Free to Leave? A Welfare Analysis of Divorce Regimes

Raquel Fernández[*]   Joyce Cheng Wong

New York University   IMF

February 2014[†]

Abstract

During the 1970s the US underwent an important change in its divorce laws, switching from mutual consent to a unilateral divorce regime. Who benefited and who lost from this change? To answer this question we develop a dynamic life-cycle model in which agents make consumption, saving, labor force participation (LFP), and marriage and divorce decisions subject to several shocks and given a particular divorce regime. We calibrate the model using statistics relevant to the life-cycle of the 1940 cohort. Conditioning solely on gender, our ex ante welfare analysis finds that women would fare better under mutual consent whereas men would prefer a unilateral system. Once we condition not only on gender but also on initial productivity, we find that men in the top three quintiles of the initial productivity distribution are made better off by a unilateral system as are the top two quintiles of women; the rest prefer mutual consent. We also find that although the change in divorce regime had only a small effect on the LFP of married women in the 1940 cohort, these effects would be considerably larger for a cohort who lived its entire life under a unilateral divorce system.

1   Introduction

During the 1970s the US underwent an important change in its divorce laws. A large number of states switched from a legal regime in which divorce requires spouses' mutual consent to a unilateral regime in which one spouse's desire to divorce is sufficient. Over the same time period, many European countries underwent a similar legal reform.[1] These legal changes were accompanied, both in the US and in Europe, by large increases in the divorce rate and married women's labor supply and by a reversal of the male-female education gap. Not surprisingly, the contemporaneous nature of these changes has given rise to a growing literature that attempts to understand the links between divorce laws, divorce rates, women's labor supply and education choices.

In this paper we examine the welfare implications of different divorce regimes. Who benefited and who lost from this change? This is a hard question to answer as it requires knowing not only how marriage formation and dissolution respond to different divorce regimes, but also how endogenous household decision variables such as saving and labor supply are affected. Given the complexity of the issue, making headway requires a quantitative model in which to analyze the key mechanisms and quantify their final impact.

To do this, we develop a relatively simple dynamic life-cycle model of endogenous marital status in which female and male agents, endowed with an initial level of productivity, make consumption, saving, labor force participation (LFP), and marriage/divorce decisions subject to a variety of shocks and given a particular divorce regime. The environment is one of imperfect capital/insurance markets and very little commitment. Capital markets are imperfect in that, although agents can borrow and save freely at a constant interest rate, debt is not state-contingent and thus borrowing is subject to the constraint of not defaulting in any state. Insurance markets are also absent: agents are unable to directly insure themselves against shocks, be these productivity or marital related. Lastly, the ability of agents to commit within a marriage is also severely limited. We assume that agents cannot write binding prenuptial contracts nor commit to future actions within a marriage or upon divorce.

We are particularly interested in how divorce regimes affect women versus men. Accordingly,

---

[1]See González and Viitanen (2009) for a very useful review of the European legal reforms.

our model and its calibration incorporate three salient gender asymmetries arising from a variety of cultural, institutional and economic factors. First, we allow women's disutility of working to depend on marital status and on the age of her children; second, our calibration respects the fact that divorced women bear a disproportionate share of the cost of raising children; and, third, we calibrate the model to match the existing gender wage gap.

Marriage matters in this environment for a variety of reasons. It provides not only "love," but also economies of scale in consumption and some degree of insurance against income shocks. On the other hand, marriage also exposes agents to other types of uncertainty (e.g., in the quality of the match) as well as to the potential pain of divorce against which there is no insurance.[2] From an insurance perspective, it is easy to see that, ceteris paribus, a mutual consent divorce regime provides more income insurance than a unilateral divorce regime. Under mutual consent, the reluctant spouse must be compensated in order to obtain a divorce. A unilateral regime, on the other hand, does not impose this restriction. It allows the agent to walk away but this greater freedom may come at additional costs, from being the one who is left to potential costs arising from changed marriage patterns and household choices. Who benefits from the tradeoffs provided by the divorce regimes is our primary question of interest.

We calibrate the model using statistics relevant to the life-cycle of the 1940 cohort. We choose this cohort mainly for data reasons since the birth year implies that the comparable CPS data for LFP and wages are available for their entire working life until age 70 (in 2010) and the 2001 and 2004 SIPP provide a broad coverage of their marital histories. This cohort is also of interest since it lived under both divorce regimes at different points over its working life.

We match match several key moments related to divorce, marriage, and women's labor force participation (LFP). In particular, we discipline the distribution of match quality draws and the parameters governing love's law of motion over the life cycle by requiring the model to fit divorce and marriage rates and their durations at different ages, as well as generating the income elasticities of marriage and divorce implied by the data. With respect to women's work, we require the model to generate the correct moments for married

---

[2]Of course, marriage may have other benefits such as allowing greater specialization in household production (see, e.g., Weiss (1997)), from which we abstract in this simple setting.

and divorced women's LFP at different points of their life-cycle. These moments discipline the disutility of working when married versus divorced and with no children versus younger and older children. The endogeneity of women's LFP allows us to address the question of the contribution of the change in divorce regime to the rise of married women's LFP, an issue of great interest in its own right.

We then use the quantitative model to study who gains from a system of unilateral versus mutual consent divorce. Since our model has two important sources of heterogeneity – gender and productivity – we conduct two welfare analyses. The first is an ex-ante approach in which agents are distinguished only by their gender. It thus answers the question: conditioning solely on your gender, would you prefer to live in a world in which divorce is unilateral or in one that requires both spouses' consents? The second analysis is also ex ante but conditions not only on gender but also on the agent's initial productivity endowment. We thus ask: if you knew both your gender and *expected* wage profile over your life-cycle, would you prefer a regime that makes divorce easier or harder?

Our analysis generates several interesting findings. First, we find that although the change in divorce regime generated a relatively small increased in married women's LFP for the 1940 cohort (a result which is in line with most of the literature in this area, e.g., Lundberg and Rose (1999), Parkman (1992), Stevenson (2008)), the consequences would have been be substantially amplified for a cohort which has always lived under a unilateral divorce system. Our analysis indicates that this result is mostly driven by an optimal response to the increased risk of divorce in face of the conflicting preferences of spouses vis a vis consumption smoothing rather than by the change in the composition of married couples.

Second, conditioning solely on gender, our ex ante welfare analysis finds that women would fare better under mutual consent whereas men would prefer a unilateral system. To understand this result note that, for a *given* pattern of marriages, the welfare impact of being granted the ability to walk away from one's spouse without incurring additional compensation costs depends on the frequency with which an agent may wish to do so relative to her/his spouse and how the agent fares when divorced relative to married. Since, ceteris paribus, women earn less than men and also bear a larger share of the cost of raising children

3

upon divorce, their welfare losses from divorce are larger and they are thus are protected by a mutual consent regime. Men, on the other hand, are more likely to gain although this is not ensured ex ante as the greater ease of divorce also exposes them to greater uncertainty which, ceteris paribus, is welfare reducing. Marriage patterns, of course, will themselves react to the welfare consequences of easier divorce. The greater instability of marriage leads women to be considerably more reluctant to marry whereas men become more willing. Overall, marriage rates fall, implying that a greater proportion of women are willing to forego some of the potential consumption insurance provided by marriage in favor of decreasing their vulnerability to becoming a divorced woman with young children. Even after taking into account the endogenous response of household formation to the change in the divorce regime, on average women who marry under the unilateral regime are more likely to become divorced than women who marry under mutual consent.

Third, once ex-ante welfare is conditioned not only on gender but also on initial productivity, we find significant differences in preferences along this dimension. Men in the top three quintiles of the initial productivity distribution are made better off by a unilateral system as are the top two quintiles of women; the remainder prefer mutual consent. The preceding explanation gives much of the intuition behind this result. Ex ante richer women and men value more the freedom of walking away from an unsatisfactory marriage than the insurance benefits provided by the latter. Even if they are left by their spouse, they fare better in the divorced state than their poorer counterparts. Poorer individuals are hit hardest by the loss of insurance and economies of scale from marriage leading poorer women in particular to become more averse to marriage.[3]

Our paper is organized as follows. The next subsection briefly reviews the literature in this area. The following section introduces the model in the context of the two different divorce regimes. Section 3 presents the households' marital status decisions and maximization problems over different stages of their life cycle. Section 4 discusses the calibration of the model to key moments relevant for the 1940 cohort and section 5 examines some of the parameterized model's implications. In that section we study how divorce regimes affect married women's LFP. Section 6 presents the welfare analysis and section 7 concludes.

---

[3]This accords with the findings of Rasul (2005).

A Brief Literature Review

Our paper contributes to a growing literature that seeks to understand the interplay of household formation, divorce regimes, women's labor supply, and consumption/savings decisions. The earlier literature is mostly empirical (regression based) in nature and uses cross-state variation in the timing of the introduction of unilateral divorce to gain insights into the implications of divorce laws for a variety of issues. This literature has debated the effect of unilateral divorce on the divorce rate (see, e.g., Peters (1986), Peters (1992), Allen (1992), and Friedberg (1998)) and female labor supply (e.g., Parkman (1992) and Gray (1998)). Wolfers (2006) reviews the literature on the divorce rate and, using a more flexible approach regarding its dynamic effects, concludes that unilateral divorce laws temporarily increased divorce rates but that this effect disappears after 10 years.[4] Stevenson (2008) provides a review of the literature regarding the effect of unilateral divorce on female labor supply. This literature had found contradictory results depending on whether differences in property division laws were included as controls. By including a richer set of controls for state-level time-varying policies, Stevenson (2008) finds a significant positive effect on the labor supply of both married and single women that is invariant to the legal regime governing property division at divorce.[5]

Given their methodology, regression based analyses are not well-suited to examining welfare consequences. Some positive evidence in favor of the unilateral system is provided by Stevenson and Wolfers (2006) who show that the introduction of unilateral divorce is linked to a decrease in both female suicides and domestic violence. On the negative side, Stevenson (2007) finds that investment in marriage-specific capital falls (e.g. spouse's education and household specialization). The full economic consequences are harder to study but Weitzman (1996) and Peterson (1996), among others, document a sharp fall in women's consumption upon divorce.

More recently, computational advances have made it feasible to use life-cycle models of

---

[4]While some papers in the literature have defined divorce rates as the number of divorces per a certain married population, others have defined it using instead the entire population. We follow the former convention.

[5]Given Stevenson's evidence, our paper abstains from modeling differences in property division and it too finds a positive effect on married women's LFP from the introduction of unilateral divorce.

endogenous marital status to contribute to our understanding of divorce regimes.[6] The seminal paper in this area is Mazzocco, Ruiz, and Yamaguchi (2007) which studies the interactions between female LFP, savings, and marital decisions in an estimated model with limited commitment. In this model, the Pareto weights in the married household's maximization problem under unilateral divorce can evolve endogenously thus allowing some commitment and ensuring that divorce, when it happens, is efficient (i.e. when an agent can no longer be compensated within the marriage for her/his higher outside option in a way that is Pareto improving). Perhaps not surprisingly, this model is computationally extremely demanding and various authors have simplified different aspects of it in order to better study their question of interest (e.g. Marcassa (2013), Voena (2012), and Guvenen and Rendall (2013), all discussed below).

Guvenen and Rendall (2013) develop an overlapping generations model of endogenous marital status and education choices to study the interplay between marital risk and the gender gap in education. Legal changes which facilitate divorce lead women to invest more in education. This in turn leads to higher divorce rates and lower marriage rates, further increasing the attractiveness of higher education. Their model relies on the same key gender asymmetries as in Fernández and Wong (2011) which ensure that divorced women fare worse than their male counterparts: lower labor earnings and a larger share of children's expenses. These asymmetries then drive the asymmetric education response by gender.[7] This paper, however, is more similar in spirit to Greenwood, Guner, Kocharkov, and Santos (2012) as household decisions, other than marital status, are static (e.g., no savings or accumulation of labor market experience) which greatly reduces computational complexity. This strategy

---

[6]A small literature has studied the consequences of marital instability on various outcomes by keeping marital status exogenous (see, e.g., Eckstein and Lifshitz (2011) and Fernández and Wong (2013) on married women's LFP, Cubeddu and Ríos-Rull (2003) on household savings, Flinn and Brown (2011) on child investment, and Blundell, Dias, Meghir, and Shaw (2013) on education choices.) Others have instead assumed a stationary environment (see, e.g. Greenwood, Guner, Kocharkov, and Santos (2012) for an elegant analysis of the consequences of technological change on endogenous marital status, female LFP, and education and Jacquemet and Robin (2011) for a search model which examines the effect of divorce risk on labor supply).

[7]Our model also allowed for savings, thus providing an alternative insurance channel beyond education. Marital status, however, was assumed to be exogenous and we were thus unable to study the full set of endogenous interactions between education and marital status choices (though we allowed the distribution of shocks to be education dependent). We too found that the education gap narrowed, but not by as large an extent as Guvenen and Rendall (2013). This may be because we also allow agents to save as a way to insure themselves against divorce shocks.

makes sense since both sets of authors are mainly interested in a longer history of changes in female LFP, education, and divorce rates, and less concerned with capturing features of the life-cycle. Our current paper, on the other hand, takes productivity as exogenous and hence does not capture the education response that is the main focus there.

Both Marcassa (2013) and Voena (2012) are mainly interested in the interaction of divorce regimes and different financial arrangements. They both conclude that women are better off under a unilateral regime if financial arrangements favor women (e.g. under equitable division or with a high level of alimony). This result is largely driven by the fact that the women's outside option is higher under these circumstances. Unlike in a mutual consent regime, unilateral divorce allows the value of this higher outside option to influence the Pareto weights in marriage thus making women better off. Our framework yields different results in part because, although the value of the outside option affects all decisions (e.g. who and when to marry, divorce, savings, etc.), it does not affect the Pareto weights in the married household's maximization problem per se given our assumption of no commitment. The two sets of assumptions regarding Pareto weights lie at opposite extremes and both are important to understand. Hence, these papers should be seen as complementary.[8]

2   The Model

We develop a dynamic life-cycle model to study the consequences of different divorce regimes. There are several ingredients that we consider key in thinking about welfare consequences. First, marital status is endogenous as is married women's labor supply. Second, markets are imperfect: there is no insurance for income, marital, or fertility shocks and debt is not state contingent. Third, the ability to commit is very limited: the behavior

---

[8]Another potentially important reason for the difference in results lies in the calibration strategy followed. In both Marcassa (2013) and Voena (2012) agents begin life married. In Marcassa (2013), the first divorce is an absorbing state; in Voena (2012) the second marriage is an absorbing state. This implies that in the former, divorce is very costly since it lasts forever. In Voena (2012), remarriage is the only time an agent makes a marriage decision and it provides long-lasting insurance since no further divorces or changes in match quality are possible by assumption, making marriage very valuable. In our model, on the other hand, agents start life as single and can make marital status decisions numerous times which allows it to more realistically capture the extent of marital status uncertainly and better reflect the values of marriage and divorce.

of married individuals must satisfy the solution to the household's maximization problem and spouses are unable to commit to future actions within marriage or contingent upon divorce other than those specified by the legal regime. The model is described in detail below.

Agents are born with gender $g \in \{f, m\}$, either female f or male m. In period zero they draw an initial productivity parameter z_0 and, following Fernández and Wong (2011) and Fernández and Wong (2013), they are also endowed with a marital type. This marital type characterizes a particular feature of their potential match as discussed in the section on endogenous household formation below.

An agent's life can be divided into two stages: work and retirement. Agents have a deterministic lifespan of T periods. From period 1 to period t^R they are in the work stage of life; from period $t^R + 1$ to T they are retired. Most of the interesting action occurs in the working stage during which individuals make marital status decisions and work decisions in addition to the consumption/saving decisions which also occur during retirement.

Preferences, Consumption, and Borrowing Constraints

The instantaneous utility function of an agent of gender g and marital status $s \in \{M, D, S\}$ (where M is married, D is divorced, and S is single) is given by:[9]

$$U_g(c_t, P_t; s) = \frac{c_t^{1-\sigma}}{1 - \sigma} - \psi_g^s(k_t)P_t + \mathbb{I}_s q_t \tag{1}$$

where c is consumption and P denotes the LFP decision, taking the value one if the agent works and zero otherwise. Women's disutility from market work, $\psi_f^s(k_t)$ is allowed to depend on her marital status s and on the vector k_t which indicates the ages of her children in that period. We assume that only married and divorced women suffer disutility from working and normalize men's and single women's work disutility to zero. Thus the latter always work by assumption and accordingly we will not match any empirical LFP moments for them. To summarize, $\psi_g^s = 0$ if $g = m$ or if $g = f$ and $s = S$. We denote the match quality

---

[9]We do not include cohabitation as an option as this alternative was less common for the 1940 cohort. See, e.g. Gemici and Laufer (2010) for a dynamic analysis in which agents choose between those marriage and cohabitation. In that model, cohabitation has similarities with unilateral divorce in that it allows an agent to separate at a lower cost.

(love) of a married couple by q_t and thus $\mathbb{I}_s$ is an indicator that takes a value of 1 if the agent is married and 0 otherwise.

Household consumption is non-excludable. Thus, all household members share in the same consumption which has economies of scale. If the household spends $\hat{c}_t$ on consumption goods, this yields $c_t = \frac{\hat{c}_t}{e(k_t;s)}$ units of household consumption. Thus $e(k_t;s)$ gives the economies of scale that exist which depend on the ages and number of children and whether there are one or two adults in the household (hence the s). Note that $e(0;S) = 1$.

Agents can save at an exogenous gross interest rate of $R > 1$. They can also borrow at that interest rate subject to the constraint that they be able to repay all their debt in all states of nature before they die, i.e., $a_{T+1} \geq 0$. The choice of a utility function with infinite marginal utility of consumption at zero ensures that the agent is bounded away from the constraint.

Wages, Retirement Benefits, and Child Support

At the beginning of each period of the work stage of life, individuals receive wage draws. All agents automatically work except for married and divorced women; these must make a participation decision as described in section 3.

An agent's wage process is uncertain. It depends on an agent's productivity which evolves stochastically over time as an $AR(1)$ process. Income is also a function of age (and thus of the time period t). Thus, an agent's wage draw y is given by:

$$
\ln y_g(t, z_t) \;=\; \gamma_g + \gamma_1 t + \gamma_2 t^2 + z_t \tag{2}
$$

$$
z_t \;=\; \rho_z z_{t-1} + \epsilon_{yt} \qquad \epsilon_{yt} \sim N(0, \sigma_\epsilon)
$$

where γ_g captures a gender component in aggregate wages, γ_1, γ_2 are the experience polynomials, and ϵ_{yt} is the shock to productivity. Note that an agent's initial productivity endowment is given by a draw from $N(0, \sigma_\epsilon)$.

We assume that as long as a divorced women has not remarried, she will obtain child support payments from her ex-husband (the father) until the children turn 20. Child support payments are assumed to be a fixed fraction of the father's wage income each

period.

During retirement individuals are no longer subject to shocks. In each period, an individual receives retirement income $b_g^s\left(\overline{y}_g, \overline{y}_{g'}\right)$ that is a function of gender, past earnings $\overline{y}_g$, and marital status.[10] Here and henceforth, g' will denote the (opposite sex) spouse of the agent of gender g.

Match Quality, Assets, and Children

We simplify the computational burden associated with endogenous household formation by assuming that agents are endowed with a permanent potential marital type. The "type" is equivalent to the initial endowment of one's partner's productivity, z_0'. Each agent is informed of her/his marital type in period zero and this characteristic is updated with the realizations of its innovations over time. This assumption considerably simplifies the computational problem since it means that with respect to marriage formation/dissolution decisions, individuals have to keep track only of the uncertainty associated with the evolution of a *potential* mate's income process rather than *forecast* the evolution of the *entire distribution* of non-married individuals' incomes, an endogenous object.[11] The initial z_0' is assigned through an imperfectly assortative matching process as described in the parametrization section.

There are three other important characteristics of a potential marital partner in addition to her/his productivity: the quality of the match, the level of assets, and the presence of children from a prior marriage. We discuss each in turn.

In this model, love is mutual. At the beginning of each period, unmarried individuals draw a match quality $q_t^\tau \sim N(\mu_q^\tau, \sigma_q)$. The distribution from which this initial quality is drawn depends upon the age of the potential couple. We distinguish between matches formed while "young" ($\tau = young$) versus "old" ($\tau = old$).[12] If the potential couple does not marry, a new match quality is drawn in the following period. If the potential couple does decide to marry, their love process subsequently evolves according to the following

---

[10] A woman who enters retirement divorced also receives a portion of the last ex-husband's pension.

[11] Unfortunately, the solution employed by Krusell and Smith (1998) does not work for this problem.

[12] In the calibration, this corresponds to matches before the age of 35 versus those after that age.

$AR(1)$ process:

$$q_{t+1}^\tau = \rho_q q_t^\tau + u_t^\tau \quad \text{where} \quad u_t^\tau \sim N(\mu_u^\tau, \sigma_u) \tag{3}$$

Individuals start life with zero assets. We assume that the asset level of an agent's potential partner, a_t', is an increasing function of own level of assets, i.e.,

$$a_t' = a_g(a_t) \tag{4}$$

This assumption (see, e.g., Mazzocco, Ruiz, and Yamaguchi (2007)), simplifies computations while also introducing an additional incentive to save. Note that we allow the function to depend on gender in order to respect the fact that the two sexes have different asset distributions.

Lastly, women also obtain fertility draws. Given the cohort under consideration and in accordance with the data, we assume that only married women have children. We assume that that single agents marry other single agents, which in our model are childless. Divorced individuals marry other divorced individuals which may have children from a prior marriage. Children are assumed to always reside with their mother and their ages are updated each period. Whether a potential match has children from a prior marriage will of course be a factor that is taken into account during the marriage decision.

Endogenous Household Formation: Timing and State Spaces

As discussed previously, we do not allow individuals to write contracts that govern their future behavior with respect to a future or current spouse or with respect to an ex spouse. That is, women cannot promise to work in a given period and neither spouse can commit to a future path of utility, consumption, or saving. Furthermore, individuals are not able to save in personal accounts once married nor write prenuptial contracts. As in the vast majority of the literature (e.g., Cubeddu and Ríos-Rull (2003)), we assume that marriage entails joining all assets.[13]

To specify more precisely the circumstances under which marriage and divorce occurs,

---

[13]Although some protection of the assets brought into a marriage is possible, its extent is not clear and likely small for an average household.

we need to be clear about the exact timing of events within a period and introduce some additional notation. Agents can be in one of four possible marital states $s \in \{M_y, M_o, S, D\}$, which correspond to, respectively, married in a match made while young, y, married in a match made while old, o, single (meaning never married) and divorced. The timing of events (in particular fertility) differs according to marital status.

Figure 1 describes the timing during a typical working period for a married woman. At the beginning of period t married agents receive their love, fertility, and wage shocks. If the husband was previously divorced, they also observe some information regarding his ex spouse as will be described in greater detail later. The couple is then faced with a decision: to stay married or to divorce. If they stay married, they then proceed to make saving and work decisions as a married couple. If they divorce, each ex spouse may individually obtain an immediate opportunity to rematch. If a rematch opportunity is not received, that agent makes her/his savings and work decisions as a divorced agent for that period. On the other hand, if a rematch opportunity is received, then upon observing the characteristics of a potential spouse, a decision is made as to whether to marry or not. If yes, that agent then makes its consumption, saving, and work decisions as part of a married couple (observing as well their ex-spouse's state variables, if relevant, as will be described in greater detail below). If not, the agent continues life as divorced for that period and makes saving and work decisions accordingly.

The timing for single and divorced agents is slightly different. Single agents observe the quality of their match draw and wage shocks and then decide whether to marry. Fertility shocks are subsequent to the marital status decision. Lastly, divorced agents observe the quality of their match draw, the number and age of the children of their potential new spouse, all their ex-spouse's relevant state variables (described in greater detail below), and then decide their marital status. If they decide to marry, they are also subject to a fertility shock. All work and savings decisions are made after the fertility shock is realized. The timeline for these agents is given in the Appendix (see figures A1-A3).

The description of agents' state spaces is complicated by the fact that information is revealed at different points within the same period and by the need to keep track of some state variables of an ex spouse. Let $s_{\overline{t-1}}$ denote the marital status of an individual who

enters period t with marital status s determined in the prior period $(t-1)$. We denote by $\Omega^s_{\overline{t-1}}$ the state space of an agent upon entering period t. Note that this is prior to *any* resolution of uncertainty in period t. By way of contrast, let the state space *just prior* to making a marital status decision in period t, given that the individual is in marital state s under the divorce regime r, be described by a vector Ω^s_t where

$$
\Omega^s_t = \begin{cases}
\Omega^{M_\tau}_t = \{a_t, z_t, z'_t, q_t, k_t, \chi^{xf}_t; r\} \text{ if } s_{\overline{t-1}} = M_\tau, \tau = y, o \\
\Omega^S_t = \{a_t, z_t, z'_t, q_t; r\} \text{ if } s_{\overline{t-1}} = S \\
\Omega^D_{mt} = \{a_t, z_t, z'_t, \chi^{xf}_t; r\} \text{ if } s_{\overline{t-1}} = D, g = m \\
\Omega^D_{ft} = \{a_t, z_t, z'_t, k_{t-1}, z'_{xt}; r\} \text{ if } s_{\overline{t-1}} = D, g = f
\end{cases}
\tag{5}
$$

Note that this state space differs from the one with which the agent entered period t since some uncertainty will have been resolved (e.g., persistent wage shocks, fertility shocks for a married woman, etc.).

It is important to note that in equation (5), we include some state variables of the ex spouse. In particular, the vector χ^{xf}_t (where x denotes ex) enters the state space of the married couple if the ex wife has not remarried and the ex couple has children under the age of 20. In that case, χ^{xf}_t includes the ages of the ex-couple's children, the asset level of the ex-wife, her persistent wage shock that period z_t, and the productivity of her potential match z'_{t-1} last period. This information is relevant because the current married couple needs to form expectations regarding the path of future child-support payments the man will be making. If his ex-spouse has remarried or if their joint offspring is at least 20, these payments are zero by assumption. The same vector is required in the state space of a divorced man since he too needs to form expectations regarding the path of his expected child support payments. Lastly, a divorced woman needs to form expectations about the path of child support she will obtain if she does not remarry. Hence she cares about z'_{xt}, where the x indicates that the variable is of her ex-spouse.[14]

---

[14]Note that she does not care whether her ex-husband has remarried since child-support payments are not contingent on his marital status.

3 Household Decisions

We are now ready to discuss the endogenous outcomes in the model: marital status, consumption/saving, and LFP. We start by characterizing the conditions under which an agent will decide to change her/his marital status through either marriage or divorce and then present the household maximization problems as these are solved once the marital status decision has been made.

Solving the households' decision problems requires some additional notation to allow us to distinguish between the value of a marital state *after* the marital status decision is taken *and all subsequent shocks in that period have taken place*, with the expected value of that marital state at the moment in which the marital status decision is taken (see the timelines).

Let Ω_t^{s*} be the state space in period t *after* the marital status decision $s*$ is taken and all that period's uncertainty is resolved. The value function associated with s^* at that point is denoted $V_{gt}^{s^*}(\Omega_t^{s^*})$. We use $EV_{gt}^{s^*}(\Omega_t^{s^*}|\Omega_t^s)$ instead to denote the expectations an agent has regarding $V_{gt}^{s^*}(\Omega_t^{s^*})$ given the information set at the time the marital status decision is made, i.e., conditional on the state space Ω_t^s as defined in equation 5.

3.1 Marriage and Divorce

We start with two agents who, having drawn a match quality q, need to decide whether to marry (if unmarried) or to divorce (if married).[15]

The (Re)Marriage Decision

Let the state space of two agents who are married in period t *subsequent* to the marital status decision that period and once all that period's uncertainty has been resolved be given

---

[15]It is worth noting that upon divorce in period τ an agent's potential marital type has the same value of z as the ex spouse, i.e., $z'_\tau = z'_{x\tau}$, (where x denotes the variable for the ex). Thereafter, the two values of z evolve independently.

by:

$$\Omega_t^{M_\tau^*} = \{a_t^M, z_t, z_t', q_{t;\tau}, k_t, \chi_t^{*xf}; r\}$$

$$\text{where } a_t^M = a_{ft} + a_{mt} \text{ if the marriage formed at time } t$$

$$\text{and } a_t^M = a_t \text{ otherwise} \tag{6}$$

where χ_t^{*xf} is the updated vector of variables of ex-wife (if relevant), e.g., it includes the marital decision in period t of the ex spouse. Note that these must be two agents who either decided to marry that period or were already married and decided not to divorce that period.

Marriage requires the consent of both matched agents. Thus, two agents will marry only if *both* are made better off by doing so. Below we write the solution ($s*$ to the marital status decision problem given s (the marital state at the beginning of the period) is either S or D :

$$s^* = \begin{cases} M & \text{if } \mathbb{E}V_{gt}^M\left(\Omega_t^{M*}|\Omega_{gt}^S\right) \geq \mathbb{E}V_{gt}^S\left(\Omega_{gt}^{S*}|\Omega_{gt}^S\right) \\ & \text{for both } g, g' \text{and s} = S \\ M & \text{if } \mathbb{E}V_{gt}^M\left(\Omega_t^{M*}|\Omega_{gt}^D\right) \geq \mathbb{E}V_{gt}^D\left(\Omega_{gt}^{D*}|\Omega_{gt}^D\right) \\ & \text{for both } g, g' \text{and s} = D \\ s & \text{otherwise; } s \in \{D, S\} \end{cases} \tag{7}$$

As discussed in greater detail below, married agents who divorce may obtain a fresh match quality with a new partner immediately (i.e., in the same period in which divorce occurred) but only with some probability ω_t.[16] The (re)marriage decision above is unchanged, but it requires some additional notation. We indicate with a s^{**} the marital status decision of a newly divorced agent who received an immediate opportunity to rematch. Note that if a divorced man immediately remarries this does not imply that his ex-wife does the same (and vice-versa).

---

[16]This is done in order to match moments of the divorce and remarriage data given the length of a period.

The Divorce Decision

The rules governing divorce depend on the divorce regime. In the benchmark model we assume that the divorce regime r is first mutual consent ($r = MC$) and then switches unexpectedly to a unilateral divorce regime ($r = U$). The U regime is straightforward: any individual who wishes to divorce can do so. Upon divorce, the marital assets are split equally between the ex-spouses.[17] In the MC regime, on the other hand, divorce requires both spouses to agree. If, subject to an equal split of marital assets, both parties would prefer to divorce than remain marry, the couple divorces with that asset split. If, on the other hand, one of the spouses would prefer to stay married at that asset split, then that spouse must receive a share of marital assets that leave her/him indifferent between being married or divorced. Note that a spouse cannot borrow individually in order to pay off the other spouse so as to obtain a divorce. Note also that there may not be an asset split which makes both agents better off divorced. In that case the agents remain married. We reiterate that under both regimes the children live with their mother upon divorce and the ex-husband pays a fraction of his labor income as child support until his ex-wife remarries or their youngest child is at least 20 years old.

The divorced agent's state space in period t after all uncertainty in that period is resolved is given by:

$$\Omega_{gt}^{D*} = \{a_{gt}^D, z_t, z_t', k_t, \chi_t^{*x}; r\} \tag{8}$$

where χ_t^{*x} equals χ_t^{*xf} for a male agent and equals z_{xt}' for a female. Note that:

$$a_{gt}^D = \begin{cases} \phi_g^r a_t & \text{if the agent divorced in period } t \\ a_{gt} & \text{otherwise} \end{cases} \tag{9}$$

where ϕ_g^r denotes the portion of the marital assets a_t that were allocated to the spouse of gender g under divorce regime r. Note that our assumptions imply $0 \leq \phi_g^r \leq 1$. If the agent entered the period already divorced, then $a_{gt}^D = a_{gt}$.

---

[17]An equal asset split is a reasonable benchmark which mimics the community property regime. Similar assumptions have been used in the literature which avoids delving into the details of the property regime. For example, Cubeddu and Ríos-Rull (2003) award the ex-wife 60% of household assets, choosing a larger than equal split rather than explicitly modeling child support as we do here.

Recall that immediately upon divorce each ex spouse faces a probability ω_t of obtaining a fresh match with another agent. Let us use $\mathbb{E}\widehat{V}_{gt}^D$ to denote the expected value associated with divorcing. Note that it is given by:

$$\mathbb{E}\widehat{V}_{gt}^D(\Omega_t^{D^*}|\Omega_t^M) = \omega_t \mathbb{E}V_{gt}^{s^{**}}(\Omega_t^{s^{**}}|\Omega_t^M) + (1-\omega_t)\,\mathbb{E}V_{gt}^D(\Omega_t^{D^*}|\Omega_t^M) - \Phi \tag{10}$$

where s^{**} is the marital *outcome* $\{M, D\}$ contingent on the agent obtaining a new match opportunity that same period in which she/he is divorcing the current partner. The last term Φ is the psychic cost borne by both ex-spouses in the period in which they divorce. It is borne independent of whether an agent immediately remarries.[18]

We are now set to characterize the divorce decision under the two regimes governing divorce.

Divorce Decision under the Mutual Consent Regime ($r = MC$)

Under the MC regime, divorce occurs in either of the two following cases:

Case 1. If for $\phi = 0.5$, $\mathbb{E}\widehat{V}_{gt}^D(\Omega_{gt}^{D^*}|\Omega_t^M) \geq \mathbb{E}V_{gt}^M(\Omega_t^{M^*}|\Omega_t^M)$ for both $g = m$ and $g = f$, and with at least one strict inequality, then the couple divorces and the marital assets are equally divided between the two ex-spouses.

Case 2. If for $\phi = 0.5$, $\mathbb{E}\widehat{V}_{gt}^D(\Omega_{gt}^{D^*}|\Omega_t^M) > \mathbb{E}V_{gt}^M(\Omega_t^{M^*}|\Omega_t^M)$ but $\mathbb{E}\widehat{V}_{g't}^D(\Omega_{g't}^{D^*}|\Omega_t^M) < \mathbb{E}V_{g't}^M(\Omega_t^{M^*}|\Omega_t^M)$, (i.e., the spouse of sex g prefers to divorce but the spouse of sex g' does not, given an equal asset split), then solve for the division $\phi_{g'}^*$ of marital assets such that:

$$\mathbb{E}\widehat{V}_{g't}^D(\Omega_{g't}^{D^*}|\Omega_t^M) = \mathbb{E}V_{g't}^M(\Omega_t^{M^*}|\Omega_t^M)$$

The couple divorces with the asset split implied by $\phi_{g'}^*$ if and only if the following two conditions are met: (i) $0 \leq \phi_{g'}^* \leq 1$ and (ii) $\mathbb{E}\widehat{V}_{gt}^D(\Omega_{gt}^{D^*}|\Omega_t^M) > \mathbb{E}V_{gt}^M(\Omega_t^{M^*}|\Omega_t^M)$, given $a_{gt}^D = (1 - \phi_{g'}^*)a_t^M$. If these conditions do not hold, the couple remains married. That is, we solve for the division of assets that makes the reluctant spouse indifferent between remaining married and divorcing. If given that asset division (with no

---

[18]This can be interpreted as resulting in part from the psychic cost of divorce and in part from social disapproval.

additional borrowing allowed) agent g still strictly prefers to get divorced, they do. Otherwise the couple remains married.

Divorce Decision Under the Unilateral Consent Regime $(r = U)$

Under the U regime, divorce occurs if, at $\phi = 0.5$ either $\mathbb{E}\widehat{V}_{ft}^D(\Omega_{ft}^{D*}|\Omega_t^M) > \mathbb{E}V_{ft}^M(\Omega_{ft}^{M*}|\Omega_t^M)$ or $\mathbb{E}\widehat{V}_{mt}^D(\Omega_{mt}^{D*}|\Omega_t^M) > \mathbb{E}V_{mt}^M(\Omega_{mt}^{M*}|\Omega_t^M)$. Only one strict inequality is required as the spouse who wishes to divorce doesn't need to compensate the other.

3.2   The Maximization Problems

We next turn to the maximization problem faced by agents once they have decided upon their marital status for that period. The maximization problem faced by a married couple differs in an important respect from that of a single or divorced agent since spouses' preferences over consumption, saving, and LFP will in general not coincide in the work stage of life. As discussed earlier, we assume that spouses maximize the weighted sum of the two agents' welfare. This reflects our assumption of no commitment within marriage other than that given by the legal regime and by custom, as reflected in their respective weights.[19]

Retirement (R): $t^R + 1$ **to** T

For computational simplicity we assume that upon retirement there are no longer any shocks to income or love. Marital status remains fixed, there are no work decisions, and child support payments are no longer required as all children are at least twenty years old given our fertility timing assumptions (discussed in the parametrization section). All households hence maximize their consumption utility subject their budget constraints. Thus, from periods $t^R + 1$ through T, agents retirement value functions are given by:

$$V_{R,gt}^s\left(a_t; \overline{y}_g, \overline{y}_{g'}\right) = \max_{a_{t+1}} u(c_t) + \mathbb{I}_s q_t + \beta V_{R,g,t+1}^s(a_{t+1}; \overline{y}_g, \overline{y}_{g'})$$

---

[19]See, e.g. Chiappori (1988) and more recently, Blundell, Chiappori, and Meghir (2005) and Cherchye, Rock, and Vermeulen (2012) for some examples which use the collective household setup.

subject to their budget constraint. Their income derives from assets, social security payments $b_t^s(\bar{y}_g, \bar{y}_{g'})$, and potentially from transfers from an ex spouse. If married, social security payments are a function of both spouses' past earnings. If single or divorced, the social security payments are a function only of own past earnings. Women who enter into retirement divorced are assumed to receive as well a fraction of their ex-husband's pension income (which is then subtracted from his budget constraint). Lastly, recall agents must die with no debt, i.e., $a_{T+1} \geq 0$.

Working Life: $t = 1$ **to** t^R

We next describe an agent's maximization problem, conditional on marital status, starting in a period belonging to the working stage of life. A divorced agent in period t after that period's uncertainty has been resolved (i.e. marital status has been decided upon and all within period shocks have been realized) is either someone who did not remarry or who entered period t married but then divorced.[20] A *divorced woman's* value function at that point is given by:

$$V_{ft}^D(\Omega_{ft}^{D*}) = \max_{a_{f,t+1}, P_t} \left[\frac{c_t^{1-\sigma}}{1-\sigma} - \psi_f^D(k_t)P_t \right] + \beta \mathbb{E}\left[V_{f,t+1}^{s*}(\Omega_{f,t+1}^{s*}|\Omega_{f\bar{t}}^D) \right]$$

$$\text{s.t. } \hat{c}_t + a_{t+1} = Ra_t + [y_{ft} - \kappa(k_t)]P_t + h(y_{mt}; k_t)$$

$$c_t = \frac{\hat{c}_t}{e(k_t)}$$

where it is understood, here and elsewhere, that $\mathbb{E}V_{f,t+1}^{s*}$ includes expectations over all shocks in period $t+1$ and hence all outcomes (including marital status ones) for period $t+1$. In particular, a divorced agent will take into account how her savings decision affects the asset level of potential spouse draws, the probability of ending up married versus divorced in the following period, etc. The budget constraint reflects the assumption that divorced women receive a fraction of their husband's salary as child support, $h(y_{mt}; k_t)$. $\kappa(k_t)$ are the childcare costs incurred if the mother works given children of ages k_t. The definition of the state space Ω_{ft}^{D*} is given in equation (8). Recall that $\Omega_{f\bar{t}}^s$ refers to the

---

[20]Note that if the agent divorced that period, the psychic cost is assumed to have been borne already and hence is not included in the value function below.

state space of the agent in marital state s at the beginning of period $t+1$ (e.g., in the value function above, Ω_{ft}^{D*} is updated with a_{t+1} generating $\Omega_{f\bar{t}}^{D}$).

A *divorced man's* value function is the same as the above with f replaced by m, no child-care expenses and, if his ex-wife hasn't remarried, then subtracting rather than adding any child support.

A *single agent* at time t is one who entered the period single and chose not to marry. A single agent's value function after all uncertainty has been resolved in period t is given by:

$$V_{gt}^S(\Omega_t^{S*}) = \max_{a_{t+1}} \left[\frac{c_t^{1-\sigma}}{1-\sigma} \right] + \beta \mathbb{E} \left[V_{g,t+1}^{s*}(\Omega_{t+1}^{s*}|\Omega_{\bar{t}}^S) \right]$$

$$\text{s.t. } \hat{c}_t + a_{t+1} = Ra_t + y_{gt}; \quad c_t = \frac{\hat{c}_t}{e(k_t)}$$

Lastly, consider a married household at time t after all that period's uncertainty has been resolved. This is a household that either entered that period married and chose not to divorce or that entered single and decided to marry. It faces the following maximization problem:[21]

$$H_t^M(\Omega_t^{M*}) = \max_{a_{t+1},P_t} \lambda \left[\frac{c_t^{1-\sigma}}{1-\sigma} - \psi_f^M(k_t)P_t + q_t \right] + (1-\lambda) \left[\frac{c_t^{1-\sigma}}{1-\sigma} + q_t \right]$$

$$+ \beta \left[\lambda \mathbb{E} V_{f,t+1}^{s*}(\Omega_{f,t+1}^{s*}|\Omega_{\bar{t}}^M) + (1-\lambda)\mathbb{E} V_{m,t+1}^{s*}(\Omega_{m,t+1}^{s*}|\Omega_{\bar{t}}^M) - \mathbb{E}_{\{s*=D\}}\Phi \right]$$

$$\text{s.t. } \hat{c}_t + a_{t+1} = Ra_t + y_{mt} - \mathbb{I}_x h(y_{mt};k_{xt}) + [y_{ft} - \kappa(k_t)]P_t;$$

$$c_t = \frac{\hat{c}_t}{e(k_t;s)}, \text{ and eqn (3)}$$

where $\mathbb{E}_{\{s*=D\}}$ is the (endogenous) probability that $s^* = D$ in period $t+1$. In the budget constraint, $\mathbb{I}_x$ is an indicator function that takes the value of one if the husband has an ex wife and zero otherwise. This is included since the household's income must be adjusted to reflect childcare payments if these exist.

In words, the problem faced by the married household above is to maximize a weighted sum of the wife's and husband's instantaneous utilities (the first line), in which the wife

---

[21]For ease of notation, we denote a married household by M, omitting the subscript τ.

receives the weight of λ and the husband $(1 - \lambda)$, plus their expected continuation values with the same weights of λ and $(1 - \lambda)$ on the wife's and husband's future expected utility, respectively (the second line). As before, $\mathbb{E}V_{g,t+1}^{s*}$ includes expectations over all shocks in period $t + 1$ and hence all outcomes (including marital status ones) for period $t + 1$. In particular, agents will take into account how all household decisions affect the probability of marriage versus divorce, and the expected welfare in each of those states. Note that we must subtract the one-time cost of divorce Φ in each state of nature in which the household divorces in the following period as it is not included in $\mathbb{E}V_{g,t+1}^{D*}$.

Let $\left(c_t^\dagger, P_t^\dagger, a_{t+1}^\dagger\right)$ be the solution to the married household's maximization problem above. We are now set to define the value of marriage to each spouse. Thus,

$$V_{ft}^M(\Omega_t^{M*}) = \frac{c_t^{\dagger 1-\sigma}}{1-\sigma} - \psi_f^M(k_t) P_t^\dagger + q_t + \beta \left[\mathbb{E}V_{f,t+1}^{s*}(\Omega_{f,t+1}^{s*}|\Omega_{\bar{t}}^M) - \mathbb{E}_{\{s*=D\}}\Phi \right]$$

is the value function associated with being a married woman at time t. The value function associated with a married man is defined analogously (with no disutility from working).[22]

4   Parametrization

In this section we describe the calibration of the model. Some model parameter values are taken from preexisting estimates while others are estimated directly from the data using model restrictions. A remaining set of parameters are calibrated within the model in order to match certain moments in the data. The reasoning guiding different choices is explained below. Table 1 reports the parameters estimated "outside" the model and Table 3, reports the "internally" calibrated parameters and their targets. Our key parameters of interest are those that affect work decisions for women and marital decisions for both sexes. These parameters include those which govern disutility from labor, child-care costs, several parameters which affect wage dynamics and marital status transitions (e.g. love).

To construct our key labor statistics we mainly use the 1962-2010 waves of the March supplement of the Current Population Survey (CPS), a cross-sectional survey conducted

---

[22]Note that the value functions in period t^R are given by the sum of the instantaneous utility defined during a working period with the continuation value associated with the retirement maximization problem.

by the Bureau of the Census. Although this is not a panel, we choose this dataset due to its long time horizon which allows us to observe the full life span of our 1940 cohort. We construct a synthetic 1940 cohort which consists of women born between 1939-1941. For the relevant statistics for men, our sample consists of men born between 1942-1944 in order to capture the average age difference between husbands and wives (approximately 3 years for this cohort). Married people are defined as those "married, with spouse present", singles are those people who report "never married" whereas divorced people are those who report their marital status to be either "divorced" or "separated". Finally, since longevity is deterministic in the model, we exclude widows from our sample.

For the marital status transition statistics, we rely on the marital history module of the 2001 and 2004 waves of the Survey of Income and Program Participation (SIPP). We construct a cohort of women born between 1938 and 1942; since this is a panel dataset, we can follow the life-cycle marital transitions of these women and compute statistics based on those. All marital statistics are computed using women only - e.g. the divorce rates calibrated in the model are those faced by the women in this cohort. We next proceed to explain the choices of functional forms and their calibration in detail.

Demographics and Preferences

The model period is 5 years. Individuals begin the working stage of life at age 20 (period $t = 1$) and remain in that stage for 9 periods. Retirement begins in the model period $t^R + 1 = 10$ (at age 65) and death occurs at the end of model period $T = 15$ (at age 90). In the benchmark model we assume that the mutual consent divorce regime is in place for the first 3 periods and then switches to a unilateral divorce regime in the 4th period. This corresponds to a regime switch occurring in 1975. The regime switch is assumed to be completely unexpected. As a robustness check, we also explored the opposite extreme – a perfectly anticipated regime change. Our welfare results did not change substantially as a result.

To parameterize the utility function we set $\sigma = 1.5$ since most estimates for the relative risk aversion parameter in the literature vary between one and two. This value is in line with the values found by Attanasio and Weber (1995) using US consumption data. We set

the discount factor $\beta = 0.90$ (for a five year period) which corresponds to a conventional yearly discount factor of 0.98.

The disutility of labor is allowed to vary by marital status and to depend on the age of the youngest child in the household. The parameters are calibrated within the model in order to match female LFP rates by marital status and children's age for the 1940 cohort.[23] With respect to children, we distinguish between mothers with young children (below the age of 5), those with older children, and non-mothers and allow these women to incur different disutilities from working.[24] Lastly, single women's and all men's disutility from work is normalized to zero.

Income Process

All agents begin life with zero assets. For an individual of gender g, her/his wage at time t is given by y_{gt} as specified in equation (2). Note that the stochastic component of wages, z_t, is modeled as an AR(1) process with normally distributed innovations. This choice is standard in the literature and is consistent with the large increase in the variance of wages observed in the data over the life-cycle.

We estimate the parameters of the income process using data from the Panel Study of Income Dynamics (PSID); the process is described below but see the Appendix for further details. First, we construct data on hourly wages (y_{mt}) for men using data on earnings and total hours worked for the male cohort described previously. We estimate the parameters γ_1, γ_2 of the second degree polynomial on age with the following regression:

$$\ln y_{mt} = c_m + \gamma_1 age_t + \gamma_2 age_t^2 + w_t$$

Next, we use the residuals w_t from this regression to estimate the parameters of the stochastic process (σ_ϵ, ρ_z) using the minimum distance estimator first proposed by Chamberlain (1984). This method seeks parameters which minimize the distance between the empirical

---

[23]The distinction between working as a single or divorced woman versus married was particularly relevant to the 1940 cohort who grew up thinking of married women primarily as homemakers.

[24]Mothers of young children may be especially reluctant to work. See, for example, Bernal (2008) and Bernal and Keane (2009) for some evidence regarding the effect of a mother's working on a child's development.

covariance matrix of income residuals and the one obtained from simulating the income process outlined above. This choice of estimator is standard in the literature and its use and identification in this specific income process is described in detail in, for example, Storesletten, Telmer, and Yaron (2004). Finally, we normalize the male value of gender-specific intercept γ_g to equal one. The analogous parameter for women, γ_f is calibrated internally to match the ratio of female to male wages averaged over the ages of 20-50 for the 1940 cohort which is 0.71. The parameters of the stochastic process and age polynomials are assumed to be the same for both sexes as the fact that women move in and out of the labor force prevents us from using the same procedure to estimate these parameters separately for women.

The model abstracts from alimony since the data suggests that both the proportion of divorced people who receive alimony and the monetary amounts are small.[25] Child support is a more common and substantial payment. We assume that unless his ex-wife remarries, the man pays child support equivalent to 10% of his current income until the children reach the age of twenty.[26] These values are within the range found in the literature (see, for example, Del Boca and Flinn (1995) and Beller and Graham (1988)).

After retirement, for computational simplicity (as in Guvenen (2007)), individuals receive a constant pension which is a function of her/his last observed earnings. The exact functional form of the pension system mimics the US Social Security bend points (following Heathcote, Storesletten, and Violante (2010)) and it is outlined in the appendix. Married couples receive either the sum of the husband's and wife's pensions or 1.5 times the husband's pension (whichever one is higher). A divorced woman receives, in addition to her own pension, 10% of her ex-husband's pension.[27]

---

[25]For example, Voena (2012) reports using National Longitudinal Survey of Young and Mature Women data that only 10% of divorced women report receiving alimony between 1977 and 1999. Using 1978 CPS data, Peters (1986) reports alimony payments which correspond to under 3% of the average male earnings that year.

[26]The model abstracts from the risk of non-compliance. Uncertainty in these payments would amplify the negative effects of divorce.

[27]The laws governing an ex-wife's claim to the man's pension have evolved over time. Before 1980 unvested pensions were not considered part of marital property. Currently, pensions are divided as part of marital property and they are frequently the most valuable portion of the marital real estate (see Oldham (2008)).

Family Formation and Fertility

All agents begin life as single and face marital transition decisions for the first 5 periods of their lives (until age 44). Recall that in period 0, agents are assigned a marital "type" which consists of their potential spouse's z_0. In particular, each agent faces a probability π that their potential spouse will have the same z_0 as themselves while with probability $1 - \pi$, they are assigned a spouse with a z_0 drawn at random from the initial distribution. The parameter π is set so as to match the correlation between the husband and wife's wages as computed from the CPS data for married women of the 1940 cohort between the ages of 20-44 working full-time year round.

When a couple (re)marries at a given age, they draw an initial love q_0^τ from $N(\mu_q^\tau, \sigma_q)$. This q_0^τ then evolves according to equation (3). Note that we allow the means of the distributions of the love shocks and of the love draws, μ_u^τ and μ_q^τ, to depend on the age at which agents married. We denote by $\tau = young$ marriages that occur between the ages of 20-34 and by $\tau = old$ marriages that occur after reaching the age of 35. These parameters, along with the parameter Φ for the psychic cost of divorce, govern marriage and divorce rates over the life cycle as well as their durations. Accordingly, we calibrate them so that they jointly match (i) women's divorce rates while young versus while old, (ii) the proportions of women who marry for the first time while young versus old, and (iii) the probability that a women will remarry within 5 years after divorce.[28]

The variance parameters σ_u and σ_q help discipline the elasticity of marriage and divorce with respect to income. Accordingly, we set them such that at age 40-44 in the model, the difference in the proportion of men in the top tercile and in the bottom tercile of income who have been married and divorced at least once matches the data. We use the 1980 Census to generate these statistics as the narrow age bracket used to define our sample yields small samples in the SIPP.

The persistence parameter ρ_q in equation (3) helps govern the duration of marriage. It is set such that the model matches the conditional probability of divorcing before the

---

[28]Young divorce rates are computed as the proportion of marriages that have taken place from ages 20-34 which end in divorce before the age of 34 while old divorce rates are the proportion of marriages that occurred between ages 20-44 which end in divorce between the ages of 34-44. First-time marriage rates are defined as the proportion of all women in the SIPP sample who marry for the first time between the ages of 20-34 (young) and 34-44 (old).

couple's 11th anniversary given that this is the woman's first marriage, that the marriage occurred during the ages of 20-34, and that the latter lasted at least 5 years. Lastly, we allow the probability of an immediate rematch draw in the period in which divorce occurs to depend only on whether the agent is in the young or old stage of married life. Accordingly ω_τ is set to match the *truncated* duration of divorce given that divorce occurred while young (20-34), ω_y, and when older, ω_o, (35-44).[29]

Fertility shocks are marital status and age dependent. They are calibrated to yield both the proportion of married women who become mothers for the first time during the ages of 20-24, 25-29 and 30-34 (68, 21, and 4 percent, respectively) and to generate the average number of children a woman has in her lifetime (2.4) as in the PSID data for the 1940 cohort.[30] Single and divorced women in the model do not obtain fertility shocks; in the data, the proportion of single mothers is small.

Consumption Deflator and Child-Care Costs

Children are assumed to live with their parents (or mother, if parents are divorced) until the age of 20. We use the McClements scale to calculate the economies of scale in consumption.[31] See the Appendix for the exact values used.

Women who have children under the age of 10 at home are assumed to incur child-care costs if they work. These depend only on the age of the youngest child, i.e. if a household has a child above the age of 10 and two below the age of 10, child-care costs are incurred only once. This parameter is calibrated internally to amount to 50 percent of (working) married women's wages, averaged over their lifecycle, consistent with the evidence presented by Attanasio, Low, and Sanchez-Marcos (2008).

---

[29]Since the model does not have marital status transitions beyond the age of 44, we compute the duration as 44 minus x where x is the age at which the woman got divorced and hence refer to it as the "truncated" duration of divorce. See the Appendix for further details.

[30]We choose to match the proportion of women (by marital status) who are mothers because LFP behavior is driven more by the presence of a young child at home rather than by the number of children women have. Moreover, given that our childcare costs and additional disutility from labor depend only on the age of the youngest child in the household, we chose to focus on the distinction between mothers and others (this is the strategy followed by Attanasio, Low, and Sanchez-Marcos (2008)).

[31]This scale is very similar to the OECD scale, but it has the advantage that it was computed based on expenditure data from families.

Other External Parameters

There is little guidance on the value of Pareto weight on a woman's welfare in the household allocation problem. We set this value, λ, to 0.3 which is close to the values estimated in the literature (see, e.g., Knowles (2007) and Voena (2012)). Recall that the asset level of a new match draw in the marriage market for a single or divorced woman depends on her own assets (see equation (4)). We set it to be 1.125 times her own asset level, where the 1.125 is the ratio of the median assets of divorced and single men to the ratio of the median assets of single and divorced women of the 1940 cohort in the 1983 SCF where this cohort of women would have been 43 years old.[32] Similarly, a non-married man receives matches with women whose assets are $\frac{1}{1.125}$ times his level. Finally, the gross interest rate is set to $R = 1.077$ which in this five-year-period model corresponds to an annual interest rate of 1.5%. This is the average real return on a 3 month t-bill over the period of 1935-2010. The values of all the parameters set externally are reported in table 1.

To summarize, there are a total of 19 parameters calibrated internally: 6 parameters which govern the disutility of labor for married and divorced women, 1 childcare cost parameter, 1 wage-intercept parameter for women, 1 parameter which governs the assortativeness of the marriage market, 7 parameters for the initial draw and evolution of the love process, 1 parameter for the psychic cost of divorce, and 2 parameters which determine the probability of an "immediate" match draw in the same period as divorce. We match a total of 19 statistics for our 1940 cohort: 6 average LFP rates for married and divorced women by children's age, 10 moments related to divorce and first marriage, 1 wage gender gap, the correlation of husband and wife's earnings, and the childcare costs. Although this mapping is only approximate, it may be useful to think of the labor disutility parameters as targeting the LFP moments, while the love process parameters are mostly used to target the life-cycle pattern of divorce and marriage.

We calibrate the internal parameters by minimizing the distance between implied model moments and their data targets. The total distance between moments and targets is computed as a weighted average of the squared difference between each moment and target. The weights are such that the 10 moments for marriage and divorce receive half of the total

---

[32]This is as far back as the SCF provides data.

weight and the 9 remaining moments receive the other half of the weight. Within each group, the moments are equally weighted.

4.1 Solution Method

The households face a known finite horizon which allows the dynamic problem to be solved numerically by backwards recursion from the last period of life using value-function iteration. In each period, the households solve for their consumption-savings rule and LFP decisions taking as given their state variables that period and next period's value function. In what follows, we present the solution method for the married household; the one for divorced women is similar while those of singles and divorced men are significantly simplified by the lack of a participation decision.

In addition to household assets, the model has three other potentially continuous state variables: the husband's and wife's persistent components of earnings, z_{mt} and z_{ft}, respectively, and the match quality level q_t^τ. As including more than one continuous state variable, while possible, is computationally costly, we choose to discretize these three variables, leaving assets as the only continuous state.

The model combines two discrete decisions (whether marriage/divorce occurs and whether the woman participates in the market) and a continuous decision (the level of savings). To solve the model, we first solve for the asset levels and participation decision conditional upon each marital status possibility as discussed in further detail below, and then maximize over the marital status options. Nevertheless, even the combination of participation and assets alone may lead to non-concavities in the value function - as explained below, we numerically check for this.

We follow Attanasio, Low, and Sanchez-Marcos (2008) and impose (and check) a unique level of reservation assets a_{t+1}^* at which, given the values of all other state variables, the conditional value functions (working versus not working, given a fixed marital status) intersect only once. This is where the woman's participation decision switches from not working to working. Thus, conditional on all other state variables, for all values $a_{t+1} < a_{t+1}^*$ the woman works and for all values $a_{t+1} > a_{t+1}^*$ the woman does not work in $t + 1$. We numerically check both the concavity of the conditional value functions and the uniqueness

of the reservation asset level. The existence of this unique reservation asset level allows us to interpolate across the asset grid for $t + 1$ since each level of a_{t+1} is now associated with a participation decision at $t + 1$ and thus with a concave value function.

At this point, and conditional on marital status and the woman's participation decision at time t, we solve for the household's optimal level of asset accumulation. The option (work vs not work) which implies the highest utility then yields the LFP decision. After solving for all asset levels and participation decision for all possible states of nature and marital status, the value functions in the married vs. divorce state are compared for each agent and a marriage or divorce decision is given at each point of the state space.

5 Implications of the Calibrated Model

In this section we discuss the results obtained from the calibration and examine the implications of different divorce regimes for married women's LFP.

5.1 Model Fit and Calibrated Parameters

As can be seen from table 2, the model does a good job matching the data moments used in the calibration. It does an excellent job of reproducing the averages values of women's LFP, by marital status and conditional on having no children, children below the age of 5, and children between the ages of 5-10. It also matches the conditional marriage and divorce statistics extremely well. The largest discrepancy is in matching the divorce rate during the ages of 35-44 and the immediate remarriage rate upon divorce over the ages 20-34, missing them by a bit over 1 and 2 percentage points respectively.

The model also does well in generating some moments that were not directly targeted in the calibration. For example, conditional upon divorcing between the ages of 20-34, the probability of remarrying within 20 years is 79.4% in the data versus 80.4% in the model. Furthermore, as can be seen in figure 2, the model also does a fairly good job in reproducing the general life-cycle profile of married and divorced women's LFP, not just the targeted averages across the life-cycle.

Table 3 reports the values of the internally calibrated parameters. A few comments

29

are worth making. First, note that the mean of the initial q draw is higher for "young" marriages than for "old" ones. This is driven by the need to match the large proportion of marriages that occur at young ages despite the fact that earnings are lower and fertility is higher, both factors contributing to decrease consumption. One way of thinking about this is that individuals obtain pleasure from the prospect of having children and that this is captured in the higher mean of q^{young}. Another important parameter governing the evolution of love over time is the mean of the love shocks. For marriages formed when young or when old, this parameter is positive and approximately 7 (young) to 8.5 (old) percent of the initial value of the mean of the initial love draw. This implies that q will tend to increase by this percent each period over the duration of the marriage.

Second, it is worth noting that, conditional on the age of a woman's children, the disutility of working is always higher for married women than for divorced ones. In order to understand the magnitudes of these parameters, it is useful to state them in terms of their consumption equivalence using the same consumption level. To do this we compute the proportional decrease in average married consumption that a woman would be willing to bear for one period in order to avoid incurring the disutility cost of working one period, i.e., we find the ξ_k^s such that

$$u((1 - \xi_k^s)\bar{c}^M) = u(\bar{c}^M) - \psi_f^s(k)$$

where $\bar{c}^M$ is the average per-period consumption of a married agent (where the average is taken over all married women across all model periods). The results of this calculation are reported in Table 5 for all s and k, and range from 3.4 to 8.8 percent of average per-period married consumption.

A similar exercise can be conducted to measure the psychic cost of divorce Φ. We solve for the consumption equivalence of Φ by solving for ξ_Φ below:

$$u((1 - \xi_\Phi)\bar{c}^M) = u(\bar{c}^M) - \Phi$$

We find $\xi_\Phi = 0.192$, i.e., individuals would be willing to sacrifice 19.2 percent of average per-period married consumption (for one period) in order to avoid the psychic distress

associated with divorce. We can also compare this number to the mean value of the initial love draw when young, μ_q^{young}. The latter is smaller in magnitude (0.72 versus 1.49, respectively) than the psychic cost of divorce; it is equivalent to 16.3 percent of one's periods average married consumption.

5.2 Married Women's LFP

How does women's LFP react to different divorce regimes?[33] To study these implications, we generate the paths of women's LFP under both divorce systems separately. In both cases, the regime remains in force throughout the agents' entire lifecycle. Figure 3 depicts the life-cycle profile of women's LFP under the two pure divorce regimes (MC and U) as well as in the benchmark model, for married women and, separately, for divorced women. The solid line with squares labeled LFP$_{MC}$ shows the LFP path under a regime of mutual consent divorce. The solid line with triangles labeled LFP$_U$ is the LFP path under the unilateral regime. Lastly, the dashed line is the LFP path obtained in the benchmark model with its mix of divorce regimes.

Note that the benchmark model's LFP path coincides with the path under mutual consent through period 3 since the change in divorce regime in period 4 in the benchmark is, by assumption, unexpected. Thereafter, LFP is on average 1.5 percentage points higher per period over the next 6 periods for married women in the benchmark model (now governed by the unilateral divorce system).[34] Thus, the unexpected change in regime from mutual consent to unilateral increased married women's LFP but not by a very large amount.

We can compare the results above with those obtained by Stevenson (2008) using a variety of specifications. First, using a simple differences-in-differences strategy that

---

[33]In an earlier paper (Fernández and Wong (2013)) we examined how a large *exogenous* increase in the probability of divorce affected married woman's LFP. We found that doubling the divorce rate increased married women's LFP increased significantly. The modeling strategy used there had some advantages and some disadvantages. On the positive side, keeping marital status exogenous allowed us to consider the interplay of several factors that otherwise are computationally very burdensome (e.g., the endogenous accumulation of labor market experience). On the negative side, treating divorce probabilities as exogenous meant that all the causality went in one direction – from greater divorce risk to higher LFP – rather than allowing the two to interact. The model of *endogenous* marital status in this paper allows us to make greater headway in understanding the relationship between the dual transformation of women's work and the stability of marriage.

[34]The LFP of divorced women is also higher as a result of the change, but the increase is smaller – on average less than 1 percentage point per period over 6 periods.

compared the change in married women's LFP from 1970 to 1980 across states that changed their divorce regime from mutual to unilateral versus those that did not, Stevenson found an increase of about 1.5 percentage points associated with the unilateral regime. Second, running a Probit on married women's LFP using individual controls and including time-varying state policies (in addition to state and year fixed effects), she found that unilateral divorce is associated with around a 1.4 percentage points increase in the LFP of non-black married women. We can compare these results with those produced by our model by calculating $\text{LFP}_{benchmark}$ - LFP_{MC} in 1980 for married women. We obtain an increase of 2.7 percentage points, which is in the same ballpark as her estimates.

Turning next to the two pure divorce regimes, as can be seen from figure 3, the model predicts that LFP, especially of married women, would have been substantially higher under a unilateral divorce regime. In particular, over the ages of 20-29 which is when most women are having children, it would have been 8.43 percentage points greater on average. Over the first 5 periods (ages 20-44), it would have averaged 7 percentage points more each period than under mutual consent. When married women become older, the inequality changes sign and they would work a bit less under a unilateral divorce regime than under mutual consent.[35]

Table 4 reports several key LFP moments. For ease of comparison, the first column replicates the benchmark results, and the second and third columns compare the two pure divorce regimes. Note that the overall ratio of female to male wages is lower under unilateral than under mutual consent as a greater proportion of lower-productivity women enter the labor force in the former.

What mechanism drives the large difference in married women's LFP over the two regimes? It may be easiest to start by ruling out certain explanations. First, note that there is are no returns to experience in this model – wages are assumed to automatically increase with age. Hence, the desire to accumulate more labor market experience cannot be playing a role.[36] Second, it is also worth noting that the increase cannot be the result

---

[35]It would be interesting to examine whether this result holds in the data. It is not an easy exercise to conduct, however, as it would require contrasting the LFP of married women who always expected to live under each of the two divorce regimes. One possibility could be to examine the LFP for married women 20-30 years old under each regime (i.e., differentiating across states), sample size permitting.

[36]In our earlier paper (Fernández and Wong (2013)), we found that the endogenous accumulation of

of a strategic calculation in which women work more in order to decrease the probability that their husbands will want to divorce them. Nor can it be the outcome of a "contract" in which wives agree to increase family income and husbands agree to a lower probability of divorce. The timing of decisions within a period effectively rules out these possibilities as first individuals make marital status decisions and only subsequently does the household make work and savings decisions.[37] Thus married women's LFP must be optimal (in the sense of maximizing the weighted sum of spouses' utilities) *taking as given* the marital status outcome.

Why then do married women work more under a unilateral divorce regime? To answer this we need to understand how an (endogenously) higher divorce risk affects married agents' preferences over their other endogenous outcomes: work, consumption, and savings. Consider a married household in which the wife did not work. Divorce has two important effects: it changes the size of each spouse's household and it divides marital assets (assume 50-50). From a man's perspective, the first effect is large as he goes from supporting a family of, say, 4 to supporting only himself (and transferring 10 percent of his income to his ex-spouse). From the woman's perspective, she goes from a family of 4 to a family of 3 and must now support it on labor income that is 30 percent smaller on average.[38] Thus, consumption smoothing implies that in face of higher divorce risk, married men will want to borrow more (or save less) than their wives. The solution to these conflicting preferences is governed by the relative Pareto weight on spouses' preferences (which favors men). However, rather than savings bearing the entire required adjustment, another option is for the married woman to enter the labor force. Doing so increases men's welfare (and decreases women's) but, by allowing savings to fall less, it can be a superior solution to the household optimization problem.

To illustrate the reasoning above, table 6 reports the average assets held by married

---

experience was not a significant contributor to the increase in married women's LFP when confronted with a doubling of the divorce rate.

[37]This timing is the one required by our assumption of the inability to commit to actions *contingent* upon a certain marital status. In the future it may be interesting to explore the consequences of alternative timing assumptions in which individuals can make labor force participation decisions simultaneously with marital status decisions, i.e., essentially they can commit to working in that period. In this paper, however, we are interested in exploring fully the non-commitment assumption.

[38]The average consumption of a divorced woman in the model ranges from 57 percent to 66 percent of the divorce man's consumption, depending on age.

couples and the average LFP of married women in each period under the mutual consent versus the unilateral divorce regimes. Columns 3 and 6 present the difference in the levels of these variables between the two divorce systems. As can be seen in the table, relative to a mutual consent regime, savings are lower (borrowing increases) and LFP is significantly higher over the first four periods of life under a unilateral regime. Thereafter saving starts to increase as retirement incentives kick in and women's LFP drops.

Of course, the composition of married agents differs across divorce regime. Could selection be responsible for most of the increase in married women's LFP obtained under the unilateral divorce regime? To check this possibility, for each period we divide the population of married women into quintiles of z_t using the distribution of couples that period under mutual consent. We do the same for married men. This yields a $5x5$ matrix of married couples. For each cell we can calculate women's LFP under the mutual consent regime vs the unilateral divorce regime. Using the same weights per cell as under mutual consent (at time t) allows us to eliminate the effect of differential selection into marriage on married women's LFP in that period.

We find that selection plays a role in the increase in married women's LFP but that it is significantly less important than the increased motivation to work faced by all married women.[39] For example, had the distribution of couples remained the same as in mutual consent, then married women's LFP would have increased from 35.80 percent to 43.83 percent rather than to 45.22 percent in period 1. In period 2 it would have increased from 39.25 to 45.58 rather than to 46.68. Thus, in the first two periods selection into marriage is responsible for 15.8 percent and 14.8 percent, respectively, of the total increase in LFP induced by a unilateral divorce regime.

---

[39]We also checked, using the same methodology, whether the results regarding savings was driven by differential selection into marriage. They are not. For example, had the distribution of couples remained the same as in mutual consent, then average assets would have decreased from -5.46 to -6.42 rather than to -6.75 in period 1. In period 2 it would have decreased from -6.55 to -7.72 rather than to -8.06. Thus, in the first two periods selection into marriage is responsible for 25.0 percent and 22.4 percent, respectively, of the total decrease in married assets induced by a unilateral divorce regime.

6 Welfare Analysis of Divorce Regimes

Prior to the welfare analysis it is useful to summarize the consequences of each regime for several key marital status moments and to understand how each affects agents' preferences towards marriage.

6.1 The Impact of Divorce Regimes on Marriage and Divorce

We start by examining how divorce regimes affect the basic marital moments. These are reported in table 7. For ease of comparison, the first column replicates the numbers from the benchmark model. As can be seen in the table, relative to a regime of mutual consent, unilateral divorce slightly more than doubles the divorce rate while younger (ages 20-34) and generates an increase of over 30% in the proportion of marriages that divorce when older (ages 35-44). Women are significantly less likely to marry while younger with the marriage rate decreasing over 14 percentage points, a 16% decrease. They are also somewhat more likely to marry when older: 4.4% versus 4.0%. The proportion of women who remarry within five years (conditional on having divorced when younger) remains fairly constant across regimes. The average (truncated) time spent divorced when younger increases somewhat. The marriage gap between higher and lower income men narrows and the divorce gap widens (becoming more negative under unilateral than under mutual consent).

We next turn to an analysis of the mechanisms that produce these results and their ultimate welfare implications. How does the freedom to walk away from one's spouse affect welfare? For any individual and a given pattern of marriages, evaluating the welfare consequences of a unilateral versus a mutual consent regime requires weighing the expected benefit of those states of nature in which she/he wishes to be free to walk away from her/his spouse without compensating the latter, against the expected cost of the reverse – being the one walked out on without receiving compensation.

It is clear why, *for a given pattern of marriages*, the winners from a unilateral regime relative to mutual consent should be men on average. Divorce is less costly for men since they earn substantially more than women on average and also bear a smaller share

of the cost of raising children upon divorce. The benefits of marriage tend to be smaller for men as well. Although both spouses gain equally from the quality of the match, q, other costs and benefits are not equal. On the positive side, both spouses obtain some insurance from marriage: a man's wife is more likely to work if he is hit by a negative income shock. Moreover, marriage provides a woman with an additional (or sole) source of income that is on average substantially higher than hers. On the negative side, marriage tends to substantially decrease a man's consumption, especially if his wife doesn't work. It may also decrease a woman's consumption, depending on family size, but this effect is smaller than in the case of the man, given relative wages. Lastly, marriage increases a woman's disutility from working (normalized at zero when single), especially if she has children. Thus, while marriage is not a bad deal for either men or women - after all, they are choosing to get married – upon receiving a negative match quality shock, it is more likely that the husband will be the one to benefit from the ability to exit at a lower cost.

To better illustrate the points made above (and no longer keeping constant marriage patterns across divorce regimes), we can trace out the evolution of two cutoff levels: the minimum q required in order to desire to marry assuming that in each period the agent is single (and has been in the past), and the minimum q required to desire to stay married (i.e., to not want a divorce) assuming the agent is married (and has been in the past). We denote these minimums by $q_{g,\min}^M$ and by $q_{g,\min}^D$, respectively, $g \in \{f, m\}$.

We perform the $q_{g,\min}^s$ calculations for an agent endowed with the median z_0 and with a marital type $\widetilde{z}_0'$, where $\widetilde{z}_0'$ equals the expected value of the match the median agent would obtain, i.e, $\widetilde{z}_0' = \mathbb{E}(z_0'|z_0)$. We assume that a single agent faces in each period the distribution of future draws associated with Ω_{t-1}^S (e.g., the innovations in z_t and z_t', etc) and ex-post resolve the uncertainty in each period by setting the innovations to their expected values. This implies that in the following period the single agent is again endowed with the median z_t (recall that $\mathbb{E}(\epsilon_y) = 0$) and her/his marital type's productivity is $\mathbb{E}(z_t'|\widetilde{z}_0')$.

Similarly, we assume that a married agent faces the future distribution of draws associated with Ω_{t-1}^M and ex post resolve the uncertainty by setting all innovations to their expected values. Thus the following period the married agent has the median z_t and the spouse has $\mathbb{E}(z_t'|\widetilde{z}_0')$. Since ex-post fertility must be an integer, we set the realization to one child in

the first period and to an additional child in the second period. We also assume that this is the married agents' first marriage. For both single and married agents, assets evolve over time as prescribed by the solutions to the optimization problems (as described in section 3.2).

Table 8 presents the evolution of $q^s_{g,\min}$ over time. The entries on the left side of the table report the values of $q^M_{g,\min}$ (for single agents) and $q^D_{g,\min}$ (for married agents) under the mutual consent regime; those on the right correspond to the unilateral regime. The lower panel translates the cutoff values into potential "acceptance" rates – the proportion of the q distribution that is not rejected or that does not end in divorce. For a single agent this is equivalent to the proportion of the matches that she/he would want to become marriages. For a married agent, the proportion of acceptances is not conditioned on the fact that being married in period $t-1$ implies that q_{t-1} must have fallen in a certain range. Hence, the "acceptance" rate reported is not the complement of the divorce rate – it simply provides an indication of how the preferences of agents evolve over time and by gender. Lastly, to facilitate comparisons, we calculate $q^D_{g,\min}$ under the assumption that divorce in that period would split marital assets equally. This assumption allows us to illustrate the difference in women's and men's valuation of marriage prior to any compensation required under mutual consent.[40]

Some interesting patterns that are common to both divorce regimes can be discerned from table 8. First, single women and men both become less choosy about marital partners as time progresses. Two factors are mainly responsible for this: the possibility that they will have more than one child falls (which lowers the consumption cost of marriage as well as the number of periods with high disutility of work) and (potential) earnings increase. Second, note that initially single women are choosier than single men; this pattern reverses at age 30-34. At that point single women become less concerned about the negative economic consequences of children within marriage and also less concerned about exiting a marriage under negative economic circumstances.

One may ask why single women living under a mutual consent regime should care about

37

the possibility that once they marry they may eventually divorce. After all, they will be compensated in that event. There are two reasons. First, compensation only leaves women indifferent between marriage and divorce. When staying in a marriage becomes unattractive (either because the man's wages are low or because the match quality is low), the amount of compensation a woman receives is also likely low. Second, even when being married is unattractive to both parties, a husband may not be able to afford to make his wife indifferent between divorce and marriage, and thus the couple remains married. While this makes a woman better off than being divorced, it is still not a state that she would prefer relative to remaining single and waiting for a better match.

It is worth remarking that the model is able to capture several well-known features of mate preferences. Basic evolutionary theory predicts that females should be choosier than males since the former invest more in their young. This result is generated in the model as a result of children being more costly to a woman. The finding that the inequality is reversed over time, with single men becoming choosier than single women, seems at least anecdotally true.

Next, note that married men are more willing to divorce than married women. This is due to the various gender asymmetries previous discussed: men earn more on average and bear a smaller share of the cost of raising children. Interestingly, the pattern over time of $q_{g,\min}^{D}$ differs by gender. It is monotonically decreasing for men, indicating that as they age they become less inclined to divorce. For women, on the other hand, the $q_{f,\min}^{D}$ follows an inverted U shape. Married women's willingness to divorce peaks during ages 30-34 and then decreases. There are many things happening simultaneously that change the attractiveness of marriage relative to divorce over time for women but it seems that the relative attractiveness of marriage increases with the growth in the husband's labor income over the life cycle.

Comparing next across regimes, note from table 8 that, indeed, the minimum q single women require in order to marry is higher under the unilateral divorce regime than under mutual consent, indicating their greater reluctance to be married in a unilateral system. This is because marriage without compensation for divorce is less attractive to women since they will more often find themselves being walked out on rather than being the ones who

walk away.[41] The minimum q required for a woman to remain married is also higher under the unilateral system since the lower value of marriage makes it less attractive to stay in a low quality marriage. For single men, on the other hand, $q^M_{m,\min}$ falls relative to mutual consent indicating the greater attractiveness of marriage for them now that the exit cost is lower. For married men, $q^D_{m,\min}$ also falls since the value of marriage has increased for them. To understand why men are more eager to be divorced under mutual consent, recall that the calculation we performed to obtain $q^D_{m,\min}$ allowed agents, only in that period, to exit the marriage without compensating their spouse.[42] This caused some men to "jump" at the opportunity of a relatively inexpensive divorce that period. Under the unilateral regime, the opportunity to divorce without compensating one's spouse always exists and hence men are less eager to exit marriage and are consequently less demanding vis a vis marriage quality.

Overall, it is clear that the preferences of men and women vis a vis marriage move in opposite directions across regimes. The overall decrease in the marriage rate under the unilateral regime allows us us to conclude that women's greater reluctance to marry prevails over men's greater willingness to marry. Note that although marriage rates fall and those that marriages that form have, on average, a higher value of the initial love draw, nevertheless a greater proportion of marriages end up in divorce.

6.2 The Welfare Consequences of Divorce Regimes

To study the overall welfare consequences of the two divorce regimes we perform two calculations. The first asks, conditional solely on gender, but otherwise under the "veil of ignorance", whether women and men prefer one regime to the other. The second calculation delves deeper into the welfare consequences of divorce regimes by conditioning ex-ante expected welfare not only on gender but also on the agent's initial endowment z_0. This

---

[41]The model predicts that under a unilateral divorce regime, men will be the ones who wish to divorce in 78 percent of the cases. This figure is for the entire universe of agents between the ages of 25 to 44. As has been noted in the literature, these numbers are not comparable with figures about who legally initiates divorce as there exist other social considerations that influence this choice.

[42]This was for illustrative purposes only – i.e., to indicate how much men value marriage. If we forced them to compensate their wives, as required under MC, then there would be no gender differences and, in some cases $q^M_{m,\min}$ would not be defined since marital assets would be insufficiently large to allow compensation to occur.

allows us to understand how preferences differ across poorer versus richer agents.

Ex Ante Welfare: Women vs Men

Table 9 shows the results of both welfare calculations. The first column ("All Quintiles") reports, for each divorce regime, the ex ante expected utility of an agent of gender g. As can be easily seen, women prefer the mutual consent regime whereas men prefer the unilateral divorce regime. The third and sixth row provide a measure of the extent to which one system is preferred to the other by reporting the percentage ρ by which the consumption of gender g would have be increased *in each state of nature and in each time period* in the mutual consent regime so as to leave that gender indifferent ex ante between the two divorce regimes.[43] That is, ρ solves:

$$W_{g0}^{MC}\left(\rho\right) = W_{g0}^{U} \tag{11}$$

where W_{g0}^{r} is the expected utility, at time $t = 0$, of an agent of gender g in divorce regime r whose z_0 is unknown but is assumed to be a random draw from the initial (normal) distribution $h(z_0$. That is,

$$W_{g0}^{r} = \int_{z_0} EV_{g0}^{r}\left(z_0\right) h\left(z_0\right) dz_0 \tag{12}$$

where $EV_{g0}^{r}\left(z_0\right)$ is the expected utility of an agent of gender g at time $t = 0$ assuming that her/his initial productivity draw was z_0. Expectations are taken over all possible paths of shocks, marital decisions conditional on the shocks, and for each possible endowment of potential spousal type given z_0 .

Note that, perhaps surprisingly, men's preference for the unilateral regime is not very strong: their consumption would need to be increased by only 1.25 percent under mutual consent in order to be indifferent. Women, on the other hand, strongly prefer the mutual consent regime. They would be willing to have their consumption decreased up to 15.76 percent under mutual consent in order not to live under a unilateral divorce regime. A significant part of this welfare calculation is driven by disutility from labor. This can be seen by keeping the outcomes the same under both regimes but ignoring (setting to zero)

---

[43]Note that a negative ρ implies that the agent prefers the mutual consent regime to the unilateral.

women's work disutility. The consumption decrease required to make women indifferent between divorce regimes falls to 6.9 percent instead.

Political Economy

An interesting political economy question is whether a simple change such as a more generous child support would persuade women, in an ex-ante sense, to favor a unilateral system. To answer this question we solve for the fraction of income that men would have to transfer to women in the form of child support so as to leave them indifferent between the two divorce systems. This more generous transfer is received only in the unilateral system; the mutual consent transfer remains constant at 10 percent as in the benchmark model. We allow all decisions to change endogenously in response to the new child-support transfer value.

We find that the childcare transfer would have to increase to 24.49 percent to leave women indifferent between the two divorce regimes. This change, however, leaves men worse off under unilateral divorce than under the mutual consent regime with the original child support. Thus, while such a change would garner women's support, it would now leave men favoring the mutual consent divorce regime.

Ex Ante Welfare: Rich versus Poor

Next, we examine how preferences within gender depend on expected income by conditioning on the quintile of the initial z draw (z_0) in addition to gender. Thus, ex ante, an agent knows both gender and the quintile of her/his z_0. Columns 2-6 report, by quintile, the ex ante expected utility under each divorce regime for an agent of gender g endowed with a z_0 that is a random draw from the indicated quintile Q_n, $n \in \{1, 2, ..., 5\}$ of the z_0 distribution. As before, in rows 3 and 6 we solve for the percent ρ by which consumption would need to be increased under the mutual consent regime so as to leave the agent indifferent between the 2 divorce regimes. That is, we solve for ρ such that

$$W_{g0,Q_n}^{MC}(\rho) = W_{g0,Q_n}^{U} \qquad (13)$$

where

$$W^r_{g0,Q_n} = \int_{z_0 \in Q_n} EV^r_{g0}(z_0) h(z_0) dz_0 \tag{14}$$

As is clear from Table 9, men born with initial productivity in the lowest two quintiles prefer, on average, the mutual consent regime as do women with initial productivity in the lowest three quintiles. Higher productivity men and women prefer the unilateral divorce system. What explains these preference differences? Overall, they stem from how the valuation of the ability to exit a marriage easily vis a vis the consumption insurance offered by a stable marriage differs with expected income. Higher initial productivity agents expect to earn more and thus they benefit less from the insurance provided by marriage relative to the ability to easily leave a low quality marriage. They are also more likely to need to make greater compensations in order to divorce a spouse under mutual consent. Lower-income individuals value more the insurance benefits of marriage and are more likely to profit from compensation under mutual consent. Reinforcing these motives is the fact that lower-income women are the agents that are worst hit by divorce. This leads them to reject marriage more frequently, thus decreasing marriage formation and its insurance benefits disproportionately for both lower-income men and women. It is interesting to note that over the last few decades, this is precisely what has happened: white women with college education marry with greater frequency than before whereas their lower-education counterparts have seen a decrease in their probability of marrying (see, e.g., Stevenson and Isen (2010)).

7 Conclusion

This paper developed a quantitative dynamic life-cycle model of endogenous marital status to study the positive and normative consequences of two divorce regimes: mutual consent and unilateral divorce. Our analysis is conducted in an environment of imperfect capital and insurance markets, and with very limited commitment ability other than that provided by the legal system. In this framework, marriage not only provides agents with love, but also with a degree of insurance against adverse income shocks. It simultaneously, however, exposes them to other sources of uncertainty (e.g., match quality).

We calibrated the model to key moments for the 1940 cohort which lived through both divorce regimes. Conditioning solely on gender, our ex ante welfare analysis found that women would fare better under mutual consent whereas men would prefer a unilateral system. Once we condition on initial productivity by quintile as well as gender, we find that men in the top three quintiles of the initial productivity distribution would be made better off by a unilateral system as would the top two quintiles of women; the rest would prefer mutual consent. These results can be explained by two gender asymmetries: women tend to earn less then men (the gender wage gap) and the costs of raising children fall primarily upon the mother in case of divorce.[44]

We also examined the link between the change in divorce regime and the LFP of married women. We found that although the 1940 cohort's LFP increased by a relatively small amount when confronted with a switch to a unilateral divorce regime, the differences in married LFP across the two regimes would be substantially higher if one compared cohorts that always lived in one versus the other regime. The higher married women's LFP under a unilateral divorce regime is mostly a response to spouses' conflicting preferences regarding consumption smoothing in the face of endogenously higher divorce risk.

We explored the robustness of our main results to various features of the calibration procedure. We experimented with slightly higher and lower Pareto weights for the wife (λ in the range of 0.2 to 0.4), more generous child support (20 percent), a wider range for childcare costs (40 to 60 percent of average working women's wages), a different baseline asset split between the husband and the wife (70/30 (30/70) and 60/40 (40/60)). Our overall welfare results remained qualitatively similar.[45]

Our model provides a framework in which to analyze the positive and normative impact of policies that affect the process of household formation, from the increased ability to write binding pre-nuptial contracts, to the growing tendency to share child custody, to the work and marriage incentives provided by the tax code, among others. The analysis could be extended in a variety of important ways by, for example, studying other household bargaining environments (e.g., Lundberg and Pollak (1996)), endogenizing fertility, and

---

[44]They are also amplified by women's disutility from working, especially if they have young children

[45]Results are available upon request.

using a richer model of assortative matching, among others.[46] The model can also be used to gain insight into questions related to growth and development that are often ignored, such as how divorce regimes affect savings, the relationship between regime preferences and income, or how marriage and divorce respond to the availability of other credit and insurance mechanisms outside the family or to the security of property rights upon divorce.[47]

References

Allen, D. (1992). Marriage and divorce: comment. *American Economic Review 82*(3), 679–685.

Attanasio, O., H. Low, and V. Sanchez-Marcos (2008). Explaining changes in female labor supply in a life-cycle model. *The American Economic Review 98*(4), 1517–1552.

Attanasio, O. and G. Weber (1995). Is consumption growth consistent with intertemporal optimization? evidence from the consumer expenditure survey. *Journal of political Economy 103*(6), 1121–1157.

Beller, A. H. and J. W. Graham (1988). Child support payments: Evidence from repeated cross sections. *American Economic Review: Papers and Proceedings 78*(2), 81–85.

Bernal, R. (2008). The effect of maternal employment and child care on children's cognitive development. *International Economic Review 49*(4), 1173– 1209.

Bernal, R. and M. P. Keane (2009). Child care choices and children's cognitive achievement: The case of single mothers. working paper.

Blundell, R., P.-A. Chiappori, and C. Meghir (2005). Collective labor supply with children. *Journal of Political Economy 113*(6), 1277–1306.

Blundell, R., M. C. Dias, C. Meghir, and J. Shaw (2013). Female labor supply, human capital and welfare reform. unpublished paper.

Caucutt, E. M., N. Guner, and J. Knowles (2002). Why do women wait? matching, wage inequality, and the incentives for fertility delay. *Review of Economic Dynamics 5*, 815–855.

Chamberlain, G. (1984). Panel data. In Z. Griliches and M. Intriligator (Eds.), *Handbook of Econometrics*, Volume 2, Chapter 22. North Holland.

Cherchye, L., B. D. Rock, and F. Vermeulen (2012). Married with children: A collective labor supply model with detailed time use and intrahousehold expenditure information. *American Economic Review 102*(7), 3377–3405.

Chiappori, P.-A. (1988). Rational household labor supply. *Econometrica 56*(1), 63–90.

Cubeddu, L. and J.-V. Ríos-Rull (2003). Families as shocks. *Journal of the European Economic Association 1*(2-3), 671–682.

---

[46]Endogenous fertility, while greatly complicating the model, would allow one to study the interaction between fertility decisions, marital status, and labor force participation, see, e.g., Eckstein and Wolpin (1989), Erosa, Fuster, and Restuccia (2002), and Caucutt, Guner, and Knowles (2002).

[47]See, e.g., Fernández (2014) and the Doepke and Tertilt (2009)

Del Boca, D. and C. Flinn (1995). Rationalizing child-support decisions. *American Economic Review 95*(5), 1241–1262.

Doepke, M. and M. Tertilt (2009). Women's liberation: What's in it for men? *Quarterly Journal of Economics 124*(4), 1541–1591.

Eckstein, Z. and O. Lifshitz (2011). Dynamic female labor supply. *Econometrica 79*(6), 1675–1726.

Eckstein, Z. and K. Wolpin (1989). Dynamic labour force participation of married women and endogenous work experience. *Review of Economic Studies 56*(3), 375–390.

Erosa, A., L. Fuster, and D. Restuccia (2002). Fertility decisions and gender differences in labor turnover. *Review of Economic Dynamics 5*, 856–891.

Fernández, R. (2014). Women's rights and development. *Journal of Economic Growth 19*(1), 37–80.

Fernández, R. and J. Wong (2013). Divorce risk, wages, and working wives: A quantitative life-cycle analysis of female labor force participation. *Economic Journal forthcoming.*

Fernández, R. and J. C. Wong (2011). The disappearing gender gap: The impact of divorce, wages, and preferences on education choices and women's work. NBER Working Papers 17508.

Flinn, C. J. and M. Brown (2011). Family law effects on divorce, fertility and child investment.

Friedberg, L. (1998). Did unilateral divorce raise divorce rates? evidence from panel data. *American Economic Review 88*(3), 608–327.

Gemici, A. and S. Laufer (2010). Marriage and cohabitation.

González, L. and T. Viitanen (2009). The effect of divorce laws on divorce rates in europe. *European Economic Review* (53), 127–138.

Gray, J. S. (1998). Divorce-law changes, household bargaining, and married women's labor supply. *American Economic Review 88*(3).

Greenwood, J., N. Guner, G. Kocharkov, and C. Santos (2012). Technology and the changing family: A unified model of marriage, divorce, educational attainment and married female labor-force participation. NBER Working Papers 17735.

Guvenen, F. (2007). Learning your earning: Are labor income shocks really very persistent? *The American Economic Review 97*(3), 687–712.

Guvenen, F. and M. Rendall (2013). Women's emancipation through education: A macroeconomic analysis. unpublished paper.

Heathcote, J., K. Storesletten, and G. L. Violante (2010). The macroeconomic implications of rising wage inequality in the united states. *Journal of Political Economy 118*(4), 681–722.

Jacquemet, N. and J.-M. Robin (2011). Marriage with labor supply. working paper.

Knowles, J. (2007). Why are married men working so much? IZA Discussion Papers 2909.

Krusell, P. and A. A. Smith (1998). Income and wealth heterogeneity in the macroeconomy. *Journal of Political Economy 106*(5), 867–896.

Lundberg, S. and R. A. Pollak (1996). Bargaining and distribution in marriage. *The Journal of Economic Perspectives 10*(4), 139–158.

Lundberg, S. and E. Rose (1999). The determinants of specialization within marriage. Unpublished paper. University of Washington.

Marcassa, S. (2013). Divorce laws and divorce rate in the u.s. *The B.E. Journal of Macroeconomics (Topics) 13*(1).

Mazzocco, M., C. Ruiz, and S. Yamaguchi (2007). Labor supply, wealth dynamics, and marriage decisions. mimeo.

Oldham, J. T. (2008). Changes in the economic consequences of divorces, 1958-2008. *Family Law Quarterly 42*(3), 419–448.

Parkman, A. (1992). Unilateral divorce and the labor force participation rate of married women. *American Economic Review 82*(3), 671–678.

Peters, E. (1986). Marriage and divorce: Informational constraints and private contracting. *American Economic Review 76*(3), 437–454.

Peters, E. (1992). Marriage and divorce: reply. *American Economic Review 82*(3), 687–693.

Peterson, R. R. (1996). A re-evaluation of the economic consequences of divorce. *American Sociological Review 61*(3), 528–536.

Rasul, I. (2005). Marriage markets and divorce laws. *Journal of Law Economic and Organization 22*(1).

Stevenson, B. (2007). The impact of divorce laws on marriage-specific capital. *Journal of Labor Economics 25*, 75–94.

Stevenson, B. (2008). Divorce law and women's labor supply. *Journal of Empirical Legal Studies 5*(4).

Stevenson, B. and A. Isen (2010). Women's education and family behavior: Trends in marriage, divorce and fertility. In J. Shoven (Ed.), *Demography and the Economy.* University of Chicago Press.

Stevenson, B. and J. Wolfers (2006). Bargaining in the shadow of the law: Divorce laws and family distress. *The Quarterly Journal of Economics 121*(1), 267–288.

Storesletten, K., C. I. Telmer, and A. Yaron (2004). Cyclical dynamics in idiosyncratic labor market risk. *Journal of Political Economy 112*(3), 695–717.

Voena, A. (2012). Yours, mine and ours: Do divorce laws affect the intertemporal behavior of married couples? working paper.

Weiss, Y. (1997). The formation and dissolution of families: Why marry? who marries whom? and what happens in divorce?". In M. Rosenzweig and O. Stark (Eds.), *Handbook of Population and Family Economics*, Volume 1A. Amsterdam: Elsevier Publishers.

Weitzman, L. (1996). The economic consequences of divorce are still unequal: Comment on peterson. *American Sociologial Review 61*(3), 537–538.

Wolfers, J. (2006). Did unilateral divorce raise divorce rates? reconciliation and new results. *American Economic Review 96*(5), 1802–1820.

Figures and Tables

Figure 1: A typical work period for a married woman

Shocks
f_t, q_t, z_t, z'_t
Ex-spouse's states:
$(z_{xt}, k_{x,t-1}, a_t, z'_{x,t-1})$
$\downarrow$

Ex-spouse's
marital
status revealed
$\downarrow$

Decide
a_{t+1}, c_t, P_t
$\downarrow$

t Ω_t^M $\uparrow$ Ω_t^{s*} **t + 1**

Ω_{t-1}^M

Decide s_t^*. If $s_t^* = D$
and obtain
remarriage opportunity
$\Rightarrow$ Decide s_t^{**}

$\Omega_{\bar{t}}^{s*}$
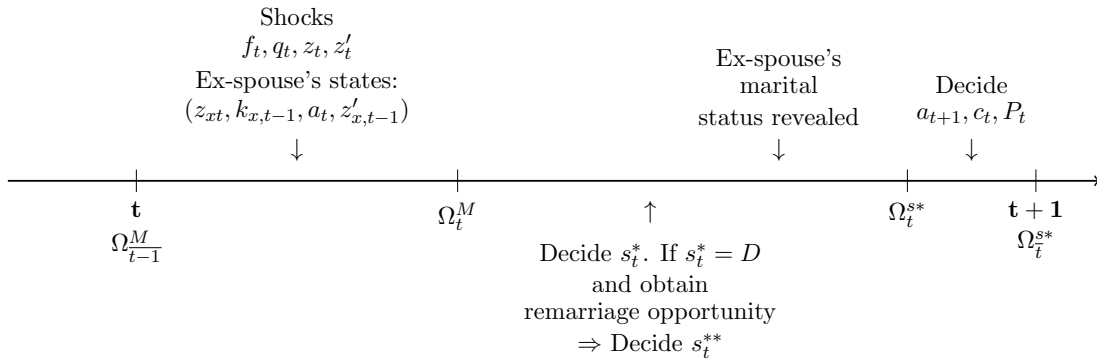
Figure 2: LFP for married and divorced women, benchmark model vs data.

Married Women LFP,
Data (dashed) vs Model (solid)

Married Women LFP,
Data (dashed) vs Model (solid)
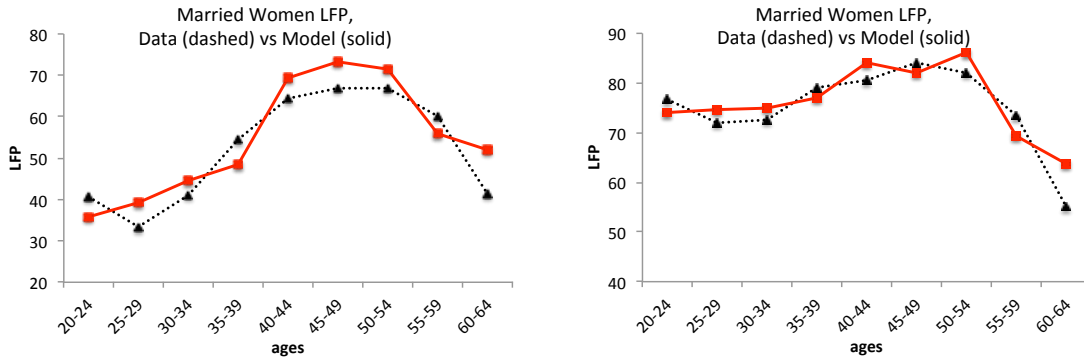
Figure 3: LFP for married and divorced women, Benchmark vs Mutual Consent vs Unilateral
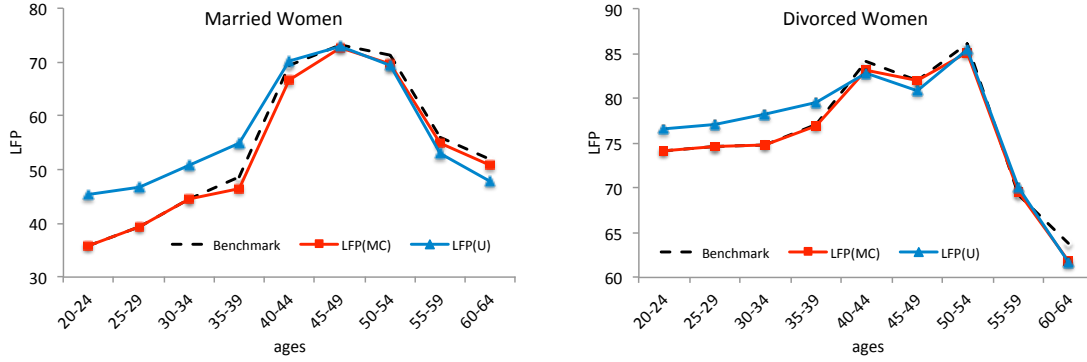
Table 1: External Parameters

Parameter		Value
Micro estimates of Intertemporal Elasticity of Substitution	σ	1.5
Discount Factor	β	0.90
Risk Free Interest Rate	R	1.16
Regression log wage on age and age^2	γ_1	0.038
	γ_2	-0.00041
Persistence of wage residuals	ρ_z	0.882
Std. Dev. of transitory error of wage residuals	σ_ϵ	0.136
Child support		10% y_h
Asset ratio for new match	women:	$1.125a_f$
	men:	$\frac{1}{1.125}a_m$

Note: See text for definitions of all variables.

Table 2: Calibration Moments: Data vs. Model

Moment		Data	Model
LFP women without children	D	84.11	85.07
	M	67.88	65.15
LFP women with young children	D	53.32	54.78
	M	30.03	30.98
LFP women with old children	D	75.55	74.13
	M	53.81	54.01
Average ratio of female to male wages (lifecycle)		70.30	71.00
Correlation of husband and wife income		30.55	31.39
Childcare costs set to 50 percent of average working woman's wage			49.91
Divorce rates during ages:	20-34	11.67	11.49
	35-44	9.48	8.13
Proportion women marry for first time at ages:	20-34	88.50	89.57
	35-44	3.94	4.11
Probability of divorcing before 11th anniversary conditional on having been married for 5 years		9.61	9.51
Difference btw. top and bottom tercile of men aged 40-44, married (M)/divorced(D) at least once	M	5.68	6.21
	D	-9.40	-10.06
Truncated duration of divorce if married during ages:	20-34	6.70	6.01
	35-44	5.84	5.75
Proportion of women who remarry (divorced 20-34)	within 5 yrs	61.24	63.33

Note: See text for definitions of all variables.

Table 3: Parameters Calibrated Internally

Parameter		Model
Disutility of labor for women without children	ψ^D	0.0623
	ψ^M	0.0819
Disutility of labor for women with young children	$\psi^D_{k_y}$	0.0994
	$\psi^M_{k_y}$	0.1346
Disutility of labor for women with old children	$\psi^D_{k_o}$	0.0836
	$\psi^M_{k_o}$	0.0961
Women's log wage intercept	γ_f	0.6025
Probability of spouse having same z_0	π	0.3380
Childcare costs	κ	0.4145
Mean of initial love draw	μ_q^{young}	0.7176
	μ_q^{old}	0.5204
Standard deviation of initial love draw	σ_q	1.8540
Mean of love shocks	μ_u^{young}	0.0525
	μ_u^{old}	0.0445
Standard deviation of love shocks	σ_u	1.2817
Persistence of love	ρ_q	0.8080
Psychic cost of divorce	Φ	1.4902
Probability of immediate match	ω^{young}	0.1366
	ω^{old}	0.0948

Note: See text for definitions of all variables.

Table 4: Calibration Moments LFP: Comparing Regimes

Moment		Benchmark	Mutual Consent	Unilateral
LFP women without children	D	85.07	85.06	85.86
	M	65.15	65.14	73.57
LFP women with young children	D	54.78	54.77	55.29
	M	30.98	29.21	32.03
LFP women with old children	D	74.13	74.12	74.82
	M	54.01	52.57	59.08
Average ratio of female to male wages (lifecycle)		71.00	72.76	64.38
Correlation of husband and wife income		31.39	29.15	32.40
Childcare costs set to 50 percent of average woman's wage		49.91	54.33	42.87

Note: See text for definitions of all variables.

Table 5: Disutility of Labor Parameters: Consumption Equivalence

	No Children	Young Children	Old Children
Married	4.59%	8.84%	5.00%
Divorced	3.42%	5.28%	4.77%

Note: The table shows proportional decrease in consumption that women in each marital state would be willing to bear for one period in order to avoid incurring the disutility cost of working. Consumption is defined as the average consumption of a married agent in a given period (regardless of their number of children), averaged across periods

Table 6: Average Married Assets and LFP: Comparing Regimes

	Assets			LFP		
Ages	MC	Unilateral	U − MC	MC	Unilateral	U − MC
20-24	-5.46	-6.75	-1.29	35.80	45.22	9.43
25-29	-6.55	-8.06	-1.51	39.25	46.68	7.44
30-34	-4.46	-5.31	-0.85	44.59	50.84	6.26
35-39	-1.81	-2.17	-0.35	46.56	54.96	8.40
40-44	0.53	0.64	0.11	66.56	70.07	3.52
45-49	3.26	3.89	0.63	72.60	72.95	0.35
50-54	5.97	7.12	1.15	69.59	69.49	-0.10
55-59	9.85	11.79	1.94	54.96	52.87	-2.09
60-64	13.55	16.16	2.62	50.92	47.85	-3.07

Table 7: Calibration Marital Status Moments: Comparing Regimes

Moment		Benchmark	Mutual Consent	Unilateral
Divorce rates during ages:	20-34	11.49	11.49	24.33
	35-44	8.13	7.20	9.76
Proportion women marry for first time at ages:	20-34	89.57	89.57	75.36
	35-44	4.11	4.02	4.37
Probability of divorcing before 11th annveriary conditional on having been married for 5 years		9.51	7.15	16.94
Difference btw. top and bottom tercile of men aged 40-44, married (M)/divorced (D) at least least once	M	6.21	6.40	4.61
	D	-10.06	-9.76	-11.09
Truncated duration of divorce if married during ages:	20-34	6.01	6.00	6.11
	35-44	5.75	5.74	5.93
Proportion of women who remarry (divorced 20-34)	within 5 yrs	63.33	63.32	64.30

Table 8: Love Cutoff Levels for Marriage and Divorce: Mutual Consent vs. Unilateral

Ages		20-24	25-29	30-34	35-39	40-44	20-24	25-29	30-34	35-39	40-44
				q_{Min} MC					q_{Min} U		
Married	Woman	—	0.291	0.391	0.301	0.239	—	0.312	0.419	0.326	0.259
	Man	—	0.647	0.527	0.454	0.432	—	0.612	0.499	0.429	0.408
Single	Woman	0.915	0.887	0.614	0.397	0.354	0.982	0.951	0.659	0.434	0.386
	Man	0.894	0.849	0.741	0.510	0.434	0.874	0.829	0.723	0.483	0.410
				Acceptance Rates MC (in percent)					Acceptance Rates U (in percent)		
Married	Woman	—	93.7	88.7	93.3	95.5	—	92.8	86.9	92.1	94.9
	Man	—	65.3	78.1	84.3	85.9	—	69.3	80.6	86.2	87.6
Single	Woman	14.3	18.0	71.1	74.2	81.1	7.7	10.4	62.4	67.4	76.1
	Man	17.0	23.9	45.0	51.6	67.4	20.0	27.4	48.8	57.5	71.9

Note: The top panel of the table shows the lowest value of q such that an agent endowed with the median z_0 and with a marital type $\tilde{z}'_0 = \mathbb{E}(z'_0|z_0)$ will remain married (for married) or will get married (for those single/divorced), under each regime. The second panel translates the cutoff values into "acceptance" rates – the proportion of the q distribution that is not rejected. See text for further details.

Table 9: Welfare Across Regimes

		All Quintiles (1)	Bottom Quint (2)	2nd Quint (3)	3rd Quint (4)	4th Quint (5)	Top Quint (6)
Women	MC	-17.41	-31.19	-27.54	-16.63	-8.49	-3.23
	Unilateral	-20.05	-41.75	-31.31	-17.97	-7.19	-2.04
	Cons Equiv	-15.76%	-61.19%	-25.53%	-9.51%	9.02%	8.42%
Men	MC	-7.30	-10.05	-9.78	-8.66	-5.57	-2.45
	Unilateral	-7.00	-12.48	-9.99	-7.21	-3.89	-1.44
	Cons Equiv	1.25%	-9.46%	-0.82%	5.84%	6.62%	4.05%

Note: The first two rows ("MC" and "Unilateral") for women and men show the average lifetime discounted utility under each of the two divorce regimes. The row labeled "Cons Equiv" corresponds to the consumption equivalence of the welfare difference between the two regimes (see text). The column "All Quintiles" conditions solely on gender while the subsequent columns condition expected welfare not only on gender but also on the quintile of the agent's initial endowment z_0.

A   Appendix

A.1   Cohorts and LFP

We use the Current Population Survey from 1962- 2010 to compute labor force participation rates. We construct a synthetic cohort of white women born between 1939-1941 and not living in group quarters ("the 1940s cohort"), and compute their LFP as the proportion of women who work at each age in a particular age span, e.g., 20-24, who report being in the labor force. For each age, we find the LFP of each birth year within our cohort (1939-41) and then average across the birth years and across the years in the age span to end up with the LFP figure for that age span. Data is available for the entire period except prior to 1962 when our cohort is 21-23. To calculate LFP at age 20 for our cohort, we use the 1960 census and compute the LFP in the same way as above and use that statistic when we average across ages 20-24. The male cohort is born in 1942-44, i.e., three years later in order to reflect the average age difference between women and their husbands.

A.2   Wages

We compute the gender wage gap using hourly wages from the CPS using the individuals' reported labor income and hours and weeks worked last year. We use the sample of white men and women who do not live in group quarters with the cohorts defined as above. Prior to 1977, for hours per week, we use the variable which reports the hours worked in the previous week, by intervals; we use the midpoint of the interval. From 1977 onward, we use the variables for "usual hours worked per week" (last year) and the continuous variable for number of weeks worked last year. Whenever we compute lifetime averages for a variable, we first compute the average of the variable over each year and then average across years. Sample weights are used throughout (PERWT). Concerning top-coded observations, we follow the procedure in Katz and Autor (1999). We multiply all top-coded observations until 1996 by 1.5. After 1996, top-coded observations in the CPS correspond to the average value of all top-coded observations, thus we do not impose further treatment.

We restrict to full time workers for the gender wage ratio and the correlation between husband and wife's earnings. We compute the gender wage ratio as the ratio of the average

wage for women versus men amongst full time year round workers aged between 20-55. The correlation of income between husband and wife is also computed using couples in which both spouses work full-time year-round in the CPS sample and for women between the ages of 20 and 44.

A.3 Labor Income Process

$$\ln y_{gt}(z_t, t) = \gamma_g + \gamma_1 t + \gamma_2 t^2 + z_t$$

$$z_t = \rho_z z_{t-1} + \epsilon_t, \quad \epsilon_t \sim \mathbf{N}(0, \sigma_\epsilon)$$

Age Profiles: We use the pooled sample of PSID for the years 1968-2009, restricted to white males who are heads of households.[48] We exclude individuals in the Latino, SEO and immigrant samples. We also drop observations from people younger than 20 and people older than 65 years old and those who report being self-employed. We include only individuals with at least 8 (not necessarily consecutive) observations. Furthermore, we drop individuals with missing, top-coded and zero earnings and those with zero, missing or more than 5840 annual work hours. Individuals with changes in log earnings greater than 4 or less than -2 are also eliminated from the sample.

We first construct data on hourly wages (y_{mt}) for men using data on earnings and total hours worked. We then run the following regression in order to estimate the parameters $\hat{\gamma}_1, \hat{\gamma}_2$ of the second degree polynomial on age:

$$\ln y_{mt} = \mathbb{D}_t + \gamma_1 age_t + \gamma_2 age_t^2 + w_t$$

where $\mathbb{D}_t$ is a set of year dummies.

Given the residuals w_t from the regression above, we estimate the parameters for the persistent shock process using the Minimum Distance Estimator (Chamberlain (1984)). The methods of estimating this process are standard in the literature (see e.g. Heathcote, Storesletten and Violante (2004) for a detailed description of the method).

---

[48]The Panel Study of Income Dynamics (PSID) is the longest panel survey conducted in the US, starting in 1968. Interviews were conducted on an annual basis until 1997, and from then onwards, biennially.

A.4 Marriage, Divorce, and Remarriage Moments

We use the 2001 and 2004 waves of Survey of Income and Program Participation (SIPP) to compute marriage and divorce rates using the cohort of white women born between 1938-1942 ("the augmented 1940s cohort" - we expand the cohort definition here due to sample size). Although the model only begins at age 20, we compute marital statistics as of age 18 since a non-negligible proportion of women in the 1940 cohort married between the ages of 18 and 20. Our sample does not include women who married before the age of 18, which accounts for about 9 percent of the women in the 1940 cohort observed in the SIPP.

Young vs. old divorce rates are computed as the proportion of all marriages which take place between the ages of 18-34 (18-44 in the case of old) that result in a divorce (or a separation) between the ages of 18-34 (young) or between the ages of 35-44 (old). First time marriage rates during the different ages are computed as the proportion of all women in the 1940 cohort in the SIPP who marry for the first time between the ages of 18-34 (young) and those who marry for the first time during the ages of 34-44 (old).

The probability of divorcing before the 11th anniversary conditional on having been married for 5 years is computed as the proportion of of marriages that take place when the woman is between the ages of 18-34 which end after their 5th anniversary but before their 11th anniversary.

In order to compute the truncated divorce duration and since the model assumes that marital transitions end at age 44, we choose 44 as the terminal age with which we compute the truncated duration. Thus, for a given marriage that ended when the woman was x years old, if we do not observe her remarrying before the age of 44, the divorce duration is calculated as 44 minus x.

A.5 Fertility

Since only a negligible proportion of never married women in the 1940 cohort have children while single, we assume that single women do not receive fertility shocks in the model. We also assume that divorced women do not have more children unless they remarry. The timing of fertility shocks for married women is as follows. In the first period, married women

receive either 0 or 1 child; let p_1 denote the probability of a non-zero value. In the second period, married women can receive either 0, 1 or 2 children; let p_2^1, p_2^2 denote the probability of receiving either 1 or 2 children (and thus the probability of receiving no children in period 2 equals 1 minus the sum of p_2^1 and p_2^2). Finally, in period 3, a woman receives 1 child with probability p_3 and zero otherwise. The probabilities p_1, p_2^1, p_2^2, p_3 are set to match the proportion of women who have children under the age of 5 in the CPS data during each of the corresponding age brackets: (i) 68.0% between the ages of 20-24, (ii) 89.5% during 25-29, (iii) 93.3% during 30-34 - and (iv) in order to match the average number of children for women of the 1940 cohort (2.4). The latter is computed from the 1980 Census by calculating the average number of own children in the household for women in the 1940 cohort.

A.6 Consumption Deflator:

We use an altered McClements scale $(e\,(k_t;s))$ to deflate household consumption. Table A.1 reproduces the original McClements scale normalized for one adult.

Table A.1: McClements Scale

1 adult	2 adults	+ 1 adult	+1 child, by age:						
			0 - 1	2- 4	5-7	8-10	11-12	13-15	16-18
1	1.64	+0.75	+ 0.148	+0.295	+ 0.344	+0.377	+0.41	+0.443	+0.59

Since we have 5 year periods, and our children are aged 0-4, 5-9, 10-14, 15-20, we weigh the scale accordingly. For example, a child aged 0-4 adds: $0.4(0.148) + 0.6(0.295) = 0.2362$.

The scale $e\,(k_t;s)$ is constructed using the number of adults in the household (1 if $s = S$ or, D and 2 if $s = M$) and the number of children with their respective ages (k_t).

A.7 Pensions:

To compute retirement benefits for a model household, we modify the approach used in Heathcote, Storesletten and Violante (2010) in order to avoid keeping track of an individual's average earnings over their lifecycle. More specifically, we take each agent's last observed earnings which we denote by y_T (note that this is y_{T_R} for men and the last period worked for

a woman) and compute social security benefits as follows: 90% of y_T up to a first threshold equal to $0.38\bar{y}_T$, where $\bar{y}_T$ is the average observed earnings in the economy during the last period, plus 32% of y_T from this bendpoint to a higher bendpoint equal to $1.59\bar{y}_T$, plus 15% of the remaining y_T exceeding this last bendpoint. For married households, this process is performed for both the husband and the wife; the household total benefits are the highest of either the sum of their benefits or 1.5 times the husband's benefits.

A.8   Figures:

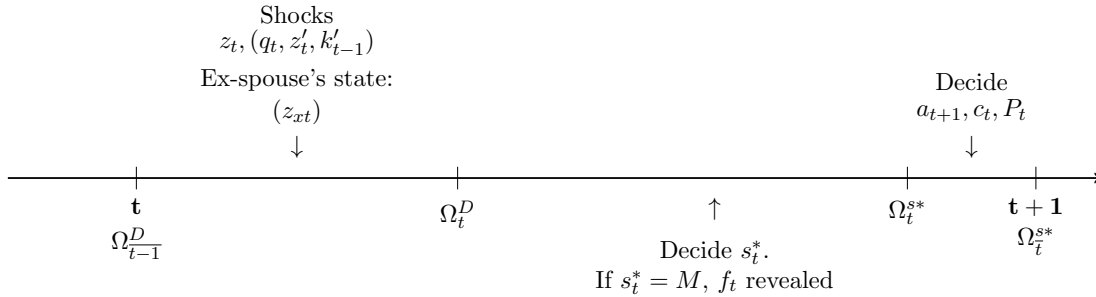Figure A.1: A typical work period for a divorced woman

Shocks
$z_t, (q_t, z'_t, k'_{t-1})$
Ex-spouse's state:
(z_{xt})
$\downarrow$

Decide
a_{t+1}, c_t, P_t
$\downarrow$

t Ω_t^D $\uparrow$ Ω_t^{s*} **t + 1**
Ω_{t-1}^D $\Omega_{\bar{t}}^{s*}$

Decide s_t^*.
If $s_t^* = M$, f_t revealed

Figure A.2: A typical work period for a divorced man

Shocks
$z_t, (q_t, z'_t, k'_{t-1})$
Ex-spouse's states:
$(z_{xt}, a_{xt}, k_{x,t-1}, z'_{x,t-1})$
$\downarrow$

Ex-spouse's
marital
status revealed
$\downarrow$

Decide
a_{t+1}, c_t, P_t
$\downarrow$

t Ω_t^D $\uparrow$ Ω_t^{s*} **t + 1**
Ω_{t-1}^D $\Omega_{\bar{t}}^{s*}$
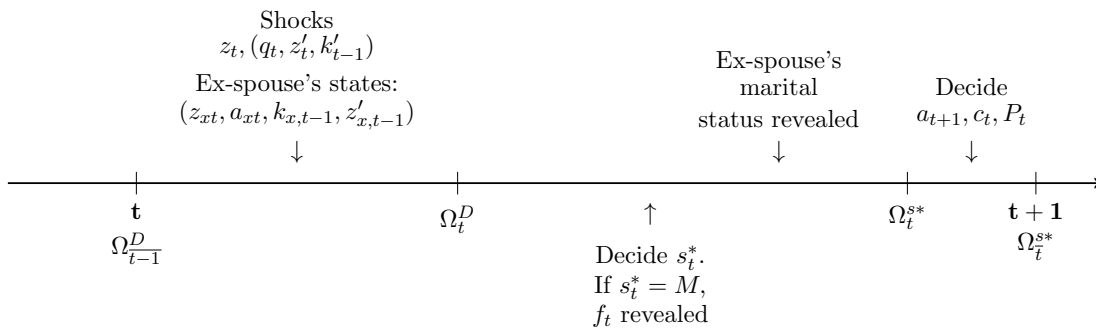
Decide s_t^*.
If $s_t^* = M$,
f_t revealed

Figure A.3: A typical work period for a single agent

Shocks $z_t, (q_t, z'_t)$ $\downarrow$ Decide a_{t+1}, c_t, P_t $\downarrow$

$\mathbf{t}$ Ω_t^S $\uparrow$ Ω_t^{s*} $\mathbf{t+1}$

Ω_{t-1}^S $\Omega_{\bar{t}}^{s*}$

Decide s_t^*.
If $s_t^* = M$,
f_t revealed