couple characteristics in the sample the period before the birth of the first child, separately for each couple type. Standard errors in parentheses.

Figure E.1: Distribution of the female share of paid and unpaid hours.



*Notes:* These graphs plot the distribution of the share of the household total housework and labor market hours carried out by women (a) before first child birth and (b) after.