# Online Appendix: The Effects of Institutional Gaps between Cohabitation and Marriage

## **OA** Empirical Analysis

#### OA.1 Data

National Longitudinal Survey of Youth 1997 (NLSY-97). This survey follows a representative cohort of 8,984 individuals born in the US between 1980 and 1984. I use data from the first 18 waves (1997-2017). Data were not collected in 2012, 2014 and 2016. I complement the public-use data with geocoded restricted-use data, which contains state identifiers. I use data on individual's marital status, reported in each survey round, and marital histories, which record the individuals' monthly marital status and partner's ID. I drop individuals for whom I cannot determine the marital status (or assign a partner) on a certain year, as well as individuals in same-sex relationships. I determine the year of birth of a child using birth histories.

I construct the maximum education attained by age 27, based on 4 groups: high school dropouts, high school, some college and college+. I use data on reported weekly worked hours to determine the individual's employment status. When this information is missing, I assign the hours corresponding to the 45th week of the annual employment histories. I classify individuals as employed if they report positive weekly hours and wages. Full-time work is defined as more than 37.5 weekly hours. I construct experience by adding the years in which individuals were employed, with full-time(part-time) years adding 1(0.5) years of experience. I express wages in 2015 real terms using the OCED CPI deflator.

Future of Families and Child Wellbeing Study (FFCWS): This survey follows a cohort of 4,898 children born in large US cities between 1998 and 2000, and their parents. The first survey was conducted at childbirth, and the following waves were implemented at ages 1, 3, 5, 9 and 15. I restrict the sample to singleton births, to women between

20 and 40 years old. The data over-samples children born to unmarried parents—both cohabiting or not living together at childbirth. In each wave I observe the marital status of the biological parents and whether they live in the same household, which I use to assign the marital status at childbirth. I classify parents as married (cohabiting) if they were married (cohabiting) at childbirth or marry (start cohabiting) within one year of the child's birth; otherwise I classify them as single-parents. I drop observations for which I cannot identify the marital status of parents at birth. I complement the public-use data with restricted-use data, which allows me to observe the child's city of birth. As with the NLSY-97, I classify parents in four education categories in each survey round. In each wave, I determine female labor supply based on whether they did any work for pay in the week prior to the survey. At age 1, I also use information on whether the mother went back to work after childbirth. Full-time work is defined as more than 37 weekly hours; and part-time as 5 to 37 weekly hours. I winsorize hours at the top, at 60 weekly hours. I construct measures of child outcomes as explained in Section 2.3 and Online Appendix OC.

Panel Study of Income Dynamics (PSID): This data started in 1968 following a representative sample of 5,000 families and their descendants. The survey was implemented annually until 1997, when it became bi-annual. The data allows me to identify the state of residence of each household, which allows me to assign to each household the institutions they face, as I explain in Appendix OA.5. I classify each head of household (and their partners) into three marital status: 'marriage', 'cohabitation' or 'no partner present'. While the survey started in 1968, cohabitation can only be identified starting in 1977. The marital status is constructed based on a different criteria for the period 1977-1982, and 1983 onward. For the first period (1977-1982), I construct the marital status by combining the *observed* marital status (based on which a cohabiting partner is treated as married) with the *legal* marital status of the household head, which differentiates between cohabitation and legal marriage. As before, I classify individuals in four education groups and obtain the maximum education attainment by taking the maximum education level among all years the individual appears in the sample.

## OA.2 Additional Tables and Figures

Figure O.1: Share of Households by Marital Status

Notes: PSID. The sample includes all household heads interviewed between 1983 and 2015, who are between 18 and 40 years old. "No partner present" includes single, divorced, and separated individuals.

	Married	Cohabiting	Single	M-C	C-S
Age at first birth	26.57	23.10	21.59	$3.47^{***}$	$1.51^{***}$
White	0.81	0.67	0.43	$0.14^{***}$	$0.24^{***}$
Black	0.07	0.14	0.39	$-0.08^{***}$	$-0.25^{***}$
Hispanic	0.12	0.18	0.17	$-0.06^{***}$	0.01
HS dropout	0.05	0.18	0.16	$-0.12^{***}$	0.01
HS graduate	0.16	0.30	0.30	$-0.14^{***}$	0.01
Some college	0.35	0.38	0.45	-0.03	$-0.07^{**}$
College plus	0.44	0.14	0.09	$0.30^{***}$	$0.05^{**}$

Table O.1: Demographic Characteristics by Marital Status at First Birth (NLSY-97)

Notes: the sample includes women from the NLSY-97 who had their first child between 1997 and 2017, in marriage, cohabitation, or not living with a partner. The column **M-C** shows the difference between "Married" and "Cohabiting" women, while **C-S** shows the difference between 'Cohabiting' and "Single". (\*\*\*p<0.01).





Notes: NLSY-97. The sample includes women between 22-35 years old. The 'share with children' reports the fraction of women with at least one child by a given age, independently of whether they co-reside with the child.

Figure O.3: Maternal Time in Childcare by Education, Labor Supply and Partner Presence



Notes: Data from the ATUS (2003-2016). The sample includes women aged 20-55 years old, who have at least one child be younger than 4. I split the sample in 4 groups, depending on female education (HS or less, or College +) and the presence of a partner. I assume 16 h available to spend in different activities, and compute share of time in childcare including both passive and active childcare activities.

Table O.2:	Behavioral	and (	Cognitive	Child	Human	Capital	by	Marital	Status	$\operatorname{at}$	Birth	l

	(1)	(2)	(3)	(4)
	Behavioral	Behavioral	Cognitive	Cognitive
	Age 9	Age $15$	Age 9	Age $15$
Cohabitation	-3.479	-3.069	-2.418	-4.402
at birth	(1.510)	(1.491)	(1.462)	(1.582)
Demographic variables	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	$1,\!818$	$1,\!881$	1,908	$1,\!638$
$R^2$	0.060	0.062	0.203	0.173

Notes: Data from the FFCWS (Waves 5 and 6). Each column reports the OLS  $\beta_1$  coefficient from Child Oucome<sub>i</sub> =  $\beta_0 + \beta_1$ Cohabitation at birth<sub>i</sub> +  $\gamma Z_i + \epsilon_i$ . "Child Outcome" corresponds to a given behavioral or cognitive human capital index at a certain age (either 9 or 15). "Cohabitation at birth" equals 1 if women were cohabiting at childbirth, with married as the omitted category. All columns control for mother's demographics (age, race, and education), household income, child's gender, the time the biological parents have known each other, whether they have other biological children together, and number of children in the household. I also control for the quality of the relationship, parental preferences, and family values indexes, described in Online Appendix OA.4. All regressions include fixed effects of the maternal state of residency. Robust standard errors in parentheses.

Figure O.4: Impact of Marital Status at Birth on Maternal Labor Supply



Notes: Data from the FFCWS (Waves 2 to 5). Sample include women who were married or cohabiting when the focal child was born. I report the OLS  $\beta_1$  coefficients from Mother's LFP<sub>i</sub> =  $\beta_0 + \beta_1$ Cohabitation at birth<sub>i</sub> +  $\gamma Z_i + \epsilon_i$ , where "Mother's LFP" equals 1 when the child's mother participates in the labor market. "Cohabitation at birth" and  $Z_i$  are defined as in Table O.2. All regressions include state fixed effects. I run the model at each age, and I report each coefficient separately. The bars denote the 95% confidence intervals of the  $\beta_1$  estimates.

	(1)	(2)	(3)
	Joint Bank	Pool Money	Own House
	Account	Together	at Birth
Cohabitation at birth	$-0.31^{***}$	$-0.24^{***}$	$-0.06^{***}$
	(0.03)	(0.02)	(0.02)
Demographic variables	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Mean Dependent Variable	0.57	0.57	0.35
Observations	1,497	2,444	2,763
B-squared	0 29	0 21	0 20
ri oquarou	0.25	0.21	0.20

Table O.3: Resource Pooling in Married and Cohabiting Couples

Notes: Data from the FFCWS (Wave 2). I report the OLS  $\beta_1$  coefficients from pooling<sub>is</sub> =  $\beta_0 + \beta_1$ Cohabitation at birth<sub>is</sub> +  $\gamma Z_{is} + \delta_s + \epsilon_{is}$ , where *pooling* equals 1 when the couple reports having a joint bank account (column 1) or pooling (at least partially) their money together (column 2). "Own House at Birth" takes value 1 when the parents report owning a house at the time of childbirth. The rest of the variables are defined as in Figure O.4. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table O.4: Formal Custody and Child Support Orders by Marital Status

	Divorced	Separated	p-value
Formal Custody (%)	0.62	0.35	0.000
Formal Child Support Order (%)	0.53	0.36	0.000

Notes: Formal custody data is obtained from the NLSY-97. Data on formal child support orders is from the FFCWS.

#### OA.3 Event Studies

For the event studies in Figure 2, I follow Kleven et al. (2019) and estimate:<sup>1</sup>

$$Y_{it}^g = \sum_{\tau=-5}^{\tau=10} \beta_\tau^g \mathbb{1}[\tau = t - e^i] + \sum_a \gamma_a^g \mathbb{1}[a = \text{age}_{it}] + \sum_e \gamma_e^g \mathbb{1}[e = \text{ed}_i] + \delta_t^g + \epsilon_{it}^g,$$

where  $Y_{it}$  captures either labor force participation or hours worked of individual *i* on year *t*. The coefficients of interest are the  $\beta_{\tau}$ s, where  $\tau$  captures the distance between year *t* and the year of birth of the first child,  $e^i$ . I control for women's age and education, as well as year fixed effects,  $\delta_t$ . My sample includes all women who had a first child between 2000 and 2017. I estimate the model separately for women who had their children under different marital status, *g*.

The main results are reported in Figure 2 in Section 2.3. In Figure O.5, I also show that the behavior of single mothers is similar to that of cohabiting women. The difference in labor force participation responses are attenuated when I control for individual fixed effects, while the effect on hours worked is robust to this specification. Finally, when I condition on the sample of woman who work positive hours, the effect on hours is smaller and some of the differences between married and cohabiting women are not significant, but the qualitative patterns are preserved.<sup>2</sup>

#### OA.4 Family Values, Parental Preferences, and Match Quality

I describe the construction of the three indexes discussed in Section 2.4: family values, parental preferences, and quality of the relationship. To construct the family values index, I follow Goussé et al. (2017) and perform Principal Component Analysis (PCA) on a set of variables associated with individuals' views on marriage, children, cohabitation, and gender roles from the FFCWS. I then retain the first principal component. To avoid

<sup>&</sup>lt;sup>1</sup>I classify women into marriage, cohabitation, or singlehood based on their marital status at first birth. I depart from Cortés and Pan (2023) and Kleven et al. (2019) who compare the outcomes of men and women irrespective of their marital status.

<sup>&</sup>lt;sup>2</sup>Results available upon request.

Figure O.5: Effect of First Child's Birth on Maternal Labor Market Outcomes: (a) LFP and (b) Hours Worked



Notes: This figure reproduces Figure 2 in Section 2.3 but additionally includes the regression outcomes for women who were single mothers at childbirth.

losing observations, I focus on mother's responses. The full set of variables and the factor loadings are reported in Panel A of Table O.5. The signs of the factors suggest that this index measures how traditional the household is, with higher scores indicating stronger adherence to traditional norms. I proceed analogously to construct indexes for parental preferences and quality of the relationship. The variables used in the construction of these indexes, as well as the corresponding factor loadings, are in panels B and C of Table O.5. The factor loadings suggest that a higher value of the indexes are related to the household having stronger parental preferences, and better quality of the relationship, respectively.

The results show that women married at childbirth are in more traditional households, have on average stronger parental preferences, and a higher match quality, compared to cohabiting or single mothers at childbirth. This suggests at least some degree of selection into marriage or cohabitation based on preferences and values. However, as shown in Figure O.4 and Table O.2, the differences in behaviors and outcomes between married and cohabiting couples are robust to controlling for these indexes.

#### Table O.5: Variables and Factor Loadings for Indices

#### Panel A: Family Values Index

Variables	Loading
Wife having a steady job important for successful marriage	-0.0973
Partners being of same race/ethnicity important for a successful marriage	0.2592
Both partners being of the same religion is important for a successful marriage	0.3212
Frequency of attending religious services	0.2627
Important decisions in the family should be made by the man	0.3476
Parents should stay together for the children even if they don't get along	0.3075
Husband earning the main income while the woman cares for the family is better	0.2603
It is more important for a man to spend time with family than to work a lot	0.1554
Fathers play a more important role in raising boys than in raising girls	0.1383
Marriage is better than just living together	0.4056
It is better for children if their parents are married	0.4004
Living together is just the same as being married	-0.1946

### Panel B: Parental Preferences Index

Variables	Loading
Father providing regular financial support to the child is important	0.2518
Father teaching the child about life is important	0.4645
Father providing direct care to the child is important	0.3752
Father showing love and affection to the child is important	0.4420
Father providing protection for the child is important	0.4592
Father serving as an authority figure and disciplining the child is important	0.4013
Thoughts about having an abortion upon discovering pregnancy	-0.0599
Father suggesting abortion	-0.0946

#### Panel C: Quality of Relationship Index

Variables	Loading
Visited friends in last month	0.3024
Went out for entertainment in last month	0.2698
Eat out at restaurant together in last month	0.3176
Help each other solve problems in last month	0.3353
Disagreements about money	-0.1352
Disagreements about spending time together	-0.1748
Disagreements about sex	-0.1252
Disagreements about pregnancy	-0.2395
Disagreements about drug or alcohol use	-0.1935
Partner is fair and willing to compromise	0.3399
Partner hits or slaps when angry	-0.1840
Partner expresses love and affection	0.3512
Partner insults or criticizes	-0.2212
Partner encourages and supports activities	0.3761

#### OA.5 The Effect of Policies on Marital Contracts' Choices

I provide details on the estimation of the effects of changes in family policy on marital contract choices. I consider three policies: a) the transition from a presumption of sole maternal custody to joint parental custody upon divorce, b) the simplification of the paternity establishment process for unmarried fathers, and c) the transition from mutual consent to unilateral divorce. The estimation uses data from the PSID, which contains information on cohabitation for a time period aligned with the policy changes. In each case, I estimate the effect of the policy change on the marital status, for a woman i, in state s, in year t:

Marital Status<sub>ist</sub> = 
$$\beta_0 + \beta_1 \text{Policy}_{st} + \gamma Z_{ist} + \delta_t + \delta_s + \epsilon_{ist}$$
. (O.1)

The indicator variable  $\text{Policy}_{st}$  equals 1 after the policy under consideration was implemented. The vector  $Z_{ist}$  includes a set of demographic controls, and  $\delta_t$  and  $\delta_s$  capture time and state fixed effects.

**Presumption of Joint Custody:** I first study the impact of switching from a presumption of sole maternal custody to a presumption of joint parental custody upon divorce. This increases the likelihood that child custody would be allocated jointly to both parents at divorce, while a presumption of sole maternal custody remains for unmarried parents. I report in Table O.6 the results of estimating the model in Equation (O.1) using the timing of the policy proposed by Brinig and Buckley (1997).

I restrict my sample to those women who are cohabiting in a given year t. My dependent variable equals 1 when a woman that is cohabiting in year t is married in year t + 1 or t + 2. The results show that after the policy change, the likelihood that a woman who is cohabiting at t marries by t + 1 or t + 2 falls by 8.8 (38%) and 18.1 (54%) percentage points, respectively. This suggests that joint custody makes marriage less attractive for women, as the value of the outside option (divorce) decreases, which in turn reduces the transition from cohabitation to marriage. These results are qualitatively aligned with the policy counterfactuals in Section 5.

	Married(t+1)	Married(t+1)	Married(t+2)	Married(t+2)
Transition to Presumption	-0.088*	-0.078	-0.181**	-0.238**
of Joint Custody	(0.050)	(0.106)	(0.072)	(0.134)
State and Year FE	Yes	Yes	Yes	Yes
State Linear Trends	No	Yes	No	Yes
Demographic Controls	Yes	Yes	Yes	Yes
Mean Dep. Var	0.231	0.231	0.339	0.339
Observations	796	796	772	772
R-squared	0.117	0.178	0.145	0.217

Table O.6: The impact of a presumption of joint custody on marital status

Notes: Data from the PSID (1977-1994). The sample is restricted to women between 20 and 40 years old who are in a cohabitation relationship in year t. Married<sub>t+1</sub> and Married<sub>t+2</sub> are indicator variables that take value 1 when the woman is married in period t+1 or t+2. Demographic controls include female age and education, number of children in the household, and whether there is a newborn at home. Robust standard errors clustered at the state level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Simplification of Paternity Establishment: During the 1990s the US Federal government mandated that states implement hospital-based policies to simplify the process of establishing paternity for unmarried parents. Using the policy variation proposed by Rossin-Slater (2017), I show in Table O.7 that the adoption of such policies increased by 9 percentage points (34%) the likelihood that an unmarried woman would be in a cohabiting relationship, decreasing the likelihood that they remain single. I find no significant effects on marriage rates of young women.

These results suggest that simplifying legal paternity makes cohabitation more appealing for those in the margin of forming a couple. For men, legal rights may increase their willingness to become involved in the child's (and mother's) life. Moreover, as legal paternity makes it easier for the mother to claim child support, singlehood becomes costlier for men. From a woman's perspective, legal paternity allows fathers to claim custody in courts if the parents do not live together, which may increase women's incentives to cohabit.

Unilateral Divorce: Finally, I follow the policy variation coded by (Voena, 2015) and (Gruber, 2004) to study the effects on marital choices of the transition from mutual consent (MCD) to unilateral divorce (UD), which allowed one party to file for divorce without spousal consent.<sup>3</sup> The results in Table O.8 suggest that UD adoption increased by

<sup>&</sup>lt;sup>3</sup>The literature has studied the effect of this transition on different outcomes (e.g., female labor supply and household's savings (Voena, 2015), household formation (Reynoso, 2024), children outcomes (Gruber, 2004) and divorce rates (Wolfers, 2006).

	Cohabit (t)	Married $(t)$	No Partner (t)
Simplified Paternity	0.090**	0.025	-0.115**
Establishment	(0.043)	(0.039)	(0.045)
State and Year FE	Yes	Yes	Yes
State Linear Trends	Yes	Yes	Yes
Demographic Controls	Yes	Yes	Yes
Mean Dep. Var	0.265	0.218	0.517
Observations	2,068	2,068	2,068
R-squared	0.104	0.108	0.115

Table O.7: Paternity establishment simplification and the choice of the marital status

Notes: Data from the PSID (1985-2003). The sample is restricted to women between 17 and 25 years old who were not married in period t - 1 (or period t - 2 after 1997, when the data becomes bi-annual). Cohabit<sub>t</sub>, Married<sub>t</sub> and No Partner<sub>t</sub> are indicator variables that take value 1 when the woman reports that marital status in year t. Demographic controls are the same as in Table O.6. Robust standard errors clustered at the state level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

2.9 percentage points (21%) the likelihood that a woman who was unmarried in t would be cohabiting in t + 1. This was offset by a similar reduction in marriage rates (column 4).<sup>4</sup> These results suggest that weakening the marital commitment makes marriage less attractive. For men, who are more likely to be the primary earners, divorce implies dividing their assets with their ex-spouses and a higher probability of paying child support. For women, divorce may imply reduced access to children, as states transition to a presumption of joint custody, and lower household income. As I show in Section 5, these mechanisms play an important role in shaping family formation choices also in my model.

	Cohabit $(t+1)$	Cohabit $(t+2)$	Married $(t+1)$	Married $(t+2)$
Unilateral Divorce	$0.045^{***}$	0.029**	-0.047	-0.037**
	(0.011)	(0.011)	(0.033)	(0.018)
State and Year FE	Yes	Yes	Yes	Yes
Demographic Controls	Yes	Yes	Yes	Yes
Mean Dep. Var	0.156	0.136	0.091	0.158
Observations	6,075	$5,\!936$	6,075	5,936
R-squared	0.074	0.071	0.024	0.045

Notes: Data from the PSID (1983-1997). The sample is restricted to women between 18 and 45 years old who were not married in period t. Cohabit\_{t+x} and Married\_{t+1} are indicator variables that take value 1 when a woman is either cohabiting or married in period t + x, with  $x \in \{1, 2\}$ . Demographic controls are the same as in Table O.6. Regressions include state and year fixed effects. Robust standard errors clustered at the state level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

<sup>&</sup>lt;sup>4</sup>A caveat in my analysis is that while most of the states transitioned from MCD to UD in the 1970s, cohabitation data starts in 1977. Therefore, identification is based on a handful of states changing divorce laws after 1977. However, my findings are consistent with recent work by Blasutto and Kozlov (2020), who use data from the National Survey of Family and the Household and exploit variation in divorce laws starting at an earlier period.

## **OB** Model Solution

#### **OB.1** The Life-Cycle Problem of Other Types of Households

Divorce, separation and singlehood are absorbing states. To simplify the notation, I use the subscript NP (No Partner) to refer to these scenarios.

A man who arrives single, separated or divorced to period t will choose how to allocate resources between private consumption and savings, after observing the realization of the income shock, to solve:

$$V_t^{m,NP}(\Omega_t^{NP}) = \max_{A_{t+1}} \left( u_t^{m,NP} + \beta E_t V_{t+1}^{m,NP}(\Omega_{t+1}^{m,NP} | \Omega_t^{m,NP}) \right)$$
(O.2)

subject to his budget constraint,  $x_t = A_t^m(1+r) - A_{t+1}^m + w_t^m P_t^m$ . Individuals who live alone lose economies of scale in consumption, and so,  $c_t = \pi^m x_t$ . For childless men, the problem is the same under the three scenarios (single, divorce or separated), since upon divorce and separation I assume no continuing relationship with the ex-partner. The only difference will be in the first period of separation or divorce, as explained in Section 3.2.

Instead, if a man had a child under marriage or cohabitation, the problem differs in two dimensions: First, child's human capital enters the utility function of a divorced man for a total of 4 periods—with the marginal utility over the child human capital captured by  $1 - \alpha^{D,f}$ —but does not enter the utility function of single or separated men, reflecting weaker parental rights/access to children. I allow this to change in counterfactuals in Section 5. Second, upon couple dissolution, fathers realize whether they will pay child support. This probability depends on whether they were married or cohabiting. If the father is a 'payer', this will reduce the total resources available for private consumption (until period 4 of the life of the child). If he is a 'non-payer', there will be no changes to their resource's availability.

The problem of the single, divorced or separated women is analogous and I omit the equation for brevity. For childless women, the only differences compared to men is that women endogenously choose their labor supply, and childless single women (but not those separated and divorced), may still have children in the future (until t = 4).

When women have children, the marginal utility of the public good will depend on the previous marital status (through  $\alpha^{D,f}$  and  $\alpha^{S,f}$ ). Moreover, if the father pays child support, separated and divorce women will receive an extra source of income in period t, proportional to the potential income of their ex-partners in t-1. Finally, women finance the consumption of children in the household. Then, the female consumption will be only a share  $\pi^{f,age^{K}}$  of the total expenditures,  $x_t = A_t^f(1+r) - A_{t+1}^f + w_t^f P_t^f$ , with  $\pi^m > \pi^{f,age^{K}=1} > \pi^{f,age^{K}>1}$ .

#### **OB.2** Choice Probabilities

The problem of a man of type  $s_m$  of choosing a household  $(s_f, g)$ , defined by (7) implies:

$$p_{s_m \to s_f,g} = Pr \bigg[ \overline{V}_m^{(s_m,s_f,g)} (\lambda^{(s_f,s_m,g)}) + \omega_m^{(s_m,s_f,g)} > \max(\overline{V}_m^{(s_m,\emptyset)} + \omega_m^{(s_m,\emptyset)}; \overline{V}_m^{(s_m,s_{f'},g)} (\lambda^{(s'_f,s_m,g')}) + \omega_m^{(s_m,s_{f'},g')} \quad \forall (f',g') \neq (f,g)) \bigg].$$

The distributional assumptions made in Section 3.3 allow me to obtain in closed-form the proportion of men of type  $s_m$  that would like to match with a  $s_f$ -woman under a contract g (or stay single),  $p_{s_m \to s_f,g}$ :

$$p_{s_m \to s_f,g} = \frac{\nu_{(s_m,s_f,g)}^m(\mathbf{\Lambda}^{s_m})}{m_{s_m}} = \frac{\exp(\overline{V}_m^{(s_m,\delta_f,g)}(\lambda^{(s_f,s_m,g)})/\sigma_\omega)}{\exp(\overline{V}_m^{(s_m,\emptyset)}/\sigma_\omega) + \sum_{\substack{s=s_f\\g=\{M,C\}}} \exp(\overline{V}_m^{(s,s_m,g)}(\lambda^{(s_f,s_m,g)})/\sigma_\omega)}, \quad (O.3)$$

where  $(\Lambda^{s_m})$  is the vector of  $g \times s_f (= 2 \times 2)$  Pareto weights associated with the different household's types a  $s_m$ -type man can form, and  $\nu^m_{(s_m,s_f,g)}(\Lambda^{s_m})$  is the measure of  $s_m$ -type men that demand to enter a contract g with a  $s_f$ -type woman. The analogous conditional choice probabilities for women define the supply of women to men in each sub-market. I omit these expressions here for brevity.

#### **OB.3** Numerical Algorithm to Solve the Equilibrium

I closely follow Gayle and Shephard (2019) and Reynoso (2024) to construct the algorithm to solve for the equilibrium Pareto weights  $\Lambda$ . Using the conditional choice probabilities from (O.3), the quasi-demand of a  $s_m$ -type man for a  $s_f$ -type woman under a contract g, and the quasi-demand of a  $s_f$ -type woman for a  $s_m$ -type man under a contract g can be written, respectively, as:

$$\sigma_{\omega} \times \left[\ln(\nu_{(s_m,s_f,g)}^m(\lambda^{s_f,s_m,g})) - \ln(\nu_{(s_m,\emptyset)}^m)\right] = \overline{V}_{(s_m,s_f,g)}^m - \overline{V}_{(s_m,\emptyset)}^m. \tag{O.4}$$

$$\sigma_{\omega} \times \left[\ln(\nu_{(s_f, s_m, g)}^f(\lambda^{s_f, s_m, g})) - \ln(\nu_{(s_f, \emptyset)}^f)\right] = \overline{V}_{(s_f, s_m, g)}^f - \overline{V}_{(s_f, \emptyset)}^f. \tag{O.5}$$

The numerical algorithm to solve for the equilibrium proceeds as follows:

- 1. Propose an initial guess for the measure of men of type  $s_m$  and women of type  $s_f$  that choose to stay single,  $\nu^m_{(s_m,\emptyset)}$  and  $\nu^f_{(s_f,\emptyset)}$ .
- 2. Take differences between (0.4) and (0.5), and impose market clearing:

$$\sigma_{\omega} \times [\ln(\nu_{(s_f,\emptyset)}^f) - \ln(\nu_{(s_m,\emptyset)}^m)] = [\overline{V}_{(s_m,s_f,g)}^m(\lambda^{s_f,s_m,g}) - \overline{V}_{(s_m,\emptyset)}^m] - [\overline{V}_{(s_f,s_m,g)}^f(\lambda^{s_f,s_m,g}) - \overline{V}_{(s_f,\emptyset)}^f]. \quad (O.6)$$

This leads to a system of  $s_f \times s_m \times 2$  equations, to solve for  $s_f \times s_m \times 2$  Pareto weights.

- 3. Find the matrix of Pareto weights  $\Lambda$  that is the root of the system of  $s_f \times s_m \times 2$ univariate equations defined in Step 2.
- 4. Use the choice probabilities from (O.3), and the analogous for women, to compute the measures of singles consistent with the Pareto weights  $\Lambda$  obtained in Step 3.
- 5. Repeat Step 2 and Step 3 until the measures of singles converge. The equilibrium Pareto weights will be given by the matrix  $\Lambda$  at which the algorithm stops.

Following Gayle and Shephard (2019), when implementing the algorithm to solve for the model in counterfactuals I first evaluate, for each type of men and women, the expected values of forming the different household types on a grid of 50 Pareto weights. In this way, I avoid computing the expected values as part of the fixed-point algorithm, as this is the most computationally expensive part of it.

## **OC** Estimation

#### OC.1 Estimation Outside the Model

The parameters set from the literature or from external sources are reported in Table O.9.

Parameter		Value	Source
Discount factor	$\beta$	0.98	Attanasio et al. (2008)
Interest rate	r	0.015	Attanasio et al. $(2008)$
Consumption scale (singles)	$\pi^S$	0.61	Reynoso $(2024)$
Consumption scale (small kid)	$\pi^{age^K=1}$	0.88	Muellbauer (1979)
Consumption scale (older kid)	$\pi^{age^K=2}$	0.81	Muellbauer (1979)
Divorce costs	DC	\$10,000	Rosen's Law Firm calculation
Child support note	CS	20%	Child Support Guideline Models:
Clind support rate			Percentage of Obligor's Income (Texas)
Length of life-cycle	Т	7	-
Decision period	$\mathbf{t}$	4	_

 Table O.9: Preset Parameters

Notes: I use the Rosen's Law Firm attorney fee calculator (www.rosen.com/feecalculator) to approximate the cost of divorce. To simplify the child support guidelines, I use the *Percentage of Obligor's Income* rule, in which payments are a share of the income of the non-resident parent. I use the rate from Texas, the largest state (in population) that follows this rule. I set the length of the life-cycle to 7 periods, of 4 years each. Women can only have children until t = 4.

Wage processes: For a man of type i, of age t, in state s, I estimate

$$\log(w_{its}) = \beta_0^{s_m} + \beta_1^{s_m} Age_{its} + \beta_2^{s_m} Age_{its}^2 + \delta_y^{s_m} + \delta_s^{s_m} + \epsilon_{its}.$$
 (O.7)

I allow the coefficients in (O.7) to vary by  $s_m$ . Time and state fixed effects are captured by  $\delta_y$  and  $\delta_s$ . The results of estimating (O.7) are in columns 1 and 2 of Table O.10.

	Men: ln He	ourly Wages	Women: In A	nnual Earnings
	Low Education	High Education	Low Education	High Education
Age	0.107***	0.202***		
	(0.027)	(0.039)		
$Age^2$	$-0.009^{*}$	$-0.016^{**}$		
	(0.005)	(0.006)		
Exp			0.344***	$0.468^{***}$
			(0.050)	(0.072)
$Exp^2$			$-0.032^{***}$	$-0.075^{***}$
			(0.006)	(0.011)
State & Year FE	Yes	Yes	Yes	Yes
Observations	$10,\!525$	$6,\!134$	10,741	$10,\!843$
R-squared	0.089	0.191	0.196	0.250

Table O.10: Wage Process Estimation

Notes: Data from the NLSY-97. The dependent variable is the natural logarithm of hourly wages for men and of annual earnings for women, expressed as 2015 prices. I trimmed the bottom and top 1% of the distribution of hourly wages and earnings. Individuals are split between 'Low' and 'High' education groups, based on their highest education attainment. For men, I pool individuals aged 23 to 37 years old, who I observe working full time (between 37.5 and 70 h), and with no missing information on wages. In line with the model, Age is a categorical variable for different intervals of the life cycle: 23-25, 26-29, 30-33 and 34-37. For women, variable definitions and sample restrictions are as in Table 0.11, but I also control for the residuals from the first-stage regressions in columns (1) and (2) of Table 0.11 and the Inverse Mills Ratio from the participation model (columns (3) and (4) of Table 0.11). Standard errors clustered at the state level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

For a woman j, of age t, in state s, I estimate

$$\log(w_{jts}) = \beta_0^{s_f} + \beta_1^{s_f} Exp_{jts} + \beta_2^{s_f} Exp_{jts}^2 + \Gamma^{s_f} X_{jst} + \delta_y^{s_f} + \delta_s^{s_f} + \epsilon_{jts}.$$
 (O.8)

As in the case of men, I allow the parameters to depend on  $s_f$ . In this model, Exp captures the cumulative experience of women from the beginning of the life cycle (age 23). The vector X controls for the marital status of the individual, and  $\delta_y$  and  $\delta_s$  capture year and state fixed effects. As discussed in Section 4.1, the identification of the effect of experience on female wages presents two main challenges. First, female experience depends on endogenous choices. Second, the distribution of observed wages is censored by endogenous selection into participation (Heckman, 1979). To address these concerns, I follow a two-step control function approach, as in Reynoso (2024) and Low et al. (2022).

**First Step:** In a first step, I estimate two different models. I estimate by OLS a model for experience (Exp), using age and the presence of children as excluded instruments, and

controlling for the women's marital status:

$$Exp_{jts} = \alpha_0^{s_f} + \alpha_1^{s_f} Age_{jts} + \alpha_2^{s_f} Age_{jts}^2 + \Gamma^{s_f} X_{jst} + \delta_t^{s_f} + \delta_s^{s_f} + \epsilon_{jts}, \tag{O.9}$$

where X is a vector including the total number of children and the woman's marital status. Year and state fixed effects are captured by  $\delta_t$  and  $\delta_s$ , respectively.

I report the results in columns (1) and (2) of Table O.11. As expected, while experience increases with age, the presence of the children is negatively associated with cumulative experience, particularly for low educated women.

I also estimate a model of labor market participation, using variation across states and over time in the generosity of the welfare system interacted with the presence of young children as an additional excluded instrument:<sup>5</sup>

$$Part_{jts} = \psi_0^{s_f} + \psi_1^{s_f} Age_{jts} + \psi_2^{s_f} Age_{jts}^2 + \psi_3^{s_f} \text{Welfare}_{(j)ts} + \psi_4^{s_f} \text{Welfare}_{ts} \times \text{Small}_{jts} + \Gamma^{s_f} X_{jst} + \delta_t^{s_f} + \delta_s^{s_f} + \epsilon_{jts}. \quad (O.10)$$

In this model, *Part* is an indicator that equals 1 when a woman work strictly positive hours; Welfare<sub>ts</sub> captures the maximum welfare benefits for a household with two children in state s in year t; and Small<sub>jst</sub> takes value 1 when there is a child aged 4 or younger in the household. The vector X includes the total number of children and the woman's marital status. Year and state fixed effects are captured by  $\delta_t$  and  $\delta_s$ .

I use a probit model to estimate (O.10). The results in columns (3) and (4) of Table O.11 suggest that for mothers of small children, a more generous welfare system has negative effects on labor force participation.

Second Step: I then estimate model (O.8), including as additional controls the residuals from the first step estimations (models (O.9) and (O.10)). For the participation model I construct the Inverse Mills Ratio (IMR). The results are in columns 3 and 4 of Table O.10.

<sup>&</sup>lt;sup>5</sup>As discussed in Section OA.1, I use NLSY-97 geocoded restricted-use data to match respondents to their state of residency in period t, which allows me to assign them their welfare rules. I am grateful to Luigi Pistaferri who generously shared the welfare data.

	Experien	ice (OLS)	Participation (Probit)		
	(1)	(2)	(3)	(4)	
	Low Education	High Education	Low Education	High Education	
Age	$0.394^{***}$	$0.405^{***}$	0.115	0.235	
	(0.040)	(0.029)	(0.100)	(0.155)	
$Age^2$	0.001	0.002	-0.026	-0.018	
	(0.010)	(0.008)	(0.017)	(0.025)	
Number of Children	-0.108***	-0.016	-0.211***	-0.293***	
	(0.015)	(0.018)	(0.021)	(0.033)	
Welfare $(1,000s)$			0.098	0.105	
			(0.343)	(0.732)	
Welfare $(1,000s) \times \text{Small}$			-0.249**	-0.239*	
			(0.099)	(0.128)	
State and Year FE	Yes	Yes	Yes	Yes	
Observations	15,727	15,726	$15,\!624$	$15,\!526$	
R-squared	0.373	0.542			

Table O.11: Regression Models of Female Experience and Participation

Notes: NLSY-97. The dependent variable in columns (1) and (2) is "Exp", which adds the total years a woman participated in the labor market and divides them by 4, since 1 year corresponds to 1/4 of a period in the model. Part-time work is considered as half a year. The dependent variable in columns (3) and (4) is "Part", an indicator variable that takes value 1 when women work strictly positive hours. "Age" is constructed as explained in Table O.10. "Welfare<sub>st</sub>" represents the maximum welfare benefits for a household with two children in state s and year t. "Small" equals 1 when there is a child younger than 4 years old in the household. All regressions control for marital status and number of children. I pool data on women aged 23 to 37 years old. I drop women who report positive wages but not employment, as well as observations for women who work less than 10 or more than 60 weekly hours. I restrict the sample to women with at most 3 children and at most 18 years of experience. Individuals are split into two education groups based on their main education attainment. Standard errors clustered at the state level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Production Function of Child Human Capital:** I estimate the production function of child human capital based on Equation (3) as

$$\log(Q_{i,t+1}) = \rho_0^{PP} + \rho_1^{PP} \times \operatorname{Small}_{i,t} + \rho_2^{PP} \log(I_{i,t}) + \rho_3^{PP} \log(I_{i,t}) \times \operatorname{Small}_{i,t} + \rho_4^{PP} \log(Q_{i,t}) + \rho_5^{PP,\operatorname{age}^K} \log(Q_{i,t}) \times \operatorname{Small}_{i,t} + \gamma^{s_f} \times \gamma^{s_m} + \epsilon_{i,t}, \quad (O.11)$$

where  $I_t$  denotes maternal time investments, and  $Q_t$  measures past human capital. The variable "Small<sub>t</sub>" is an indicator that equals 1 when the child is less than 5;  $\gamma^{s_f}$  and  $\gamma^{s_m}$  capture the education level of the child's parents.

I do not directly observe maternal time investments,  $I_t$ , in the FFCWS data. Then, I use auxiliary data from the American Time Use Survey (ATUS) to estimate the share of time mothers spend in childcare. I assume that women allocate one unit of time (16 hours) between working in the market, childcare, and other activities. Childcare defines all activities directly related to active or passive time with children (e.g., playing or reading, bathing, driving a child to school, etc.), but excluding time in which women perform activities *while* taking care of children (e.g., cooking or doing dishes.) Both in the FFCWS and the ATUS I first assign women into cells, defined by the combination of the woman's education, working status, presence of a partner, and age group of the youngest child.<sup>6</sup> Second, within each cell, I obtain in the ATUS 10 deciles of the distribution of the time women allocate to childcare.

Third, I use data from the FFCWS related to the activities that mothers do with their children (reported in Table O.12) and construct a latent variable of maternal time investments. For each women, I aggregate the responses to these questions, and use this aggregate as a proxy of maternal time investments. Within each cell in the FFCWS, I create 10 deciles of the distribution of this latent variable (where I interpret a lower quantile as lower maternal time investment). Finally, at the cell level, I map these 10 deciles to the corresponding decile of the share of time in childcare from the ATUS.

In the estimation, I use data for children aged 1 to 9 (wave 2 to 5 of the FFCWS). As in Section 2.3, I construct two different measures of human capital—behavioral and cognitive—at each age (except age 1). I report the variables used in the construction of each measure in Table O.14.<sup>7</sup> I use behavioral measures for ages 1 and 3 (corresponding to the "Small" stage in my regressions), and cognitive measures for ages 5 and 9. Even when I use both behavioral and cognitive data for the estimations, I maintain consistency between periods t and t+1. This implies that, if I use behavioral data for the independent variable  $Q_{t=2}$ , I also use behavioral data for the independent variable  $Q_{t=3}$  (but also for the next round, I may use cognitive variables for the independent variable  $Q_{t=3}$  (but also for

<sup>&</sup>lt;sup>6</sup>In the ATUS, I define the following age categories: (1-2), (3-4), (5-7), (8-10), and (11-16). In the FFCWS, I focus on the age of the focal child in each wave of the survey. Consistently with the model, I classify women in three potential working status: no working (< 5 weekly hours), part-time ( $5 \le$ hours < 37), and full-time ( $37 \le$ hours < 60).

<sup>&</sup>lt;sup>7</sup>To construct the behavioral child human capital measures, I add the responses to the questions from column 2, and I obtain percentiles based on these aggregate measures. For the cognitive measures, I compute the distribution of the test scores from column 3, and obtain the mean of the percentiles across tests in each wave.

Wave	Measures of maternal investments
	Days per week mom sings songs or rhymes to child
Wave 2	Days per week mom read stories to child
(Age 1)	Days per week mom tell stories to child
	Days per week mom plays inside with toys (such as blocks) with child
Wave 3	Samo an Waya 2
(Age 3)	Same as wave 2
Warra 4	Same as Wave 2 and 3, but additionally:
$(\Lambda ro 5)$	Days per week mom plays outside in the yard or park with child
(Age 5)	Days per week mom takes child on outing or special activity
	Frequency play sports or outdoor activities with child in past month
Wara 5	Frequency read or talk about books with child in past month
(A = 0)	Frequency participated in indoor activities with child in past month
(Age 9)	Frequency talked about current events with child in past month
	Frequency you talked about child's day with child in past month

Table O.12: Measures of Maternal Investments at Different Ages

Notes: Data from the FFCWS. All variables are categorical, taking values 0 to 7 in waves 2 to 4, and values 1 to 5 in wave 5.

the dependent variable  $Q_{t+1=4}$ ). I estimate (O.11) separately for two-parent (married and cohabiting) vs single-mother households, defined at each wave, based on the relationship between the child's biological parents. I report the results in Table O.13.

Male Income Shock: I estimate the Markov process of the unemployment shock using data from the NLSY-97. To do this, I construct the employment status of each man in a period t (corresponding to 4 years in the data) by averaging their employment status over the years I observe them in the data in that period. I classify a man as receiving a negative income shock if they have been unemployed/out of the labor force at least half of the period. I report in column 1 of Table O.15 the probability that a man receives an unemployment shock between the ages of 22-25, corresponding to the first period of the life-cycle in the model (t = 1). Then, for periods t = 2 to t = 4, I report the probability of receiving a shock in period t, conditional on their t - 1 status. For  $t \ge 5$ , I assume the same transition probabilities as in period t = 4.

**Fertility Process:** I estimate in the NLSY-97 the probability that a woman has her first child at a given age, conditional on her marriage market marital status and education (as described in Online Appendix OC.2). I start by computing the probability of having

Sample:	Both parents	Only mother
	Child Human Capital (t+1)	Child Human Capital (t+1)
$\log(\text{Child Human Capital }(t)) \times \text{Small}$	-0.229***	-0.130*
	(0.071)	(0.069)
$\log(\text{Child Human Capital }(t))$	$0.549^{***}$	$0.475^{***}$
	(0.066)	(0.062)
$\log(\text{Maternal Time }(\mathbf{t}))(I_t) \times \text{Small}$	0.102**	0.142**
	(0.043)	(0.068)
$\log(\text{Maternal Time }(\mathbf{t}))(I_t)$	0.017	-0.008
	(0.036)	(0.056)
Mother Low Ed., Father High Ed.	0.062	
	(0.055)	
Mother High Ed., Father Low Ed.	0.044	
	(0.051)	
Mother High Ed., Father High Ed.	$0.149^{***}$	
	(0.039)	
Mother High Ed. (no partner)		$0.145^{***}$
		(0.041)
Small Child $(< 4 \text{ yo})$	1.071***	0.757***
	(0.320)	(0.285)
Observations	2,522	1,599
R-squared	0.152	0.172
Sample Child	Age 1 to $9$	Age 1 to $9$
Human Capital Measure	Cognitive and Behavioral	Cognitive and Behavioral

Table O.13: Production function of child's human capital

Notes: Data from the FFCWS (Waves 2 to 5). I pool data from rounds 2 to 5, where "Small" is associated with children younger than 3 years old. "Low Education" and "High Education" are defined based on whether the parent has a high school degree or less, or some college or more, respectively. The sample I is restricted to those children born when the mother was between 20 and 40 years old, and for which the focal child is the first, second or third biological child of the woman. Robust standard errors in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

the first child in period t = 1 (age 20 to 25). I then compute, for each group, the transition from being childless in t - 1 to having the first child in period t, for periods 2, 3 and 4 (ages 26-29, 30-33 and 34-37), conditional on the marital status in the marriage market and at the end of the previous period. Since my data is truncated at age 37, I assume that fertility choices are completed by then. The estimated probabilities are in Figure O.6.

**Probability of Child Support by Marital Status:** I estimate on the FFCWS the share of divorced and separated fathers with a child support order in place by age 9, conditioning marital status at childbirth and maternal education. I then multiply these shares by the probability that the father does not owe child support payments. These probabilities are reported in Table O.16.

Table O.14: Measures of Child Human Capital at each Survey Wave (FFCWS)

	Behavioral	Cognitive
Wave 2 (1 yo)	Child tends to be shy (reversed), often fusses and cries (reversed), very sociable, easily	No measure
	upset (reversed), reacts strongly when upset (reversed), friendly with strangers	
Wave 3 (3 yo)	Child acts too young for age; avoids looking others in the eye; too dependent; defiant;	PPVT
	disobedient; demands must be met immediately; does not answer when people talk to	
	him/her; does not get along with other children; does not know how to have fun; does	
	not seem to feel guilty after misbehaving; easily frustrated; easily jealous; feelings	
	are easily hurt; gets in many fights; too upset when separated from parents; hits	
	others; has angry moods; looks unhappy without good reason; overtired; screams	
	a lot; punishment does not change his/her behavior; refuses to play active games;	
	seems unresponsive to affection; self-conscious or easily embarrassed; selfish or will	
	not share, too shy; shows little affection towards people; shows little interest in things	
	around him/her; stubborn; sullen or irritable; has sudden changes in mood or feelings;	
	has temper tantrums or hot temper; too fearful or anxious; uncooperative; under-	
	active; slow-moving or lacks energy; unhappy, sad or depressed; unusually loud; wants	
	a lot of attention; whiny; withdrawn	
Wave 4 (5 yo)	Child cannot concentrate; cannot sit still and is restless/hyperactive; clings to adults	Letter–Word Test,
	or is too dependent; cries a lot; disobedient; does not get along with other children;	PPVT
	does not seem to feel guilty after misbehaving; has trouble getting to sleep, nervous;	
	high-strung or tense, has speech problem; stubborn, sullen or irritable; has sudden	
	changes in mood or feelings; has temper tantrums or hot temper, too fearful or	
	anxious; is unhappy, sad or depressed; wants a lot of attention; withdrawn or does	
	not get involved with others; feels worthless or inferior; acts too young for his/her	
	age	
Wave 5 (9yo)	Same as 5 yrs ("Child is disobedient" split between at home and at school)	Digit Span, PPVT,
		WJ9 (Reading),
		WJ 10 (Math)
Wave 6 (15 yo))	Same as 5 and 9 yrs but excluding: does not get along with other children; has a	School grades (A–
	speech problem; has sudden changes in mood or feelings; wants a lot of attention; is	D) in Math, Read-
	withdrawn; feels worthless or inferior; acts too young for his/her age; plus: Suspended	ing, History, Sci-
	from school	ence; Ever failed a
		class
۱ <u>ــــــــــــــــــــــــــــــــــــ</u>		

#### Table O.15: Male Income Shock Process

	Low Education				High Education			
	t = 1	t = 2	t = 3	t = 4	t = 1	t = 2	t = 3	t = 4
Negative income shock in $t-1$	0.137	0.531	0.529	0.603	0.115	0.324	0.327	0.531
No income shock in $t-1$	0.137	0.078	0.044	0.034	0.115	0.043	0.015	0.018

Notes: Each period t corresponds to 4-years period of the individual's life, with t = 1[22, 25], t = 2 = [26, 29], t = 3 = [30, 33] and t = 4 = [34-37].

Table	O.16:	Probability	of Re	ceiving	Child	Support	by	<sup>·</sup> Maternal	Education
						<b>. . .</b>			

	Low Educated Mother	High Educated Mother
Divorce	0.231	0.297
Separatation	0.104	0.155

Notes: The sample includes parents who were married or cohabiting at childbirth, but are divorced or separated by the time the child is 9 years old.





Notes: This figure reports the probability of having a first birth in period t, conditional on not having a child in t - 1. I construct these probabilities by age interval in the data, corresponding to periods 1 to 4 in the model.

#### OC.2 Sample Selection and Definition of Household Types

Here I explain the construction of the estimation sample, how I assign women to different marital status, and how I determine their relevant partner in the marriage market. I focus on the random sample of NLSY-97 female respondents, which consists of 3,289 individuals and a total of 68,633 observations. I further restrict my sample to women who are at least 20 years old, have at most two children by the last wave, and for whom I can assign a marital status and a partner (if they are not singles) at first birth. I drop women who had their first child before the age of 20, or that I ever observe in a same-sex relationship.

Marital Status in the Marriage Market: Since in my model there is only a oneshot marriage market at the beginning of the individual's life cycle, I replicate this in the data and assign individuals to a *unique* marital status: 'marriage', 'cohabitation' and 'singlehood'. Since I focus on understanding the decisions and consequences of having children under different family arrangements, this assignment is driven by the marital status at first birth. The underlying assumption is that women completed their fertility by the last survey (33 to 37 years old).<sup>8</sup> I explain my choices in detail below.

1. For women who are childless by the last wave (2017), I assign them to 'marriage' if they were ever married, to 'cohabitation' if they were never married but they ever

<sup>&</sup>lt;sup>8</sup>This may be a strong assumption for younger women. However, when I restrict my attention to the older cohorts (born between 1980/81) the share of childless women only falls from 31% to 28% between ages 34 and 37, alleviating concerns of incorrect classifications given my assumption of complete fertility.

cohabited, and to 'singlehood' if I never observe them living with a partner.

- 2. For women who had only one child by the last wave I assign them to the marital status under which they had this child, independently of whether they had other marital status or were matched to other partners. If they did not have a partner at the time of the first birth, I assign them to 'singlehood'. However, if after having the child they started to cohabit (marry) with the child's father, I assign them to 'cohabitation' ('marriage').
- 3. For women who had two children by the last wave, I focus on the marital status at first birth, and follow the same assignment rules described above.<sup>9</sup>

Assignment to Relevant Partner: If a woman was assigned to 'singlehood', she has no partner assigned. If a woman was assigned to 'marriage', I assign to her the father of her first child (if she has a child), or her first spouse (if childless). I proceed in the same way for women assigned to 'cohabitation.<sup>10</sup> I then assign to each male partner their relevant characteristics (age and education). I drop couples in which the age difference between partners more than 7 years, or for which I cannot determine either partner's education.

My sample of men consist of the partners of these women, and the single male from the NLSY-97.<sup>11</sup> I assign men to 'singlehood' using the same criteria that I followed for women. However, I then draw a random sample of single men, to have the same measure of men and women in the marriage market—which gives me a common denominator to compute the matching frequencies based on either sample. Then, my sample consists of all couples (married or cohabiting), and an equal number of single men and women, where the

 $<sup>^{9}</sup>$ My sample is robust to dropping those women who had a longer relationship with the father of the second child than with the father of the first child, which only account for 5% of the cases (only 2% when I condition on not being single at first birth).

<sup>&</sup>lt;sup>10</sup>As a robustness, for childless women, I construct the tenure of the first two marriages (or first two cohabiting relationships). I consider as the relevant partner the one with whom they were married or cohabiting for longer. The correlation between the partner I assign using each of these approaches is 0.97. However, since my data is truncated (at ages 33-37), the second marriage/cohabitation may eventually become longer. Unfortunately, my data does not allow me to explore this further.

<sup>&</sup>lt;sup>11</sup>If I construct the sample of male independently from the sample of women considering the male NLSY-97 respondents and following the same guidelines than for women, marriage would be relatively lower (41%), while cohabitation and singlehood would be higher (26% and 33% respectively).

random sample of single men preserves the education distribution among single men from the unrestricted sample.

My final sample consists of 1,837 women: 48% assigned to 'marriage', 24% to 'cohabitation', and 28% to 'singlehood' in the marriage market. I consider two education groups, 'low'—less than 14 years of education—and 'high'—those with more than 14 years of schooling.<sup>12</sup> In my sample, 45% of women are classified as 'low educated' and 55% as 'high educated'. For men, these shares are 47% and 53%, respectively.<sup>13</sup>

#### OC.3 Moments

I explain here the construction in the data and the model of the 32 moments that I target in the internal estimation. All data moments are constructed using the NLSY-97 estimation sample described in Appendix OC.2.

Female Labor Supply (M1-M6): I construct moments on female labor supply, conditional on education and presence of a 'small' child in the household ( $age^k < 4$  in the data, and in period of child's arrival in the model). M1 to M4 compute female labor force participation (part-time or full-time) as  $\mathbb{E}\left[P_f > 0 | age_t^k$ , Partner,  $s^f\right]$ . For M1 and M2, I consider the sample of low and high educated women with no small children, regardless of the presence of a partner; M3 and M4 focus on the sample of low and high educated women with small children and living with a partner, irrespective of whether they are married or cohabiting. M5 and M6 compute the share of full time work conditional on participation for the sample of low and high educated women with small children, who do not live with a partner (single mothers, divorced or separated)—as  $\mathbb{E}\left[P_f = 1|P_f > 0, age_t^k = 1, Partner_t = 0, s^f\right]$ .

To construct the data moments, I pool observations from different survey waves. At each wave, I consider that a woman lives with a partner if she was assigned to marriage

<sup>&</sup>lt;sup>12</sup>Considering three education groups—as has been done in the literature—would decrease the share of observations in each household type, as I would have 24 types of households, instead of 12. Morover, it would increase from 8 to 18 the number of Pareto Weights I have to solve for, heavility increasing the computational burden of the problem.

<sup>&</sup>lt;sup>13</sup>The male sample consisting of the male partners of the NLSY-97 women is on average more educated than the sample of NLSY-97 men that I would obtain if I follow the same criteria I followed for women.

or cohabitation in the marriage market and did not separate/divorce by the corresponding survey wave. I consider them as not living with a partner if they were either assigned to singlehood, or they are divorced/separated by the time I observe them in the data.<sup>14</sup> For consistency with the data, I construct the model moments using the first 4 periods of the life-cycle. These moments are the weighted average of the labor supply of women in different couple-types, conditional on own education—where weights are given by the equilibrium choice probabilities.

Divorce and Separation Rates (M7-M8): I compute the probability of divorce or separation for couples with children, by t = 4:  $Pr(D_{t=4}|k_{t=4} = 1, g = M)$  or  $Pr(S_{t=4}|k_{t=4} = 1, g = C)$ . I I construct the data moments by considering whether women got divorced or separated by the last wave they appear in the survey, independently of when the divorce/separation occurred. I restrict my attention to the older cohorts (aged 36-37 by 2017), for consistency with the timing of the model. I also condition on whether they ever had a child, independently of the age of the child at the time of the last wave or at the time of the divorce/separation. Analogously, I construct these moments in the model as the probability of divorce or separation by t = 4, for women who married or cohabited in the marriage market, and who ever had a child.

Correlation between Partner's Types (M9): Both in the data and the model, I compute  $corr(s_f, s_m)$ , including all couples that marry or cohabit in the marriage market.

Matching Frequencies for Married and Cohabiting Couples (M10-M25): In the data, I compute the share of women in each couple type (by education,  $(s_f, s_m)$  and marital contract, g), using the total number of women as the denominator:  $\frac{\#CoupleType}{\#F}$ .<sup>15</sup> In the model, I construct M10-M17 (M18-M25) using the female (male) education distributions and the female (male) choice probabilities of choosing a certain contract-partner

 $<sup>^{14}</sup>$ For consistency with the model, I assign individuals to a given marriage market marital status from the first period I observe them in the data until they divorce/separate, independently of whether they have *already* married or started cohabiting. The data moments are robust to focusing only in periods in which the partner is actually present in the household.

<sup>&</sup>lt;sup>15</sup>Since my sample consists of the same number of men and women (see Appendix OC.2), the data matching frequencies constructed using the total number of men or women coincide, so I only construct one set of data moments M10-M17, and repeat them to construct M18-M25.

combination—where the choice probabilities are defined in Appendix OB.2. Note that when the marriage market is not in equilibrium, the model matching patterns constructed based on female choices (M10-M17) and male choices (M18-M25) will not coincide (even when the data moments are the same in both cases).

Share of Singles (M26-M29): I compute the share of single women and men, by education, analogously to how I constructed M10-M25:  $\frac{\#SingleF(s_f)}{\#F}, \frac{\#SingleM(s_m)}{\#M}$ .

Aggregate Share of Women by Marital Status (M30-M32): I construct these moments by aggregating the share of women in the data and in the model that are married, cohabiting, or single from the marriage market perspective, irrespective of their own education and the education of their partners,  $\frac{\#MarriedF}{\#F}$ ,  $\frac{\#CohabitingF}{\#F}$   $\frac{\#SingleF}{\#F}$ .

## **OD** Model Estimation

#### OD.1 Model Fit

Parameter	Symbol	Estimate	s.e.	Sensitivity
Fem. Dis. of Work (No small, low ed., PP)	$\psi^{(Low,NC)}$	1.201	0.018	M1, $HLM^f$ , $HHC^f$ (54%)
Fem. Dis. of Work (No small, high ed., PP)	$\psi^{(High,NC)}$	0.121	0.004	M2, $HLM^f$ , $LHM^m$ (81%)
Fem. Dis. of Work (Small, low ed., PP)	$\psi^{(Low,C,P)}$	-0.017	0.767	$LHM^{f}, LLC^{f}, HHC^{f}$ (45%)
Fem. Dis. of Work (Small, high ed., PP)	$\psi^{(High,C,P)}$	-0.476	0.017	M4, $HLM^{f}$ , M9 (71%)
Fem. Dis. of Work (Small, low ed., NP)	$\psi^{(Low,C,NP)}$	1.092	0.037	M1, $HLM^f$ , $HHC^f$ (34%)
Fem. Dis. of Work (Small, high ed., NP)	$\psi^{(High,C,NP)}$	0.995	0.009	M6, $HLM^{f}$ , $HHC^{f}$ (65%)
Match Quality Variance	$\sigma_{\xi}$	9.717	0.172	M1, $LHM^{f}$ , M3 (47%)
MgU over Child HK at Divorce (Female)	$\alpha^{D,f}$	0.750	0.016	$HLM^{f}, HHC^{f}, HLC^{f}$ (36%)
Scale of Marriage Market Pref. Shock	$\sigma_{\omega}$	3.841	0.172	$HLC^{f}, LHM^{m}, HHC^{f}$ (29%)
Taste for Singlehood (female, low ed.)	$\theta_S^{f,Low}$	4.042	0.061	$LHM^f, HLM^f, LS^f$ (45%)
Taste for Singlehood (female, high ed.)	$ heta_S^{f,High}$	5.611	0.049	$HS^f, HHC^f, HLC^f$ (36%)
Taste for Singlehood (male, low ed.)	$\theta_S^{m,Low}$	8.023	0.051	$HLM^m, LS^m, LLM^m$ (40%)
Taste for Singlehood (male, high ed.)	$ heta_S^{m,High}$	7.884	0.099	$HS^m, LHM^m, LHC^m$ (38%)
Taste for Cohabitation (low ed. partner)	$ heta_C^{m,Lf}$	1.269	0.085	$LHC^m, LLC^m, HLM^m$ (49%)
Taste for Cohabitation (high ed. partner)	$\theta_{C}^{m,Hf}$	1.972	0.065	$HHC^{m}, HLC^{m}, HLM^{m}$ (43%)

Table O.17: Parameter Estimates

Notes: The standard errors (s.e.) are computed as the square root of the variance matrix of the estimators, described in Section 4.2. The variance matrix is constructed using numerical gradient methods, with a 1% forward step-size with respect to the point estimate value. The last column reports the three moments with the highest impact on each parameter, given by the sensitivity measure defined in Section 4.2.4, and how much of the total variation is explained by changes in these moments (in parentheses). M1 to M9 denote the moments described in Appendix OC.3. The rest of the moments refer to the matching frequencies and the share of singles, where "L" denotes Low Educ. and "H" High Educ. The first element in a pair refers to the female type and the second to the male type. "M," "C" and "S" refer to marriage, cohabitation and singlehood. The suprascripts f and m denote female and male, respectively.

Marital Contract	Household Type	Data	Model	$\Delta$ choices
	(female, male)		(female choices)	(female - male)
Marriage	Low, Low	0.087	0.086	0.025
		[0.076,  0.098]		
	Low, High	0.073	0.074	0.009
		[0.063,  0.083]		
	High, Low	0.053	0.075	-0.002
		[0.045,  0.062]		
	High, High	0.27	0.258	-0.010
		[0.253, 0.288]		
Cohabitation	Low, Low	0.088	0.094	0.016
		[0.076,  0.099]		
	Low, High	0.041	0.039	-0.012
		[0.033, 0.049]		
	High, Low	0.039	0.029	-0.012
		[0.032, 0.047]		
	High, High	0.07	0.065	-0.005
		[0.06, 0.081]		

Table O.18: Matching Frequencies

Notes: Bootstrapped 90% CIs of the data moments in square brackets in column 3. The discreteness of the model solution leads to minor differences between the female choices (column 4) and the corresponding male choices. I report these differences in column 5. To guarantee internal consistency, in counterfactual analysis I use as the baseline matching frequencies those obtained using the estimated parameters  $\Upsilon$  and solving again the equilibrium using the algorithm described in Section OB.3, based on which female and male choices fully coincide.

Table	O.19:	Female	Equilibrium	Pareto	Weights	by	Couple	Type

	Mar	riage	Cohab	oitation
	Male Low	Male High	Male Low	Male High
Female Low	0.39	0.22	0.11	0.06
Female High	0.98	0.95	0.93	0.86

Notes: This table displays the elements of vector  $\Lambda$  for each type of household, given by the combination of partners education  $(s_f, s_m)$  and marital contract g. The computational procedure to obtain the Pareto weights is described in Section 4.2.

Table 0.20:	Differences in	Experience	between Married	and	Cohabiting	Women
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	Low Educated		High F	Educated
Source	Data	Model	Data	Model
Value	-0.10	-0.29	-0.15	-0.15

Notes: I measure differences in female experience up to age 37 between women who had children under marriage and under cohabitation, as  $\frac{Avg(Exp_M)-Avg(Exp_C)}{Avg(Exp_C)}$ , both in the data and in the model. For consistency in measuring cumulative experience, I only consider women who had children in the first two periods of the life cycle.



Figure O.7: Labor Force Participation for Women with Small Children by Marital Status

Notes: Small children are defined as being in  $age^{K} = 1$  in the model, and less than 4 years old in the data.

Table O.21: Differences in Child Human Capital between Cohabitation and Marriage

	All	Low F, Low M	Low F, High M	High F, Low M	High F, High M
Difference	-8.0	-1.0	-2.5	0.3	-1.9

Notes: Human capital is measured as average  $Q_t$  by t = 3. I condition on couple type, based on the education of both parents, where 'F' and 'M' denote female and male. Differences are computed as  $100 \times (\text{Average Q Cohabitation} - \text{Average Q Marriage})/\text{Average Q Marriage}$ . I compute the overall differences by weighing the average human capital of each household type using the model choice probabilities.

#### **OD.2** Comparative Statics

Table O.22: Differences in Child Human Capital between Cohabitation and Marriage: Analysis of Mechanisms

Seconomic	Overall	Low-Educ.	Highly-Educ.
Scenario	(All Women)	Women	Women
Baseline gaps	-0.08	-0.019	-0.023
1. Ignoring direct effect of	0.88	0.15	0.66
parental education	-0.88	-0.15	-0.00
2. Ignoring differences in maternal	0.00	0.27	0.03
time investment behaviors	-0.00	-0.27	0.05
3. Ignoring differences in parameters	0.25	0.80	0.50
between couples and single-mothers.	-0.25	-0.89	-0.50

Notes: Child human capital is measured as in Table O.21. The first row reports differences in child human capital between cohabitation and marriage for all women, and by mother's education. In the following rows, I report the percentage change in the human capital gap across different scenarios, relative to the baseline gap. The scenarios are: (1) I ignore the direct effect of parental education in the production function of human capital, by setting to zero the coefficients associated to  $\delta^{s_f}$  and  $\delta^{s_m}$ in Equation (3); (2) I ignore the differences in maternal time investment behaviors, by assigning to all women the maternal time investment  $I_t$  they would make if they don't work; and (3) I ignore differences between couples and single mothers (except for the coefficients associated with the household type), by equalizing the coefficients in the production function of child's human capital for couples and no couples ( $\rho$  parameters in Equation (3)).



Figure O.8: Comparative Statics with Respect to Model's Parameters

Notes: The top-left panel shows the share of couples that divorce from marriage or separate from cohabitation by period T, as  $\alpha^{D,f}$  varies. The middle- and right-top panels show the relationship between the disutility of work and the moments associated with female LFP. The bottom-left panel shows the relationship between the variance of the match quality shock,  $\sigma_{\xi}$ , and divorce rates. The bottom-middle panel shows the relationship between the scale of the marriage market preference shock,  $\sigma_{\omega}$ , and the correlation between partner's type. Finally, the bottom-right panel shows the relationship between the taste value for singlehood (for low educated women),  $\theta_S^{f,\text{Low}}$ , and the share of single women of that type. The dashed vertical lines show the value of the parameter estimates; horizontal dashed lines show the model moment at the estimated parameter value and the equilibrium Pareto weights.

#### **OD.3** Equilibrium Effects

I illustrate here the relevance of considering equilibrium effects. I focus on a key model parameter: the marginal utility over child human capital for divorced women  $(\alpha^{D,f})$ . I explore two outcomes: couple stability and marital contract choice.

I first keep the marriage market (i.e., matching frequencies and initial Pareto weights) fixed. In this case, increasing  $\alpha^{D,f}$  raises divorce by improving the female outside option (Figure O.9, top-left). Notably, this also leads to an increase in the share of women choosing marriage and a decline in the share choosing cohabitation. This is consistent with the evidence in Table O.7 in Appendix OA.5, which shows that the transition from a presump-



Figure O.9: Comparative Statics: The Effect of  $\alpha^{D,f}$  on Marital Contract and Divorce

Notes: The top-left panel shows the effects of changing  $\alpha^{D,f}$  on divorce rates, and on the share of women that would choose marriage or cohabitation in the marriage market, taking the baseline equilibrium as given. In the top-right panel and the bottom-left panel the dashed line with square markers reproduces the corresponding line from the first panel, while the solid line shows the effects once I take into account the equilibrium effects. The bottom-right panel plots the equilibrium Pareto weight of married women in different type of couples, where "High" and "Low" denote High Education and Low Education. "F" and "M" denote female and male, respectively. The dashed vertical line shows the baseline value of  $\alpha^{D,f} = 0.75$ .

tion of sole maternal custody to joint parental custody at divorce—modeled as a reduction in  $\alpha^{D,f}$ —reduces marriage rates in the short run.

However, Figure O.9 (top-right panel) shows that accounting for equilibrium effects mitigates the impact of changes in  $\alpha^{D,f}$  on women's contract choices. As  $\alpha^{D,f}$  increases (from a baseline of 0.75, to full maternal custody, with  $\alpha^{D,f} = 1$ ), low-educated women receive a lower share of resources in marriage (Figure O.9, bottom-right panel). In equilibrium, this offsets the positive effect of higher  $\alpha^{D,f}$  on marriage and the negative effect on cohabitation. Once the marriage market equilibrium adjusts, marital patterns remain largely unchanged relative to the baseline, but the economic position of low-educated married women deteriorates significantly.

# **OE** Counterfactuals

Figure O.10: Equalizing the Marginal Utility Over Child Human Capital at Divorce and Separation: Share Choosing Marriage (left) and Share Choosing Singlehood (right)



Table O.23: Matching Frequencies: Baseline vs. Counterfactual (with  $\alpha^{S,f} = \alpha^{D,f} = 0.75$ )

Marital Contract	Household Type	Counterfactual	% Change
		(Eqm. Effects)	from baseline
Marriage	Low F, Low M	0.053	-19.70
	Low F, High M	0.039	-41.79
	High F, Low M	0.084	12.00
	High F, High M	0.273	6.64
Cohabitation	Low F, Low M	0.131	77.03
	Low F, High M	0.132	83.33
	High F, Low M	0.015	-48.28
	High F, High M	0.041	-38.81
Single	Low Female	0.095	-44.44
	High Female	0.137	12.30
	Low Male	0.180	-15.49
	High Male	0.043	-39.44

Notes: Matching frequencies for couples are computed based on female choices. "Low" and "High" denote Low Educated and High Educated respectively. "F" and "M" denote female and male partners.

	Child support enforcement			
	(1)	(2)	(3)	(4)
	Baseline	No eqm, female	No eqm, male	Eqm
Divorce Rate	0.263	_	_	0.257
Separation Rate	0.467	—	—	0.477
Choosing Marriage	0.469	0.467	0.496	0.466
Choosing Cohabitation	0.23	0.249	0.221	0.24
Choosing Single	0.301	0.284	0.283	0.294
		Equal asse	ts split	
	(1)	(2)	(3)	(4)
	Baseline	No eqm, female	No eqm, male	Eqm
Divorce Rate	0.263	—	_	0.256
Separation Rate	0.467	—	—	0.477
Choosing Marriage	0.469	0.464	0.493	0.464
Choosing Cohabitation	0.23	0.243	0.223	0.242
Choosing Single	0.301	0.293	0.284	0.294

Table O.24: Counterfactual Choices: Child Support Enforcement and Equal Asset Split

Notes: The first panel implements the counterfactual of full child support enforcement, where fathers pay child support with probability 1. The second panel shows the results of a counterfactual in which the assets are split evenly between the partners upon separation from cohabitation (as in the case of divorce). In each panel, column (1) reproduces the results from the baseline model. Columns (2) and (3) report counterfactual female and male choices, but keeping fixed the baseline marriage market equilibrium. Column (4) shows the equilibrium results once the marriage market adjusts (and the Pareto weights change to those in Table O.25).

Table O.25: Counterfactual Pareto Weights: Child Support and Equal Assets Split

Panel (a): Full Child Support Enforcement							
	Mar	riage	Cohabitation				
	Male Low Ed.	Male High Ed.	Male Low Ed.	Male High Ed.			
Female Low Ed.	0.367 (-0.057)	0.215(-0.044)	0.1 (-0.103)	0.053 (-0.1)			
Female High Ed.	0.98~(0.0)	$0.952 \ (0.002)$	0.93~(0.0)	0.859 (- $0.003$ )			
Panel (b): Equal Split of Assets							
	Marriage Cohabitation						
	Male Low Ed.	Male High Ed.	Male Low Ed.	Male High Ed.			
Female Low Ed	0.389(-0.0)	0.225~(0.0)	0.111 (-0.005)	0.059 (0.002)			
Female High Ed	0.98~(0.0)	0.95 (-0.0)	0.93~(0.0)	0.861 (-0.001)			

Notes: I report the equilibrium Pareto weights under (a) full child support enforcement in marriage and cohabitation; and (b) equal division of assets. In each case, I report in parentheses the percentage changes in Pareto weights relative to the baseline values from Table O.19.

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