Marriage and Cohabitation *

by Ahu Gemici† and Steven Laufer‡
New York University

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†ahu.gemici@nyu.edu
‡sml8@nyu.edu

Abstract

Despite the large occurrence of cohabitation and its strong link to important behavioral outcomes, it has received little attention in the economic literature. We use data from the Panel Study of Income Dynamics to document the labor supply, housework hours, and fertility patterns of cohabiting partners. The data suggests that in comparison to marriage, cohabitation is associated with a lower degree of household specialization, higher relationship instability, and greater degree of positive assortative mating. We develop and estimate a dynamic model of household formation and dissolution, fertility and labor supply and use the estimated model to perform policy experiments that investigate the welfare implications of different institutional arrangements regarding divorce regulations. In a dynamic model of the household with limited commitment, marriage leads to equilibrium outcomes that are closer to the efficient allocation when there are gains from specialization. On the other hand, cohabitation enables partners to insure themselves against uncertainty regarding the match quality of the relationship. Each match has different gains from either living arrangement, depending on their observable characteristics, and match quality. Cohabitation provides a tradeoff between the advantages and disadvantages of getting married and remaining single. We use the estimated model to assess the welfare implications of inefficiencies that may arise in co-residential relationships due to lack of commitment.

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1 Introduction

In the United States, the number of unmarried couples living together has increased significantly between 1960 and 2000. Today, there are 9.7 million Americans living with an unmarried different-sex partner. Empirical evidence from the Panel Study of Income Dynamics shows that relationship stability, labor supply, and fertility of men and women differ considerably by whether they are cohabiting or legally married. Moreover, there are significant differences in the legal regulations unmarried cohabitants and married couples face in the United States. These are factors that suggest that cohabitation constitutes a state of union that is distinct from marriage. In this paper, we look at the implications of different family laws concerning cohabitation and marriage on individuals' relationship, fertility and labor supply choices. Our departure from the literature is the incorporation of cohabitation as a living arrangement that is a distinct alternative to being married and remaining single.

Using the Panel Study of Income Dynamics, we find that in comparison to marriage cohabitation is associated with a lower degree of household specialization, higher relationship instability and higher degree of positive assortative mating. In other words, married women work less than single women, but the difference between cohabiting women and single women's labor supply is statistically insignificant. A similar analysis for men reveals that both cohabiting and married men tend to work more than single men, with married men working more than those cohabiting. Patterns of marital sorting are quite different for cohabiting unions compared to married unions. For example, in cohabiting unions correlation between the labor incomes of partners is much higher, compared to partners in married unions.[1]

A major goal of family law is the protection of parties who have entered into long-term relationships of dependence and interdependence - both economic and noneconomic - and of their children. The law extends a variety of benefits to and imposes obligations upon couples in the officially sanctioned unions called marriage. These rights include the rights of partners against one another, such as remedies upon dissolution and inheritance, as well as the rights against third parties - such as state benefits, tort claims, health related benefits, and rights concerning children. In the United States, most of these marriage rights and benefits do not apply to unmarried cohabitants.[2] Due to lack of such benefits and protections, unmarried partners are

[1] A detailed exposition of these empirical facts including the controls included in these analyses can be found in the data section.

[2] There is a wide variety of ways state legal systems in the United States treat cohabitation. The different approaches range from one extreme where cohabitants have no rights against one another or against third parties, to the other extreme, where cohabitants are treated as though they were married under state law. In Oregon, Washington, Nevada and California, a domestic partnership is almost equivalent to marriage. Within the last 3 decades, some states have adopted, either by case law or statute, a variety of protections for cohabitants. However, in general, the remedies offered to cohabitants in the United States are very limited in comparison to other countries. Moreover, even in states where marriage rights are

rendered vulnerable especially if the relationship ends. In many states in the US, the law of cohabitants' rights is mostly not adequate to protect the dependencies arising from long-term cohabitation or to compensate for the contributions made by either of the parties, especially the one who serves as a homemaker during the course of the relationship.

The current debate in the United States regarding family laws is whether the legal system should extend some or all of the protections inherent in marriage to unmarried cohabiting partners whose living arrangements are functionally similar to it. The relevant question for this debate is: What are the welfare implications of extending protections inherent in marriage to unmarried cohabiting partners? One of the goals of this paper is to partially address this question. In this paper, we assess the implications of family laws, such as regulations regarding divorce or dissolution of a cohabiting household, on intra-household allocation, fertility, household formation and dissolution patterns. In order to do this, we develop and estimate a dynamic model of household formation and dissolution, fertility and labor supply and use the estimated model to perform policy experiments that investigate the welfare implications of different institutional arrangements regarding the dissolution of cohabiting relationships or marriages.

The main distinction that we emphasize is that unmarried cohabitants do not need to follow strict procedures to dissolve their living arrangements, whereas married couples do.[3] This feature of cohabitation enables partners to take advantage of the benefits of living together, without the commitment that legal marriage requires. For example, Brien,Lillard and Stern (2006) show that the lower cost of separation makes cohabiting relationships attractive for couples, as it gives the opportunity to hedge against future bad shocks to the relationship quality while taking advantage of benefits of living together such as joint consumption of a public good, returns to specialization and children. However, the lack of commitment in a cohabiting relationship relative to marriage has disadvantages, as the increased chance of dissolution may prevent the couple from fully realizing some of these benefits.

In the model, in each period a single individual meets a potential partner with an exogenous probability and decides whether he/she is going to continue being single, start cohabiting with the partner, or get married. In addition to their relationship status, the agents choose in each period how to divide their time between housework, labor market work and leisure and whether to have children or not. Working at a given period increases an individual's human capital,

fully extended to cohabiting partners, the laws allowing for domestic partners to obtain dissolutions, legal separations and annulments is new. There are many things that are still uncertain regarding property, custody and tax issues.

[3]There are other legal differences between marriage and cohabitation that we will not consider in this paper, but that are nevertheless important. These involve the rights of partners against one another, such as remedies upon dissolution and inheritance, as well as the rights against third parties - such as state benefits, tort claims, health related benefits, and rights concerning children. Most of these rights have the purpose of recognizing the contribution of one partner to the property of the other upon dissolution.

and hence future wages. Agents face uncertainty regarding their earnings, their match quality if they are in a relationship, and whether they will have children. In order to characterize the allocations chosen by married/cohabiting individuals, we employ the collective household model in a dynamic framework with no commitment so that couples cooperate but they are unable to commit to future allocations as in Mazzocco and Yamaguchi (2007). For the couple's problem, we make the assumption that the outcomes to the household's allocation problem are constrained efficient so that the solution to the couple's problem is obtained by using a Pareto problem with participation constraints. Due to lack of commitment, the share of the total household resources that a partner receives is subject to change depending on his/her outside option each period. In addition, the partners are not able to commit to not separate in the future, and face uncertainty regarding future marital instability. This gives rise to inefficiencies within the relationship since (1) Household members cannot contract over transfers to be made in the future periods of the relationship, (2) Household members cannot make conditional transfers for future separation states. The potential for inefficiencies is higher for higher levels of probability of separation. Holding everything else constant, this probability is higher for a cohabiting couple as their cost of separation is allowed to be different from marriage. The size of the efficiency concerns depend on the home production technology and preferences.

In the model, the gains from living together are: (1) Joint consumption of a public good, (2) Specialization in home production and market work, (3) A match-specific benefit, which is observable to the partners, but is subject to change as the relationship progresses and (4) Children. The extent to which each of these gains are realized depends on whether the couple chooses to cohabit or get married. The tradeoff that the couple faces in making this choice is as follows. Cohabitation allows the partners to benefit from living together, without the requirement to face legal separation costs in the event of negative match specific shocks. Marriage makes future separation more costly and this enables the agents to fully specialize. In this regard, we are interested in the welfare implications of partners' inability to make binding agreements. Inefficiencies may arise in relationships due to lack of access to a commitment technology.[4] More importantly, individuals can choose the degree of commitment they have access to in their relationship, through choosing between marriage and cohabitation. These choices depend on their observable and unobservable characteristics, the characteristics of their potential matches, the quality of their match, as well as preferences and the home production technology. In this paper, we develop a framework that allows us to control for such selectivity into different living arrangements which are marriage, cohabitation and remaining single.

The degree of commitment in a relationship also has implications on the degree of positive

[4]Lundberg and Pollak (2001) conduct a detailed analysis of inefficiencies that may arise in marriage, due to lack of commitment.

assortative mating for cohabiting unions in comparison to marital unions. This is because the substitution possibilities in the time inputs of the spouses in the household production function translates into different mating patterns depending on the degree of commitment. In this case, patterns of marital sorting observed in the data are strongly linked to the intra-household decision process, as in Del Boca and Flinn (2006). This paper is also closely linked to Greenwood and Guner (2008) who look at the role of technological progress on marriage and labor market outcomes since World War II.

We structurally estimate the model using data from the Panel Study of Income Dynamics (PSID), which have detailed information on relationship and wage histories, as well as labor market and housework hours of partners. The model is estimated by simulated method of moments, which minimizes a weighted average distance between a set of sample moments and moments simulated from the model. The parameter estimates show that men and women have substantial comparative advantage in the labor market and at home. Men on average have higher wage offers and women have higher level of productivity at home. Moreover, the estimates of the home production technology show that the housework hours of men and women are close substitutes. Hence, the estimated model shows that there are large gains from specialization. The estimates of the match quality process shows that there is persistence in match quality, but that couples face a substantial amount of risk in their match quality. These features of the model show that there is a tradeoff between cohabitation and marriage, and the extent to which they compare to each other depend on the couple's initial match quality draw and their labor market opportunities.

We use the estimated model to conduct counterfactual experiments, such as decreasing the cost of divorce. With higher divorce costs, marriage rates fall and cohabitation rates increase. Overall, the proportion of individuals getting together (married or cohabiting) increase. The higher divorce costs also lead to a higher degree of specialization for married couples. Married women's labor market hours increase. The welfare implications are most stark for those couples who are married in the baseline, but who optimally choose to cohabit under the counterfactual scenario. Due to the prohibitively high level of divorce costs, they choose to not marry, but they still choose to get together through cohabitation due to the public good and match quality benefits of living together. Households with large wage differentials between the partners, and who therefore have the highest gains from specialization, are the ones who lose most as a result of the higher divorce costs. When costs increase, they choose to cohabit instead and their level of public good output declines. The welfare consequences of larger divorce costs are therefore the highest for couples who stand to benefit most from marriage under the baseline due to their comparative advantages in the labor market.

This paper contributes to a growing literature in economics and demography on marriage

and cohabitation in relation to household formation, dissolution and labor supply. Brien, Lillard and Stern (2006) study cohabitation decisions and find that individuals cohabit in order to learn about their potential partners and hedge against future bad relationship specific shocks. Choo and Siow (2005) investigate marriage and cohabitation behavior in Canada. Blau and van der Klaauw (2006) investigate the effect of labor market and policy variables on the family structure experience of children. Blau and van der Klaauw (2010) analyze the determinants of family structure. Light and Omori (2008) use NLSY 1979 data to analyze the economic determinants of marriage, cohabitation and divorce, and Light (2004) investigates the effect of marriage and cohabitation on total family income. Reinhold (2007) investigates the relationship between premarital cohabitation and subsequent marital instability, and more importantly, how this relationship has changed significantly over time. Greenwood and Guner (2008) look at the role of technological progress on marriage and labor market outcomes since World War II. Chade and Ventura (2004) analyze the equilibrium and welfare effects of income taxation on marital decisions, and allow for the possibility of cohabitation as an alternative to marriage, but they do not model labor supply or fertility decisions. Jacquemet and Robin (2011) non-parametrically estimate a search-matching model of the marriage market and household labor supply.

2 Model

In the model, agents make decisions regarding relationship status, employment, and fertility in each period. At each age a, a single individual chooses the following: hours of labor market work (h_a), hours of housework (d_a), and whether to cohabit or marry (if he/she meets a potential partner) or continue search as a single person. When married, the individuals jointly choose: hours of labor market work and housework of both spouses, whether to become pregnant or not (if at a fecund age), and whether to stay married or separate. When cohabiting, individuals face the same alternatives as when they are married, with the addition of the decision to get married or not.

2.1 Preferences

The individual's utility flow depends on his/her private leisure, public good consumption (produced by a intra-household production technology with income and domestic labor supplies of the partners as inputs if married or cohabiting, private if single), number of children, and match

quality (if married or cohabiting). The utility function of an individual is given by,

$$
\begin{aligned}
&u(l_i, Q, n_a, \theta_a, \xi_a) = \\
&\alpha \log(l_i) + (1-\alpha)\log(Q+\zeta) + u_{KID}(\xi_a) \cdot n_a \\
&+\mathbf{1}\{\xi_a = c \ or \ \xi_a = m\}\theta_a + \mathbf{1}\{\xi_a = m\}u_{MAR,i} + \mathbf{1}\{\xi_a = m\}u_{COH,i} \\
&+\mathbf{1}\{\xi_{a-1} = m, \xi_a = s\}(\kappa_m + \kappa_k n_a) + \mathbf{1}\{\xi_{a-1} = c, \xi_a = s\}(\kappa_c + \kappa_k n_a)
\end{aligned}
$$

where l_i is leisure, Q the quantity of the public good produced in the household, θ_a the match specific quality of at age a, n_a indicates the presence of children from the current relationship. The utility of marriage relative to cohabiting is $u_{MAR,i}$ We include some heterogeneity in preferences for marriage by allowing for two types of agents with marriage preferences $u_{MAR,1}$ and $u_{MAR,2}$ respectively. We allow the distribution of these types to vary at different levels of education, The variable ξ_a denotes the relationship status and takes on three values: marriage, cohabitation, and being single. Parents get utility $u_{KID}(\xi)$ from children from the current relationship, and this utility may differ depending on the relationship status. κ_M and κ_C indicate the cost of separating for a married couple and a cohabiting couple, respectively, so that the separation cost is determined by the relationship status in the preceding period (ξ_{a-1}). κ_K indicates an additional separation cost that the couple incurs, if they have children. Finally, ζ is the utility that the individuals get when they consume zero units of the public good Q.

2.2 Fertility and Children

Each period, married and cohabiting couples determine whether they want to try to have a child. Whether they have an additional child the following period is a random event whose probability is determined by this choice. We assume that for couples who do not wish to have a child, this probability is zero. For couples trying to have a child, we fix this probability at 0.9, which is the approximate probability that a couple is able to conceive after one year of trying (Taylor, 2003). Children give direct utility to both parents and we allow this utility to be different depending on the status of their relationship. Couples with children receive utility each period, $u_{KID}(\xi)$, which depends on whether they are married, cohabiting or separated. Offsetting the positive utility from children, we also assume that having children makes it more costly to dissolve a relationship. Married and cohabiting couples with children incur an extra utility cost κ_K if they separate. Finally, having children makes the housework of both parents more productive, as described below in Section 2.5.

2.3 Wages

Agents begin the model with an endowment of human capital K_a drawn from a gender and education specific distribution

$$\log K_{i,a=1} \sim \mathcal{N}(\mu_{w0ie}, \sigma^2_{w0})$$

where μ_{w0ie} is the mean starting endowment for gender $i = m, f$ and education $e = 1, 2$, with $e = 1$ denoting no college and $e = 2$ denoting at least some college. The variance of this initial distribution, σ^2_{w0} is assumed to be common across gender and education groups.

Each period, each individual works h_{ia} hours in the labor market at a wage $w_{ia} = rK_{ia}$ where r is the constant rental rate of human capital. Human capital then evolves according to:

$$K_{i,a+1} = K_{ia}^{\alpha_{wi}}(A_{wi} + B_{wi}h_{ia})^{(1-\alpha_{wi})} \cdot \varepsilon_{i,a+1}$$

with $\log \varepsilon_{ia} \sim \mathcal{N}(0, \sigma^2_{wi})$. This is a similar specification to that of Heckman, Lochner and Taber (1998) and implies the following law of motion for wages

$$\log w_{i,a+1} = (1 - \alpha_{wi}) \log r + \alpha_{wi} \log w_{ia} + (1 - \alpha_{wi}) log(A_{wi} + B_{wi}h_{ia}) + \log \varepsilon_{i,a+1}.$$

We allow parameters $\alpha_{wi}, A_{wi}, B_{wi}$ and σ_{wi} to differ between genders ($i = m, f$) and we choose a normalization with $r = 1$.

2.4 Marriage Market and Match Quality

Every period, with probability p, a single individual meets a potential partner. For an individual with wage w_i, the wage distribution of these potential partners is given by

$$\log w_p \sim \mathcal{N}(a_{wpi} + b_{wp} \log w_i, \sigma^2_{wp})$$

where a_{wpi} is allowed to differ by gender. A non-zero value of b_{wp} introduces an exogenous source of correlation between the wages of the two partners. A second, endogenous source of correlation will emerge from the agents' decisions about which types of potential partners they chose to marry or cohabit with.

Once a potential partner is drawn, the potential couple then draws a match quality of the partnership, θ from a distribution

$$\theta \sim \mathcal{N}(\mu_\theta, \sigma^2_\theta)$$

The couple then decides whether to marry/cohabit or whether to remain single and continue

search. The problem that the couple faces when they are making this decision is outlined below in the household's problem section. If they decide to get married or cohabit, their match quality follows a Markov process during the course of their relationship, so that in each period they draw a new match quality conditional on the match quality in the previous period. As in Brown and Flinn (2006), we have a finite number of match quality values $\theta_1, ..., \theta_M$. The probability of a match quality of θ_j increasing to θ_{j+1} is given by P_θ^+ if $j < M$. The probability of a match quality of θ_j decreasing to θ_{j-1} is given by P_θ^- if $j > 1$.

2.5 Home Production Technology

There is a public good that is domestically produced using the domestic labor supplies of the partners as inputs. The intra-household production technology is given by $Q(d_m, d_f, g)$, where d_m, d_f are the partners' number of housework hours and g is the amount of goods purchased in the market for the production of the public good. The output of the intra-household production process is not observable and is not marketable. At age a, the public good is produced according to the following technology:

$$Q_a = ((1 + \phi(\mathbf{1}\{n_a = 1\}))D_a^\sigma + g_a^\sigma)^{1/\sigma}$$

where g_a is the amount of market purchased goods, and D_a is the effective housework hours.ϕ governs the extent to which the presence of kid in a household shift the productivity of housework hours. In the case of couples, this is the wife's children from previous marriages in addition to children from current marriage. ϕ shifts the productivity of housework hours as long as there is any children in the household, regardless of the number of children. D_a is defined as,

$$\begin{aligned} \text{Single Males:} \quad D_a &= \delta_m d_{ma} \\ \text{Single Females:} \quad D_a &= \delta_f d_{fa} \\ \text{Couples:} \quad D_a &= (\delta_m d_{ma}^\nu + \delta_f d_{fa}^\nu)^{1/\nu} \end{aligned}$$

2.6 Budget Constraint

In each period the individuals buy a market good g with their labor income:

$$\begin{aligned} \text{Single Males/Females :} \quad g_a &= w_{ia} h_{ia} \quad i = m, f \\ \text{Cohabiting or Married:} \quad g_a &= w_{ma} h_{ma} + w_{fa} h_{fa} \end{aligned}$$

We abstract from borrowing and savings decisions, so that in each period the labor income is used to purchase g, which acts as an input into the home production technology.

2.7 Household's Problem

The problem of a cohabiting/married couple can be formulated as the problem of a planner who assigns Pareto weight μ_m to the male partner and $(1-\mu_m)$ to the female partner.

The first best allocation solves,

$$\max_{\{h_{m,a},h_{m,a},d_{m,a},d_{m,a},\xi_a,p_a\}_{a=1}^{A}} \mu_m \sum_a^A \beta^a u(l_{m,a},Q_a,n_a,\theta_a,\xi_a) + (1-\mu_m)\sum_a^A \beta^a u(l_{f,a},Q_a,n_a,\theta_a,\xi_a)$$

where each period the couple chooses the male and female labor market hours $(h_{m,a},h_{f,a})$ and housework hours $(d_{m,a},d_{f,a})$, whether to attempt to get pregnant that period or not (p), and what the relationship status should be (ξ_a). The couple does not have access to a commitment technology, therefore we formulate the Pareto problem with participation constraints. In each period, the planner must provide each partner a continuation value at least as large as that partner's outside option, $\bar{V}_{i,a}(w)$, which is the value of becoming single. This value depends on the individual's gender $(i=m,f)$, age and current wage. With this constraint, the problem can be expressed as:

$$\begin{aligned}
\max_{h_{m,a},h_{f,a},d_{m,a},d_{f,a},p_a,\xi_{a+1}} \quad & \mu_{m,a}\left(\sum_a^A \beta^a u(l_{m,a},Q_{m,a},n_a,\theta_a,\xi_a)\right) \\
& +(1-\mu_{m,a})\left(\sum_a^A \beta^a u_f(l_{f,a},Q_{f,a},n_a,\theta_a,\xi_a)\right) \\
\text{s.t.} \quad & \sum_{r=a}^A \beta^{r-a} u(l_{m,a},Q_{m,a},n_a,\theta_a,\xi_a) \geq \bar{V}_{m,a}(w) \\
& \sum_{r=a}^A \beta^{r-a} u(l_{f,a},Q_{f,a},n_a,\theta_a,\xi_a) \geq \bar{V}_{f,a}(w)
\end{aligned}$$

We can reformulate this problem in its recursive form using the approach of Marcet and Marimon (2000) and Mazzocco and Yamaguchi (2006) where they expand the set of state of variables by including a new state variable, M_{ia} that denotes the Pareto weight plus the cumulative sum of the Lagrange multipliers on the participation constraints from all previous periods. Hence, whenever spouse i's participation constraint binds, the weight on this utility function is increased until that partner is indifferent between remaining in the relationship and becoming single. If there is no value of the Pareto weight that simultaneously satisfies the participation constraints of both partners, the couple separates. In this model, divorce is an efficient outcome in this problem and it occurs whenever there are no more gains to staying married compared to the value of separating.

When a couple first meets, the initial Pareto weight is determined by a Nash bargaining

problem that assigns both potential partners equal bargaining weight, where the outside option for both potential partners is to remain single.

3 Discussion

In the model, the gains from marriage/cohabitation stem from the joint consumption of a public good in the household, specialization, a match-specific utility, utility that is specific to marriage and children. These generate positive economic gains from marriage in the sense that the output the partners generate together is greater than the sum of the outputs that the partners can obtain separately. However, the extent to which each of these gains are realized depends on whether the couple chooses to cohabit or get married.

The tradeoff that the couple faces in making this choice is as follows. The couple faces some uncertainty regarding their match quality, and this uncertainty is resolved at the beginning of the second period: (1) Cohabitation provides an opportunity to hedge against future negative match quality shocks. Therefore, cohabitation allows the partners to benefit from the advantages of living together, without the requirement to face legal separation costs in the event of negative match specific shocks, (2) Marriage makes future separation more costly and this enables spouses to fully specialize at home and in the labor market. The first is the only benefit of cohabitation relative to marriage in the model. The latter advantage of marriage arises when each partner has a comparative advantage at home or in the labor market. When the partners have a comparative advantage in the labor market or at home and when their inputs into the home production technology are close substitutes, the efficient solution to the household problem entails full specialization. For example, consider a case where the female's productivity at home is higher than the male's and/or male's productivity in the labor market is higher relative to hers. In this case, the efficient solution entails her to work in household production and him to work in the labor market. When the female works at home, she foregoes the opportunity to accumulate higher human capital that increases her future wages. In the model, this decreases the value of her future outside option and therefore her share of the future household surplus, putting her at a disadvantage relative to the male. Therefore, the Pareto optimal allocation can emerge as an equilibrium outcome only if she is compensated for her foregone labor market opportunities. Such compensations and promises for future transfers are not feasible under limited commitment. The solution to the household allocation problem in the case of a married household is closer to the first-best outcome under full commitment. This is because participation constraints bind less frequently for a married household due to the higher separation costs.

4 Data

The core PSID sample consists of two independent samples: a cross-sectional national sample, known as the SRC (Survey Research Center) sample, and a national sample of low-income families, known as the SEO (Survey of Economic Opportunities) sample. This core sample originated in 1968 and the individuals from families in the core sample were interviewed from 1968 to 1996 every year and every two years after 1996. In 1990 and 1997, a supplemental sample of Latino households and Immigrant families were added to the core PSID sample. The estimation sample used in this paper includes only those individuals who are associated with families from the SRC.

For the years 1968-1977, the PSID does not make the distinction between marriage and permanent cohabitation, and identifies a respondent in either kind of relationship as "married.". Starting in 1978, the survey records the legal marital status of the head, which can be used to distinguish between those who are legally married and those who are cohabiting. After 1993, the survey asks only for the legal marital status so it is no longer possible to distinguish a respondent who is single from one who is cohabiting using these questions. Alternatively, starting in 1983, the PSID records in greater detail the relationship of each member of the household to the head. First-year cohabiters are identified by a special code, as are "permanent cohabiters," defined as those cohabiters who have been in the household long enough to have appeared in an earlier wave of the survey. (Information such as hours worked that is collected for wives is also collected for permanent cohabiters.) From the relationship code assigned to the head's wife or partner, we are able to construct an alternative measure of the relationship's status.

For our tabulations, we use both approaches to identify married and cohabiting couples, using one if the other is ambiguous, and discarding the few observations where the two measures contradict each other. When we report transition probabilities by the duration of the relationship in its current status, we keep only observations where we can clearly identify the start of the relationship.[5] Because the PSID is administered only once per year, there is a limit to the precision with which we can identify the length of a relationship. For example, a relationship that is observed in one wave and has dissolved or changed status by the next wave is assumed to have lasted for one year. Similarly, this holds for a relationship that is observed for longer. The method by which we identify married and cohabiting couples does not let us clearly identify the relationship status of any observations before 1977. Therefore we do not use data collected prior to this year.

[5] We can do this either if we see one spouse in a particular wave and then the other spouse enters the household the following wave, or if we explicitly see the status of relationship change from cohabiting to married, or if the cohabiter is coded as first-year cohabiter. In addition, there are cases where a partner appears for the first time, but is not identified as a first-year cohabiter, but is coded as permanent cohabiter the following wave.

After 1997, the PSID switched to a biannual format. In order to maximize the number of observations for the later cohorts, we use available information on dates of marriage and divorce and the movements of individual household members to construct the relationship status of respondents during years in which data was not collected. This is particularly important for our analysis as information on labor income and hours worked are collected for the calendar year before the year of each survey, which is the "off-year" after the survey format changes. When we are able to do so, we assign to that year the relationship status as of the mid-point of the year.

Couples who were cohabiting or married in both the preceding and following year are assumed to have the same status during the intervening year. When a new marriage is observed in a year following one in which no data was collected, we use the marriage history to identify if the marriage began before or after the middle of the previous year. Similarly, when a new cohabiting relationship is observed, we use the dates on which the partner moved into the household to determine if they had begun to cohabit before or after that date. Using a combination of the marriage date and the move-in date, we are able to identify if a newly married couple had been living together un-married in the preceding year. For a relationship that ends between two survey waves, we use the same approach to assess the status of the relationship at the middle of the intervening year. In this case, we use dates of divorce or separation from the marriage history files as well as the move-out dates of former household members.

Over the course of the sample period, we observe the respondents in 3,667 relationships with distinct partners. In 25% of these, the couple lives together un-married, either before or without ultimately getting married. 65% of relationships are observed to eventually be married. Of all cohabiting relationships, 45% eventually result in marriage. Conversely, we observe that 18% of marriages begin as cohabiting relationships. The true number is likely higher as our tabulation excludes episodes of pre-marital cohabitation that were sufficiently short that respondent was not interviewed during the period.

Table 2 shows the annual labor market and housework hours worked by marital status and presence of children in the household. Our model predicts that because cohabiting couples have a lower level of commitment and are more likely to dissolve the relationship, they are less able to specialize. Traditionally, the male partner specializes in labor-market production and the female partner in home-production, so we hypothesize that married or cohabiting women should work less in the labor force and more at home than single women, but that this effect should be stronger for married women. As a simple descriptive test of this hypothesis, we regress the number of hours worked by women on dummy variables for marital and cohabitation status, controlling for age and children and including person-specific fixed effects. The results of this regression are shown in Table 3. We find that married women do work less than single women, but the effect of cohabitation compared to being single is statistically insignificant. A similarly

specified regression for men reveals that both cohabiting and married men tend to work more than single men, with married men working more than those cohabiting.

Having described the marriage and cohabitation patterns of our PSID sample, we consider the differences in housework hours between couples of different relationship status. In married couples with children, the wife performs an average of 20 hours of housework and the husband 8. The corresponding numbers for cohabiting couples with children are 18 hours for the female partner and 10 for the male partner, suggesting that cohabiting couples do engage in less traditional gender specialization than married couples. To be more careful about other factors that might affect the division of housework, we regress the hours of housework for both partners on dummies for the relationship status, controlling for number of children, hours worked in the labor market by both partners, and person-specific fixed effects. The results of this regression are shown in Table 4. We find that in legal marriages, compared to cohabitation, the wife works an an additional 1.9 hours per week in the house and the husband 2.0 hours fewer. Thus our conclusion regarding the effect of the relationship status on specialization seems fairly robust.

5 Estimation Method

Estimation is carried out by simulated method of moments where the model parameters are chosen to minimize a weighted average distance between a set of sample moments and moments simulated from the model. The moments used in the estimation are listed below. Moments related to the couples' labor supply behavior are as follows: 1) Hours worked and wages by gender,age,education (by cohort), 2) Variance of wages (by cohort), 3) Correlation between male and female education level in a cohabiting and married union (by cohort), 4) Transition rates between different relationship states (single, cohabiting, married) by relationship length (by cohort), 5) Number of children by relationship status (by cohort), 6) Transition rates between relationship status, and having a child in subsequent periods (by cohort). The method of moments estimator used is defined as follows:

$$\min \; g(\theta)' W g(\theta) \tag{1}$$

The weights are the inverse of the estimated variances obtained from the micro-data, divided by the number of individuals that contribute to each moment. $g(\theta)$ is defined as follows:

$$g(\theta) = \frac{1}{N}\sum_{i=1}^{N} g_i(\theta) = \left[\bar{m}^1 - \mu^1(\theta), ..., \bar{m}^K - \mu^K(\theta)\right] \tag{2}$$

where $\{\bar{m}_1, .., \bar{m}_k, ..., \bar{m}_K\}$ correspond to each of the data moments defined above, and

$\{\mu_1(\theta), .., \mu_k(\theta), ..., \mu_K(\theta)\}$ are the corresponding model moments. N denotes the number of individuals in the sample.

6 Estimation Results

Below we present the estimation results. We made a number of choices in the estimation in the interest of keeping the problem at a manageable size for computation.

We approximate the decision problem by using discrete distributions to represent distributions of the match quality θ, and wage shocks ε. Following Kennan (2004), we specify a continuous distribution for each of the two shocks, and given the parameters of this distribution, we specify a discrete approximation to it. The estimation results are obtained by allowing for $n_\theta = 5$ and $n_{wage} = 5$ support points for the discrete approximations to the match quality and wage distributions.

We also discretize the decision variable for labor supply and housework hours. In the model, there are three choices regarding labor supply and housework hours. For labor supply, choices for daily hours are 0, 4, 8 and 10 which correspond to not working, working part-time, and two possible choices of hours within full-time employment. For housework hours, choices for daily hours are 0.1,3,6, and 9. These numbers are then translated into their weekly or annual counterparts in the data, assuming that time is supplied for five days per week and 50 weeks per year. Housework and labor market hours in the data are truncated to the maximum values allowed in the model, 45 hours per week of housework and 2500 hours per year in the labor market.

We use a grid for the Pareto Weights, μ, also. The estimation results reported here are obtained by setting $n_\mu = 5$. We find that simulated moments are sensitive to the number of grid points allowed for the Pareto weight as well, although to a less extent than they are to the θ specification. Unobserved heterogeneity in utility of marriage and wages is introduced by allowing for two types.

The parameters that govern utility agents receive from different relationship choices are not jointly identified. We normalize the mean of the starting match quality distribution (μ_θ), the direct utility from cohabiting (u_{COH}), and the cost of dissolving a cohabiting relationship (κ_c) to zero. The utility that singles get from children ($u_{KID}(s)$) is also not separately identified and we normalize it to zero, which has the additional benefit that we do not need to keep track of children from previous relationships. This greatly reduces the computational burden of estimating the model.

6.1 Parameter Estimates

Tables 5 through 8 report the parameter estimates. Table 6 displays the home production technology parameters. The key parameters are σ and ν which governs the degree of substitutability between the market purchased goods and housework hours in the production of the public good, and between the housework hours of the partners, respectively.

Our estimated value for σ is 0.51, a reasonably high degree of substitutability between market purchased goods and housework hours. Parameter estimates also show that housework hours of the partners are close substitutes, $\nu = 0.92$. In the data, both cohabiting and married men work fewer hours in the house than women and our parameter estimates imply that women are more productive in the house with $\delta_f = 1.07$, compared to $\delta_m = 0.76$. When the technology is such that the production technology allows for higher degree of substitution possibilities between the housework hours of men and women, the comparative advantage created by the higher wages of men and larger home productivity of females translates into household allocations that entail specialization. With limited substitution possibilities, we should observe men working as much in the house as women do, despite the fact that they have higher productivity in the labor market. On the other hand, with a production technology that exhibits the property of perfect substitutability between the housework hours inputs of men and women, we should observe men to be not working in the house at all. Neither of the last two scenarios hold in the data; men work less than women in the house, but they do work on average about 10 hours per week.

The other factor that contributes to the gains from specialization is the comparative advantage of men over women in the labor market. Table 8 shows that among both high-school and college-educated workers, men draw higher initial levels of human capital (and therefore begin with higher wages) than women do. The difference is particularly pronounced for those with no college education, with males in this group starting with wages that are 49% higher than those of similarly educated women. The difference between the genders is smaller for those with some college, where starting male wages are only 11% higher than female wages, though because of the coarseness of the wage grid, the associated standard errors on these measurements are large. Once in the labor force, men are able to carry over a greater share of their previous human capital into the following period than women are ($\alpha_{wm} = .98$ compared to $\alpha_{wf} = .95$). In addition, males lose less of their human capital by not working are able to accumulate human capital more easily than women when they do work. An avergae male worker who leaves the labor force for one year expects to lose 10% of their human capital, compared to 30% for women. For married or cohabiting women facing uncertainty about the future of their relationship, this provides a strong incentive to preserve human capital by not specializing in housework despite the gains in current period utility from doing so.

The transition probabilities that govern the evolution of the match quality θ is another key

parameter in the model. In the data, the level of separation rates and also the pattern they follow over a relationship's length are the key moments that identify the transition probabilities. Moreover, the degree of uncertainty faced in a relationship determines choices about whether to try to have children (we estimate a large additional separation cost for couples with children), as well as the degree of specialization partners can achieve in the household given their comparative advantages in the labor market and household. Table 7 shows that the probability of a positive match quality shock, p_θ^+, is estimated to be 22%, while the probability of a negative match quality shock, p_θ^-, is 26%.

6.2 Model Fit

Below we present the within-sample fit for chosen moments in the estimation.

In Table 9, we show that the model is able reproduce the patters of marriage and cohabitation rates in the data. Marriage rates in the model climb from 39% at age 21-25 to 58% at age 26-31, compared to a rise from 41% to 59% in the data. Cohabitation rates are much lower than marriage rates, fluctuating between 5% and 6% in both the data and the model.

The difference in the rates at which marital and cohabiting relationships dissolve is the key to understanding the difference in specialization opportunities. These rates are shown in Table 10. Couples in their first three years of marriage divorce at a rate of 6% per year, a rate that falls to 4% for couples that have been married 7-9 years. In the simulations, divorce rates at different marital lengths also fluctuate between 4 and 6%, though the trend is not monotonic as it is in the data. In the model simulations, cohabiting couples face much higher dissolution rates of 14% in the first three years and 13% thereafter. The simulations match the high dissolution rates of couples during their first three years of cohabitation but under-predict by a large amount the rate at which couples separate if they have been together longer. In the data, this group of couples who have been cohabiting for more than three years account for only 20% of all cohabiting observations.

This difference in the stability of relationships produces differences in the time allocations for the two spouses or partners. To remove some of the compositional effects of from the analysis, Tables 11 and 12 present a comparison of labor market and housework hours restricted to individuals aged 25 to 30 in the model and data. In Table 11, we show labor market hours by gender, relationship status and the presence of children. While single men and women work similar number of hours, once in a marital or cohabiting relationship, men's hours increase and women's hours decrease. The model is particularly successful at capturing the differences in women's hours across different relationship states and the higher degree of specialization in housework for married women compared to cohabiting ones. In the data, married women without children work 1664 hours per year compared to 1749 hours for cohabiting women. In the model, these num-

bers are 1536 hours and 1780 hours respectively. The presence of children significantly increases the value of house work relative to hours in the labor market. In couples with children, both men and women in both marital and cohabiting relationships work significantly fewer hours in labor market hours, with a much larger decrease for women. These patterns are quantitatively reproduced in the model simulations.

In Table 12, we show that the choice of housework hours mirrors decisions made in the labor market. Single men and women work the fewest number of hours at home. As women in relationships decrease their time working out of the house, they increase their hours of housework. The greater specialization of married women compared to cohabiting women we described in terms of labor market hours can also be seen in the housework data. Married women without children work 11.8 per week at home compared to 10.1 for cohabiting women. In the presence of children, married women increase their housework to 21.2 hours, cohabiting women to 18.0 hours. The model's fit to these numbers is extremely close with married women working 22.9 and 11.4 hours with and without children respectively, and cohabiting women working 21.2 and 11.8 hours with and without children. The model's fit to male housework hours is also extremely good, though it under-predicts the number of hours for cohabiting men without children.

Because marital relationships are more stable and children increase the costs of separation, children become more desirable for married couples than for cohabiting ones, a pattern that is reproduced in the model. Among sample members age 25 to 35, 77% of married couples but only 42% of cohabiting couples have children. In the model, these numbers are 78% for married individuals and 44% for those cohabiting.

In Tables 13-14, we show wage profiles by age, gender and education. Wage profiles for both genders are well captured by the model, though the profiles for college-educated men are too flat. This happens because we under-predict the hours worked by this group and therefore understate their accumulation of human capital. In general, the model does a good job describing hours, particularly for males with no college education, and it reproduces the fact that hours among college-educated women decline from ages 24 to 36 as they have children and spend more time working at home. One difficulty faced by the model is that in order to prevent cohabiting women from specializing to a greater degree in housework, we estimate parameters that make it difficult for women to build and maintain human capital. A consequence of this parameterization of the model is that in order to match female wage profiles, we over-estimate the number of hours worked by women, in particular married women with children.

Overall, the model is successful in reproducing patterns found in the data with regard to relationship formation and dissolution, and differences in fertility, labor market hours and housework hours for individuals in different relationships. We next use this parameterized model to explore several counterfactual scenarios designed to understand the role of public good production, spe-

cialization, match quality and children in individuals' decisions about relationship status and time allocation.

7 Policy Experiment: Increasing Divorce Costs

The estimated model is used to assess the impact of increasing divorce costs on marriage and cohabitation patterns, as well as labor market outcomes. In Experiment I, we increase the cost of divorce by 50 percent. The model is well suited to study the implications of such a policy, as both labor supply, housework hours, as well as separation are endogenous outcomes, and are all influenced by divorce costs.

When divorce costs increase, it is more costly to dissolve a bad marriage, which makes any marriage a less attractive option *ex-ante*. This causes a decline in the marriage rate as more potential couples choose to cohabit rather than get married. With higher divorce costs, the total proportion of people who live together (married or cohabiting) between ages 21-26 also falls from 44 to 42 percent. Table 15 shows that the marriage rate among individuals aged 21-25 falls from 39 percent to 32 percent. At ages 26-30, marriage rates decrease by five percent from 58 percent to 53 percent. On the other hand, among the couples who choose to live together, the proportion who chooses to cohabit increases to 10 percent. Higher divorce costs make separation more difficult within marriage. This decreases the value of marriage and increases the attractiveness of cohabitation due to individuals' ability to hedge against future negative match quality shocks within cohabitation.

Due to the fact that divorce is a lower risk under this counterfactual, married women work fewer hours in the labor market. This can be seen in Table 16, which shows the annual labor market hours under the baseline and counterfactual scenarios. The effect is similar for married women with or without children. Annual hours worked by married women fall from 1536 hours to 1476 hours for those without children. For married women with children, the corresponding decrease is from 1186 to 1130 hours. Men's labor market hours also change but in a smaller amount compared to women. Overall, the degree of specialization in the household increases, although not substantially. This occurs because higher cost of divorce manifests itself in lower frequency of renegotiations within marriage and the household equilibrium allocation gets closer to the full-commitment allocation which is the efficient one in the presence of comparative advantages and substitution possibilities in the home production technology. In the estimated model, relationships carry a substantial amount of risk in terms of match quality, as the probability of a negative match quality shock is quite high, at 26%. Home production technology parameter estimates show that ν is 0.92, so that housework hours of males and females are close substitutes. Moreover, there are substantial comparative advantages in the estimated model. Males log

wage offers are higher, and female hours in the home production technology are more productive ($\delta_m = 0.75$, while $\delta_f = 1.07$). Hence, the *ex ante* efficient solution entails full specialization within the household. The higher divorce costs lead to the household allocations to be closer to the efficient allocation that entails specialization. Since they cannot commit to a division of future household surplus, and value of separation is now lower due to higher divorce costs, participation constraints bind less frequently for married couples, which lead to less frequent renegotiations. Moreover, the higher reservation match quality to get married under this experiment leads to a stronger positive selection into marriage. Due to the fact that only the very good matches get married under this policy experiment and higher divorce costs, we see more specialization in equilibrium for married households. Under the baseline scenario, the homemaker cannot be compensated for foregone earnings power, and the family chooses an inefficient level of specialization, producing too little of the public good. The same is true in Experiment I also, but to a lesser extent.

When we turn to cohabiting couples, we see a different picture in terms of the changes in their labor market behavior. Table 16 shows that the labor market hours of cohabiting women increase substantially under this counterfactual scenario. For example, in the baseline, a woman with no child who is cohabiting works on average 1780 hours a year, whereas under the counterfactual this is 1965 hours. In order to see the reason behind this increase, it is important to look at the compositional change of couples conditional on their relationship choice under the baseline and counterfactual scenarios. The simulations show that the average value of θ conditional on choosing to cohabit at the beginning of the relationship is lower under the counterfactual compared to the baseline. Due to the higher cost of separation within marriage under the counterfactual, the reservation match quality value (θ^*) to get married increases. In other words, with higher divorce costs, individuals get married only if they have a very high match quality draw when they meet a potential partner. The opposite happens for the group of cohabitants. The matches who previously chose to get married under the baseline, but who now choose cohabitation (the switchers) join the left tail of the conditional match quality distribution for cohabitant households leading to the fall the expected value of match qualities conditional on both relationship states (marriage and cohabitation). This can also be seen in the changes in the dissolution rate under the counterfactual in Table 15. Dissolution rates conditional on cohabitation increase. Under the baseline, the dissolution rates for cohabiting households with no children is 14 percent, whereas it is 19 percent under this counterfactual.

The welfare implications of increasing divorce costs can be best seen by comparing couples who switch their relationship choice due to the policy change. The implications of lifetime utility are different for different individuals in the simulations. After the divorce costs increase, some couples who were choosing marriage before the policy change, now choose cohabitation.

In the baseline, the couples who choose to marry are those who stand to benefit most from specialization, in other words, they are those couples whose wages are most different. Couples who choose to cohabit are those with similar wage endowments, who stand to benefit less from specialization. Matches with larger wage differentials choose to marry instead to take advantage of the increased specialization that comes with stronger commitment. Under the counterfactual, with the prohibitively high cost of divorce, these couples choose cohabitation instead of marriage and they lose their ability to choose the level of specialization that is closer to the efficient equilibrium outcome. However, they still choose to get together and not remain single, due to the fact that being together still dominates being single due to the benefits of public good consumption. This explanation can be verified by the following tables. Figure **??** shows the changes in the level of public good that is produced within the household for those couples who are married under the baseline but who switch to cohabitation under the counterfactual. As can be seen, the largest decrease in the level of public good occurs for those matches with larger wage differentials between the partners. The welfare decrease also happens most for these couples with the largest wage differentials.

8 Conclusion

Couples looking to gain from the many benefits of marriage must balance those benefits against the risk that the quality of the relationship will deteriorate, leading to a choice between remaining in a bad marriage or initiating a costly divorce. We have argued that non-marital cohabitation provides an important alternative for couples wishing to enjoy the advantages of living together while maintaining the option of easily dissolving the relationship should it deteriorate. However, because a cohabiting couple can separate more easily, it causes the two partners to forgo some of the gains that come with the greater commitment present in a legal marriage. In particular, although it may be more efficient for one partner to spend more time engaged in home production, the lack of commitment makes it impossible to compensate this partner for the resulting decline in his or her human capital. The lower degree of commitment under cohabitation amplifies This problem, leading to less efficient allocations of time, which most commonly takes the form of increased labor market hours for women who work additional hours in order to maintain their human capital. Thus the option to engage in non-marital cohabitation as opposed to marriage has important implications for female labor force participation and wages, as well as on fertility decisions.

The estimated model shows that men and women have substantial comparative advantages in the labor market and at home. In addition, men and women's housework hours are found to be close substitutes in the home production technology. The estimated model shows that there are

large gains from specialization and that couples face a substantial amount of risk in their match quality in a relationship. Hence, we find that there is a non-trivial tradeoff between cohabitation and marriage. Our policy experiments also show that changing divorce costs does not change expected lifetime utility substantially. This is because couples are able to substitute between cohabiting and marriage, when one becomes less attractive due to different policies regarding divorce. However, with higher degree of specialization, fertility rates increase and households choose a higher degree of specialization. Hence, separation costs have strong implications on labor supply behavior, especially that of women.

The framework we have presented here suggests several additional interesting policy questions, the proper analysis of which would unfortunately push the current model beyond our computational limits. One such question involves the consequences of tax policies which differentiate between married and non-married couples, for example the so-called "marriage penalty" under which some married couples are taxed at a higher rate than the same two people would be if they were not married. In the model introduced by this paper, such policies may have unintended consequences for couples' choice of relationship status as well as decisions about work and children.

A second question deals with arrangements such as alimony and child support that would allow a couple to commit to transfers after relationship has dissolved. By increasing the ability of the partners to make commitments to each other, such policies are likely to lead to greater degrees of specialization and more efficient allocations. In fact, current alimony laws are particularly designed to compensate women who have sacrificed their earnings potential in order to stay home with their families.

The complexity of the current model makes it infeasible to introduce these policy choices with the amount of detail necessary to properly study their effects. A careful analysis of the consequences of such policies remains an important topic for future research.

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Table 1: **Marriage and Cohabitation Rates Conditional on Being Together**

	1955-1965 Cohorts	1966-1976 Cohorts
High School:		
Proportion Married	69%	53%
Proportion Cohabiting	30%	47%
College:		
Proportion Married	69%	57%
Proportion Cohabiting	30%	42%

Table 2: **Labor Market and Housework Hours by Gender and Relationship Status, 1955-1965 Cohort**

	Married	Cohabiting
Labor Market Hours:		
Males - No Children	2086	1907
Males - Children	2084	1886
Females - No Children	1574	1740
Females - Children	1046	1116
Housework Hours:		
Males - No Children	7	7
Males - Children	8	10
Females - No Children	13	11
Females - Children	20	18

Table 3: **Regression of Hours Worked**

Dependent variable is the total number hours spent working in the previous calendar year at all jobs. The regression includes dummies for married or cohabiting households, with single s the excluded category. Individual fixed effects are included. The regressions for men includes 55,760 observations of 2,997 distinct respondents. The regressions for women includes 59,599 observations of 3,107 distinct respondents. Standard errors are in parentheses.

	Male		Female	
Age	239	(3.2)	249	(3.3)
Age squared	-3.23	(.051)	-3.31	(.051)
one child	19.4	(13)	-416	(11)
two children	-7.1	(14)	-674	(12)
>2 children	-33.8	(18)	-842	(16)
Married	168	(11.2)	-85.5	(9.0)
Cohabiting	127	(15.6)	-9.32	(14.5)
constant	-2302	(46)	-2565	(47)
R^2		.19		.16

Table 4: **Regression of Housework Hours**

Dependent variable is weekly hours spent on household production, the answer to the question "About how much time do you [or does your spouse] spend on housework in an average week, I mean time spent cooking, cleaning and doing other work around the house." The regression includes only married or cohabiting households, with cohabiting the excluded category. Household fixed effects are included. The regression for the wife's hours includes 52,556 observations of 5,169 distinct households. The regression for the husbands's hours includes 51,525 observations of 5,593 distinct households. Standard errors are in parentheses.

	Husband's Hours		Wife's Hours	
Married	-2.04	(.17)	1.9	(.37)
Husband's work hours	-.075	(.002)	.070	(.004)
Wife's work hours	.029	(.002)	-.29	(.004)
one child	.60	(.09)	3.52	(.16)
two children	.93	(.10)	5.58	(.17)
>2 children	1.35	(.13)	8.21	(.22)
constant	11.1	(.19)	23.3	(.21)
R^2		.05		.22

Table 5: **Parameter Estimates - Utility Function**

This table shows the estimated parameter values with standard errors in parentheses. The utility parameters are also expressed as an equivalent percentage increase or decrease in the consumption of the public good.

Weight on leisure-single (α)	0.484	()
Weight on leisure-married/cohabiting (α_1)	0.345	()
Utility from children - married ($u_{KID}(m)$)	0.083	()
Utility from children - cohabiting ($u_{KID}(c)$)	0.056	()
Utility of being married - Type 1 ($u_{MAR,1}$)	-0.277	()
Utility of being married - Type 2($u_{MAR,2}$)	1.599	()
Probability of being Type 2 - HS	0.209	()
Probability of being Type 2 - college	0.087	()
Divorce penalty (κ_m)	10.074	()
Dissolve cohabitation penalty (κ_c)	0.000	-
Dissolve with kids penalty (κ_k)	1.989	
Consumption Equivalent Values of the Utility Terms		
Utility from children - married ($u_{KID}(m)$)	+8.7%	
Utility from children - cohabiting ($u_{KID}(c)$)	+5.5%	
Utility of being married - Type 1 ($u_{MAR,1}$)	-24.2%	
Utility of being married - Type 2($u_{MAR,2}$)	+395%	

Table 6: **Parameter Estimates - Home Production Technology**

Substitution between hrs and mkt good (σ)	0.515	()
Substitution between male and female housework hours (ν)	0.925	()
Increase in home productivity from children (ϕ)	0.572	()
Productivity of male housework hours (δ_m)	0.758	()
Productivity of female housework hours (δ_f)	1.073	()

Table 7: **Parameter Estimates - Match Quality & Fertility**

Probability of meeting potential partner (p_{meet})	0.321	()
Mean starting match quality draw (μ_θ)	0	-
Variance of starting match quality draw (σ_θ)	3.199	()
Probability of positive match quality shock (p_θ^+)	0.222	()
Probability of negative match quality shock (p_θ^-)	0.255	()

Table 8: **Parameter Estimates - Wages**

Wage Process		
Share of wage from previous wage - male (α_{wm})	0.979	()
Share of wage from previous wage - female (α_{wf})	0.948	()
HC returns for zero hours worked - male (A_{wm})	0.063	()
HC returns for zero hours worked - female (A_{wf})	0.022	()
HC returns to work - male (B_{wm})	0.501	()
HC returns to work - female (B_{wf})	0.302	()
variance of wage shock - male (σ_{wm})	0.397	()
variance of wage shock - female (σ_{wf})	0.363	()
Initial Wage Distribution		
mean initial log wage - male, HS (μ_{w0m1})	0.979	()
mean initial log wage - male, college (μ_{w0m2})	1.675	()
mean initial log wage - female, HS (μ_{w0f1})	0.470	()
mean initial log wage - female, college (μ_{w0f2})	1.567	()
variance of initial log wage (σ_{w0})	0.380	()
Wage Distribution of Potential Partners		
log wage intercept - male partner (a_{wpm})	2.585	()
log wage intercept - female partner (a_{wpf})	2.359	()
correlation of partner's wage - (b_{wp})	-0.065	()
variance of log wage (σ_{wp})	0.629	()

Table 9: Marriage and cohabitation rates by gender

	Model	Data
Fraction Married		
Age 21-25	39%	41%
Age 26-30	58%	59%
Fraction Cohabiting		
Age 21-25	5%	5%
Age 26-30	6%	6%

Table 10: Annual rates of relationship dissolution by relationship type and duration of relationship

	Model	Data
Married		
Duration 1-3 years	4%	6%
Duration 4-6 years	6%	5%
Duration 7-9 years	5%	4%
Cohabiting		
Duration 1-3 years	17%	17%
Duration 4-6 years	9%	13%
Duration 1-3 years	7%	13%

Table 11: Annual hours of labor market work by gender, relationship status, and children. Age 25-30.

	Model	Data
Single		
Male - No Child	2000	1961
Female - No Child	2000	1893
Married		
Male - No Child	1843	2116
Male - Child	1903	2055
Female - No Child	1536	1664
Female - Child	1186	1016
Cohabiting		
Male - No Child	1979	1988
Male - Child	1847	1834
Female - No Child	1780	1749
Female - Child	1221	1037

Table 12: Weekly hours of housework by gender, relationship status, and children. Age 25-30.

	Model	Data
Married		
Male - No Child	5.9	6.9
Male - Child	8.5	8.0
Female - No Child	11.4	11.8
Female - Child	22.9	21.2
Cohabiting		
Male - No Child	4.8	6.9
Male - Child	9.4	10.6
Female - No Child	10.9	10.1
Female - Child	21.9	18.0

Table 13: Average log wage among those working positive hours in the labor market, by gender, education and age.

	Model	Data
Female		
High School, Age 20	1.7	1.7
High School, Age 26	1.9	1.9
High School, Age 32	2.0	1.8
High School, Age 38	2.0	2.0
College, Age 26	1.9	2.1
College, Age 32	2.0	2.2
College, Age 38	2.0	2.2

Table 14: Average log wage among those working positive hours in the labor market, by gender, education and age.

	Model	Data
Male		
High School, Age 20	1.8	1.9
High School, Age 26	2.1	1.9
High School, Age 32	2.3	2.2
High School, Age 38	2.3	2.2
College, Age 26	2.0	2.2
College, Age 32	2.3	2.4
College, Age 38	2.3	2.6

Policy Experiments

Table 15: **Experiment: Effect of Increasing Divorce Costs on Marital Outcomes**

	Baseline	Experiment
Proportion Married - Age 21-25	39%	32%
Proportion Cohabiting - Age 21-25	5%	10%
Proportion Married - Age 26-31	58%	53%
Proportion Cohabiting - Age 26-31	6%	9%
Dissolution Rates - No Child	6%	6%
Dissolution Rates - Child	4%	3%
Dissolution Rates - No Child	14%	19%
Dissolution Rates - Child	3%	3%
Children - Married - Age 25-35	78%	77%
Children - Cohabiting - Age 25-35	44%	34%

Table 16: **Experiment: Effect of Increasing Divorce Costs on Labor Market Hours**

	Baseline	High Divorce Costs
Married		
Male - No Child	1843	1832
Male - Child	1903	1864
Female - No Child	1536	1476
Female - Child	1186	1130
Cohabiting		
Male - No Child	1979	2036
Male - Child	1847	1847
Female - No Child	1780	1965
Female - Child	1221	1221

Table 17: **Experiment: Effect of Increasing Divorce Costs on Housework Hours**

	Baseline	High Divorce Costs
Married		
Male - No Child	5.9	5.8
Male - Child	8.5	8.9
Female - No Child	11.4	11.6
Female - Child	23.0	23.3
Cohabiting		
Male - No Child	4.9	4.8
Male - Child	9.4	9.4
Female - No Child	11.0	10.9
Female - Child	21.9	21.9

Figure 1: **Counterfactual Experiment**