The Effects of Institutional Gaps Between Cohabitation and Marriage

Paula Calvo*

May 6, 2025

Abstract

I examine the choice between marriage and cohabitation, and its implications for individual welfare and child human capital. I show that, conditional on observable characteristics, cohabiting couples experience higher separation rates and worse child outcomes. I then build and estimate an equilibrium model of the marriage market, with subsequent life-cycle choices, incorporating the marriage-cohabitation choice. I find that non-college-educated cohabiting women receive fewer household resources than married women. Consistent with the data, their children accumulate less human capital, driven by lower maternal time investments and higher separation rates. In a counterfactual analysis, I find that a policy that equalizes custody laws for married and cohabiting parents would increase cohabitation by 33% and improve the welfare of non-college-educated women. Changes in the marriage-market equilibrium drive these effects: while weaker parental rights initially hurt cohabiting women, equilibrium adjustments ultimately reallocate household resources in their favor.

Keywords: Marriage Market, Cohabitation, Intra-household Resources, Child Human Capital.

*Arizona State University. **Address:** Department of Economics, PO Box 879801, Tempe, AZ 85287-9801, US. **Email:** paula.calvo@asu.edu. I am extremely grateful to my advisors, Joe Altonji, Ilse Lindenlaub, Costas Meghir, and Cormac O'Dea for their guidance and encouragement. I am indebted to Ana Reynoso for her invaluable support at every stage of this project. I thank Jason Abaluck, Julian Aramburu, Pierre-Andre Chiappori, Zara Contractor, Mónica Costa-Dias, Disa Hynsjö, Patrick Moran, Emily Nix, Jaehee Song, and Pengpeng Xiao, as well as many seminar participants at Yale, Minneapolis FED OIGI Research Conference (Mentoring day), Women in Empirical Microeconomics, Arizona State University, University of Wisconsin, UIUC, Stockholm University, IESE, PUC Chile, IFS, Georgetown University, Federal Reserve Bank of St. Louis, Microsoft Office of the Chief Economist, University of Michigan Population Studies Center, UIC, Stanford University, NYU Applied Micro Mini Conference, Census Bureau's Center for Economic Studies, and Universidad Nacional de La Plata, for productive discussions and constructive comments. Emily Wang, Vibhuti Mehta, and Sertan Ozsoy provided outstanding research assistance. The Institution for Social and Policy Studies at Yale provided funding for this project. I thank Luigi Pistaferri for sharing the welfare program data. This research was conducted with restricted access to Bureau of Labor Statistics (BLS) data. The estimation of the model was done using the ASU Sol Supercomputer (Jennewein et al., 2023). I thank the Yale Center for Research Computing for guidance and use of the research computing infrastructure. The views expressed here are those of the author and do not reflect the views of the BLS. Any mistakes are my own.

1 Introduction

In recent decades, US society has been characterized by high rates of non-marital cohabitation and fertility, mainly among the non-college-educated (Lundberg et al., 2016). At the same time, cohabiting and married couples are treated differently under US laws, in dimensions ranging from property division upon separation to child custody laws to taxation. As marriage has been associated with higher family stability, higher parental investments, and better child outcomes (Kearney, 2023), an open policy question is whether these legal differences should narrow, at the expense of reducing the set of individuals' choices.

While institutional differences between marriage and cohabitation are widespread, some countries and US states have taken steps to narrow these gaps.[1] However, the distributional consequences of these policies, as well as their impact on child human capital, remain unclear. To better inform policy design, we must advance our understanding of how such legal differences influence family formation decisions (e.g., marriage vs. cohabitation), intra-household inequality, and child outcomes.

In this paper, I address two central questions. First, I examine the factors that drive the choice among marriage, cohabitation, and remaining single and how this choice affects intra-household inequality and child human capital. Second, I analyze the distributional consequences of laws that treat married and cohabiting couples equally, and the role of the marriage market equilibrium in shaping these effects. I focus on two main types of policies: changes in child custody laws and measures that equalize the financial obligations of married and cohabiting couples (e.g., property division).

To answer these questions, I first empirically document the dimensions in which married and cohabiting couples differ. Next, I develop and estimate an equilibrium model of household formation in which couples choose between marriage and cohabitation in the marriage market, after which both couples and single individuals solve their life-cycle problem. Fi-

[1] For example, most Canadian provinces now allow cohabiting partners to claim alimony upon separation, and since January 2020, cohabiting couples in California can register their partnerships to gain many of the rights and obligations of marriage.

nally, using the estimated model, I simulate the equilibrium effects of narrowing the legal distinctions between cohabitation and marriage.

In the first part of the paper, I use rich data from the National Longitudinal Survey of Youth (NLSY-97) and the Future of Families and Child Wellbeing Study (FFCWS). I show that married and cohabiting couples differ in both observable characteristics and subsequent choices, even when conditioning on these observables. Compared with married couples, cohabiting couples are more likely to separate, have higher female labor supply, and exhibit worse cognitive and behavioral outcomes among their children. Moreover, I show that cohabitation decisions respond to family laws that either widen or narrow the legal distinctions between marriage and cohabitation.

In the second part of the paper, I develop an equilibrium model of household formation that, for the first time, integrates the choice between marriage, cohabitation, and singlehood with subsequent life-cycle decisions. This model allows me to analyze sorting into marriage and cohabitation and the effects of this choice for intra-household inequality and child human capital. The marriage market equilibrium determines the matching patterns—who marries whom, who cohabits with whom, and who remains single—as well as the partners' initial relative bargaining power, which governs the weight of each partner in the decision-making process and the intra-household allocation of resources. After matching in the marriage market, households solve a life-cycle problem with limited commitment. Each period, they make choices about divorce and separation, female labor supply, consumption, and savings. These choices endogenously shape the accumulation of child human capital and the evolution of partners' relative bargaining power over time.

A key innovation of my model is that it incorporates many of the institutional differences between marriage and cohabitation, reflecting US family laws: (1) the presumption of parental joint custody upon divorce versus maternal sole custody after cohabitation; (2) the lower likelihood of fathers' paying child support after cohabitation; and (3) the common property regime for married couples versus individual asset ownership for cohabiting partners. By modeling this comprehensive set of legal distinctions, I can assess how each

factor influences household formation and child development. Differences in child custody laws emerge as a key driver of selection into cohabitation in my model, and changing those laws significantly affects household formation.

Central to my model and analysis is the marriage market equilibrium. This feature allows me to quantify the relative gains for men and women from entering different types of relationships and shed light on the factors that drive marital choices. Moreover, because partners' relative bargaining power is determined in equilibrium, I can assess, for the first time, differences in intra-household inequality between married and cohabiting couples.

This equilibrium framework allows me to examine not only the short-term effects of policy changes on existing households but also the long-term impact of policies that operate through shifts in the marriage market equilibrium. Using my model, I assess the consequences of narrowing the legal distinctions between cohabitation and marriage. My findings highlight the crucial role of the marriage market in shaping policy outcomes, since changes in household formation and partners' equilibrium bargaining positions can offset (or even reverse) the short-run (and typically intended) effects of policy interventions.

I estimate the model in two stages using US data. First, I estimate the wage processes and the production function of child human capital directly from the data. Then, I use the method of simulated moments to estimate the remaining model parameters, targeting observed matching patterns and the life-cycle behavior of couples and singles.

The results indicate that the marriage market exhibits positive assortative matching in education, driven by parental complementarities in the production function of child human capital. Compared with cohabitation, legal marriage is relatively more attractive for men, because they benefit from greater stability and stronger parental rights upon divorce. These advantages outweigh the financial costs associated with a higher likelihood of child support enforcement and more equal property division. For women, a key advantage of cohabitation is retaining full custody of their children upon separation, whereas married couples are more likely to share custody after divorce. This reduces the relative appeal of marriage, particularly for women matched with non-college-educated men. Since these

men tend to have lower incomes, the financial benefits of marriage are weaker for women in such matches. In equilibrium, men attract women into marriage by offering a greater share of household resources in marriage compared with cohabitation. These differences are more pronounced for non-college-educated women.

Consistent with the data, the model shows that children born to cohabiting mothers accumulate 8% less human capital than those born to married mothers. This gap is largely driven by differential sorting, since highly educated couples are more likely to marry. Even conditioning on education, differences in human capital persist due to higher separation rates among cohabiting couples. Anticipating separation, cohabiting mothers increase their labor supply and thus reduce maternal time investments. Also, their children are more likely to grow up in single-parent households, which further hinders child development.

Finally, I use the estimated model to evaluate the distributional consequences of eliminating legal distinctions between cohabitation and marriage. I find that a policy that grants cohabiting parents the same child custody rights as married parents—by increasing joint parental custody after cohabitation—improves the welfare of low-educated women. Accounting for marriage market equilibrium effects is key to this result. Under the baseline equilibrium, the policy initially reduces the welfare of cohabiting women by weakening their parental rights upon separation. However, as the marriage market adjusts, these women receive a larger share of household private consumption, which ultimately increases their welfare and renders cohabitation a more attractive option. In this scenario, cohabitation rises by 33%, driven primarily by shifts in family formation among the less educated, who become less likely to marry or remain single. This policy also helps close the human capital gap between children born to low-educated cohabiting and married mothers, largely due to the increased stability of cohabiting relationships in the counterfactual scenario.

The welfare effects of two other policy simulations—equal division of assets upon separation for cohabiting couples and full child support enforcement—are relatively small. However, these exercises underscore the importance of accounting for marriage market equilibrium effects when evaluating policies.

This paper is among the first to examine the complexities of modern family structures within an equilibrium framework of household formation. My findings highlight the importance of considering the long-run effects of family policies, providing valuable insights for policymakers considering legal reforms that equalize the rights and obligations of married and cohabiting couples. In particular, I shed light on the long-term effects of changes in parental rights and obligations upon separation and divorce—an area that has received little attention in the literature.

1.1 Related Literature

This paper relates to four strands of the literature. First, it speaks to a large body of literature that documents the changing structure of the US family, such as the retreat from marriage and the increase in non-marital fertility (Browning et al., 2014; Aiyagari et al., 2000). Work in this area proposes different mechanisms behind the decline in marriage rates, such as the reduction in job opportunities for men (Autor et al., 2019); the increase in male wage inequality (Gould and Paserman, 2003); changes in the wage structure (Ciscato, 2021; Rios-Rull et al., 2010); changes in cultural norms (Bau and Fernández, 2021); and technological changes in home production (Greenwood et al., 2016).

A related phenomenon—which received significantly less attention—is the increase in non-marital cohabitation, which, mainly for low-educated couples, has become an alternative arrangement under which to have children (Lundberg et al., 2016). Other work has considered the cohabitation choice from a more theoretical perspective, including reasons such as learning about the quality of new partners (Brien et al., 2006) and differences in marital preferences and commitment (Iyigun, 2009).

I contribute to this literature by documenting novel empirical facts about the differences in the behaviors and outcomes of cohabiting and married couples in the US, characterizing cohabitation as a different family arrangement relative to legal marriage. Moreover, through my empirical analysis and policy counterfactuals, I provide suggestive evidence on how changes to the institutional differences between marriage and cohabitation affected marital

choices and, in particular, the cohabitation margin.

Second, this paper relates to the literature that studies the link between family structure and child development, which typically documents a positive association between marriage and child outcomes (McLanahan and Sandefur, 1994; Brown, 2004; Kearney, 2023). Focusing on marriage versus cohabitation, Lundberg et al. (2016) suggest that marriage has become a commitment device to support high couple-specific parental investments among the highly educated. Lafortune and Low (2023) show how wealth allows marriage to offer that commitment, and thus sustains specialization within the household. My research is closer to that of Adamopoulou et al. (2024), who show that cohabitation is associated with worse child outcomes relative to marriage due to differential parental investments.

While some of the mechanisms in these papers are also present in mine, my work differs in important dimensions. First, I build the production function of child human capital within a marriage market equilibrium framework. In this setting, the marriage market equilibrium not only affects child human capital, but also the nature of this production function endogenously shapes the equilibrium. Second, I model a broader set of legal differences between marriage and cohabitation. This allows me to investigate the impact of different policies on child human capital accumulation.

Third, my paper relates to the literature that examines how family policies affect family formation and divorce, as well as other household choices such as female labor supply or savings. The policies studied include divorce laws (Voena, 2015; Fernández and Wong, 2017; Reynoso, 2024); welfare benefits (Low et al., 2022); child support and alimony (Foerster, 2024, Chiappori et al., 2017a); the tax system (Gayle and Shephard, 2019); paternity establishment rules (Rossin-Slater, 2017); and survivor benefits (Persson, 2020), among others. Some of this work explicitly considers the effects of policy changes on household formation and, hence, their differential impact on existing versus newly formed households (Fernández and Wong, 2017; Reynoso, 2024; Chiappori et al., 2017a).

Within this literature, a small set of papers explicitly examines how changes in the family policy environment impact the choice of cohabitation or the decisions made by

couples. This work has focused on dimensions such as alimony (Goussé and Leturcq, 2018; Rangel, 2006); property division (Chigavazira et al., 2019); the tax system (Chade and Ventura, 2005); and changes in divorce laws (Blasutto and Kozlov, 2020; Laufer and Gemici, 2009). My work most closely relates to the last two papers, which embed cohabitation within a household life-cycle model. While my model has common elements with both, I model the marriage market in equilibrium. This allows me to assess how policy changes affect household formation in the longer run and the distributional effects of such policies. Moreover, I model a broader set of differences between marriage and cohabitation and use data from a more recent cohort (born in 1980-84), for whom cohabitation is more prevalent.

Finally, my paper builds on work that characterizes the marriage market equilibrium and examines how economic and institutional changes affect family formation, life-cycle choices, and welfare. I build on the literature that quantifies the gains from marriage, after the seminal contribution by Choo and Siow (2006) and extensions by Chiappori et al. (2017b) and Mourifié and Siow (2021).

Recent papers in this area have embedded a collective model of the household in an equilibrium framework of the marriage market. Goussé et al. (2017) build a search and matching model to study marital sorting and couples' life-cycle behavior. Calvo et al. (2024) model the equilibrium in both the marriage and the labor market to study how sorting in both markets affects gender gaps and inequality. Chiappori et al. (2018) combine a household life-cycle model with an equilibrium frictionless matching framework, with pre-marital investments and full commitment within marriage. Gayle and Shephard (2019) and Reynoso (2024) extend this framework to an imperfect transferable utility (ITU) environment with limited commitment and endogenous divorce.

I extend the equilibrium life-cycle models with ITU to allow individuals to choose between contracts with different characteristics in the marriage market: marriage and cohabitation. This allows me to assess the drivers behind the marriage versus cohabitation choice and the intra-household allocation of resources implied by each contract. This is, to the best of my knowledge, one of the first papers to address modern households' arrangements

within an equilibrium model of family formation.

The rest of the paper is organized as follows. In Section 2, I describe the institutional setting and document empirical facts on marriage and cohabitation. Section 3 introduces the model. Section 4 describes the estimation procedure, identification, and estimation results. I present policy counterfactuals in Section 5. Section 6 concludes.

2 Empirical Evidence

I first describe the main legal differences between cohabitation and marriage (Section 2.1) and data sources (Section 2.2). Second, I document the main differences between married and cohabiting couples in Section 2.3. Finally, Section 2.4 addresses potential endogeneity concerns and provides evidence on the role of policies in shaping family structures.

2.1 The Institutional Setting

In the US, legal marriage grants spouses specific rights and obligations, which differ from those faced by unmarried couples, independent of the length of the relationship or the presence of common children. Civil unions between unmarried partners are not recognized by the US federal government or the vast majority of states.

Table 1 summarizes the main distinctions between marriage and cohabitation in the US, at the time of the couple's dissolution. I include these differences in my model below.

Table 1: Institutional Differences between Married and Cohabiting Couples in the US

	Marriage	**Cohabitation**
Children	Paternity established by default	Paternity needs to be established
	Joint custody more likely	Joint custody less likely
	Child support settled at divorce	Child support needs to be claimed
Assets	Common property of assets	Individual property of assets

Regarding children, while married fathers are automatically granted paternity at birth, unmarried fathers have to follow additional steps to establish legal paternity.[2] Moreover,

[2]During the 1990s, states simplified paternity establishment by allowing parents to sign an affidavit in

several state courts still distinguish between married and unmarried parents when determining how to assign custody rights, either favoring unmarried mothers or requiring legal paternity establishment before treating married and unmarried parents equally (Cuadra, 2010). Also, the divorce process includes custody and child support orders (Huntington, 2015). Since cohabiting parents do not go through a legal process to separate, they are less likely to have a formal custody or visitation agreement (Table O.4 in Online Appendix OA.2), and must take additional steps to obtain a child support order.

Second, married couples are covered by state divorce laws, which determine who can initiate the divorce, on which grounds, and how property is divided. Therefore, state courts dictate the allocation of spousal assets upon divorce. However, for an unmarried couple, each partner is legally entitled to their own assets upon separation.[3]

2.2 Data

I use two main data sources. The National Longitudinal Survey of Youth 1997 (NLSY-97), which follows a cohort of men and women born in the US between 1980 and 1984. These data provide detailed fertility and marital histories, including cohabitation spells, as well as rich demographic information, labor market outcomes, and characteristics of the respondent's partner. The Future of Families and Child Wellbeing Survey (FFCWS) follows a cohort of children born between 1998 and 2000 in the US, starting at birth. These data contain rich information on children's outcomes and parents' characteristics, such as marital status and labor supply. Additional details are provided in Online Appendix OA.1.

2.3 Motivating Facts

I first document the growing role of cohabitation as a defining feature of US society. I then show that, even when controlling for couple characteristics, married and cohabiting couples

the hospital at childbirth (Rossin-Slater, 2017). However, 87% of cohabiting fathers in the FFCWS report that nobody at the hospital talked to them about establishing paternity.

[3]My analysis abstract from other differences between marriage and cohabitation, including federal tax treatment, welfare eligibility, inheritances, and social security benefits.

exhibit distinct behaviors. Finally, I examine differences in outcomes among children born under these different family arrangements.

Cohabitation has tripled over the past 40 years, becoming a prevalent household arrangement in the US (Figure O.1 in Online Appendix OA.2). Nearly one-fourth of women born in the early 1980s had their first child within a cohabitation relationship (Table 2).

Table 2: Marital Status of Women at First Birth

	Married	Cohabiting	No partner present
Share (%)	52%	23%	25%

Notes: NLSY-97, Bureau of Labor Statistics. Sample restricted to women whose first birth occurred between 1997 and 2017.

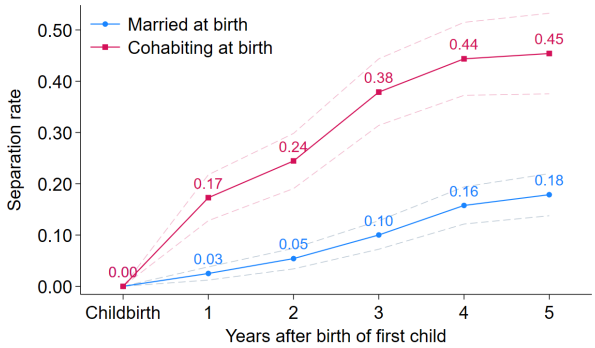
While cohabitation is widespread across demographic groups there are marked observable differences between women who had children under marriage and under cohabitation, which suggests sorting based on demographics. Women who have children under cohabitation have on average lower education and are relatively younger (see Table O.1 in Online Appendix OA.2). However, even after conditioning on these observable characteristics, married and cohabiting couples make different choices along dimensions that can affect their long-term outcomes, such as the human capital of women and their children.

First, college-educated women are more likely to have children in marriage than in cohabitation, while differences are less marked among the non-college-educated (Figure O.2 in Online Appendix OA.2). Second, conditional on education, cohabiting parents have significantly less stable relationships than married parents. Figure 1 shows that 45% of parents cohabiting at childbirth have separated by the child's 5th birthday, compared with only 18% of those married at childbirth. Thus, children born to unmarried parents are more likely to grow up in a single-parent household (typically with the mother).[4]

Third, the literature has extensively documented the negative impacts of childbirth on female labor market outcomes (Angelov et al., 2016; Kleven et al., 2019; Adda et al., 2017; Berniell et al., 2021). However, using an event study around the time of childbirth, I find that the "motherhood penalty" on employment and hours worked is less pronounced and

[4]Due to differences in parental separation, the children of cohabiting couples are more likely to be exposed to non-biological parental figures. However, there is no differential pattern conditional on dissolution, and so, I abstract from this feature in my model.

Figure 1: Couple Stability by Marital Status at First Birth



Notes: NLSY-97, Bureau of Labor Statistics. I plot the coefficients of a regression of whether the couple is separated on indicators of the time since childbirth, by marital status. I control for women's education, age, race, age at first birth, number of years together before childbirth, and year and region fixed effects. Dashed lines represent 95% CIs of the estimates.

less persistent for women who were cohabiting at childbirth compared with married women (Figure 2).[5] These findings are consistent with recent work by Adamopoulou et al. (2024), who show that cohabiting women have lower motherhood penalties than married women, relative to men.[6] If maternal time is an input in the production of child human capital, and higher labor supply reduces time investments, differences in labor market behaviors may translate to differences in child outcomes.[7] This story is consistent with Lafortune and Low (2023) and Laufer and Gemici (2009), who suggest that the marriage contract supports specialization within the household and hence higher investments in children. I next examine the differences in child outcomes between married and cohabiting couples.

Differences in Child Outcomes: Using rich data on child outcomes from the FFCWS, I construct measures of child behavioral and cognitive outcomes at different ages.[8] The results in Table O.2 in Online Appendix OA.2 suggest that toward the end of the de-

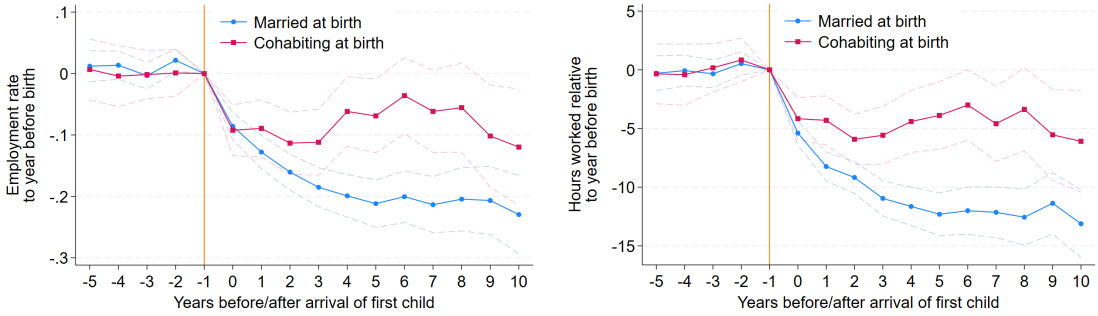
[5]Details on the event study specifications and additional results are in Online Appendix OA.3.

[6]Figure O.4 in Online Appendix OA.2 documents similar patterns in the FFCWS data.

[7]Figure O.3 in Online Appendix OA.2 shows that the time women allocate to childcare activities decreases as they increase their labor supply, conditional on education and partner's presence. This is consistent with Agostinelli and Sorrenti (2022) and Bastian and Lochner (2022), who find that the increase in labor supply induced by the Earned Income Tax Credit reduces maternal time investments, which is not compensated with an increase in the quality of the time investments.

[8]I report the variables used to construct these measures in Table O.14 in Online Appendix OC.1. For consistency with the other indexes constructed in Section 2.4, I perform principal component analysis using either the behavioral or the cognitive variables, separately for each wave. I predict, in each case, the scores for the first principal component, which I then convert into percentiles.

Figure 2: Motherhood Penalties: (a) Employment Rate and (b) Hours Worked



Notes: NLSY-97, Bureau of Labor Statistics. The sample includes women who had their first child between 2000 and 2017 and who were between 20 and 35 years old at the time of childbirth, under marriage or cohabitation. The figures display the coefficients of indicator variables that capture the distance between child's birth ($\tau = 0$) and year t. The magnitudes of the coefficients are relative to the year before the child's birth ($\tau = -1$), depicted by the vertical orange line. I estimate separate models for the sample of women who were married and cohabiting at first birth. All models control for women's age and education and include year fixed effects. Dashed lines represent 95% CIs. Standard errors are clustered at the individual level.

velopment process (between ages 9 and 15), children born to cohabiting parents have on average worse behavioral (columns 1 and 2) and cognitive outcomes (columns 3 and 4), compared with those born to married couples. My findings show that while demographic differences between married and cohabiting couples contribute to disparities in child outcomes, these gaps persist even after accounting for demographics.[9] Differences in parental investments and household stability may help explain these patterns. The model estimates presented below will allow me to quantify the relative importance of these mechanisms.

2.4 Addressing Potential Endogeneity Concerns

As documented in Section 2.3, married and cohabiting couples differ in both behaviors and outcomes. However, even after controlling for a broad set of observable characteristics correlated with marital choices, differences in outcomes may still reflect sorting on unobservables (e.g., varying preferences for children) into marriage or cohabitation. I provide two pieces of evidence to contribute alleviate these endogeneity concerns.

First, exploiting the richness of the FFCWS, I construct three indexes associated with the *quality of the relationship*, *parenting preferences* and *family values*. These indexes aim

[9]When adding controls step-wise, I find that mother's demographic characteristics (education, race, and age) are key in explaining the gaps between cohabitation and marriage reported in Table O.2. Additional controls (income, household composition, etc.) have little impact on the magnitude of the main coefficient.

to capture unobserved characteristics and preferences that may correlate not only with the choice of the marital contract but also with other outcomes of interest. The first two indexes reflect the quality of the relationship between the child's parents and their preferences for parental involvement, while the third measures the degree of household conservatism, similar to the Family Value Index of Goussé et al. (2017). These indexes enter as controls in Tables O.2 and Figure O.4 in Online Appendix OA.2, and the inclusion of these controls has little impact on the magnitude of the coefficients. Details on construction of the indexes are provided in Online Appendix OA.4.

Second, I document how marital decisions—including the choice to cohabit—respond to policies that widen or narrow the differences between marriage and cohabitation. To do so, I exploit the staggered adoption of three policies across states and over time that altered the legal distinctions between marriage and cohabitation: (a) the shift from a presumption of sole maternal custody at divorce to joint parental custody, (b) simplification of the paternity establishment process for unmarried fathers, and (c) the transition from mutual consent to unilateral divorce. This variation allows me to estimate the causal effects of these policies on marital choices, and particularly on the choice of cohabitation. In all cases, I find that changes in the legal environment influence cohabitation decisions. This suggests that family formation is not solely driven by preferences but can also be shaped by policy, as I further demonstrate in the counterfactual analysis in Section 5. Details on the policy changes, econometric models, and results are provided in Online Appendix OA.5.

3 The Model

Motivated by the evidence in Section 2, I develop an equilibrium model of the marriage market that incorporates the choice between marriage, cohabitation, and singlehood. This model captures the main institutional differences between marriage and cohabitation, including differences in property division and child custody rules. Using this framework, I examine the factors that drive marital choices and their implications for intra-household resource allocation and child human capital. I then use the model to evaluate the potential

impact of various policies on family formation and related outcomes.

3.1 Model Overview

There is an equal measure of men and women (denoted by m and f, respectively). Individuals i of sex $j \in \{f, m\}$ are characterized by their exogenous education level s, which can be of two types: Low (L) or High (H).

The life of an individual is divided in two stages. The first one is the matching stage, in which individuals meet in a one-shot frictionless heterosexual marriage market. In this stage, agents choose the type of household they want to form, given by a combination of contract-type, g— Marriage (M), Cohabitation (C), or Singlehood (S)—and a partner's type, s. This choice is made based both on the expected utility from forming each type of household and on idiosyncratic preferences for a partner-type and contract combination (Chiappori et al., 2017b; Chiappori et al., 2018; Reynoso, 2024; Gayle and Shephard, 2019).

The marriage market equilibrium determines family formation (who matches with whom and under which contract and who remains single), as well as the initial relative bargaining power of partners (i.e., the market-clearing Pareto weights). Note that in this model, the initial market-clearing Pareto weights are common to all couples of the same type. Moreover, since partners act non-cooperatively upon separation or divorce, my model exhibits imperfect transferable utility (ITU) (Chiappori et al., 2015). This implies that in equilibrium, the initial Pareto weights are determined by anticipating the life-cycle expected utilities. At the same time, the life-cycle value produced by a household depends on the intra-household resource allocation (the Pareto weights).

The second stage is the household's life cycle, divided in T periods, in which couples solve a collective household problem with limited commitment to the initial allocations (Mazzocco, 2007; Voena, 2015; Bronson, 2019). In each period, existing households observe shocks to their match quality and the male partner's income, and a fertility realization. Based on these, they make choices on couple dissolution, female labor supply, consumption, and savings. These decisions endogenously determine the intra-household allocation

of private consumption—given by the partners' updated Pareto weights—individual flow utilities, and child human capital.

A critical feature of the model is that during the matching stage individuals can choose between three marital statuses: marriage, cohabitation, or staying single. During the life cycle, married couples can *divorce* and cohabiting couples can *separate*. My model does not allow for rematching. Hence, divorce, separation, and singlehood are absorbing states.[10]

I present the second stage of the life cycle in Section 3.2. In Section 3.3, I describe the marriage market, in which individuals match anticipating the solution to the second stage.

3.2 Second Stage of the Life Cycle

I describe the elements of the second stage of the model in Section 3.2.1 and the problem of the household in Section 3.2.2.

3.2.1 Model Components

Flow Utilities: In every period $t \in \{1, .., T\}$, the flow utilities of women (f) and men (m) in couples (married or cohabiting) are given by

$$u_t^f = \log(c_t Q_t) - \psi P_t + \xi_t, \qquad \text{and} \qquad u_t^m = \log(c_t Q_t) + \xi_t. \tag{1}$$

where c_t denotes the consumption of a private good and Q_t is the human capital of children—a public good within the household.[11] The parameter ψ captures female disutility from labor supply, P_t. I allow ψ to vary by female type (s_f), the birth of a child ("K arrival" $= 1$), and the presence of the male partner ($PP = 1$). Also, both partners derive utility from their match quality, ξ_t. This is a couple-specific shock that follows a

[10] Based on the empirical evidence, I rule out the possibility of cohabiting couples transitioning to marriage or single mothers transitioning to cohabit with or marry their child's father. Still, as I explain in Online Appendix OC.2, I consider a couple to be married if they had their first child under marriage, independent of whether they cohabited before.

[11] Couples only derive utility from the public good if there is a child in the household. Including the period of birth, a child is in the household for four periods (until $age^K = 4$).

random walk process, $\xi_t = \xi_{t-1} + \epsilon_t$, with $\epsilon_t \sim N(0, \sigma_\xi^2)$. Cohabiting men without children receive an extra utility $\theta_C^{s_f}$, which varies with his partner's type. This captures the non-economic value of cohabitation.

The flow utilities of divorce and separated women and men are given by

$$u_t^f = \log(\pi^f c_t Q_t^{\boldsymbol{\alpha^{g,f}}}) - \psi P_t \qquad \text{and} \qquad u_t^m = \log(\pi^m c_t Q_t^{\boldsymbol{\alpha^{g,m}}}). \tag{2}$$

After a couple dissolves, both partners stop perceiving utility from the match quality and lose economies of scale (captured by $\pi^j < 1$ for $j \in \{f, m\}$).[12] A key distinction between marriage and cohabitation lies in how male and female partners derive utility from children upon divorce or separation. I model this through gender-specific utility parameters, $\alpha^{g,j}$, which I treat as economy-wide policy parameters, following Edlund (2013). These parameters capture, for each contract $g \in \{M, C\}$, the marginal utility parents derive from their child's human capital upon separation/divorce. For clarity, I denote these parameters $\alpha^{\mathrm{S},j}$ and $\alpha^{\mathrm{D},j}$, where S stands for *Separation* and D for *Divorce*.

Following Brown et al. (ming) I assume that children become an excludable good when parents no longer live together, and I impose that the α parameters for men and women sum to 1 within each contract (e.g., $\alpha^{\mathrm{S},f} + \alpha^{\mathrm{S},m} = 1$). Reflecting the institutions discussed in Section 2.1, I assume that cohabiting women retain sole custody of their children, meaning $\alpha^{S,f} = 1$ and $\alpha^{S,m} = 0$. Thus, I interpret $\alpha^{D,f}$ relative to full custody. I further assume that parental rights are fully anticipated and do not depend on individual preferences or behaviors, conditional on the chosen marital contract. To quantify the extent of parental rights for men and women in divorce relative to separation, I empirically estimate the parameters α, as explained in Section 4.2. As I demonstrate in Section 5, these parameters are key in shaping marriage market equilibrium and couples' choices.

The flow utilities of singles are analogous to those of the separated/divorced, with the following exceptions: I assume single women have full custody, with $\alpha^{f,\text{single}} = 1$ and

[12] I assume that women finance the child's consumption, and so $\pi^{f,\text{child}} < \pi^{f,\text{no child}} = \pi^m$. Also, π^f varies with the age of the child.

$\alpha^{m,\text{single}} = 0$. In each period, singles derive extra flow utility, $\theta_S^{s_j}$, which captures non-economic gender- and type-specific preferences for singlehood.[13]

RESOURCES: In each period, the household allocates resources derived from earnings, $w_t^m P_t^m$ and $w_t^f P_t^f$, and assets, $(1+r)A_t$, between household's consumption, x_t, and savings, A_{t+1}.[14] I assume households face borrowing constraints, and so $A_{t+1} \geq 0$. In each period, the budget constraint of a household is then given by $x_t = w_t^f P_t^f + w_t^m P_t^m + (1+r)A_t - A_{t+1}$. Labor earnings depend on the wage rate, w_t, and the labor supply, P_t.

In each period, the household decides whether the female partner works full time ($P_t = 1$), part time ($P_t = 0.5$), or does not work ($P_t = 0$). These choices determine female cumulative experience, $\text{Exp}_{i,t}$, and in turn their wage rate, $w_{i,t}^f$: $\log(w_{i,t}^f) = \beta_0^{s_f} + \beta_1^{s_f}\text{Exp}_{i,t} + \beta_2^{s_f}\text{Exp}_{i,t}^2$. Men always work full time ($P_t = 1$) and their wages are a function of age, t: $\log(w_{i,t}^m) = \beta_0^{s_m} + \beta_1^{s_m} t + \beta_2^{s_m} t^2$. However, they can get a persistent unemployment shock, $\mu_t^{s_m}$, that halves their period t earnings.[15] For both men and women, I allow the parameters of the wage process to depend on the individual's type, s.

Differences in resources between marriage and cohabitation materialize in the period the couple splits. Divorced and separated fathers pay child support to their ex-partner with a probability that depends on the previous marital contract g. Their payment status is realized upon divorce/separation.At divorce ($t = t^D$) ex-spouses pay a divorce cost (DC), divided evenly between them. I assume that courts allocate half of the couple's assets (A_{t^D}) to each of the ex-spouses, with $A_{t^D}^f = A_{t^D}^m = 0.5A_{t^D}$. At separation ($t = t^S$), ex-partners do not pay a separation cost, and each of them keeps their own assets, allocated proportionally to their potential earnings, with $A_{t^S}^f = A_{t^S}(\frac{w_t^f}{w_t^f + w_t^m})$ and $A_{t^S}^m = A_{t^S} - A_{t^S}^f$.[16] I assume that

[13]The flow utilities of singles are given by $u_t^f = \log(\pi c_t Q_t) - \psi P_t + \theta^{f,s_f}$ and $u_t^m = \log(\pi^m c_t) + \theta^{m,s_m}$.

[14]Note that the total expenditures in private consumption, x_t, finances the consumption of all household members, including children (which implies that $c_t^f + c_t^m = C_t \leq x_t$). When individuals do not live with a partner, their resources depend on their own earnings and savings. Women living alone with children finance their consumption, while men do not.

[15]This shock follows a Markov process, $E(\mu_t^{s_m}|\mu_{t-1}^{s_m}) = \Phi_t^{s_m}$, where $\Phi_t^{s_m}$ is a matrix of dimensions 2×2, which contains the probability of transitioning from the employment (1) to the unemployment state (0).

[16]Table O.3 in Online Appendix OA.2 shows that cohabiting partners are less likely to have a joint bank account or share money, consistent with a policy environment in which cohabiting partners retain their own assets upon separation, which discourages joint financial decisions. This, in turn, motivates my modeling

no private transfers at divorce or separation that can undo these allocations.

FERTILITY: The fertility process is stochastic and women have at most one child. The probability of a child's birth depends on the woman's age (t), education (s_f), and, importantly, the marital status chosen in the marriage market (g). Hence, when choosing a marital contract individuals also choose the associated fertility process. Divorced and separated childless women cannot have children.

CHILD HUMAN CAPITAL: Child human capital $Q_{i,t}$ is produced in the maternal household during the first three periods of the child's life, using as inputs maternal time ($I_{i,t}$), previous child human capital ($Q_{i,t}$), and parental education (captured by $\gamma^{s_f} \times \gamma^{s_m}$), with

$$\log(Q_{i,t+1}) = \rho_0^{PP,\text{age}^K} + \rho_1^{PP,\text{age}^K} \log(I_{i,t}) + \rho_2^{PP,\text{age}^K} \log(Q_{i,t}) + \gamma^{s_f} \times \gamma^{s_m}. \tag{3}$$

The productivity of the investments, captured by the parameters ρ, depends on the child's age (age^K) and the father's presence (PP).[17] However, it does not depend on the specific marital contract. Therefore, differences in child development between marriage and cohabitation will only depend on marital sorting and endogenous investments conditional on the contract, but not on structural differences in the production function between contracts.

Two things are worth mentioning: First, parental types (s_f and s_m) enter the production function *directly*, through the interaction between γ^{s_f} and γ^{s_m}, but do not affect the productivity of the investments (the ρ parameters). When the father is not in the household, only the mother's education, γ^{s_f}, enters in (3).[18] Second, the maternal time investment is a function of the labor supply of women, given by $I_t = \kappa^{s_f,PP,age_K}(P_t)$. I allow κ to depend on the female type (s_f), the presence of the father (PP), and the child's age (age^K), but not on the specific marital status.

assumption.

[17] I allow for the parameters ρ to depend on whether $age^K = 1$ or $age^K > 1$. This captures differences in the productivity of investments at different developmental stages, as informed by the empirical analysis.

[18] I capture expenditures on children only indirectly, through parental education. This is consistent with Del Boca et al. (2014), who do not consider expenditures on children in the estimator of the child human capital production function. This responds to the fact that individuals may not adequately attribute household public good expenditures to children.

3.2.2 The Couple's Life Cycle

I now introduce the problem of a couple. For brevity, I show here the problem of the married couple, but the problem of the cohabiting couple is analogous. I provide details on the problem of the other types of households in Online Appendix OB.1.

A couple who arrives married (AM) to period t will compare their value under marriage and divorce, after observing their fertility and shocks realizations. Based on these, they will decide whether to divorce ($D_t = 1$ or $D_t = 0$), their consumption and savings (A_{t+1}), and female labor supply (P_t) to maximize the household value V_t^{AM}—which is the sum of weighted spouses' individual values (V_t^{fM} and V_t^{mM}). This problem is given by

$$V_t^{AM}(\Omega_t^M) = \max_{D_t, A_{t+1}, P_t^f} \left[\lambda_t^M V_t^{fM}(\Omega_t^M) + (1 - \lambda_t^M) V_t^{mM}(\Omega_t^M) \right], \tag{4}$$

subject to the budget constraint in marriage if $D_t = 0$ and the one in divorce if $D_t = 1$.

In (4), $\Omega_t^M = \{\text{Exp}_t^f, \xi_t, A_t, k, age^K, Q_t, \mu_t, \lambda_t^f\}$ is the couple's state space in period t. For each partner, the value V_t^{jM} will be given by their value under marriage (if $D_t = 0$), or the value in divorce (if $D_t = 1$). For the female partner, V_t^{fM} is given by

$$V_t^{fM}(\Omega_t^M) = (1 - D_t) \underbrace{\left(u_t^{fM} + \beta E_t V_{t+1}^{fAM}(\Omega_{t+1}^M) \right)}_{\text{Value in Marriage}} + D_t \underbrace{\left(u_t^{fD} + \beta E_t V_{t+1}^{fD}(\Omega_{t+1}^{fD}) \right)}_{\text{Value in Divorce}}. \tag{5}$$

The value for the male partner, V_t^{mM}, is analogous. The values under marriage and under divorce are computed considering the expected realizations of shocks and the optimal choices that, conditional on those shocks, they would make jointly if they stay married, or individually if they divorce.[19] Cohabiting couples solve the same problem, but these couples choose between cohabitation and separation; the differences between divorce and separation were discussed in Section 3.2.1.

[19] To compute the expected values, individuals solve the problem backward, starting from the last period of the life cycle, T, and integrating over all possible realization of the shocks, taking as given the state space (Ω_t^M under marriage and Ω_t^{mD} and Ω_t^{fD} under divorce).

I assume limited commitment. In each period, the partners' weights in the household problem are given by their relative bargaining power (or Pareto weight), λ_t. The Pareto weights at the beginning of the life cycle ($t = 1$) are those determined by the marriage market equilibrium, and are the same for all couples of the same type. In periods $t > 1$, these Pareto weights will be couple-specific, since they can be renegotiated to ensure that the participation constraints of the spouses hold, as I explain below.

Female labor supply (P_t) determines female experience, and hence female wages. This choice, together with the savings choice (A_{t+1}), affects the total resources, x_t, available for the consumption of all household members in period t. The intra-household allocation of x_t to the private consumption of each partner, c_f and c_m, will be governed by the relative Pareto weights.[20] The female labor supply—together with the divorce decision—also determines the child human capital, Q_{t+1}, as in Equation (3). When a couple divorces, savings and female labor supply will be decided by each divorced household individually.

My framework features imperfect transferable utility (ITU), meaning that couples' Pareto weights—which determine the allocation of private consumption between the partners and their relative weight in the household problem—will affect the couples' choices, and hence the surplus generated by a match. This implies a departure from the transferable utility (TU) setting, in which the marriage market allocation can be solved independently of how surplus is split between partners. Several features of my model drive this departure from TU. First, TU requires that utility be fully transferable both within marriage and upon divorce (Chiappori et al., 2015). However, in my framework, ex-partners act non-cooperatively, and resources in divorce are allocated based on prespecified rules rather than on the Pareto weights that governed the relationship. Second, female labor supply influences not only current earnings but also time investments in children and the accumulation of experience, which affects future wages. Since upon separation partners do not

[20] In particular, if the couple decides to stay married the household problem will be given by problem (4), with $D_t = 0$. When solving this problem, the couple will first decide how to allocate the total resources between total consumption and savings. Conditional on that decision, the intra-household allocation of consumption will be such that the marginal utility of consumption of both partners equalizes. Under the current parameterization of the model, this implies $c_m = (1 - \lambda_t)C_t$ and $c_f = \lambda_t C_t$.

compensate each other for past investments, maternal time investments may be inefficiently low. Third, the nature of the utility function changes after separation and divorce, which affects the extent to which men and women value the household's public good. This can result in underinvestments in children, since parents may not fully internalize the long-term benefits of these investments.

Couple Dissolution and Renegotiation: Couples who arrive married or cohabiting to period t optimally decide whether they stay together or break up. Divorce and separation are unilateral decisions, which means that they do not require the consent of the other partner. For a married couple, three potential scenarios arise: (i) if for both spouses the value of marriage is higher than the value of divorce ($u_t^{jM} + V_{t+1}^{jM}(\Omega_t^M) \geq V_t^{jD}(\Omega_t^{jD})$ for $j \in \{f, m\}$) the couple will continue married without renegotiation of the Pareto weights, λ_t^f; (ii) if both spouses prefer divorce over marriage ($u_t^{jM} + V_{t+1}^{jM}(\Omega_t^M) < V_t^{jD}(\Omega_t^{jD})$ for $j \in \{f, m\}$) the couple will divorce; and (iii) if for one of the spouses $j \in \{f, m\}$ divorce has a higher value than marriage, but the opposite holds for the other spouse, the couple will renegotiate the Pareto weight in favor of the party who wants to leave, adjusting it just enough to make them indifferent between staying and divorcing (Ligon et al., 2000). In this setting, divorce is efficient and will occur when no feasible allocation of resources within marriage satisfies both spouses' individual participation constraints and the intertemporal budget constraint. The analysis for the cohabiting couple is analogous, but the value of divorce is replaced by the value of separation.

3.3 The Matching Stage

A one-shot frictionless marriage market takes place at the beginning of the life cycle. At this stage, individuals form a couple, given by a combination of partner type s and contract (marriage or cohabitation), or remain single.

At the matching stage, individuals take as given the solution of the life-cycle problem of each type of household, described in Section 3.2.2. They compute the systematic expected lifetime value from the perspective of the marriage market, $\overline{V}^{(s_j, s_{-j}, g)}(\lambda^{(s_j, s_{-j}, g)})$, of

entering each type of contract g with a partner of type s_{-j}.These values are determined in equilibrium since, as explained above, in the ITU setting the total surplus produced by a match is not independent of the equilibrium Pareto weights, $\lambda^{(s_j,s_{-j},g)}$.

Moreover, each individual i of sex $j \in \{f,m\}$ draws a vector of marital preferences, ω_i^j, over partners of the opposite sex, as in Choo and Siow (2006):

$$\boldsymbol{\omega}_i^j = (\omega_i^{\emptyset}, \omega_i^{s_{-j},M}, \omega_i^{s_{-j},C};\ \ s \in L,H);\ \ \omega^{s_{-j},g} \sim \text{Gumbel}(0,\sigma_\omega). \tag{6}$$

I assume these taste shocks are drawn from a Gumbel distribution, with location parameter 0 and scale parameter σ_ω, and represent the subjective taste of individual i of sex j of entering a contract g with a partner of type s_{-j}.[21] This implies that individuals care about their partner's type, s, and the contract they set, but not about their partner's identity.

Then, given the systematic utility values, $\overline{V}^{(s_j,s_{-j},g)}(\lambda^{(s_j,s_{-j},g)})$, and their idiosyncratic preferences, $\omega_i^{(s_j,s_{-j},g)}$, individuals choose the type of household—a combination of $s_{-j} \in \{H,L\} \cup \emptyset$ and $g \in \{M,C,S\}$—that maximizes their lifetime utility:

$$V_i^{(s_j,s_{-j},g)} = \max_{s_{-j},g}\Bigg(\underbrace{\overline{V}^{(s_j,\emptyset)} + \omega_i^{s_j,\emptyset}}_{\text{Value of singlehood}} ; \underbrace{\overline{V}^{(s_j,\boldsymbol{s_{-j}},\boldsymbol{g})}(\lambda^{(s_j,s_{-j},g)}) + \omega_i^{(s_j,\boldsymbol{s_{-j}},\boldsymbol{g})}}_{\substack{\text{Value of matching to partner} \\ \text{of type } s_{-j} \text{ under contract } g}} \Bigg). \tag{7}$$

Following Choo and Siow (2006), the idiosyncratic taste shocks, $\omega_i^{s_j,s_{-j},g}$, are additively separable in the total value V_i of forming each type of household. Thus, conditional on the marriage market equilibrium, the taste shocks have no impact on the life-cycle choices and individuals' lifetime values. The separability assumption and the distributional assumptions made in (6) allow me to compute in close form the proportion of individuals of type s_j who will demand a contract g with a partner of type s_{-j}, given the matrix of $s_m \times s_f \times 2$ initial Pareto weights, $\boldsymbol{\Lambda}$. These choice probabilities are defined in Online Appendix OB.2.

The solution to the matching problem (7) determines the marriage market equilibrium,

[21] Specifically, $\omega_i^{s_{-j},M}$ is the idiosyncratic value for an individual i of type s_j of marrying a spouse of type s_{-j}; $\omega_i^{s_{-j},C}$ is the value of cohabiting with a partner of type s_{-j}; and $\omega_i^{\emptyset}$ is the value of staying single.

given by the matching patterns (who matches with whom) and the initial matrix of Pareto weights $\mathbf{\Lambda}$ (the split of the marital surplus). At the equilibrium Pareto weights, the measure of men who demand each type of household will and the measure of women who supply them will coincide, clearing the marriage market. Formally, the equilibrium is defined as

Definition 1: A competitive equilibrium at the matching stage is given by (1) a matrix of $(s_f \times s_m \times 2)$ Pareto weights $\mathbf{\Lambda}$ and; (2) an assignment of male types to female types $\nu^m_{(s_m,s_f,g)} \to \nu^f_{(s_f,s_m,g)}$, $\forall s_m \in \{L,H\}$, $\forall s_f \in \{L,H\}$ and $\forall g \in \{M,C\}$ (as defined by (O.3)), such that (1) The measure of s_m-type men demanding an s_f-type woman under a contract g equals the measure of s_f-type women supplied to type-s_m males under contract g:

$$\nu^m_{(s_m,s_f,g)}(\mathbf{\Lambda}) = \nu^f_{(s_f,s_m,g)}(\mathbf{\Lambda}) \;\; \forall s_m \in \{L,H\}, \forall s_f \in \{L,H\}, \forall g \in \{M,C\},$$

and; (2) at the Pareto weights $\mathbf{\Lambda}$, the mass of single men and women, $\nu^m_{(s_m,\emptyset)}(\mathbf{\Lambda})$ and $\nu^f_{(\emptyset,s_f)}(\mathbf{\Lambda})$, is such that the sum of men and women in each type of household (couples and singles) equals the measure of men and women of each type in the economy:

$$\nu^f_{s_f} = \nu^f_{(s_f,\emptyset)}(\mathbf{\Lambda}) + \sum_{s_m,g} \nu^f_{(s_f,s_m,g)}(\mathbf{\Lambda}) \qquad \forall s_f, s_m \in \{L,H\}$$
$$\nu^m_{s_m} = \nu^m_{(\emptyset,s_m)}(\mathbf{\Lambda}) + \sum_{s_f,g} \nu^m_{(s_f,s_m,g)}(\mathbf{\Lambda}) \qquad \forall s_f, s_m \in \{L,H\}.$$

As explained earlier, the equilibrium Pareto weights are common to all couples of the same type who form in the marriage market. These are endogenously determined anticipating the allocations and choices that households will make over the life cycle. At the same time, in the ITU setting, those allocations and choices will be affected by the equilibrium Pareto weights. Then, obtaining the marriage market equilibrium requires solving for a fixed point in $\mathbf{\Lambda}$. To do this, I adapt to my setting the fixed-point algorithm proposed by Galichon et al. (2019) and implemented by Gayle and Shephard (2019) and Reynoso (2024). Details are provided in Online Appendix OB.3.

4 Model Estimation

In this section, I discuss the identification of model parameters and the methods used in the estimation. The structural estimation proceeds in two steps. First, I identify the production function of child human capital and the wages, male income shock, and fertility processes directly from the data. I draw another set of structural parameters from previous research. In a second step, I internally estimate the remaining parameters using the method of simulated moments (McFadden, 1989; Pakes and Pollard, 1989).

4.1 Parameters Estimated Outside the Model

Preset Parameters: Table O.9 in Online Appendix OC.1 reports the parameters that are taken directly from the literature or set from external data sources. I set the length of the life cycle to seven periods, of 4 years each. Women are fertile for four periods (late 30s) and child's human capital accumulates for three periods.

Wage Processes for Men and Women: I estimate the wage processes using data from the NLSY-97. In the model, male wages follow a deterministic process that depends on age. As women choose their labor supply, their earnings process depend on labor market experience. This presents two main challenges: First, female experience is endogenous, and second, I only observe wage offers for women who select into work (an issue addressed by Heckman, 1979). I present the model for the wage processes and the corresponding results in Online Appendix OC.1. I also elaborate there on the endogeneity concerns in estimating the female wage process and on the two-step control function approach I implement to alleviate them. The results in Table O.10 show that, consistent with Reynoso (2024), returns to experience increase with education, both for men and for women. In both cases, wages exhibit a concave profile, with positive, but decreasing, returns to experience.

Child Human Capital: I estimate the production function of child human capital based on Equation (3) on FFCWS data. As explained in Section 3.2, the parameters of this function depend on the presence of the father and the age of the children. To account

for the first, I estimate the production function separately for children who live with both parents and for those who live only with their mother. To account the latter, I interact the inputs (maternal time, I_t, and past human capital, Q_t), with an indicator that takes value 1 when the child is "small" (less than 5). In mapping data and model, I align the model's first period with data on children classified as "small". When both parents live together, I account for the interaction between their education levels, while for single-parent households I only control for maternal education.

Since I do not observe maternal time investments (I_t) in the FFCWS, I use a latent variable to map maternal labor supply from the FFCWS to childcare time from the ATUS—conditional on education, father's presence, and child's age (see Online Appendix OC.1 for details).[22] Since my model lacks such latent variable, I assign to each women the average childcare of women in her corresponding cell (defined by maternal education × father's presence × child's age × labor supply) from the ATUS. I construct child's human capital measures (Q_t) using the same information as in Section 2.3. I provide details on the estimation and the construction of I_t and Q_t in Online Appendix OC.1.

The estimation results are reported in Table O.13 in Online Appendix OC.1. The returns to maternal time investments are larger for young children, consistent with previous findings (Del Boca et al., 2014; Attanasio et al., 2020; Bolt et al., 2024). Self-productivity increases with the child's age and is higher when both parents live together, which potentially reflects the father's time investments or the greater resources available in two-parent households—factors omitted from my model. Finally, I find strong complementarities in parental education, as evidenced by the large and significant coefficient on having two highly educated parents. As I demonstrate in Section 4.2.4, this complementarity plays a key role in driving positive sorting in the marriage market.

Other elements estimated outside the model: I estimate the Markov process of the male income shock ($\mu_t^{s_m}$) and the fertility processes on the NLSY-97. I estimate

[22] This strategy allows me to introduce variation in maternal time investment that is not only driven by labor supply, as illustrated in Figure O.3—e.g., a woman may work full time and still make significant time investments in children.

the probability that the father will pay child support upon divorce or separation on the FFCWS. Details and results are provided in Online Appendix OC.1.

4.2 Internally Estimated Parameters

I internally estimate the remaining 15 structural parameters (denoted by the vector $\boldsymbol{\Upsilon}$): (a) the disutility of work for women in different households, $\psi^{s_f,\text{K arrival},PP}$; (b) the variance of the shock to the match quality, σ_ξ; (c) the marginal utility over child human capital for divorced women, $\alpha^{D,f}$; (d) the scale parameter for the marriage market taste shocks, σ_ω; and (e) the utility terms for single men and women, $\theta_S^{s_f}$ and $\theta_S^{s_m}$ and for cohabiting men, θ_C^{m,s_f}. The full list of parameters is in Table O.17 in Online Appendix OD.1.

4.2.1 Data and Sample

The internal estimation uses data from the NLSY-97. I summarize individuals' complex marital choices by integrating information on their marital and fertility histories. To map the data to the model, I assign each individual to a unique marital status and partner, which allows me to characterize in the data their marriage market choices. As the main criteria for the assignment, I consider the marital status under which they had their first child.[23] My final sample consists of 1,837 women, with 48% classified as married, 24% as cohabiting, and 28% as single. Details on sample selection and the assignment of individuals to unique marital statuses and partners are provided in Online Appendix OC.2.

4.2.2 The Method of Simulated Moments

To estimate the vector of structural parameters $\boldsymbol{\Upsilon}$, I use the method of simulated moments. I construct a set of 32 moments in the data—denoted by M_D—related to the labor supply of women in different types of households, marital transitions, and marriage-market matching frequencies. For every given vector of parameters $\boldsymbol{\Upsilon}$, I solve the model and construct the

[23] For women who are childless by the time I last observe them in the data, I consider them as singles if they never had a partner, as cohabiting if they have ever cohabited but have never been married, and as married if they were ever married. I discuss this assumption in the Online Appendix.

same set of moments—denoted by M_M—on simulated data. I describe these moments in Online Appendix OC.3. I do not target heterogeneity by couple-type or between marriage and cohabitation in the estimation, except for behaviors directly associated with differences in the institutional setting, such as separation versus divorce rates.

Following Gayle and Shephard (2019), I use an equilibrium constraint approach in the estimation (Su and Judd, 2012). Under this approach, I augment the vector of parameters $\boldsymbol{\Upsilon}$ to include $\boldsymbol{\Lambda}$, the vector of eight equilibrium Pareto weights, one for each type of couple. I use a global search algorithm (followed by a local search refinement) to obtain the estimated parameters $\hat{\boldsymbol{\Upsilon}}$ and the equilibrium Pareto weights $\boldsymbol{\Lambda}$ that minimize the distance between the data and the model moments, subject to market clearing constraints.[24] This approach is computationally more efficient than solving a nested fixed-point problem, which requires to solve the marriage market equilibrium for each proposed vector $\boldsymbol{\Upsilon}$, using the algorithm discussed in Online Appendix OB.3.[25]

4.2.3 Identification

The structural parameters $\boldsymbol{\Upsilon}$ are identified from the close link between each parameter and the aggregate behavior of individuals in the model, captured by the 32 moments described in Online Appendix OC.3. I provide heuristic identification arguments below.

The parameters of the female disutility of work, $\Psi^{s_f,\text{K arrival},PP}$, are linked to female labor supply choices. Given the wages and the productivity of maternal time in the production of

[24] This implies solving the following problem:

$$(\hat{\boldsymbol{\Upsilon}}, \Lambda(\hat{\boldsymbol{\Upsilon}})) = \underset{\boldsymbol{\Upsilon},\boldsymbol{\Lambda}}{\operatorname{argmin}} \big[M_M(\boldsymbol{\Upsilon},\boldsymbol{\Lambda}) - M_D\big]^T W \big[M_M(\boldsymbol{\Upsilon},\boldsymbol{\Lambda}) - M_D\big]$$
$$s.t \;\; \nu^f_{(s_f,s_m,g)}(\Lambda) = \nu^m_{(s_m,s_f,g)}(\boldsymbol{\Lambda}) \quad \forall (s_m,s_f) \forall\, g \in \{M,C\},$$

where the market clearing constraints are defined as in Online Appendix OB.2 and W is the optimal weighting matrix, given by the inverse of the diagonal of the variance-covariance matrix of the data moments.

[25] Due to the discreteness of the numerical solution, the vector $\boldsymbol{\Lambda}$ obtained using the method of simulated moments is not identical to the vector of Pareto weights obtained using the algorithm to solve the equilibrium. Therefore, for consistency between baseline and counterfactuals, I use the vector of structural estimates, $\hat{\Upsilon}$, and solve again for the initial Pareto weights using the algorithm before conducting counterfactuals. I report these Pareto weights in Table O.19 in Online Appendix OD.1. The patterns obtained with both procedures are consistent, despite some differences in the Pareto-weight magnitudes.

child human capital (identified outside the model), an increase in Ψ renders labor market work more costly for women.

The variance of the shock to the match quality, σ_ξ, is associated with couples' dissolution rates. Given the mean of the shock (normalized to zero), a higher variance will increase the share of couples who draw a shock below a certain threshold, fueling separation/divorce. Moreover, due to differences in the policy environment, married and cohabiting partners have different outside options. Therefore, differences between divorce and separation rates, conditional on σ_ξ, will contribute to pin down $\alpha^{D,f}$, the parameter related to the strength of parental rights for divorced women.

The scale parameter of the distribution of the marriage market taste shocks, σ_ω, is pinned down by the overall marriage market sorting patterns. The observed fraction of singles informs the parameters of the extra flow utility of singles, $\theta_S^{s_f}$ and $\theta_S^{s_m}$. The per-period values of cohabitation for childless men, θ_C^{m,s_f}, are pinned down by the share of men choosing cohabitation, conditional on the Pareto weights.

Finally, all structural parameters are constrained by the marriage market-clearing conditions. For a proposed set of parameters $\boldsymbol{\Upsilon}$, the model matching frequencies computed from female and male choices may differ. Then, the equilibrium Pareto weights and structural parameters will adjust until there is no excess demand for any couple-type, and the model matching frequencies coincide with the corresponding data moments.

4.2.4 Results and Fit

Parameters Estimates and Fit: I report the structural parameters from the internal estimation and their standard errors in Table O.17 in Online Appendix OD.1. The last column of Table O.17 reports the three moments that explain most of the variation of the parameters in the estimation and the share of this variation explained by those moments.[26]

[26]The variance matrix of the estimated parameters $\hat{\boldsymbol{\Upsilon}}$ is computed as $\text{Var} = [\Delta_m' W \Delta_m]^{-1} \Delta_m' W C W \Delta_m [\Delta_m' W \Delta_m]^{-1}$, where Δ_m is the 17×32 matrix of partial derivatives of the moment condition with respect to each parameter. C is the covariance matrix of the data moments. I compute the sensitivity of each parameter to the moments in the estimation as $|\text{Sensitivity}| = |-[\Delta_m' W \Delta_m]^{-1} \Delta_m' W|$, as defined by Andrews et al. (2017).

The estimate of $\alpha^{D,f}$—which captures the extent of parental rights for divorced women—equals 0.75, and reflects three aspects of the institutional environment discussed in Section 2.1. First, women partially surrender parental rights in marriage (as suggested by Edlund, 2013), reflected by $\alpha^{D,f} < 1$. Second, even under shared custody arrangements, divorced women get more time with children relative to divorced men ($\alpha^{D,f} > 0.5$). Finally, the results imply that $\alpha^{D,m} > \alpha^{S,m} = 0$, and thus, divorced fathers have stronger parental rights than separated fathers.[27] I investigate the effects of changing these policies in Section 5.

The estimates of $\psi^{s_f,\text{K arrival},PP}$ suggest that most women lose utility when working positive hours, except for women in couples with a small child. This induces mothers of small children to work even when more time at home would increase child human capital. The extra flow utility from singlehood, $\theta_S^{s_j}$, is positive for men and women and relatively constant across education groups. Conditional on education, men require a higher taste value to match the empirical share of singles, since they do not derive value from children. The extra utility value for cohabiting childless men is positive and increasing on the partner's education. Finally, I estimate a scale parameter of marriage market shocks, σ_ω, of 3.84, which rationalizes the observed marriage market mismatch.

Table 3 shows that under the estimated parameters, the model fits the targeted data moments well. In Figure O.8 in Online Appendix OD.2 I perform comparative statics with respect to the parameters that capture the marginal utility over child human capital ($\alpha^{D,f}$), the disutility of work ($\psi^{s_f,\text{K arrival},PP}$), the shock of the quality of the match (σ_ξ), the marriage market shock (σ_ω), and the taste for singlehood (θ_S). The responses of model moments to changes in the parameter's values are in line with the identification arguments discussed in Section 4.2.3.

Marriage Market Equilibrium: Figure 3 displays the share of couples of different types who form in the marriage market—an additional set of moments targeted in the estimation. Under the estimated structural parameters and the equilibrium Pareto weights,

[27] These results are consistent with data from the FFCWS that show that 94% of children co-reside with their biological mother when both parents are not present in the household, and thus, women have higher access to children. It is also consistent with evidence in Table O.4 in Online Appendix OA.2, showing that divorced fathers are twice as likely as separated fathers to have a formal custody order.

Table 3: Moments

Moment Description	Data	90% CIs	Model
M1. Female LFP (Low Educ., no small child)	0.857	[0.847, 0.866]	0.87
M2. Female LFP (High Educ., no small child)	0.919	[0.914, 0.924]	0.916
M3. Female LFP (Low Educ., small child, partner)	0.770	[0.749, 0.791]	0.775
M4. Female LFP (High Educ., small child, partner)	0.843	[0.829, 0.856]	0.841
M5. Fem FT/PT Ratio (Low Educ., small child,no partner)	0.591	[0.552, 0.629]	0.590
M6. Fem FT/PT Ratio (High Educ., small child, no partner)	0.656	[0.607, 0.703]	0.648
M7. Divorce Rate by t=4 (conditional on having a child)	0.290	[0.257, 0.327]	0.259
M8. Separation Rate by t=4 (conditional on having a child)	0.448	[0.387, 0.502]	0.473
M9. Correlation between Partners Type (All Couples)	0.398	[0.357, 0.442]	0.375
Single Female (low educ.)	0.159	[0.146, 0.173]	0.158
Single Female (high educ.)	0.120	[0.108, 0.132]	0.122
Single Male (low educ.)	0.203	[0.187, 0.220]	0.213
Single Male (high educ.)	0.076	[0.056, 0/095]	0.076

Notes: Model moments are computed at the estimated values of the parameters, $\hat{\boldsymbol{\Upsilon}}$. Details on the construction of data and model moments are provided in Online Appendix OC.3.

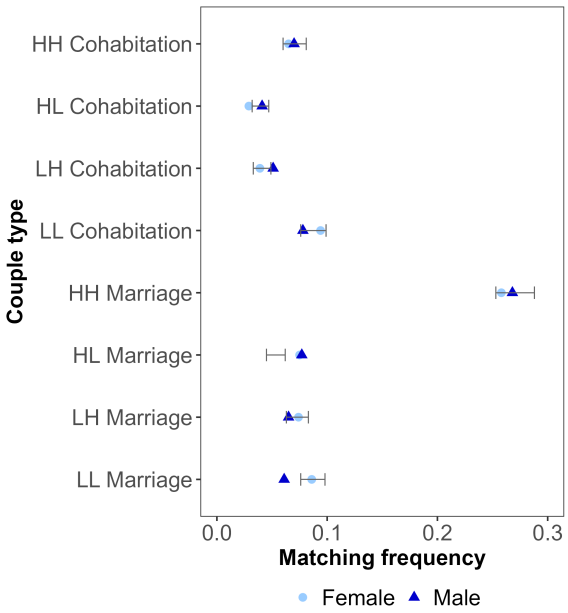
the matching frequencies computed from female choices (light blue dots) closely coincide with those computed from male choices (dark blue triangles), consistent with the marriage market equilibrium. These matching patterns reproduce the empirical ones, with most of the model moments lying within the 90% confidence intervals of the data moments.

The marriage market exhibits positive assortative matching (PAM) in education, measured by a positive correlation between the education of the male and the female partners in couples (0.375). A key mechanism behind this result is the complementarity between partners' education in the production function of child human capital, reported in Table O.13 in Online Appendix OC.1.

The market-clearing Pareto weights $\boldsymbol{\Lambda}$—the initial weight of the female partner in each type of household—are reported in Table O.19 in Online Appendix OD.1. Within contracts, the initial female Pareto weight is increasing (decreasing) on female (male) education. Moreover, Figure 4 shows that cohabiting women have lower initial Pareto weights in all type of households, conditional on both partners' education. These differences are more pronounced for low-educated women.

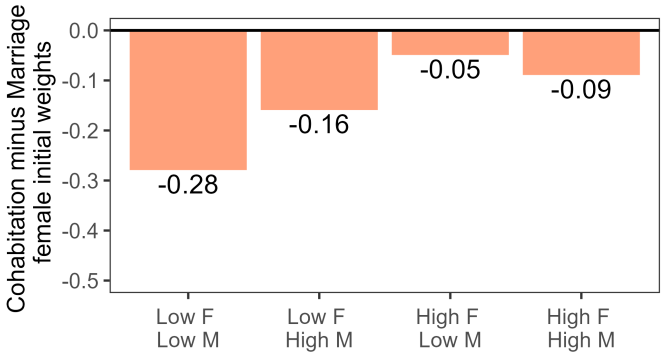
As discussed, cohabitation allows women to retain full custody of children upon separation (captured by $\alpha^{S,f} = 1$), while married couples are more likely to share custody upon

Figure 3: Matching Frequencies: Model Moments and Data CIs (black bars)



Notes: Each set of markers and bars represents a different couple-type in the marriage market, where I denote low-education by "L" and high-education by "H," with the first letter in the pair denoting the female partner's education (e.g., "HL Cohabitation" refers to a cohabiting couple formed by a high-educated female and low-educated male partner). Since in the data the matching partners are unique, there is only one data confidence interval, denoted by the black bars. However, slight differences between male and female choices arise due to the discreteness of the numerical solution of the model.

Figure 4: Differences in Initial Female Pareto Weights (Cohabitation - Marriage)



Notes: Each bar computes the difference between the Pareto weights of cohabiting and married women, in a given couple-type (s_f, s_m), reported in Table O.19 in Online Appendix OD.1. I denote by "F" the female partner and by "M" the male partner.

divorce ($\alpha^{D,f} < 1$). This reduces the relative value of marriage for women, particularly for those matched with low-educated men. For these women, legal marriage offers fewer financial benefits, due to their partners' lower wages. In contrast, because women are more likely to exit cohabiting relationships, legal marriage becomes relatively more attractive to

men. Marriage offers them greater stability, which allows them to live with their children for longer and enables higher maternal time investments. Even in the event of a divorce, married fathers retain stronger parental rights. These advantages help offset the higher financial costs of divorce compared with separation, including a greater likelihood of paying child support and equal assets split.[28] In Online Appendix OD.3 I perform a comparative static analysis with respect to $\alpha^{D,f}$, that helps illustrate the role that parental rights play in shaping marital sorting as well as the importance of considering marriage market equilibrium effects when assessing the impact of policies. I return to this in Section 5.

Since men have a relative higher value of marriage, in equilibrium they provide women with a larger share of household resources to convince them to marry. This is particularly true among the highly educated, who benefit relatively more from marrying highly educated women, given the strong complementarities in the production of child human capital. The relative gains from marriage are lower among the less educated: Low-educated men are less willing to give up consumption to attract women into marriage, and low-educated women are willing to resign private consumption to enter cohabiting relationships. This renders low-educated partners relatively more likely to sort into cohabitation (as shown in Figure 3 and Table O.18). For instance, when both partners are low-educated, only about half of couples sort into marriage. For them, preferences play a larger role in driving marital choices. When both partners are highly educated, 80% of couples enter legal marriage.

All in all, two-thirds of the couples that form choose legal marriage. The equilibrium share of singles is large (see Table 3), with 27% of men and women not matching in the marriage market. However, the educational composition of singles varies by gender: 78% of single men and 58% of single women are low-educated.

Untargeted Patterns: Under the estimated parameters, the model successfully reproduces several untargeted data patterns, discussed in Section 2.3. First, married mothers accumulate less labor market experience than cohabiting mothers (see Table O.20 in Online Appendix OD.1). Specifically, as shown in Figure O.7, low-educated cohabiting women

[28]The relative value of marriage is particularly high for highly educated men due to the higher fertility probability within marriage.

with small children are more likely to participate in the labor market and, conditional on employment, are more likely to work full-time compared to their married counterparts.[29] The anticipation of higher separation rates and lower financial protections incentivizes cohabiting women to increase their labor supply while reducing time investments in children.

Consistent with the data, cohabiting couples in the model separate more often than married couples, conditional on the child's age. This is mainly driven by cohabiting women retaining full access to children upon separation.[30]

Finally, by the end of the developmental stage, children born to cohabiting parents accumulate 8% less human capital than those born to married parents. This gap is mainly driven by highly educated couples with high complementarity in the production of child human capital disproportionately sorting into marriage, as discussed above. However, differences in child human capital between cohabitation and marriage persist after conditioning on parental education, as shown in Table O.21 in Online Appendix OD.1, and consistent with the empirical evidence. This is explained by lower maternal time investments and higher separation rates (relative to divorce rates), mainly among the low-educated.

To quantify the role of the different mechanisms in explaining the human capital gap (sorting, maternal investments, and couple dissolution), I simulate the model closing one of these channels at a time. First, ignoring the direct effect of parental education closes 88% of the overall gap between children born to married and cohabiting women, and 15% of the gap between children of low-educated mothers. Second, ignoring differences in maternal time investments reduces by 27% the gap in human capital among children born to low-educated women, as these women have the largest gaps in labor supply. Finally, eliminating differences in the production function between children living with one versus two parents closes most of the gap (89%) in human capital between children of low-educated married and cohabiting women, and one-fourth of the overall gap between the marital contracts. This is explained by higher separation rates among cohabiting mothers, which make their

[29] The model closely matches the labor supply behavior of highly educated women but overestimates the participation gap between low-educated married and cohabiting women. This leads to an overestimation of the experience gap for this group.

[30] Still, my model underestimates differences in divorce vs. separation at early stages of the child's life.

children more likely to grow up with only one parent. Details on the implementation are provided in Online Appendix OD.2. The full results are reported in Table O.22.

5 Policy Counterfactuals

Finally, I simulate a reduction in the institutional differences between marriage and cohabitation and investigate the welfare implications. In particular, I examine whether these policies could effectively improve the position of low-educated women within the household and the outcomes of their children, since they are in the relative weakest position in cohabiting arrangements.

Equal Parental Rights: I first investigate the effect of equalizing parental rights for divorced and separated parents, increasing joint custody upon separation. I implement this counterfactual by shifting the parameters α associated with access to children upon separation/divorce in the utility functions defined in equation (2), as explained in Sections 3.2 and 4.2.4. The baseline values of these parameters are in the first row of Table 4. The ranking of the estimated parameters—$\alpha^{S,m} < \alpha^{D,m} < \alpha^{D,f} < \alpha^{S,f} = 1$—is consistent with a policy environment that favors maternal custody, and in which divorcees are more likely to get joint custody compared with separated parents, as discussed in Section 2.1.[31]

In the counterfactual, I assign to cohabiting couples the same custody laws that married couples face, by equalizing the marginal utility over child human capital upon divorce and separation (second row of Table 4). For women, this represents a reduction in relative parental rights upon separation (lower $\alpha^{S,f}$), which renders cohabitation less attractive. In contrast, men benefit from increased access to children upon separation (as $\alpha^{S,m} = 1 - \alpha^{S,f}$).

I first examine the implications of transitioning from the baseline to the counterfactual scenario, without allowing the marriage market to adjust (i.e., keeping the baseline Pareto weights fixed). First, among already formed couples, this policy will reduce the value of cohabiting women's outside option, and depress separation rates, as shown in Figure 5 (left

[31] In the data, this is reflected in the lower probability that cohabiting parents have a formal custody agreement (Table O.4 in Online Appendix OA.2) or have established legal paternity.

Table 4: Marginal Utility over Child Human Capital: Baseline and Counterfactual

Parameters	α^{D_f}	α^{S_f}
Baseline Model	0.75	1.00
Counterfactual	0.75	0.75

Notes: $\alpha^{D,f}$ and $\alpha^{S,f}$ capture the mg. utility over children for divorce and separated women (see Equation (2) in Section 3.2). The "Baseline Model" reproduces the estimates from Table O.17. The "Counterfactual" equalizes $\alpha^{S,f}$ to $\alpha^{D,f}$.

panel), where the baseline is denoted by gray bars and the partial equilibrium counterfactual by coral bars. On average, relationship duration reverses, with cohabiting arrangements becoming longer than legal marriages.[32] This increased stability further benefits men, who now enjoy their children for longer, but negatively affects women, who now have less power to exit undesirable relationships. Therefore, under the initial marriage market equilibrium, cohabitation becomes a less attractive option for women, while the opposite is true for men (right panel of Figure 5), which leads to a disequilibrium in the marriage market.[33]

However, the marriage market Pareto weights adjust to ensure market-clearing. I report the counterfactual equilibrium Pareto weights in Table 5. In the new equilibrium, the bargaining power of cohabiting women increases relative to the baseline, which encourages more women to cohabit. These effects are primarily concentrated among low-educated women, who see the relative gains from marriage relative to cohabitation decrease (brown bars in Figure 6, left panel). The effects are qualitatively similar for their male partners, with the increase in gains from cohabitation concentrated among men matched with low-educated women (Figure 6, right panel).

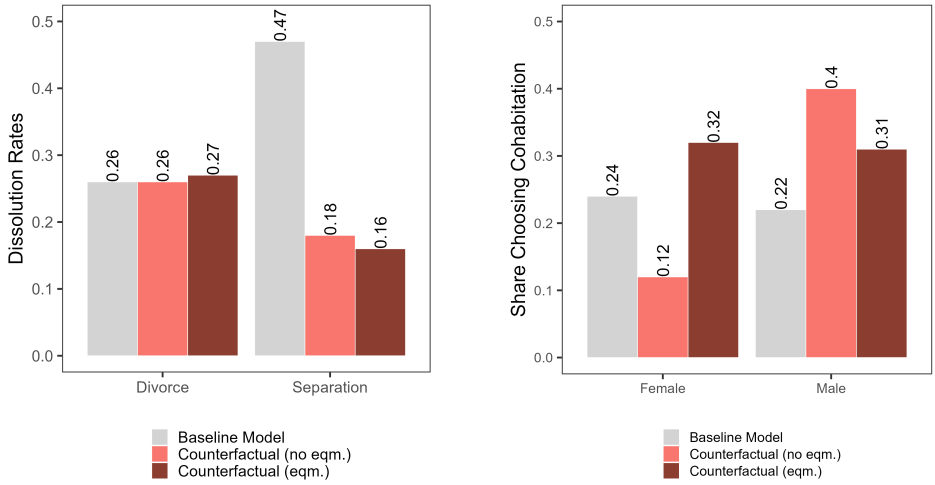
Overall, cohabitation increases by 33% (Figure 5, right panel), driven entirely by changes in family arrangements among the less educated. This shift is offset by adjustments in both the marriage and singlehood margins, which mainly increase for highly educated women, for whom gains in bargaining power do not compensate the reduction in parental rights. Disaggregated changes in matching frequencies are in Table O.23 in Appendix OE.[34]

[32] As the main advantage of cohabitation for women disappears, the lower financial benefits at separation for cohabiting couples pushes separation even lower than divorce rates in the counterfactual.

[33] This is counterbalanced by marriage and singlehood becoming more attractive for women and less attractive for men, as shown in Figure O.10 in Online Appendix OE.

[34] In the counterfactual, I keep the fertility processes unchanged relative to the baseline. However, changes in parental rights could in principle affect fertility in unclear directions. I reproduce the counterfactual

Figure 5: Effects of $\alpha^{S,f} = \alpha^{D,f}$ on: Dissolution (left); % Choosing Cohabitation (right)



Notes: The baseline model (gray bars) reproduces the results from Section 4.2.4. The counterfactual model with no equilibrium effects (coral bars) considers the change in parameters from Table 4, fixing the Pareto weights to those in Table O.19. The counterfactual model with equilibrium effects (brown bars) considers changes in parameters, matching frequencies, and equilibrium Pareto weights (shown in Tables O.23 and 5). The left panel reports divorce and separation rates. The right panel shows the % of men and women who choose cohabitation. The baseline and the equilibrium counterfactual reflect realized choices. Small departures from the equilibrium remain due to the discreteness of the numerical solution.

Table 5: Counterfactual Equilibrium Pareto Weights with $\alpha^{S,f} = \alpha^{D,f}$

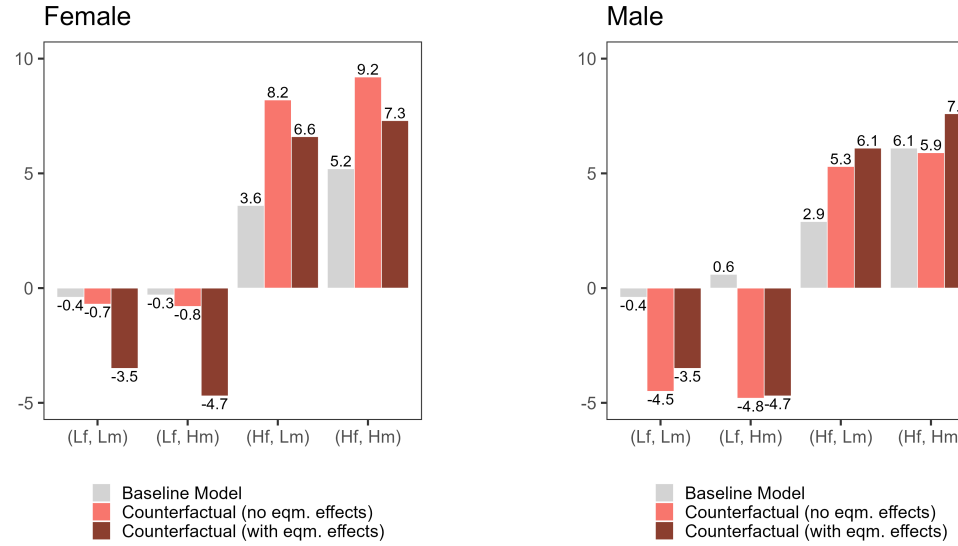
	Marriage		**Cohabitation**	
	Male Low Ed	Male High Ed	Male Low Ed	Male High Ed
Female Low Ed	0.50 (0.11)	0.23 (0.01)	0.56 (0.45)	0.33 (0.27)
Female High Ed	0.97 (-0.01)	0.91 (-0.04)	0.94 (0.01)	0.89 (0.03)

Notes: Absolute changes in counterfactual versus baseline Pareto weights (from Table O.19) are in parentheses.

To summarize these effects, I construct an aggregate measure of *social welfare* and assess how it changes in the counterfactual relative to the baseline. This measure, defined by Equation (8), is given by the weighted sum of the expected lifetime utility, $\overline{V}^{s_j,s_{-j},g}$, of men and women in every type of household (including singles) at the time of the marriage market, as defined in Section 3.3. The weights are given by the measure of men and women,

under two alternatives: (a) increasing and, (b) decreasing the fertility rate of cohabiting women by 10%. The equilibrium response in Pareto weights is virtually the same in these two scenarios relative to my main results (with constant fertility). However, cohabitation rates show a larger increase in the higher fertility counterfactual, and a much nuanced increase in the low fertility one.

Figure 6: Equalizing Custody Laws: Gains from Marriage Relative to Cohabitation by Couple-Type and Gender (Baseline and Counterfactual)



Notes: This figure shows the expected lifetime gains from marriage relative to cohabitation, for women and men in each type of couple. "L" denotes low-education, and "H" denotes high education, and "f" and "m" denote female and male, respectively. Gray bars refer to the results of the baseline model (Section 4.2.4). Coral bars refer to the counterfactual in which I equalize custody laws upon divorce and separation (implementing by making $\alpha^{S,f} = \alpha^{D,f}$), but taking as given the baseline matching frequencies and Pareto weights (Figure 3 and Table O.19). Brown bars refer to the same counterfactual, but after allowing for the matching frequencies and Pareto weights to adjust (to those in Table O.23 and Table 5, respectively).

$\nu^m_{(s_m,s_f,g)}$ and $\nu^f_{(s_f,s_m,g)}$, choosing each type of contract, as defined in Equation (O.3).

$$SW = \sum_{s_f}\sum_{s_m}\sum_{g} \frac{\nu^f_{(s_f,s_m,g)}(\mathbf{\Lambda})}{\mu_f} \times \overline{V}^{s_f,s_m,g} + \sum_{s_m}\sum_{s_f}\sum_{g} \frac{\nu^m_{(s_m,s_f,g)}(\mathbf{\Lambda})}{\mu_m} \times \overline{V}^{s_m,s_f,g} \tag{8}$$

The results in Table 6 suggest that, in the counterfactual equilibrium, social welfare increases by 1.2% relative to the baseline (first row of column (2)). Both men and women benefit from the policy change (with welfare gains of 1.41% and 0.98%, respectively). The results are heterogeneous by education, with gains concentrated among the low-educated.

The equilibrium effects are crucial for these conclusions. While in the short term women lose due to the policy change (column 1 of Table 6), the long-run increase in Pareto weights reverses these initial effects. In contrast, men immediately benefit from greater stability and stronger parental rights in cohabitation. However, in the long-run, these gains are offset—but not fully eliminated—by a reduction in their share of intra-household resources.

Finally, I examine the effects of this policy on child development. Overall child human capital increases by 0.85%, relative to the baseline, after taking into account the equilibrium effects. This is mainly explained by changes in household formation, and in particular by the decrease in the share of children born to low-educated single mothers.

As cohabitation increases among low-educated women, the overall human capital gap between children born to married and cohabiting couples widens, rising from 8% in the baseline to 11.3% in the counterfactual. However, among couples formed by low-educated partners, the human capital gap narrows, driven by the lower separation rates of cohabiting couples in the counterfactual. This has a *direct* effect given by the increase in the time children spend living with both parents and an *indirect* effect, since low-educated cohabiting women anticipate higher stability and decrease their labor supply—which increases their maternal time investments—relative to the baseline.

Table 6: The Effects of Equalizing Child Custody Laws on Social Welfare

	(1) **Counterfactual (no eqm.) vs. Baseline** (partial effects)		(2) **Counterfactual (eqm.) vs. Baseline** (total effects)	
Aggregate	-0.59%		1.20%	
	Female	Male	Female	Male
All	-4.21%	0.98%	2.74%	1.41%
Low Education	-2.65%	2.07%	2.00%	1.90%
High Education	-5.35%	0.18%	3.36%	1.01%

Notes: This table reports the welfare effects (defined by Equation (8)) of equalizing the marginal utility over child human capital at divorce and separation (implemented by setting $\alpha^{S,f} = \alpha^{D,f}$). Column (1) reports partial equilibrium welfare effects, keeping household formation and the initial Pareto weights fixed. Column (2) reports the equilibrium effects, after allowing for changes in the marriage market equilibrium. The row "Aggregate" considers men and women in every type of household. Columns "Female"("Male") compute changes in Equation (8) separate for women(men), overall and by education.

Other Policies: In the data, a low share of fathers pay child support (Table O.4 in Online Appendix OA.2), which reflects weak child support enforcement particularly among those who separate from cohabitation. Moreover, cohabiting couples are not subject to divorce laws, and thus, each partner can in principle keep their own assets at separation. The evidence reported in Table O.3 in Online Appendix OA.2 suggests that they respond by reducing resource pooling within the household and by saving in separate accounts. I then implement two other counterfactual policies: full child support enforcement upon

divorce and separation and equal division of assets for cohabiting couples upon separation.

As I report in Table O.24 in Online Appendix OE, the implementation of each of these policies makes cohabitation more attractive to women (column (2)). In the short run, the share of women who would choose cohabitation increases by 8% in the full child support enforcement counterfactual and by 5.6% in the equal asset-split counterfactual. The opposite is true for men (column (3)), with both policies reducing by about 3% the share of men who would choose cohabitation. However, when the marriage market equilibrium adjusts, the Pareto weights in cohabiting couples adjust in favor of men. This is because men are the more negatively affected by the new policies, and hence, they are less willing to enter cohabiting relationships (Table O.25). These equilibrium changes partially undo the initial (and potentially intended) effects of the policies. Particularly in the full child support enforcement counterfactual, low-educated women—specially those in cohabiting relationships—lose bargaining power relative to the baseline. Family formation decisions change only minimally (Table O.24), and overall welfare effects are negligible.

These two exercises highlight the importance of considering equilibrium effects when assessing the impact of policies that aim to benefit certain groups. For example, child support has the goal of providing resources to women (and their children). However, my results suggest that stronger child support enforcement discourages men from cohabitation. Then, the marriage market adjusts by weakening the bargaining position of low-educated women in new cohabiting relationships, partially undoing the policy intended effects, in line with Chiappori et al. (2017a).

6 Conclusion

In recent years, US society has been characterized by high rates of non-marital cohabitation and fertility, mainly among the less educated. At the same time, US laws treat married and cohabiting families differently. While policymakers debate whether to narrow these differences, we have limited evidence to inform the design of effective policy.

I first show empirically that cohabitation is associated with higher female labor supply, lower stability, and worse cognitive and behavioral outcomes among children. I then build an equilibrium framework of household formation in which individuals decide between marriage, cohabitation, and singlehood. I model key institutional distinctions between marriage and cohabitation: property division laws, child custody laws, and differences in child support enforcement. In the model, after choosing a contract and a partner-type in the marriage market, agents solve a life-cycle problem, making decisions about separation, female labor supply, and savings. These choices endogenously shape child human capital, and the relative bargaining power of each partner.

My estimates show that differences in child custody laws shape sorting into cohabitation, mainly among the low-educated. However, women's gains from cohabitation—driven by stronger parental rights upon separation—are offset by the lower share of household resources and financial benefits they have in these arrangements. Also, consistent with the empirical evidence, the model shows that children born to low-educated cohabiting women accumulate less human capital than those born to married women, explained by lower time investments and higher separation rates among cohabiting couples.

I simulate the effects of narrowing the legal distinctions between marriage and cohabitation. I find that increasing joint parental custody upon separation from cohabitation has positive welfare effects for low-educated cohabiting women in the long run. The marriage market equilibrium plays a critical role: Under the baseline equilibrium, the welfare of cohabiting women decreases after the policy change, as it weakens their parental rights. However, as the marriage market adjusts, women in new cohabiting couples receive a higher allocation of household's resources, which induces them to enter these relationships. This policy also closes the gap in human capital between children born to low-educated cohabiting and married parents. These results highlight that changes in family formation and in the relative bargaining position of partners within the household can undo the initial (and potentially intended) effects of policies.

This is among the first systematic efforts to address the complexities of household

structures within an equilibrium framework of household formation. The results underscore the importance of accounting for the evolving nature of families when evaluating policy impacts, since family formation choices can influence individual outcomes and shape responses to policy changes. Future research should further investigate how modern family arrangements shape individual welfare and child development.

References

Adamopoulou, E., Hannusch, A., Kopecky, K., and Obermeier, T. (2024). Cohabitation, child development, and college costs. Unpublished manuscript.

Adda, J., Dustmann, C., and Stevens, K. (2017). The career costs of children. *Journal of Political Economy*, 125(2):293–337.

Agostinelli, F. and Sorrenti, G. (2022). Money vs. time: Family income, maternal labor supply, and child development. *Revise and Resubmit, Journal of Political Economy*.

Aiyagari, S. R., Greenwood, J., and Guner, N. (2000). On the state of the union. *Journal of Political Economy*, 108(2):213–244.

Andrews, I., Gentzkow, M., and Shapiro, J. M. (2017). Measuring the sensitivity of parameter estimates to estimation moments. *The Quarterly Journal of Economics*, 132(4):1553–1592.

Angelov, N., Johansson, P., and Lindahl, E. (2016). Parenthood and the gender gap in pay. *Journal of Labor Economics*, 34(3):545–579.

Attanasio, O., Meghir, C., and Nix, E. (2020). Human capital development and parental investment in india. *The Review of Economic Studies*, 87(6):2511–2541.

Autor, D., Dorn, D., and Hanson, G. (2019). When work disappears: Manufacturing decline and the falling marriage market value of young men. *American Economic Review: Insights*, 1(2):161–78.

Bastian, J. and Lochner, L. (2022). The earned income tax credit and maternal time use: More time working and less time with kids? *Journal of Labor Economics*, 40(3):573–611.

Bau, N. and Fernández, R. (2021). The family as a social institution. NBER Working Papers 28918, National Bureau of Economic Research.

Berniell, I., Berniell, L., de la Mata, D., Edo, M., and Marchionni, M. (2021). Gender gaps in labor informality: The motherhood effect. *Journal of Development Economics*, 150:102599.

Blasutto, F. and Kozlov, E. (2020). (Changing) marriage and cohabitation patterns in the US: do divorce laws matter? Unpublished manuscript.

Bolt, U., French, E., Maccuish, J. H., and O'Dea, C. (2024). The intergenerational elasticity of earnings: Exploring the mechanisms. Working paper, IFS.

Brien, M. J., Lillard, L. A., and Stern, S. (2006). Cohabitation, Marriage and Divorce in a Model of Match Quality. *International Economic Review*, 47(2):451–494.

Bronson, M. A. (2019). Degrees are forever: Marriage, educational investment, and lifecycle labor decisions of men and women. Unpublished manuscript.

Brown, M., Flinn, C. J., and Mullins, J. (forthcoming). Family law effects on divorce, fertility, and child investment. *Journal of Labor Economics*.

Brown, S. L. (2004). Family structure and child well-being: The significance of parental cohabitation. *Journal of Marriage and Family*, 66(2):351–367.

Browning, M., Chiappori, P.-A., and Weiss, Y. (2014). *Economics of the Family*. Cambridge Surveys of Economic Literature. Cambridge University Press.

Calvo, P., Lindenlaub, I., and Reynoso, A. (2024). Marriage market and labour market sorting. *The Review of Economic Studies*, 91(6):3316–3361.

Chade, H. and Ventura, G. (2005). Income taxation and marital decisions. *Review of Economic Dynamics*, 8(3):565–599.

Chiappori, P., Iyigun, M., Lafortune, J., and Weiss, Y. (2017a). Changing the rules midway: The impact of granting alimony rights on existing and newly formed partnerships. *The Economic Journal*, 127(604):1874–1905.

Chiappori, P.-A., Costa-Dias, M., and Meghir, C. (2018). The marriage market, labor supply, and education choice. *Journal of Political Economy*, 126(S1):S26–S72.

Chiappori, P.-A., Iyigun, M., and Weiss, Y. (2015). The Becker-Coase theorem reconsidered. *Journal of Demographic Economics*, 81(2):157–177.

Chiappori, P.-A., Salanié, B., and Weiss, Y. (2017b). Partner choice, investment in children, and the marital college premium. *American Economic Review*, 107(8):2109–67.

Chigavazira, A., Fisher, H., Robinson, T., and Zhu, A. (2019). The consequences of extending equitable property division divorce laws to cohabitants. IZA Discussion Paper 12102, IZA.

Choo, E. and Siow, A. (2006). Who marries whom and why. *Journal of political Economy*, 114(1):175–201.

Ciscato, E. (2021). The changing wage distribution and the decline of marriage. Unpublished manuscript.

Cuadra, B. (2010). Family law—maternal and joint custody presumptions for unmarried parents: Constitutional and policy considerations in massachusetts and beyond. *Western New England Law Review*, 32(3):599–659.

Del Boca, D., Flinn, C., and Wiswall, M. (2014). Household choices and child development. *The Review of Economic Studies*, 81(1):137–185.

Edlund, L. (2013). The role of paternity presumption and custodial rights for understanding marriage patterns. *Economica*, 80(320):650–669.

Fernández, R. and Wong, J. C. (2017). Free to leave? A welfare analysis of divorce regimes. *American Economic Journal: Macroeconomics*, 9(3):72–115.

Foerster, H. (2024). Untying the knot: How child support and alimony affect couples' dynamic decisions and welfare. *Review of Economic Studies*, page rdae105.

Galichon, A., Kominers, S. D., and Weber, S. (2019). Costly concessions: An empirical framework for matching with imperfectly transferable utility. *Journal of Political Economy*, 127(6):2875–2925.

Gayle, G.-L. and Shephard, A. (2019). Optimal taxation, marriage, home production, and family labor supply. *Econometrica*, 87(1):291–326.

Gould, E. D. and Paserman, M. D. (2003). Waiting for Mr. Right: rising inequality and declining marriage rates. *Journal of Urban Economics*, 53(2):257–281.

Goussé, M., Jacquemet, N., and Robin, J.-M. (2017). Household labour supply and the marriage market in the uk, 1991-2008. *Labour Economics*, 46:131 – 149.

Goussé, M. and Leturcq, M. (2018). More or less unmarried. the impact of legal settings of cohabitation on labor market outcomes. Technical Report 2018-08, French Institute for Demographic Studies.

Greenwood, J., Guner, N., Kocharkov, G., and Santos, C. (2016). Technology and the changing family: A unified model of marriage, divorce, educational attainment, and married female labor-force participation. *American Economic Journal: Macroeconomics*, 8(1):1–41.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, 47(1):153–161.

Huntington, C. (2015). Family law and nonmarital families. *Family Court Review*, 53(2):233–245.

Iyigun, M. (2009). Marriage, cohabitation and commitment. IZA DP 4341.

Jennewein, D. M. et al. (2023). The Sol Supercomputer at Arizona State University. In *Practice and Experience in Advanced Research Computing*, PEARC '23, pages 296–301, New York, NY, USA. Association for Computing Machinery.

Kearney, M. S. (2023). The two-parent privilege: How americans stopped getting married and started falling behind. In *The Two-Parent Privilege*. University of Chicago Press.

Kleven, H., Landais, C., and Søgaard, J. E. (2019). Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, 11(4):181–209.

Lafortune, J. and Low, C. (2023). Collateralized marriage. *American Economic Journal: Applied Economics*, 15(4):252–291.

Laufer, S. and Gemici, A. (2009). Marriage and cohabitation. Unpublished manuscript.

Ligon, E., Thomas, J. P., and Worrall, T. (2000). Mutual insurance, individual savings, and limited commitment. *Review of Economic Dynamics*, 3(2):216–246.

Low, H., Meghir, C., Pistaferri, L., and Voena, A. (2022). Marriage, labor supply and the dynamics of the social safety net. Working Paper 24356, National Bureau of Economic Research.

Lundberg, S., Pollak, R. A., and Stearns, J. (2016). Family inequality: Diverging patterns in marriage, cohabitation, and childbearing. *Journal of Economic Perspectives*, 30(2):79–102.

Mazzocco, M. (2007). Household intertemporal behaviour: A collective characterization and a test of commitment. *The Review of Economic Studies*, 74(3):857–895.

McFadden, D. (1989). A method of simulated moments for estimation of discrete response models without numerical integration. *Econometrica*, 57(5):995–1026.

McLanahan, S. and Sandefur, G. (1994). *Growing up with a single parent. What hurts, what helps.* Harvard University Press.

Mourifié, I. and Siow, A. (2021). The cobb-douglas marriage matching function: Marriage matching with peer and scale effects. *Journal of Labor Economics*, 39(S1):S239–S274.

Pakes, A. and Pollard, D. (1989). Simulation and the asymptotics of optimization estimators. *Econometrica*, 57(5):1027–1057.

Persson, P. (2020). Social insurance and the marriage market. *Journal of Political Economy*, 128(1):252–300.

Rangel, M. A. (2006). Alimony rights and intrahousehold allocation of resources: Evidence from brazil. *The Economic Journal*, 116(513):627–658.

Reynoso, A. (2024). The impact of divorce laws on the equilibrium in the marriage market. *Journal of Political Economy*, 132(12):4155–4204.

Rios-Rull, J.-V., Short, J., and Regalia, F. (2010). What accounts for the increase in the number of single households? In *Meeting Papers, 995*. Society for Economic Dynamics.

Rossin-Slater, M. (2017). Signing up new fathers: Do paternity establishment initiatives increase marriage, parental investment, and child well-being? *American Economic Journal: Applied Economics*, 9(2):93–130.

Su, C.-L. and Judd, K. L. (2012). Constrained optimization approaches to estimation of structural models. *Econometrica*, 80(5):2213–2230.

Voena, A. (2015). Yours, mine, and ours: Do divorce laws affect the intertemporal behavior of married couples? *American Economic Review*, 105(8):2295–2332.