Yours, Mine and Ours: Do Divorce Laws affect the Intertemporal Behavior of Married Couples? *

Alessandra Voena†
Department of Economics, Stanford University

June 2010

Abstract

Divorce laws establish spouses' individual property rights over household resources and determine when divorce is allowed. This paper examines how such laws influence the intertemporal behavior and the welfare of U.S. married couples. I build a model of household choice about consumption, labor supply and divorce under multiple divorce law regimes and I estimate it using exogenous variation in U.S. divorce laws from the 1970s to the 1990s. Couples responded to equal division of property and unilateral divorce by increasing tangible assets up to 19%, which suggests the presence of a strong income effect for the primary earner, and by reducing female employment by over 5 percentage points, because the threat of divorce granted additional bargaining power to married woman. The bargaining weight of women implied by these responses in the model corresponds to a third of the weight of men. This indicates that equal division of assets benefited women when it was first introduced, as they has such low weight in marriage decision. However, counterfactual experiments show that equal division may be potentially detrimental to women as they gain equality in their marriage. When men and women have the same bargaining weight, women are better off in a separate property regime, as they may need more assets than their husband to smooth consumption when going into a divorce.

*I thank Luigi Pistaferri and Michele Tertilt, Caroline Hoxby, Petra Moser and Monika Piazzesi for their support and advice. I am grateful to Ran Abramitzky, Stefania Albanesi, Rick Banks, Maristella Botticini, Giacomo De Giorgi, Daniela Del Boca, Paula England, Chris Flinn, Max Floetotto, Seema Jayachandran, Hamish Low, Neale Mahoney, John Pencavel, Martin Schneider, Brett Turner, Frank Wolak, and participants to the LDRG and the Macro Bag Lunch at Stanford, the SF Fed Applied Micro Summer Conference and the Mondragone-La Pietra-Collegio Carlo Alberto Doctoral Conference for helpful comments and suggestions. I owe special thanks to Elizabeth Powers and Jeffrey Gray, who provided critical data. I acknowledge the Leonard W. Ely & Shirley R. Ely Graduate Student Fellowship through a grant to SIEPR and the Michelle R. Clayman Institute for Gender Studies Graduate Dissertation Fellowship for financial support.

†Address: 579 Serra Mall, Stanford, CA 94305. Email: avoena@stanford.edu.

1 Introduction

The goal of this paper is to examine how the distribution of property rights within marriage, regulated by divorce laws, affects the intertemporal behavior and the welfare of couples. In particular, I analyze the implications of two types of divorce laws, those that regulate how household assets are divided in a divorce, and those that establish who can initiate a divorce. Both sets of laws have been radically reformed during in the past forty years.

Between the 1970s and the 1990s, most U.S. families have entered a property rights system where each spouse can unilaterally obtain divorce and keep approximately half of marital assets. Until the early 1970s instead, in the majority of states married people held *individual* property rights over assets, which were preserved in divorce settlements (Turner 1998, Golden 1983). All these states later introduced equitable distribution of property, which allows courts to allocate assets irrespectively of the title of ownership in favor of equity. These legal changes were meant to protect secondary earners (usually women) by promoting the notion that marriage dissolution should be treated as the dissolution of a business partnership (Turner 2005). In addition to changes in property division rules, the introduction of unilateral divorce in the 1970s and 1980s allowed people to divorce without the consent of their spouse. Previously, divorce was only allowed in case of "fault" of one party or under the consent of both spouses. While this reform was intended to improve the efficiency of courts, and not to necessarily influence society and marriage, it made divorce more easily accessible to U.S. couples (Gruber 2004, Stevenson and Wolfers 2007).

Current family law defines marriage as a "partnership of coequals" (New York divorce bill of 1980). Accordingly, survey data suggests that assets are often jointly accumulated by spouses, and divided in case of divorce.[1] When divorce is an option, property division rules may influence the intertemporal decision and the welfare of married couples through multiple channels. First, equal division of assets may act as a tax on savings for the breadwinner and a subsidy for the secondary earner and thus affect spouses' individual returns on joint savings. Property division rules can also affect intrahousehold decision-making, by affecting spouses' outside option and thus marital bargaining, especially if one spouse can threat to initiate divorce without the consent of the other party. The implications of these channels on household incentives to save and invest and on spouses' welfare are not simple to predict nor to observe. Little information is available on spouses' private consumption, property and bargaining power within marriage. Data on divorced couples is scarce and heavily affected

[1] In the 1990s, three quarters of couples who had a bank account had only a joint account (Treas 1993). More recent data from the 2004 Survey of Consumer Finances reveal that 74% of household liquid savings are held in joint accounts (Klawitter and Fletschner 2006). Joint debts are also a common feature of household balance sheets and some suggest they are the primary source of financial distress for recently divorced women (Wolf 2010).

by selection bias.

To address these issues, my approach in this paper is build a dynamic model where spouses make collective choices about consumption allocation, savings, labor market participation and divorce, under uncertainty about their future preferences for one another. In this model, decisions in marriage depend on spouses' initial bargaining weights, which evolve over time as spouses' outside options to marriage change. I solve the model under different assumptions on divorce settlement laws and legal grounds for divorce, which parsimoniously capture the key features of these U.S. divorce laws over the past fifty years. This model allows me to obtain quantitative predictions about the effects of divorce laws on the saving and investment behavior of couples. It also allows to undertake counterfactual and welfare analysis that can account for changes in the role of women in the labor market and in the family, which has been evolving rapidly since these reforms took place (Goldin 2002, Knowles 2007).

The model suggests that the welfare effects of divorce laws crucially depend on the distribution of decision power inside the marriage. Divorce laws that impose equal division of assets only affect those households where the distribution of power is asymmetric and that would otherwise not plan to divide property equally in a divorce. If spouses' bargaining weights are the same, equal division of assets may not be beneficial for either spouse, and may in fact be detrimental if one spouse has a lower permanent income than the other. This is because the secondary earner needs *more* savings than the primary earner to smooth the marginal utility of her consumption when going from marriage to divorce when she had been consuming half of household resources while married.

The model also predicts that the incentives to accumulate both physical and intangible assets during marriage depend on property division rules, especially if a unilateral divorce regime is in place, when such rules do not reflect the actual distribution of resources within marriage. In this case, the accumulation of assets is affected by two competing forces: the substitution effect makes current consumption cheaper than future consumption for the spouse with high bargaining power, thus potentially discouraging saving. However, the income effect leads to higher incentives for asset accumulation because equal division is costly for the high bargaining power spouse, who may need more savings to smooth the marginal utility of her consumption.

The response of spouses' behavior to divorce law reforms allows to identify the intra-household bargaining parameter of the model. Estimating such parameter allows to examine the welfare effects of the legal changes and to undertake policy analysis. To do so, I exploit exogenous variation in divorce laws across states and over time to identify the effect on the behavior of couples that got married *before* the reforms, using data from the Panel Survey of Income Dynamics and from the National Longitudinal Survey of Young and Mature Women to analyze the impact on saving and female labor supply decisions of divorce law

reforms. These estimated responses serve as target moments in the estimation of the structural parameters of the model. My regression results suggest that equal division of assets in unilateral divorce is associated with over 20 percent more assets accumulated compared to title based regimes. Moreover, the introduction of unilateral divorce in community property states was followed by an increase in asset accumulated of 16 to 19 percent, while no change is observed when unilateral divorce was introduced in title-based states. I also find that women reduced their labor market participation by over 5 percentage points when unilateral divorce was introduced in community property states.

To estimate the structural model, I use these regression results as target moments in an indirect inference exercise, where I simulate the same divorce law reforms observed in the data. The estimates suggest that in the 1970s and 1980s, when these reforms took place, women had relatively little power in their households, almost a third of their husbands (25%). Thus, imposing an equal division of assets was beneficial for them and detrimental for their husbands, because in a title-based regime women would have been awarded less than in equitable distribution. This change led to a fall in the returns to assets for the primary earner, which had a substitution and an income effect. The latter effect dominated, which explains the increase in asset accumulation. Equal property division and unilateral divorce also discouraged women from participating in the labor market, as more resources were granted to women in divorce in divorce and they gained more bargaining power in marriage.

Understanding how property rights in marriage affect the incentives to save and invest may have important policy implications, given of the frequency of divorce in the United States and the fact that divorce laws are subject to continuous changes in the United States through the action of courts and lawmakers.[2] As of June 2010, the state of New York is on the verge of introducing unilateral divorce (Confessore 2010). Recently, legal scholars have suggested that, to achieve equity, all property should be subject to division, including property acquired *before* marriage (Motro 2008). Others have instead suggested that joint bank accounts should be banned to encourage spouses to manage their resources separately and let women have "a purse of their own" (Mahle 2006). However, little is known about how couples' economic behavior responds to individual property rights within marriage. Today, judges, legal authors and lawyers mainly rely on anecdotal evidence and personal experience when evaluating property division rules (Turner, 2005).

Using the structural model, I can examine the welfare implications of various property

[2]Divorce is a common event in the United States. According to the National Center for Health Statistics, in 1995 the probability that a first marriage would end in a divorce within 10 years of marriage was 30 percent and larger than 50 percent by the 25th year of marriage. While the number of divorcees as a fraction of the total population increased significantly in the 1970s, it then stabilized and slightly decreased recently. The number of divorces rose with respect to the number of marriages until the 1980s, and has been declining since then (Stevenson and Wolfers, 2007).

division rules, by allow spouses to choose a property division rule at the time of marriage, based on the initial distribution of bargaining power. I find that equal division is not always beneficial for women who have equal bargaining power as their husband nor is optimal from the point of view of the household, which would choose a division rule that benefits the secondary earner when spouses' bargaining power is the same. While equal division of assets was beneficial to the average woman when it was first introduced in the 1970s and it still benefits those women with low bargaining power, it may prevent more empowered women (e.g. those who have as much weight in household decision as their husband) from smoothing the marginal utility of their consumption upon divorce: if they were allowed to own their property individually, they may decide to save *more* than their husband to account for lower wages that may be due to maternity wage penalties, higher life expectancy and, as some surveys suggest, higher risk aversion.

Thus, the view of "marriage as a partnership" may prevent spouses from optimally planning their savings if they have different preferences or constraints. Previous work suggests that spouses' individual incentives may be crucial for joint saving decisions. Among others, Browning (2000) suggests that spouses with different life expectancies have different incentives to save. Mazzocco (2004) models how spouses' different preferences for risk combine to generate household joint saving decisions. My paper highlights the costs and benefits of laws that treat spouses' savings as joint, leading to joint accumulation of assets, when people can divorce and divide property.

The paper is organized as follows. Section 2 introduces divorce laws in the United States. Section 3 illustrates the dynamic model. Section 4 describes the data used in the empirical estimation. Section 5 exploits quasi-experiments in U.S. divorce laws to test the prediction derived from the calibrated model. Section 6 addresses potential concerns about the identification strategy and presents robustness checks. Section 7 exploits the results from the quasi-experiment to estimate the parameters of the dynamic model and discusses the policy implications of the estimation results. Section 8 concludes.

2 U.S. divorce laws: overview and literature review

The 1970s and 1980s saw widespread and fundamental changes to state divorce laws. Across states and over time, the grounds for divorce shifted from mutual consent to unilateral choice and property division rules were rewritten to promote equitable allocation of assets.

2.1 Grounds for divorce

Over the period of analysis, the legal regimes governing the grounds for divorce in the United States can be defined as mutual consent regimes and unilateral divorce regimes. Mutual consent only permits divorce when both husband and wife agree or on fault grounds, such as adultery or domestic violence. Unilateral divorce permits divorce on the grounds of "irreconcilable differences" or "irretrievable breakdown", thus allowing one party to obtain divorce without the consent of the other.

Before the 1960s, state regulation allowed divorce only under mutual consent. The 1960s brought about the start of the unilateral divorce revolution. From 1970 to 1990, the number of states with unilateral divorce grew from three to thirty-five. By 2009, only fifteen states, including New York and Washington DC, do not recognize irreconcilable difference or irretrievable breakdown as legal grounds for divorce.[3] Table (13) in the Appendix shows detailed information on the introduction of unilateral divorce and legal changes to property division rules across states between 1967 and 1999 and suggests that there is a considerable variation in these laws across states and over time.[4]

The economic and sociology literature has examined the effect unilateral divorce predominantly on the following ourcomes: the probability of divorce, the welfare of women and children and the labor market participation of women. The literature on the effects of the unilateral divorce revolution on the likelihood of divorce is large and contentious. Becker (1993) applies the Coase theorem to the divorce decision and concludes that, in the absence of transaction costs and under symmetric information, the change from mutual consent divorce to unilateral divorce should not affect the probability of divorce because of re-bargaining within marriage. Chiappori *et al.* (2007) analyze the assumptions of the Becker-Coase theorem and conclude that the result holds only under very restrictive assumptions. On the empirical side, Friedberg (1998) uses time and cross-sectional variation in the introduction of unilateral divorce and finds that unilateral divorce increased the divorce rate. Wolfers (2007) shows that this effect is not robust to controlling for pre-existing time trends in the divorce rate. He does, however, document a short-term positive relationship in the early years since the reform, suggesting that unilateral divorce may have increased the probability of divorce for couples that were *already* married. The difference between short-term and long-term effects may be driven by changes in selection into marriage and matching. Thus, when the reform occurs, couples that are already married are more likely to respond. As

[3]Statutorily, these states require "living separate and apart" or a judicial separation to allow divorce. In practice, spouses may then be able to divorce without the consent of their spouse, but the process is more difficult (Friedberg 1998).

[4]The years of introduction of unilateral divorce are from Gruber (2004) and have been updated using the issues of the *Family Law Quarterly* (1977-1990). The reforms in property division laws are from the *Family Law Quarterly*, Rasul (2003), Stevenson (2006), Gray (1998), Turner (1998) and state-level sources.

time passes, people may account for the new legal regime when deciding whether to marry and when. Making divorce "easier" may lead people to accepts worse matches or, if divorce is very costly, to seek for better ones.

Recent work has suggested that unilateral divorce significantly decreased female suicide and domestic violence (Stevenson and Wolfers 2006). Moreover, while Gray (1998) finds that unilateral divorce has no independent effect on female labor force participation, Stevenson's work (2008) suggests that unilateral divorce increases female labor participation independently of the underlying property division regime. Unilateral divorce also had a negative effect on the life outcomes of children who grew up when it was first introduced (Gruber 2004): this may be explained by the fact that grounds for divorce laws also influence parents' investment in children, though the magnitude of this channel appears small (Brown and Flinn, 2006).

Unilateral divorce may also have important effects on household savings and investment. Yet, there is little research on the subject. A relevant paper is Stevenson's (2007) who evaluates the impact of unilateral divorce on marriage-specific investments using Census data on newlywed couples. She finds that the introduction of unilateral divorce negatively affects the propensity to undertake marriage-specific investments, such as support of a spouse through school or the purchase of a house.

2.2 Property division laws

Property division regimes over the period of analysis can be classified into three main regimes:[5]

a) Title-based regimes (TB), where assets are allocated according to the title of ownership;

b) Community property regimes (CP), where assets are divided equally, under the presumption that they are jointly owned by both spouses;

c) Equitable distribution regimes (ED), where assets are divided by courts, which have some discretion, in order to achieve equity. This may imply equal division or a division that favors the spouse who contributed the most to purchase of the asset or in favor of the spouse who has higher needs.[6]

[5]The legal classification distinguishes between community property and common law regimes (Golden 1983). It then classifies common law states as strict title-based states and equitable distribution states. I follow the economic literature (Gray 1998, Stevenson 2007) by classifying states as title-based common law, community property and equitable distribution regimes.

[6]Even among equitable distribution and community property regimes, states differ in the definition of marital assets that are subject to division in a divorce settlement. In most states, assets owned prior to marriage, plus inheritances and gifts received during the marriage are separate property that spouses are allowed to own individually. In other states, even intangible assets such as the earnings from a law or medical

At the turn of the 20th century, common law title-based property division was the dominant legal regime, with the exception of eight states, mainly those with a French or Spanish colonial legacy, such as Louisiana, New Mexico or California, which had community property regimes. Over the course of the century, title-based states shifted towards equitable distribution, while community property states maintained their laws. By the 1930s, 17 title-based states had transitioned to equitable distribution (Golden 1983). After the federal Uniform Marriage and Divorce Act (UMDA) of 1970, all the remaining 27 states that had a title-based property division system adopted equitable distribution (Golden 1983, p.3).[7] In fact, the UMDA created the legal ground for the introduction of equitable distribution in all states and by the early 1980s a number of populous states, such as Illinois (1977), New York (1980) and Pennsylvania (1980), introduced equitable distribution. The last title-based state to transition to equitable distribution was Mississippi, in 1994 (Family Law Quarterly, 1977-2005).[8]

Although prenuptial agreements might have blunted the impact of these property division reforms, legal scholars believe that prenuptials had only a minor effect. While these contracts were not enforced by courts until the 1970s, since the Uniform Premarital Agreements Act of 1983 the enforcement of prenuptial agreements has become more likely. Today, prenuptial agreements are signed in only 5 to 10 percent of marriages (Rainer 2007), a fact potentially explained by social stigma and lack of information on their benefits (Mahar 2003).

The effect of property division laws has been subject to a limited amount of analysis. Aura (2003) develops a game theoretic model of asset allocation in limited commitment under different property division legal regimes. Modeling divorce as an out-of-equilibrium event, he shows that property division laws may affect household bargaining and intertemporal behavior. Gray (1998) and Stevenson (2007) allow the impact of unilateral divorce to have

degree are subject to a form of division. Furthermore, household debt that is held in both spouses' name, such as mortgage, is also subject to division by courts.

[7]These legal reforms were salient to U.S. households. For instance, a search of the Lexis Nexis archives (www.lexisnexis.com) revealed that between June and July 1980, when equitable distribution was introduced in New York state, seven articles were published in the New York Times regarding this legal change, including some long and detailed ones. Moreover, between 1974 and 1990 eighty articles from the New York Times have been classified as regarding both "marital property" and "divorce and dissolution".

[8]Alimony or maintenance payments are transfers awarded to the poorer spouse upon divorce. Traditionally, alimony was awarded to the wife who had no fault in the divorce. Since the Uniform Marriage and Divorce Act of 1970, alimony can be awarded to the poorer spouse, independently of the gender, to ease the transition to the labor market. It has thus been redefined as "rehabilitative" alimony (Turner 1998). Even before these changes, data on alimony payments show that these were generally infrequent transfers. For instance, in the National Longitudinal Survey of Young and Mature Women only 10 percent of divorced women ever report receiving alimony between 1977 and 1999, for a median payment is 4,000 real 2008 dollars, approximately 15 percent of the divorcee's household income. Child support is usually a larger transfer from the non-custodial parent to the parent that is granted custody of the children. Del Boca and Flinn (1995) examine a sample of divorce cases in Wisconsin between 1980 and 1982, where the average child support transfer is about 20 percent of the father's income.

a different effect on female labor supply in states with different property division rules, but do not explore the mechanism through which these laws could operate. Marcassa (2008) shows that changes in the laws that govern settlements are likely to affect couples' decision to divorce. Chiappori *et al.* (2008) develop a model of couple formation and disruption with different income division rules upon divorce, which influence household formation and matching.

3 The model

To identify the channels through which divorce laws influence household behavior and welfare, I develop a dynamic model of household choice where spouses jointly decide about how much to save, how to allocate consumption and whether to work or not. Given that prime age men are rarely non participants, I will only focus on the participation of women to the labor market. In each period, spouses can decide to divorce and live off their income plus the assets left to them after divorce. Whether divorce occurs and how resources are allocated depend on the divorce law regime. I model two grounds for divorce regimes (mutual consent and unilateral divorce), and three property division rules (community property, title-based regime, equitable distribution) to mirror the legal framework that I described in section 2.

The model represents the behavior of two individuals, H and W who are married at time 1 and live until time T. The symbol H denotes the primary earner and the symbol W the secondary earner. They can be thought as husband and wife, but the gender characterization at this stage is only for expositional convenience.

In every period from time 1 to T, the household chooses how much to save and how to allocate private consumption between the spouses, in the presence of economies of scale. Between time 1 and time $T-R$, the household also makes decisions about W's labor supply and about divorcing, depending on the divorce laws. From time $T-R+1$ to time T, spouses are retired and thus make no labor supply decisions.

3.1 Preferences

Both husband and wife derive utility from the consumption of one numeraire good c^j and disutility from labor force participation P^j. Spouses' utility functions are separable across periods and across states of the world.

Furthermore, each spouse has a subjective level of preference for the partner which is captured by a taste-for-marriage parameter ξ_t^j, which changes over time and affects the divorce decision. This parameter reflect spouses' affection for one another (love) and their attachment to marriage due to other idiosyncratic factors (e.g. children).

Preferences thus take the form:

$$u^j_{married} = u(c^j_t, P^j_t) + \xi^j_t \qquad\qquad u^j_{divorced} = u(c^j_t, P^j_t).$$

The taste shocks follow a random walk process:

$$\xi^j_t = \xi^j_{t-1} + \epsilon^j_t \qquad \text{where } \epsilon^j_t \text{ is distributed as } N(0, \sigma^2_\epsilon), \quad \text{for } j = W, H.$$

The random walk process is meant to capture the persistence of positive and negative changes in one's preferences.

The utility function $u(c, P)$ is Constant Relative Risk Aversion (CRRA) with separability between consumption and labor:

$$u(c, P) = \frac{c^{1-\gamma}}{1-\gamma} - \psi P$$

for $\gamma \geq 1$ and $\psi > 0$.

Men always participate in the labor market before retirement ($P^H_t = 1$ for $t = 1, ...T-R$), while participation is a choice variable for the wife.

3.2 Budget constraint

Here I describe the consumption technology, the process for spouses' income and the budget constraints of the household and the divorcees' problems.

3.2.1 Consumption technology and children

For a given level of household expenditure z, spouses' consumption depends on the household inverse production function

$$\frac{z}{e(k)} = F(c^H, c^W) = \left[(c^H)^\rho + (c^W)^\rho\right]^{\frac{1}{\rho}}$$

where $e(k)$ represents an equivalence scale due to the presence of children in the family. Thus, for a given level of expenditure, a couple is able to consume more than they could consume if they were living alone. The constant elasticity of substitution functional form allows the magnitude of economies of scale in the household to depend on the consumption gap between spouses. That is, if one spouse, for instance the husband, does not consume anything, then $z = c^W$. Economies of scale are maximized when spouses have the same consumption.

The birth of children takes place at predetermined ages. Children affect household consumption according to the McClements scale (denoted as $e(k)$).[9]

3.2.2 Income over the life-cycle

Spouses are uncertain about their future labor income and receive permanent income shocks that are correlated between husband and wife.

The wife's labor income depends on her human capital, accumulated through labor force participation (Olivetti 2006, Attanasio *et al.* 2008):

$$ln(y_t^W) = ln(h_t^W) + z_t^W$$

where z_t^j represents the permanent component of income that follows a random walk process

$$z_t^W = z_{t-1}^W + \zeta_t^W \tag{1}$$

Note that in the empirical model, I will overlay spouses' income data with an i.i.d measurement error, represented by ι_t^j $(j = H, W)$.

The law of motion for spouse W's human capital h is:

$$ln(h_t^W) = ln(h_{t-1}^W) - \delta \cdot (1 - P_{t-1}^W) + (\lambda_0^W + \lambda_1^W \cdot t) \cdot P_{t-1}^W.$$

If a woman participated in the previous period, her human capital increases at rate $(\lambda_0^W + \lambda_1^W \cdot t)$. If she did not, her human capital depreciates at a rate δ. If W participates, the household faces childcare expenses d^k.

I assume that the husband's income is growing over the life cycle, consistently with patterns observed in the data:

$$ln(y_t^H) = ln(y_1^H) + ln(h_t^H) + z_t^H \tag{2}$$

$$ln(h_t^H) = ln(h_{t-1}^H) + \lambda_0^H + \lambda_1^H \cdot t \tag{3}$$

The initial offer wage y_1^j is lower for W than for H.

At time $T - R$, spouses retire and only obtain a share of their pre-retirement income, which follows the U.S. Social Security rules.

[9] A couples with a child aged 0-1 consumes 109 percent of the consumption of a childless couple. The additional fraction is 18 percent for each child between 2 and 4 years, 21 percent between 5 and 7 years, 23 percent between and 8 and 10, 25 percent between 11 and 12, 27 percent between 13 and 15 and 38 percent between 16 and 18 years.

3.2.3 Budget constraints in marriage

In marriage, the budget constraints depend on the property division regime.

In a title-based regime:

$$A_{t+1}^H + A_{t+1}^W = (1+r) \cdot (A_t^H + A_t^W) + y_t^H + (y_t^W(h_t^W) - d_t^k) \cdot P_t^W - z_t \tag{4}$$

Thus, spouses save in separate "accounts" A^H and A^W that have the same market rate of return r. If divorce is not an option, spouses are indifferent between the two accounts because they will pool during marriage. If divorce is possible, spouses make a portfolio allocation decisions over household total assets $A = A^W + A^H$. If divorce occurs, each spouse keeps his/her own assets.

In equitable distribution and community property, assets are treated as jointly owned upon divorce and thus spouses save jointly:

$$A_{t+1} = (1+r) \cdot A_t + y_t^H + (y_t^W(h_t^W) - d_t^k) \cdot P_t^W - z_t.$$

3.2.4 Budget constraints in divorce

In divorce, spouses live off their resources. They both contribute to the consumption of their children as a fraction of their own consumption (according to the equivalence scale $e(k)$), and this is meant to capture child custody and child support. The budget constraint is thus simply:

$$A_{t+1}^j = (1+r) \cdot A_t^j + (y_t^j - \frac{d_t^k}{2}) \cdot P_t^j - c_t^j \cdot e(k_t). \qquad j = H, W \tag{5}$$

where participation for the man is always $P^j = 1$.

In the first year after divorce, each spouse's level of assets depends on the property division regime. In a title-based system, spouses maintain their own "account" A^j upon divorce. In equitable distribution and community property, wealth is divided according to a sharing rule: in divorce, the husband keeps a share α of A, the wife a share $(1-\alpha)$, where:

$$\alpha = \begin{cases} \frac{1}{2} & \text{in community property} \\ \\ \text{Uni}[\frac{1}{3}, \frac{2}{3}] & \text{in equitable distribution} \end{cases}$$

Spouses know that assets would be divided equally in community property, while they

are uncertain about the property division rule. This is meant to capture the fact that under equitable distribution between half and two thirds of the property is usually assigned to the spouse with the highest earnings (Woodhouse and Fetherling 2006), but also that the division of assets may sometimes favor the spouse with lower income and thus higher need for assets (Turner 2005).[10]

Spouses to contract around existing divorce laws at the time of divorce, but cannot commit to a division rule during marriage. This assumption reflect the fact that prenuptial agreements were rarely enforced before the mid 1980s and remain unfrequent today (Mahar 2003). I discuss the welfare effects of binding prenuptial agreements in a counterfactual simulation exercise in section (7).

3.3 Divorcee's problem

Having described the budget constraints in the various cases of interest, we now turn to the characterization of the objective function. The female divorcee solves the following problem:

$$U_t^{WD} = max_{c^W, P^W, A^W} \quad u(c_t^W, P_t^W) + \sum_{s=1}^{T} \beta^s E\left[u(c_{t+s}^W, P_{t+s}^W)\right] \tag{6}$$

s.t. budget constraint (5).

The budget constraint depends on the property division regime at the time of divorce.

In each period, a divorcee has a given probability of remaining in the current marital status or of remarrying with another spouse. If remarriage occurs, the problem is analogous to the one of a married couple. I assume that people do not divorce after their second marriage.

The problem for the male divorcee is analogous, without the labor market participation choice.

3.4 Married couple's problem

The couple's problem depends on the existing divorce law regime. Spouses make decisions collectively with bargaining weights θ and $1-\theta$, where θ represents the husband's weight in the household objective function.[11] The parameter θ_0 in the initial period is determined by

[10] This model captures important features of the actual legal system, but includes some important simplifications. For instance, in the past if spouses had a joint title of property on the house, then such house would be divided between them upon divorce even in title-based regime. Furthermore, in community property or equitable distribution not all assets owned by a couple are subject to division. Some states have a "dual property" system that allows spouses to keep all assets accumulated before marriage or inherited.

[11] An interesting alternative would be to model the household decision in a non-cooperative framework (Del Boca and Flinn 2009). Under certain assumptions, the main intuition would remain unchanged: when spouses save separately, but courts consider their assets as jointly owned, the risk of divorce lowers the

conditions of the marriage market.[12]

3.4.1 Mutual consent divorce

I first describe the mutual consent divorce case. In each period, the couple maximizes the sum of their discounted utilities:

$$max_{c^H,c^W,P^W,A} \quad \theta U_t^{HM} + (1-\theta)U_t^{WM} \tag{7}$$

s.t. budget constraint (4)

where

$$U_t^{jM} = u(c_t^j, P_t^j; \xi_t^j) + \sum_{s=1}^{T-t} \beta^s E\left[u(c_{t+s}^j, P_{t+s}^j)\right]$$

The household solves problem (7) with fixed bargaining weights θ and remains married unless *both spouses* prefer the divorce allocation described in section 3.3. Thus, divorce would occur in period j when:

$$U_s^{HM} < U_s^{HD} \qquad \text{and} \qquad U_s^{WM} < U_s^{WD}.$$

Because uncertainty in this model comes from the realization of the shocks to preference-for-marriage and to income, the expected value is taken with respect to the distribution of ξ^j and y^j for $j = H, W$ and, accordingly, with respect to future marital status and income.

If only one spouse wants to divorce, she cannot lower the utility in marriage of the other spouse to induce him to agree to divorce, since in this setting the bargaining weights are fixed. This assumption does not appear particularly strong if one considers that, under mutual consent divorce, the spouse who had a "fault", e.g. an abusive or adulterous spouse, was often punished by courts in divorce settlement.

The spouse who wants to divorce can "bribe" the other by offering her (him) a larger fraction of household assets than the one determined by the law. Thus, if spouse i wants to remain married when j wants to divorce

returns on the accumulation of assets for the richer spouse.

[12] Alternatively, it can be seen as the outcome of initial intra-household bargaining based on threat-points that are internal to the marriage, such as the threat of a non-cooperative equilibrium within the marriage (Lundberg and Pollak 1993).

$$U_s^{jM} < U_s^{jD} \qquad \text{and} \qquad U_s^{iM} > U_s^{iD}$$

spouse j prefers divorce while spouse i prefers marriage given the default property division law $\{A^j, A^i\}$, then spouse j will offer i to keep an amount A^{i*} that would make him indifferent between marriage and divorce and would push him to consent to divorce. Such amount may not exist, if for instance i's realization of the preference parameter is very high.

3.4.2 Unilateral divorce

In unilateral divorce, spouses can re-bargain the intra-household allocation based on their divorce allocations. In every period, the couple solves:

$$max_{c^H, c^W, P^W, A} \quad \theta_{t_0} U_t^{HM} + (1 - \theta_{t_0}) U_t^{WM} \tag{8}$$

s.t. budget constraint (4)
where

$$U_t^{jM} = u(c_t^j, P_t^j; \xi_t^j) + \sum_{s=1}^{T-t} \beta^s E\left[u(c_{t+s}^j, P_{t+s}^j)\right]$$

The participation constraints state that each spouse has to be better off in marriage than in divorce:

$$U_s^{HM} \geq U_s^{HD} \tag{9}$$
$$U_s^{WM} \geq U_s^{WD} \qquad s = t, ...T. \tag{10}$$

The solution to this case closely follows the limited-commitment literature (Ligon *et al.* 2002, Marcet *et al.* 1992), which has been successfully applied to intra-household bargaining (Mazzocco 2007, Mazzocco *et al.* 2007). In this setting, divorce never occurs when conditions (9-10) are satisfied and would always occur when both spouses prefer the divorce allocation to remaining married.

Furthermore, when only one spouse prefers to divorce and the other prefers to stay married, re-bargain occurs. This can be seen as an increase in the weight of the spouse that prefers to divorce and a decrease in the weight of the one who prefers to remain married. Thus, when

$$U_s^{jM}(\theta_{t_0}) < U_s^{jD} \qquad \text{and} \qquad U_s^{iM}(\theta_{t_0}) \geq U_s^{iD}$$

for $j = H, W$ and $i = W, H$, θ_{t_0} would shift to θ_j^* such that

$$U_s^{jM}(\theta_s^*) = U_s^{jD} \qquad \text{and} \qquad U_s^{iM}(\theta_s^*) \geq U_s^{iD}. \tag{11}$$

If re-bargain is not possible, thus if there is no θ_s^* that satisfies (11), then divorce occurs even if one spouse prefers remaining marriage.

3.5 Solution method

This model does not have a closed form solution and is solved numerically using backward induction.

3.5.1 Divorcee's problem

The problem of the female divorcee W has three state variables, A^W, h^W and the divorce laws Ω_t and has two choice variables, c^W and P^W. The model is solved by backward induction (Adda and Cooper 2003) under the terminal condition that $A_{T+1}^W = 0$ for a discrete vector of possible values for A^W.[13]

For the male divorcee the problem is identical with the only exception that the decision to work is not a choice variable.

The solution leads a sequence of values $V_t^{Dj}(\Omega_t)$ that represent each spouses' valuation of divorce.

3.5.2 The couple's problem

The married couple's problem has ten state variables: the assets level A^j for each spouse, the level of the wife's human capital h^W, the levels of preferences for marriage for each spouse ξ^j, the income level for each spouse y_t^j, the husband's bargaining power θ and the divorce laws Ω_t (which represents two state variables: ground for divorce law and property division rule). Choice variables are spouses' consumption levels c^j and female labor force participation P^W. This leads to the following joint value function:

$$V_t^M(h_t^W, A_t^H, A_t^W, \xi_t^H, \xi_t^W, y_t^H, y_t^W, \theta_t, \Omega_t)$$

The household takes the divorce laws Ω_t as given and assume that they are going to persist in time: changes in Ω_t are thus unanticipated and exogenous to household behavior. This assumption reflects the fact that divorce law reforms happened in a relatively short period of time and that, so far, no state has reintroduced the pre-reform regimes.

[13] If remarriage reoccurs (with probability $(1 - \zeta_t)$ in each period), then the problem is again solved by backward induction under the same zero-assets terminal condition.

Divorce laws impose restrictions on the state variables. In community property, $A_t^H = A_t^W \ \ \forall t$ and in equitable distribution $(1-\alpha)A_t^H = \alpha A_t^W \ \ \forall t$. In mutual consent divorce, $\theta_t = \theta_{t+1} \ \ \forall t$.

The problem is again solved numerically by backward induction with the terminal condition

$$A_{T+1} = 0$$

since there is no bequest motive in the model. In the last period, expenditure is set to $z_T = A_T^H + A_T^W + y_T^H + y_T^W$. Given z_T, consumption for each spouse is determined according to the household production function and the distribution of bargaining power.[14] This leads to an individual value of marriage for each spouse $V_T^{jM} = u(c_T^j(z_T), \theta_T)$.

Each spouse compares her own valuation of marriage V_T^{jM} to the one of divorce $V_T^{jD}(\Omega_T)$ and decides whether she would prefer to divorce or not. Whether divorce occurs or not depends on the underlying grounds for divorce law. If divorce occurs, spouses' utility is $V_T^{jD}(\Omega_T)$, otherwise it is V_T^{jM}. This would give to each spouse a value for period T that I denote as:

$$V_T^j(h_t^W, A_t^H, A_t^W \xi_t^H, \xi_t^W, y_t^H, y_t^W, \theta_t, \Omega_t)$$

for $j = H, M$. If divorce occurs ($D_t = 1$), then $V_T^j = V_T^{jD}$, otherwise if $D_t = 0$, $V_T^j = V_T^{jM}$.

In period $T-1$, the value function takes the form:

$$V_{T-1}^M = max \quad \theta u(c_{T-1}^H) + (1-\theta)u(c_{T-1}^W) + \theta E_{\xi y}[V_T^H] + (1-\theta)E_{\xi y}[V_T^W]$$

which is again solved numerically.[15]

In the other periods, the solution is obtained by solving the problem recursively. Starting in period $T-R$ backwards until period 1, household also make decisions on female labor participation P_t^W:

$$V_t^M = max \quad \theta u(c_t^H) + (1-\theta)u(c_t^W, P_t^W) + \theta E_{\xi y}[V_{t+1}^H] + (1-\theta)E_{\xi y}[V_{t+1}^W].$$

[14] From the first order conditions: $c^H = \left[\frac{\theta^{\frac{1}{\gamma+\rho-1}}}{(1-\theta)^{\frac{\rho}{\gamma+\rho-1}} + \theta^{\frac{\rho}{\gamma+\rho-1}}}\right]^{\frac{1}{\rho}} \cdot z$ and $c^W = \left[\frac{(1-\theta)^{\frac{1}{\gamma+\rho-1}}}{(1-\theta)^{\frac{\rho}{\gamma+\rho-1}} + \theta^{\frac{\rho}{\gamma+\rho-1}}}\right]^{\frac{1}{\rho}} \cdot z$.

[15] To obtain the numerical solution I discretize the vector of assets A and the vector of h^W, y_t^j and of ξ_t^j. I solve the value function for a subset of the vector of discrete values of A and then use linear interpolation to speed up computation. I discretize the random walk processes into a Markov chains and use the transitions probabilities to compute the expected values $E[u(\cdot)]$ (Adda and Cooper 2003).

3.6 Equilibrium definition

An equilibrium in this problem is an allocation for the married couple

$$\{c_t^{HM}, c_t^{WM}, P_t^{WM}, A_t, D_t\}_{t=1,...T}^{S_t},$$

an allocation for the divorcees

$$\{\{c_t^{HD}, A_t^{HD}\}, \{c_t^{WD}, P_t^{WD}, A_t^{WD}\}\}_{t=1,...T}^{S_t}$$

and an allocation in remarriage such that

1. $\{c_t^{HM}, c_t^{WM}, P_t^{WM}, A_t, D_t\}_{t=1,...T}^{S_t}$ solves the married couple's problem given the set of divorce laws Ω_t and the state $S_t = \{\xi_t^H, \xi_t^W, y_t^H, y_t^W\}$;
2. $\{\{c_t^{HD}, A_t^{HD}\}, \{c_t^{WD}, P_t^{WD}, A_t^{WD}\}\}_{t=1,...T}^{S_t}$ solve the divorcees' problems given Ω_t and the state $S_t = \{\xi_t^H, \xi_t^W, y_t^H, y_t^W\}$;
3. the allocation in remarriage solves each spouse's problem in remarriage.

3.7 Implications of the model

The model has implications for three observable elements of household behavior: divorce, asset accumulation and female labor supply (human capital) decisions. These implications derive from both the direct effect of each law and the interaction effects between grounds for divorce and property division laws.

3.7.1 Divorce laws, the divorce decision and intra-household renegotiation

A relevant feature of my model is that utility cannot be fully transferred between spouses: spouses can only transfer a finite amount of consumption goods to each other, subject to the intertemporal budget constraint, but they experience shocks to the preferences for marriage whose support goes from negative infinity to positive infinity. Since utility is not transferable, under unilateral divorce couples will end their marriage more often than under mutual consent, in violation of the Becker-Coase theorem.[16] Assume for example that the realizations of the wife's preference shock ξ_t^W is very low, for instance because she meets another more suitable partner. Then, within-marriage compensation (i.e. transfer of consumption goods and leisure from the husband to the wife) may not always be sufficient to convince her to remain in the marriage and compensate for such a low ξ_t^W. The lack of transferable

[16] See Chiappori *et al.* (2007) for a discussion of the other assumptions needed for this theorem to hold.

utility would make divorce more likely in unilateral divorce regimes than in mutual consent regimes even if spouses contract around property division laws: in mutual consent divorce: there exist values of the preference shocks that make it impossible for the spouse who wants to divorce to persuade the one who wants to remain married by transferring more assets than the default divorce law.

When divorce does not occur, under unilateral divorce couples renegotiate household allocations based on the divorce outside options. Under mutual consent divorce, the bargaining weight is fixed in time to a value that reflects the conditions of the marriage market before the wedding (let's denote it as θ_0). This is because spouses cannot exercise the divorce outside option without the consent of the other party and thus divorce cannot be a relevant threat-point of household bargaining. If unilateral divorce is introduced, the bargaining weights shift to incorporate spouses' outside options that are represented by divorce allocations and that are not incorporated in the initial θ_0. For instance, if the husband's bargaining weight θ_0 is high (e.g. because of other social norms or of conditions of the marriage market at time 0 that are unrelated to the divorce outside-option), but the realizations of W's income are sufficiently high to allow her to be better off in divorce than in marriage, W can use the threat of divorce to increase her bargaining power and to lower the weight of her husband. This translates into a higher share of consumption goods and higher leisure for her.

Similarly to an income shock, changes in property division rules impact spouses' resources in divorce. An increase in spouse's j welfare in divorce (e.g. due to a more favorable property division rule, or a work promotion, or a better potential new partner) improves hers outside option. If the increase is large enough to led her/him to seek for divorce, the other spouse may offer a better allocation within marriage. Property division law only affect the intra-household allocation if there is unilateral divorce: in this case, they can shift the bargaining power towards the spouse who is favored by the law.

3.7.2 Divorce laws and assets

Property division laws allocate assets to spouses in divorce settlements and thus influence resources available to each spouses in case of divorce. In a title-based property division regime, the household chooses how much to allocate to each spouse in the event of a divorce. The lower θ, the higher the wife's consumption in marriage relative to her husband's consumption.[17] Thus, to allow her to smooth consumption in divorce, without income pooling

[17]From the intra-temporal first order conditions, the optimal consumption allocation, when both spouses participate, for a given level of expenditure z is

$$\frac{c^W}{c^H} = \left(\frac{\theta}{1-\theta}\right)^{\frac{1}{1-\gamma-\rho}},$$

with her husband, A^W will also have to be high and decreasing in θ. Each spouse's asset level increases in his/her bargaining power, just as their consumption does.

In equitable distribution and community property, households can only choose the *total* amount of savings A and the share attributed to wife is, in expectation, equal to the one attributed to the husband. Thus, women with low bargaining power $(1-\theta)$ will benefit from these division regimes compared to a title-based regime. On the contrary, in those households where women have high bargaining weight (e.g $\theta = \frac{1}{2}$), assets chosen in a title-based regime may be such that $A^W > \frac{1}{2}A$.

In this model, W has lower permanent income that her husband H. If $\theta = \frac{1}{2}$, W needs more assets than H to maintain her marginal utility of consumption constant in divorce, because in that circumstance she will no longer be able to benefit from his income. If θ is sufficiently high, the wife needs less self-insurance in divorce, because she has low consumption in marriage and her income alone would allow her to smooth the marginal utility of her consumption as a divorcee

During marriage, divorce laws influence household behavior through multiple channels. Because of unilateral divorce and the corresponding increase in the likelihood of divorce, risk-averse households are encouraged to increase savings in order to allow the smoothing of the marginal utility of divorce against the loss of economies of scales in divorce (Cubeddu and Rios-Rull, 1997 and 2003). In addition, by influencing the amount of assets available to spouses in the event of a divorce, property division laws have multiple effects on household behavior.

First, they alter the household intertemporal problem by affecting each spouse's individual returns on assets. Second, they influence spouses' outside option and thus intrahousehold bargaining. Third, equitable distribution introduces uncertainty on the returns on savings.

a) Spouses' individual returns on savings In community property and equitable distribution, the division of assets imposed by courts may alter the returns on assets relative to a title-based regime. In marriage, each spouse's consumption increases in his/her bargaining power. Equal division of assets acts thus as a tax on savings for the high-power spouse and as a subsidy for the low-power one. Spouses' weight in household decision function determine the overall effect in the household intertemporal problem: equal property division in a household with unequal distribution of power decreases the returns on savings. Similarly to a change in the market return on assets or to a tax on savings, such decrease has a substitution effect (consumption is cheaper at time t than at time $t+1$ and may decrease savings) and an income effect(for a net saver, resources available at time $t+1$ are lowered and this may increase savings). Preferences and spouses' need for insurance determine whether the income or the substitution effect dominates.

b) Spouses' outside options

Property division rules determine the fraction of household resources available to each spouse in a divorce. Thus, by affecting spouses' outside option, property division rules also affect spouses' bargaining power when spouses can initiate divorce without the consent of the other party.

b) Uncertainty Spouses are uncertain about how property will be divided in equitable distribution. Uncertainty on the returns on assets negatively affects the welfare of a risk-averse family.

3.7.3 Divorce laws and female labor supply

If divorce generates a loss of resources for women (such as the loss of their share of the husbands' income), women have an incentive to increase their labor supply to accumulate human capital (cf. Johnson and Skinner 1986). However, the more favorable the property regime is to them, the weaker this incentive would be, since tangible assets provide women with sufficient insurance against the loss of within-marriage transfers from their husbands.[18]

Furthermore, a woman's labor force participation is *decreasing* in her bargaining power, and thus increasing in θ: the lower a women's power $(1-\theta)$, the lower the utility cost of participation in the household value function. By increasing a woman's outside option in divorce, divorce laws that favor women may thus lead to a reduction in their labor supply. Again, this mechanism would only operate when spouses can exercise the divorce outside option without the consent of the other party.

This link between the distribution of power in the household and female labor supply has to be interpreted keeping into account the fact that in this model the alternative to labor market participation is leisure. One could argue that, if home production was another option, a woman with very low bargaining power in her household may supply all of time to housework and domestic production, if that was beneficial for the household. But if leisure is the only alternative to labor market work, then the fact that leisure increases in a spouse's bargaining power is a straightforward implication.

4 The data

I use data from the the Panel Survey of Income Dynamics (PSID), the National Longitudinal Survey of Mature Women (NLS-MW), and the National Longitudinal Survey of Young Women (NLS-YW). These surveys provide longitudinal information on U.S. households from the end of the 1960s till the 2000s. In this paper, I exploit 26 waves of the PSID (between

[18] This model does not consider alimony, since data suggest that is a relatively infrequent transfer. Alimony in a this model would imply a reduction in the scope for self-insurance for women and in an increase in their bargaining power in unilateral divorce.

1968 and 1993), 19 waves of NLS of Mature Women (between 1967 and 1999), and 20 waves of NLS of Young Women (between 1968 and 1999).

The PSID provides key information on labor force participation and income. I do not use data after the 1993 wave, since several important questions were significantly modified after this point.

The NLS-MW and NLS-YW are part of the Original Cohorts of the NLS. The NLS-MW was administered from 1967 to 2003 on an initial sample of 5,083 women who were between 30 and 44 years of age in 1967. The NLS-YW was administered from 1967 to 2003 on an initial sample of 5,159 women who were between 14 and 24 years of age in 1968. In addition to information on income, education and fertility, these surveys provide rich data on household assets holdings that is not available in other longitudinal surveys of the 1970s and 1980s. Since the NLS does not disclose state identifiers, I matched women to their state of residence using the geographical variables provided in the surveys. The geographical variables that I use to match women to their state of residence are the size of the labor market in the 1960 Decennial Census in the area of residence, an index of the demand for female labor in the area of residence and the Census division of residence.[19]

Since my model does not consider family formation, but takes couple matching as exogenous, my empirical analysis only considers couples who married *before* legal reforms took place: divorce laws may in fact also affect sorting into marriage. Thus, my sample includes women from the NLS and the PSID married before the introduction of unilateral divorce in their state and before changes to divorce settlement laws.

5 Empirical analysis of divorce law reforms

5.1 The characteristics of the samples

The PSID provides detailed longitudinal information on female employment and divorce. Table (1) summarizes characteristics of the pooled sample of 3,874 women I analyze. Eighty-eight percent are married, while 12 percent are separated or divorced.[20] Average female employment in the sample is 54 percent.

[19]Since this information is only available for the waves between 1967 and 1971, I can only identify the state of residence for those survey respondents who do not change state between 1971 and 1999. Thus, I match 10,086 women out of 10,242 at least once in the sample, but for a total of 2,856 women, the state of residence eventually becomes unavailable as they are recorded changing it. On the one hand, to the extent that people do not change state because of divorce laws, I am unable to exploit variation in divorce laws that couples are exposed to as they change state of residence. On the other hand, since divorce laws may not be immediately salient, focusing on couples that have lived for a long time in the same state may decrease estimation error. A similar approach is used in Powers (1998) on the NLS-YM. I thank Jeff Gray for providing the list of geographical characteristics at the Primary Sampling Unit (PSU) level and the PSU-state matches.

[20]I exclude widows from the sample.

Table 1: **Summary statistics of the PSID (1968-1993): Pooled sample of women married before divorce law reforms**

	Obs.	Mean	Median
Age	52,818	40	41
Employment	52,818	0.54	1
Married	52,818	0.88	1
Number of children	52,818	1.66	1
Years since marriage	43,318	17	19

The NLSW provides uniquely rich data on household wealth. The women I analyze are slightly older than the PSID sample due to the sampling age of the initial cohort. Data on wealth is collected for a subset of years, leaving me with asset data for 4,538 couples. Assets include real estate, financial assets and business assets. [21] Table (2) reports the average and median characteristics of this sample. Households assets average almost 70,000 and income averages approximately 38,000, both in real 1990 dollars. Asset holdings peak when women are 64 at a mean level of 127,000 real 1990 dollars. Seventeen percent of the pooled sample holds zero or negative total assets at a point in time.

Table 2: **Summary statistics of the National Longitudinal Survey of Young and Mature Women (1967-1999): Pooled sample of couples married before divorce law reforms with non-missing assets data**

	Obs.	Mean	Median
Wife's age	15,399	40	40
Husbands's age	14,896	44	44
Assets (1990 dollars)	15,399	70,573	32,658
Household income (1990 dollars)	12,554	37,852	34,045
Number of children	15399	2	2
Years since marriage	12,022	21	21

Both the NLSW and the PSID record the marital status of survey responders. Nevertheless, it is difficult to observe divorces precisely, since households may fall out of the sample when divorce occurs. In the NLSW survey, 824 divorces are recorded in the sample of 5,131 (15 percent). The divorce hazard is 1.9 percent per year. Data on divorces on the PSID is also limited. The PSID does not collect information on former members of a household

[21] In the NLS-MW assets are recorded in 1967, 1971, 1972, 1977, 1982, 1987, 1989, 1995, 1997, 1999. For NLS-YW, assets are available on for survey years 1968, 1971-1973, 1978, 1983, 1988, 1993, 1995, 1997, 1999.

who drop out because of divorce, unless they were part of the initial 1968 cohort of surveyed families. In the PSID subsample that I consider, 884 divorces are recorded (22 percent).

5.2 Quasi-experimental variation

I analyze the impact of the introduction of unilateral divorce and of equitable distribution on the intertemporal behavior of U.S. households, using data from both the NLSW and the PSID. I exploit state and year variation of divorce laws, as summarized in Table (13).

Unilateral divorce was introduced at different points in time in 33 states between 1967 and 1992. In the same period, as is illustrated in section (3), all 27 states that had a title-based property division system adopted equitable distribution.

The sources of quasi-experimental variation that I will exploit are the introduction of unilateral divorce in different pre-existing property regimes (mainly, community property and title-based regimes) and the adoption of equitable distribution in states with different legal grounds for divorce (mutual consent and unilateral divorce).

Table 14 illustrates the number of observations that generate the quasi-experimental variation in the NLSW (assets) and the PSID (participation). Variation in divorce laws is concentrated in the following groups:

a) Introduction of unilateral divorce

   a.1) in title-based regimes (398 households in the NLSW, 290 households in the PSID).

   a.2) in community property regimes (653 households in the NLSW, 573 households in the PSID).

b) Introduction of equitable distribution

   b.1) in mutual consent states (1,149 households in the NLSW, 1,701 households in the PSID).

   b.2) in unilateral divorce states (206 households in the NLSW, 249 households in the PSID).

c) Introduction of both equitable distribution and unilateral divorce in the same year (233 households in the NLSW, 178 households in the PSID).[22]

Other legal changes affected very few households. A small group of households experienced the transition into unilateral divorce as equitable distributions states (12 households in the NLSW and 87 households in the PSID): unilateral divorce usually preceded property division reforms. Last, only a few households adopt community property during the

[22]This group includes those states where the two legal reforms took place in two subsequent years.

sample period, since Wisconsin was the only state that moved from an equitable distribution system to a community property regime in 1986. Such observations are insufficient to provide identification for such quasi-experiment and thus they will not be used for causal interpretation.

In the next subsection, I analyze the impact of this policy variation on the accumulation of assets and the labor force participation of women.

5.3 Empirical analysis

The dynamic model described in section (3) does not provide a closed form solution. Nevertheless, it delivers a framework to interpret the effects of divorce laws reforms on the endogenous variables of the model, such as wealth accumulation or female labor supply, which I examine below.

5.3.1 Household wealth

To identify some of the channels through which divorce laws affect the accumulation of assets, I estimate the following equation, where i denotes household, t denotes year and s the state of residence:

$$\begin{aligned} assets_{i,s,t} = {} & \beta_1 Unilateral_{s,t} + \beta_2 (Unilateral \cdot Com.Prop_{s,t}) \\ & + \beta_3 (Unilateral \cdot Eq.Distr_{s,t}) + \beta_4 Com.Prop._{s,t} + \beta_5 Eq.Distr._{s,t} \\ & + \gamma' Z_{i,t} + \delta_t + f_i + s_s + \epsilon_{i,s,t}. \end{aligned} \tag{12}$$

The dependent variable *assets* represents total net assets for married couples, measured in real 1990 dollars.[23] The vector Z contains a set of controls, such as age dummies, state fixed effects and family structure, δ_t denote year fixed effects, s_s state fixed effects and f_i household fixed effects.

I consider a vector of property division and grounds for divorce regimes. The excluded category is a title-based mutual consent system. What do these reduced form coefficients tell us about the forces influencing household behavior in my model? I summarize such forces and the mapping from structural model and the reduced form estimates in table (3). Coefficient β_1 associated with the dependent variable *Unilateral* captures the effect of

[23] Because this analysis is conducted on a sample of married samples, I consider the possibility that the results may be driven by non-random attrition due to different characteristics of divorcing couples across legal regimes. I use Inverse Probability Weighting to ensure that results are not driven by non-random attrition (subsection 6.1).

unilateral divorce with respect to mutual consent divorce in title-based states.[24] According to the model, the channels through which unilateral divorce affect household saving behavior in title-based states are common to *all property regimes*. In fact, β_1 captures the effect that is due to consumption smoothing against the increased risk of loosing the marriage surplus (economies of scale) and the effect due to the possibility of re-bargaining on the divorce outside option based on spouses' labor incomes.

Coefficients β_2 ($Uni \cdot Com.Prop.$) and β_3 ($Uni \cdot Eq.Distr.$) capture the *additional* effect of unilateral divorce in community property and equitable distribution states beyond the effect described by β_1 (see Table 3). Thus, these coefficients capture the impact of unilateral divorce in states where courts divide assets disregarding the title of property, beyond the impact that is observed in title-based states. This corresponds to three mechanisms in the model. First, it captures the effect due to the change in individual returns on assets that occurs when unilateral divorce is introduced in these property division regimes. Second, it also captures the effect due to household re-bargain when spouses' outside options in divorce are affected by property division laws. Third, if one spouse has a high preference for marriage, it may be optimal for the household to lower the outside option of the spouse who prefers divorce by dissaving and thus by increasing the commitment to the marriage, especially if the spouse with high ξ^j has also a large weight. It is impossible to separately identify the magnitude of these channels.

Furthermore, in the model the difference between β_3 and β_2 captures the effect of uncertainty in the allocation of assets upon divorce, since in equitable distribution states judges have wider discretion in the allocation on property.

Coefficient β_4 ($Com.Prop.$) measures the average difference in assets between title-based

[24] Consider the equation that compares the effect of all the possible combinations of divorce laws on outcome y:

$$\begin{aligned} y_{i,t} = {} & \alpha_0 + \alpha_1 \left(Mutual_{s,t} \cdot Title_{s,t}\right) + \alpha_2 (Mutual_{s,t} \cdot Com.Prop_{s,t}) + \alpha_3 (Mutual_{s,t} \cdot Eq.Distr_{s,t}) \\ & + \alpha_4 \left(Unilateral_{s,t} \cdot Title_{s,t}\right) + \alpha_5 (Unilateral_{s,t} \cdot Com.Prop_{s,t}) + \alpha_6 (Unilateral_{s,t} \cdot Eq.Distr_{s,t}) \\ & + \gamma' Z_{i,t} + \delta_t + f_i + \epsilon_{i,t}. \end{aligned}$$

The coefficients of this equation are not all identified as the six divorce law combinations are collinear. The equation can be rewritten as equation (12), where β_1 represents the difference between mutual consent and unilateral divorce in a title regime (thus $\alpha_4 - \alpha_1$), β_4 represents the difference between community property and title-based mutual states in mutual consent ($\alpha_2 - \alpha_1$) and β_5 the difference between equitable distribution and title-based states again in mutual consent ($\alpha_3 - \alpha_1$). The coefficient β_2 represents the difference between the effect of the introduction of unilateral divorce in an community property state and in a title-based state: $\beta_2 = (\alpha_5 - \alpha_2) - (\alpha_4 - \alpha_1)$. Similarly, for equitable distribution,

$$\beta_3 = (\alpha_6 - \alpha_3) - (\alpha_4 - \alpha_1) = (\alpha_6 - \alpha_4) - (\alpha_3 - \alpha_1)$$

and thus also it indicates the effect of the introduction of equitable distribution in equitable distribution states, which is an experiment that occurs in the data. The excluded category is thus $Mutual \cdot Title$, which is identified by the fixed-effects together with the constant term α_0.

Table 3: **Interpretation of coefficients**

Coefficient	Channels from the model
β_1	Smoothing of economies of scale, re-bargain on income
β_2	Income effect, substitution effect, re-bargain on income and assets
β_3	β_2+Uncertainty
β_4	*No quasi-experimental variation*
β_5	Income effect and substitution effect with "bribing"

and community property states in mutual consent regimes. Since it is identified by those households who change state from a title-based state to a community property state between 1967 and 1971 in the NLSW dataset and by no quasi-experimental variation, it has no plausible causal interpretation.[25]

Last, coefficient β_5 ($Eq.Distr.$) measures the average wealth difference due to the introduction of equitable distribution in title-based states in mutual consent regimes. The introduction of equitable distribution in unilateral divorce states is also captured by coefficient β_3.

In the model, the introduction of equitable distribution has three main effects on households: it affects spouses' returns on saving, it may change their outside option and it introduces uncertainty about the division of assets. These effects are captured by the coefficients of equation (12), though it is impossible to separately identify them. Later, I will use these "reduced form" estimates to estimate the structural parameters of my model.

Table 4 reports the results of the estimation of equation (12) using fixed-effect OLS regressions, for different specifications. Column (1) is the baseline specification that includes age dummies for the wife, year fixed-effects and individual fixed effects. Column (2) controls for a polynomial in the husband's age, which is missing for some households. Column (3) controls for state fixed effects, which may not be entirely captured by individual fixed effects if people change state of residence. Column (4) uses the natural logarithm of household assets as dependent variable, instead of the level of assets.

The coefficient β_1, which represents the effect of unilateral divorce in title property states is equal to -5,853 (column (1)) and is not statistically significant. This suggest that the consumption smoothing effect that is independent of the underlying property regime may not have been important as it did not lead to an increase in household assets. Also, it suggests that intra-household re-bargain due to divorce outside options in a title-based regime may

[25]As explained above, changes of state are not measured after 1971. Furthermore, only Wisconsin introduced community property in this sample, in 1986, after the introduction of unilateral divorce.

not have influence household saving behavior.

On the contrary, coefficients β_2 and β_3 are equal to 17,535 and 15,199 real dollars (corresponding to 25% and 22% of average assets)and both are statistically significant at the 5 percent level, suggesting that the *additional effect* of unilateral divorce in equitable distribution and community property states is relevant. The average increase in household assets in community property states and equitable distribution states when unilateral divorce is introduced ($\beta_1 + \beta_2$ and $\beta_1 + \beta_3$) is equal to respectively 11,682 real dollars and 9,346 real dollars, about 16% and 13% of average wealth.

The effects of the transition from title-based regimes to equitable distribution (β_5) is equal to -14,687 real dollars but is generally not statistically significant.

The results of the estimation in the first four specifications in Table 4 are fairly similar.

The distribution of wealth is very skewed: the 25th percentile is equal to 4,025 real 1990 real dollars, the median to 32,658 real dollars and the 75th percentile to 79,891 real dollars. I replicate the analysis using quantile regressions that are robust to the skewness in the distribution of the dependent variable and allows to understand the behavior of households at various quantiles. The median regression (Table 5) confirms my earlier findings on the effect of unilateral divorce. Regressions for the 25th and for the 75th percentile show similar patterns, with the effect being stronger among the third quartile in absolute terms, but among the first quartile as a share of the level of assets at that quartile.

The finding that community property and equitable distribution encourage household savings with unilateral divorce may be interpreted in multiple ways within the context of the model. Depending on the average level of women's bargaining power in U.S. households at the time of divorce law reforms, two are the candidate explanations., which depend on the distribution of power within the household. If women (secondary earners) had low weight in household decision, equitable distribution and community property were favoring them in a divorce with respect to the marriage allocation. Then, the increase in asset accumulation is due to the presence of an income effect for the primary earner (i.e. the husband) in the household. The second, less plausible interpretation is that equal division of assets grants less money to the secondary earner if she has just as much bargaining power as the primary earner. Thus, the household increases asset accumulation to insure that the secondary earner can smooth the marginal utility of her consumption.

To interpret this finding, thus, we first have to know the distribution of power inside the household. In section 7 I will thus directly estimate the bargaining weight of men, exploiting the results of this section and those of the response of female labor supply to divorce law reforms.

Table 4: **Household assets: household fixed effects regressions**

	(1)	(2)	(3)	(4)	(5)
VARIABLES	assets	assets	assets	assets	assets
Unilateral (β_1)	-5853	-6375	-4310	-5556	-5959
	(6788)	(6996)	(6987)	(6839)	(6737)
Uni*Com.Pr. (β_2)	17535**	17192**	21303**	17458*	18118**
	(8556)	(8398)	(8368)	(8678)	(8612)
Uni*Eq.Distr. (β_3)	15199**	16149**	17240**	14278*	14573*
	(7474)	(7115)	(6445)	(8014)	(7927)
Com.Pr. (β_4)	14387	15854	-20113	-30743	13944
	(14699)	(14561)	(13850)	(30922)	(14520)
Eq.Distr. (β_5)	-14687	-15777*	-17316	-14083	-13898
	(8876)	(8794)	(10709)	(9226)	(9166)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Wife age dummies	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No
Polyn husband age	No	Yes	No	No	No
Children dummies	Yes	Yes	Yes	No	No
Polyn years since marriage	No	No	Yes	No	No
Observations	15399	14896	12022	15399	15399
Individual fixed effects	4538	4363	3516	4538	4538
Standard errors in parentheses, clustered at the state level *** p<0.01, ** p<0.05, * p<0.1					

Note: Data from the NLS of Young and Mature Women. Sample of couples married before legal reforms. Dependent variable is real total family net assets. Excluded category for divorce laws: title-based mutual consent regime.

Table 5: **Household assets: quantile regressions and random-effect Tobit**

VARIABLES	(1) assets q(0.5)	(2) assets q(0.5)	(3) assets q(0.5)	(4) assets q(0.25)	(5) assets q(0.75)	(6) ln(assets) Tobit
Unilateral (β_1)	-9569***	-9406	-9021***	-2560***	-16565***	-0.055
	(1101)	(9848)	(2375)	(1070)	(3959)	(0.054)
Uni*Com.Pr. (β_2)	12889***	12172*	10382***	1702	27812***	0.072
	(1299)	(7576)	(3738)	(1291)	(6137)	(0.070)
Uni*Eq.Distr. (β_3)	13155***	12852	15480***	9476***	22000***	0.111*
	(2849)	(12636)	(5327)	(2678)	(7559)	(0.060)
Com.Pr. (β_4)	6614***	6643	6005**	6947 ***	-13815***	-0.000
	(2242)	(7512)	(3411)	(2223)	(4823)	(0.057)
Eq.Distr. (β_5)	6158	4548	2862	3507	3717	-0.082
	(17769)	(19001)	(40105)	(17899)	(44753)	(0.035)
Children dummies	Yes	Yes	Yes	No	No	Yes
Polyn hus. age	No	Yes	No	No	No	No
State regime fixed effects	Yes	Yes	Yes	Yes	Yes	No
Polyn t since marriage	No	No	Yes	No	No	No
Observations	15399	14896	12022	15399	15399	12730
Individual effects	No	No	No	No	No	3999
Standard errors in parentheses, block bootstrapped at the household level *** p<0.01, ** p<0.05, * p<0.1						

Note: Data from the NLS of Young and Mature Women. Sample of couples married before legal reforms. Dependent variable is real total family net assets. Excluded category for divorce laws: title-based mutual consent regime.

5.3.2 Female employment

As discussed in the theory section, female employment is another variable that is likely to be affected by divorce laws. To analyze the impact of legal regime on female labor suplly, I estimate the following equation using linear fixed effects probability models and random-effects logit regressions:

$$\begin{aligned} P(employment_{i,s,t}) = {} & \beta_1 Unilateral + \beta_2(Unilateral \cdot Com.Prop._{s,t}) \\ & + \beta_3(Unilateral \cdot Eq.Distr._{s,t}) + \beta_4 Com.Prop._{s,t} + \beta_5 Eq.Distr._{s,t} \\ & + \gamma' Z_{i,t} + \delta_t + f_i + s_s + \epsilon_{i,s,t} \end{aligned} \tag{13}$$

where *employment* is a variable that takes value 1 if the woman is employed and 0 otherwise. This equation is analogous to equation (12).

Estimation of equation (13) suggests that unilateral divorce generally has a slightly negative effect but statistically insignificant on female employment. However, in community property states women employment declines by 5.8 percentage points when unilateral divorce is introduced and the effect is statistically significant at the 1 percent level (Table 6). This finding is robust to controlling for the number of children in the household and for the time elapsed since marriage.

Table (13) also reports the results of estimating equation (13) using random-effects logit. This estimation method leads to similar results as OLS, but shows that unilateral divorce may have had a positive and statistically significant effect in lowering female employment also in equitable distribution states.

These results are supported by what is found in Chiappori *et al.* (2002), who estimate labor supply for a cross-section of couples in the PSID: in their sample, female labor supply is lower in community property states. Similarly, Kapan (2009) finds a decrease in women's labor supply in England and Wales following a 2000 House of Lords decision that entitled women to a higher share of household assets upon divorce.

The quasi-experiments that I use is, though, different since it also involves the introduction of unilateral divorce in community property or equitable distribution states, rather than the introduction of community property.

Gray (1998) and Stevenson (2007) came to different conclusions when analyzing similar quasi-experiments in the data. While Gray finds that unilateral divorce increases female participation in community property states, Stevenson finds that property division regimes do not affect female labor participation, which always increases with unilateral divorce. My approach in this section significantly differs from previous work on various dimensions. First of all, it only examines the effect on couples married *before* legal reforms, therefore

excluding any potential effect that divorce laws may have on household formation. Second, it uses a more updated classification of divorce law reforms: both samples in Gray (1998) and Stevenson (2007) contain 17 states that were title-based for the entire duration of the panel, while I include the transitions of all these states into equitable distribution regimes.

These findings suggest that unilateral divorce may have increased women's bargaining power in those states where courts were awarding them at least 50 percent of assets in divorce. This is compatible with the hypothesis that women's power was low enough that an equal division rule *improved* their condition, thus granting them with more bargaining power in the family by means of a better divorce outside option compared to the initial marriage allocation. Moreover, the additional assets awarded by courts reduced their need for accumulation of human capital as self-insurance against the risk of loss of consumption in the event of a divorce. The decrease in female labor supply with unilateral divorce in community property states will be an identifying moment of my structural estimation exercise.

Analysis of hours worked by men lead to results with opposite sign: men slightly increase their labor supply when unilateral divorce is introduced in community property states (Appendix B.2). This is additional evidence that supports the hypothesis that the introduction of unilateral divorce in community property states resulted in a transfer of bargaining power from husbands to wives.

Table 6: **Employment of married and divorced women: Linear Probability model (LP) and Random-effect Logit regressions (REL)**

VARIABLES	(1) employment LP	(2) employment LP	(3) employment LP	(4) employment LP	(5) employment REL	(6) employment REL	(7) employment REL	(8) employment REL
Unilateral (β_1)	-0.031	-0.026	-0.038	-0.031	-0.045	-0.033	-0.142	-0.075
	(0.033)	(0.034)	(0.038)	(0.034)	(0.118)	(0.129)	(0.145)	(0.117)
Uni*Com.Pr. (β_2)	-0.010	-0.003	-0.020	-0.008	-0.250	-0.134	-0.264	-0.199
	(0.036)	(0.037)	(0.041)	(0.037)	(0.159)	(0.178)	(0.180)	(0.158)
Uni*Eq.Dis. (β_3)	0.004	-0.012	-0.010	0.002	-0.098	-0.182	-0.121	-0.099
	(0.037)	(0.043)	(0.039)	(0.038)	(0.109)	(0.119)	(0.111)	(0.108)
Com.Pr. (β_4)	0.024	0.016	0.014	0.021	0.223	0.115	1.074	0.143
	(0.022)	(0.023)	(0.045)	(0.024)	(0.152)	(0.163)	(1.237)	(0.151)
Eq.Distr (β_5)	-0.004	-0.002	-0.004	-0.003	0.011	0.011	-0.000	0.003
	(0.016)	(0.018)	(0.015)	(0.016)	(0.052)	(0.056)	(0.052)	(0.051)
P-val $\beta_1 + \beta_2 = 0$	0.024**	0.096*	0.002***	0.035**	0.013**	0.216	0.002***	0.021**
P-val $\beta_1 + \beta_3 = 0$	0.309	0.189	0.262	0.272	0.108	0.025**	0.032**	0.047**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effect	No	No	Yes	No	No	No	Yes	No
Children dummies	Yes	Yes	No	No	Yes	Yes	No	No
Polyn t since marr	No	Yes	No	No	No	Yes	No	No
Observations	52223	42844	52223	52223	43503	36512	43503	43503
Individual effects	3858	2688	3858	3858	2587	2078	2587	2587
Standard errors in parentheses, clustered at the state level (1-4)								
*** p<0.01, ** p<0.05, * p<0.1								

Note: Data from the PSID. Sample of couples married before legal reforms and divorced or separated women. Dependent variable is female employment status. Excluded category for divorce laws: title-based mutual consent regime.

6 Robustness checks and additional evidence

6.1 Attrition in the asset data

The household assets equation is estimated on a sample of married couples. This may generate the concern that non-random attrition, due to different likelihood of divorce across divorce laws, may be driving the results. For instance, if in community property couples with fewer assets were more likely to get divorced and thus to fall out of the sample than in title-based regimes, the average level of asset would be higher in community property because of this selection mechanism. I use Inverse Probability Weighting (IPW, Wooldridge 2002) to account for differential non-random attrition of couples from the sample due to divorce. This method allows to re-weight the observations to counteract the effect of non-random attrition on the composition of the sample. I describe this procedure in detail in Appendix C. Re-estimating equation (12) with IPW leads to very similar results than without accounting for non-random attrition, suggesting that the composition of the sample of married people does not affect the regression results.

6.2 Effects over time and pre-existing trends

Assets accumulation decisions may take time to respond to legal changes. A lagged response may occur if these changes are not immediately salient to households. Moreover, asset level may take a few years to reach the new optimal level, as consumption smoothly adjusts to allow for more or less savings. Finally, assets response in the post-treatment period may be confounded with pre-existing trends in asset accumulation across states.

To analyze the dynamic effect of the introduction of unilateral divorce and separate it from pre-existing trends in different regimes, I add to equation (12) a separate linear time trend for all states that will eventually introduce unilateral divorce, by property division regime, and a time trend for the number of years since the introduction of unilateral divorce, again by property division regime. This allows to consistently estimate pre-existing time trends separately from treatment-specific time trends:

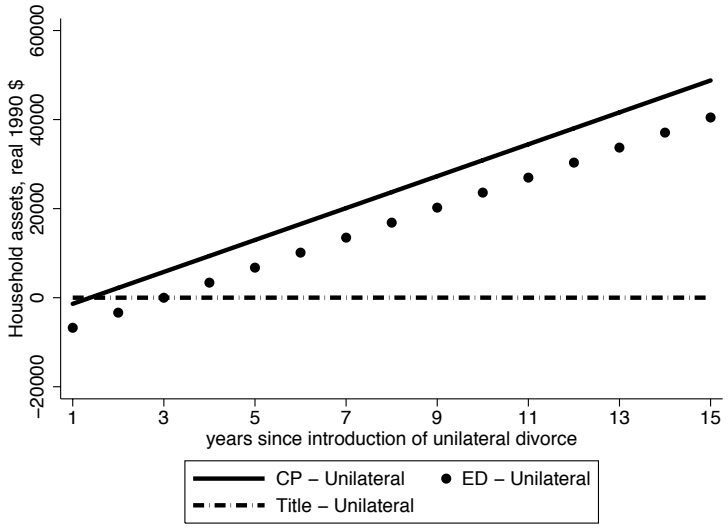
$$
\begin{aligned}
assets_{i,s,t} = {} & \beta_1 Unilateral_{s,t} + \beta_2(Uni \cdot Com.Prop_{s,t}) \\
& + \beta_3(Uni \cdot Eq.Distr._{s,t}) \\
& + \mu_1(Uni \cdot Time_{s,t}) + \mu_2(Uni \cdot Com.Prop \cdot Time_{s,t}) \\
& + \mu_3(Uni \cdot Eq.Distr. \cdot Time_{s,t}) \\
& + \zeta_1(Ever\,Uni \cdot Time_{s,t}) + \zeta_2(Ever\,Uni \cdot Com.Prop \cdot Time_{s,t}) \\
& + \zeta_3(Ever\,Uni \cdot Eq.Distr. \cdot Time_{s,t}) \\
& + \beta_4 Com.Prop._{s,t} + \beta_5 Eq.Distr._{s,t} \\
& + \gamma' Z_{i,t} + \delta_t + f_i + \epsilon_{i,s,t}.
\end{aligned} \tag{14}
$$

Equation (14) allows to separately estimate a pre-existing trend for states that will eventually introduce unilateral divorce, (ζ_1,ζ_2 and ζ_3, by property division regime) from the trend of states that have introduced unilateral divorce (μ_1,μ_2 and μ_3, by property division regime).

Figure (1) represents the trends of household assets since the introduction of unilateral divorce by property division regimes. Controlling for pre-existing trends still preserves the positive and statistically significant growth of assets in community property and equitable distribution states, while title-based regimes exhibit a much smaller positive trend, not statistically different from zero.[26]

[26]Coefficient for unilateral time trend in all states: -781 (p-value: 0.51). Coefficient for additional unilateral time trend in community property states: 3583 (p-value: 0.10). Coefficient for additional unilateral time trend in equitable distribution states: 3370 (p-value: 0.06). Coefficient for pre-existing time trend in all states who adopt unilateral divorce: 1100 (p-value: 0.24). Coefficient for pre-existing time trend in community property states: -440 (p-value: 0.83). Coefficient for pre-existing time trend in equitable distribution states: -1161 (p-value: 0.22). Coefficient for community property and unilateral divorce: -4176 (p-value: 0.32). Coefficient for equitable and unilateral divorce: -9328 (p-value: 0.52).

Figure 1: Dynamic effect of introduction of unilateral divorce, controlling for pre-existing time trends



Note: Data from NLSW. Sample of couples married before legal reforms. Dependent variable is real total family net assets. The figure plots $\beta_j + \mu_j \cdot t \quad$ *for* $j = 1, 2, 3$ *from equation (14).*

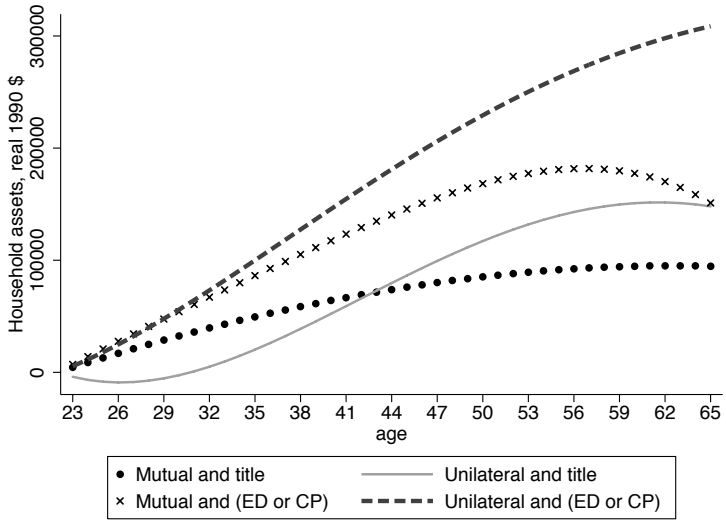
6.3 Effects over the life-cycle

Divorce laws also have an effect on the patterns of wealth accumulation over the life-cycle. Figure (2) represents the profiles of asset accumulation obtained by estimating the following equation for four combinations of divorce laws (title and mutual, title and unilateral, community property or equitable distribution and mutual, community property or equitable distribution and unilateral):

$$assets_{i,s,t} = f(age_{i,t}) + \delta_t + f_i + \epsilon_{i,t}.$$

where $f(\cdot)$ is a polynomial of fourth degree and imposes wealth at zero at age 22 (since the profiles are estimated starting at age 23), so that all profiles have no constant term (which is identified by the fixed effects). The figure suggests that households are likely to accumulate assets faster in unilateral divorce than in mutual consent divorce. They also accumulate more assets over the life cycle in community property or equitable distribution than in title-based regime.

Figure 2: Asset accumulation over the life cycle, by divorce law regime



Note: Data from NLSW. Sample of couples married before legal reforms. Dependent variable is real total family net assets.

7 Structural estimation

Divorce law reforms had two main effects on the outcomes analyzed in the last two sections section. The presence of both equitable distribution or community property *and* of unilateral divorce is associated with 16 percent higher assets and 6 percentage points lower female employment than with mutual consent divorce. The same changes are not observed when unilateral divorce was introduced in title-based states. These findings cannot be explained by changes in sorting in or out of marriage or by pre-existing trends.

To interpret these results and obtain welfare measures of their effects, I estimate some of the structural parameters of this model and obtain the others from the literature.

In the current version of this paper, I estimate the following parameters:

a) the bargaining power of the husband θ_0 before the introduction of unilateral divorce.

b) the variance of the shocks to the preference for marriage σ^2_ϵ

c) the disutility from labor market participation ψ

d) nine parameters from spouses' income processes: the variance of each spouse's permanent income shocks $\sigma^2_{\zeta^j}$ for $j = H, W$, the covariance of such shocks $\sigma_{\zeta^H \zeta^W}$, the returns to labor market experience for each spouses λ^j_0 and λ^j_1, the depreciation rate of

non-participation for women δ and the offer wage gender gap at the beginning of the career.

The income process parameters are estimated in a first stage, using moments of spouses' joint income distribution. I choose a set of exogenous parameters as described in Table (8) and use them to simulate the model and estimate parameters $\sigma_\epsilon^2, \psi, \theta_0$.

7.1 Estimation of spouses' income processes

I first estimate the income shocks parameters for the couple using spouses' income data from the PSID by non-linear least squares.[27] Identification of such parameters is described in detail in Appendix D. I estimated the income process parameters for men on the sample of all married men and the parameters for women only on a sample of working women, using divorce laws as excluded variables in the wage equation which allow to correct for the selection of women in the labor force.

I estimate the parameters using non-linear least squares and maximum likelihood (Table 7). Three facts are worth noticing from this exercise. First of all, the estimated offer wage gender gap at age 23 is 81% (that is, women earn on average 81% of men's income when they enter the labor market). Second, the rate of growth of income for men is faster than the rate of growth for women: about 9.7% per year (at the beginning of the career for men, but decreasing with age) and 6.5% for those women who always participate. Thus, the wage gap first grows and then shrinks over the life-cycle. However, the gap in the returns to experience shrinks over the life cycle. This could reflect the fact that women suffer a wage penalty when they have children (Miller, 2009) and generates a wage gender gap that initially increases over the life cycle and then decreases when the reproductive cycle ends. Third, according to these estimated variances, the income of men is more variable than the one of women. This results has a straightforward explanation, if one considers, among other factors, the different riskiness of sectors that are more likely to employ women (e.g. health and education) versus sectors with larger shares of men (e.g. construction, agriculture, finance) and the higher frequency of public sector jobs among women.

[27] See Low, Meghir and Pistaferri (2008) for estimation of men's income shocks parameters.

Table 7: **Parameters of the income process**

Parameter		Estimate	s.e.
W's returns to experience (constant)	λ_0^W	0.065	(0.045)
W's returns to experience (age)	λ_1^W	-0.002	(0.0004)
W's human capital depreciation	δ	0.064	(0.021)
H's returns to experience (constant)	λ_0^H	0.097	(0.009)
H's returns to experience (age)	λ_1^H	-0.005	(0.0003)
Initial offer wage gender gap	$\frac{y_1^W}{y_1^H}$	0.805	(0.068)
Variance of W's income shock	$\sigma^2_{\zeta^W}$	0.023	(0.019)
Variance of H's income shock	$\sigma^2_{\zeta^H}$	0.067	(0.0171)
Covariance of H's and W's income shocks	$\sigma_{\zeta^H\zeta^W}$	0.006	(0.002)

Note: Standard errors for parameters λ_0^W, λ_1^W, λ_0^H and λ_1^H computed by maximum-likelihood. Standard errors for parameters $\sigma^2_{\zeta^H}$, $\sigma^2_{\zeta^W}$, $\sigma_{\zeta^H\zeta^W}$ and δ (are estimated in two-stages) computed by bootstrap to account for first-stage estimation errors.

7.2 Estimation method: indirect inference

I use indirect inference (Gourieroux *et al.* 1993) to estimate the key parameters of the model, exploiting the variation provided by the quasi-experiment as source of identification. Indirect inference estimates the structural parameters by means of an *auxiliary model*. The estimation of the auxiliary model will deliver a vector of auxiliary coefficients $\hat{\phi}$.

I solve the dynamic model under mutual consent divorce for vectors of possible values of structural parameters $\Xi = (\sigma_\epsilon^2 \ \psi \ \theta_0)'$, given initial values of the state variables and the realization of the shocks.

I draw the shocks $\{\epsilon^j_{i,t}, \zeta^j_{i,t}\}^{i=1,...I}_{t=1,...T-R}$ and obtain vectors of $\{\xi^j_{i,t}\}^{i=1,...I}_{t=1,...T-R}$ and $\{y^j_{i,t}\}^{i=1,...I}_{t=1,...T-R}$ for $I = 5,000$ households, for spouses $j = H, W$ and for $T - R = 14$ periods and use the policy functions to obtain simulated patterns for household assets, female labor participation and divorce decision before retirement.[28]

I then simulate the introduction of unilateral divorce at various stages of the life cycle that match the patterns observed in the data and simulate the post-reform behavior of household assets, female labor participation and divorce. The underlying assumption is that in the US people do not change state in response to or in anticipation of divorce law reforms. This appears especially plausible f one considers that most US states have long residency

[28]I focus on the pre-retirement period for two reasons. First, because my estimates in the previous section are based on a sample of non-retired people. Second, since attrition for death in my sample is higher past age 65 and I only have attrition for death in the data, but not in the model, excluding retired people minimizes the relevance of attrition.

requirements before

I estimate the same auxiliary model on the simulated data and obtain a vector of coefficients $\phi_{sim}(\Xi)$. The optimal choice of $\hat{\Xi}$ minimizes the difference between coefficients estimated on the actual data and coefficients estimated on the simulated data.

Thus, I pick $\hat{\Xi} = (\hat{\sigma_\epsilon^2} \quad \hat{\psi} \quad \hat{\theta})'$ such that:

$$\hat{\Xi} = Argmin_{\Xi}(\hat{\phi} - \phi_{sim}(\Xi))W^{-1}(\hat{\phi} - \phi_{sim}(\Xi))' \tag{15}$$

where W is a weighting matrix.

As auxiliary model, I use a differences-in-differences estimator for the introduction of unilateral divorce in states at different points in time. To ease the computational burden, I estimate the parameters on the sample in community property states, and use the other regimes for post-estimation validation.

The auxiliary parameters are $\{\phi_1, \phi_2, \phi_3, \phi_4\}$ from the model

$$assets_{i,s,t} = \delta_1 \cdot Unilateral_{s,t} + \gamma_{age,i,t} + \upsilon_{1it} \qquad \phi_1 = \frac{\delta_1}{\text{mean}(assets)} \tag{16}$$

$$female\ employment_{i,s,t} = \phi_2 \cdot Unilateral_{s,t} + \delta_{age,i,t} + \upsilon_{2it} \tag{17}$$

$$female\ employment_{i,s,t} = \phi_3 + \upsilon_{3ist} \qquad \text{in a mutual consent regime} \tag{18}$$

$$divorce_{i,s,t} = \phi_4 + \upsilon_{4ist} \qquad \text{in a mutual consent regime.} \tag{19}$$

Equations (16) and (17) are analogous to the reduced form equations (12) and (13) from section 5, restricted to the sample of community property states (thus $Title = 0$ and $Eq.Distr = 0$). They are meant to capture the response of household asset accumulation and of female employment to the introduction of unilateral divorce. As we will see, equations (18) and (19) provide a straightforward identification of the disutility of participation and the risk of divorce respectively.

The goal is to match the following facts between the actual and the simulated data for community property states:

a) the relative change in household assets when unilateral divorce is introduced (19%);

b) the response of female participation when unilateral divorce is introduced (5.5 percent-

age points);

c) the average female participation rate in mutual consent regimes of the pooled sample of women between 23 and 64 (51%);

d) the average divorce rate in mutual consent regimes of the pooled sample of couples where women are between 23 and 64 (21%).

by choosing the appropriate values of σ_ϵ^2, ψ and θ.

I estimate equations (16-19) on the simulated data. I also estimate the same equations on the PSID and NLSW data, controlling for state fixed-effects and year fixed-effects, and set the weighting matrix to be equal to the variance-covariance matrix of the estimated parameters of the auxiliary model: $W = Var[\hat{\phi}]$.[29]

7.3 Exogenous parameters

To ease the computational burden, I set each period to correspond to 3 years of life. Spouses have the same life cycle: they are 23 years old at time 1, they retire at 65 at time 15 and die with certainty at time 18, at age 79.

I calibrate the economies of scale parameter ρ to match the McClements scale, according to which a single spends 61 percent of a childless couples to achieve the same level of consumption. Such scale represents an intermediate value for the magnitude of economies of scale in the family estimated in the literature (Fernandez-Villaverde and Krueger 2007). This calibration leads to a parameter value of 1.4023.[30]

Parameters from the utility function and from spouses' income profiles are from Attanasio *et al.* (2008). The relative risk aversion γ is set to 1.5. I set the market rate of return on assets r to 0.03 and the discount factor β to 0.98, as in Mazzocco *et al.* (2007).

I use data from the National Longitudinal Survey of Young and Mature Women (described in section 4) to calibrate the number of children (two) and the age at childbearing (average age in the data is 26 and 29) and use CEX data for childcare expenditure following Attanasio *et al.* (2008).

[29] I obtain $Var[\hat{\phi}]$ using block bootstrap at the state level. Since ϕ_1 is estimated on a different sample that $\{\phi_2, \phi_3, \phi_4\}$, I set $Cov(\hat{\phi_1}, \hat{\phi_2}) = Cov(\hat{\phi_1}, \hat{\phi_3}) = Cov(\hat{\phi_1}, \hat{\phi_4}) = 0$.

[30] According to the McClements scale, $0.61z = 1c^j$. Under the assumption that spouses have identical bargaining power, $c^j = c^H = c^W$, the household inverse production function becomes $z = 2^{\frac{1}{\rho}} c^j$. Thus $\rho = \frac{log(2)}{log(\frac{1}{0.61})} = 1.4023$. I also consider robustness check with alternative values for the household economies of scale indicated in Fernandez-Villaverde and Krueger (2007).

Table 8: **Exogenous parameters of the model**

Parameter		Value	Reference
Initial age		23	
Years in each period		3	
Age at death	$23 + 3 \cdot T$	79	
Retirement age	$23 + 3 \cdot (T - R + 1)$	65	
Economies of scale	ρ	1.4023	McClements scale
Relative risk aversion	γ	1.5	Attanasio *et al.* (2008)
Market returns on assets	annual r	0.03	
Discount factor	annual β	0.98	Attanasio *et al.* (2008)
Retirement income		1992 Soc.Sec. rules	Casanova (2009)
W's age at childbearing		26 and 29	NLSW
Childcare costs	d^k		CEX

7.4 Identification

The choice of the auxiliary parameters allows a rather transparent identification of the structural parameters of my model, as I describe below. The parameters are identified by the combination of *all* structural parameters. However, for some parameters the theoretical link between structural model and auxiliary model is especially strong.

7.4.1 The utility cost of participation parameter ψ

The main role of the utility cost of participation (ψ) in the model is determining a woman's labor market participation decision. Namely, *ceteris paribus* a woman is more likely to participate in the labor market the lower her disutility from working. Thus, the average female employment rate is the parameters of the auxiliary model that provides identification for the structural parameter ψ (Figure 3 panel a). With the purpose of simplifying computation, I choose to estimate such average only on a sample of households living in mutual consent states.

7.4.2 The variance of the preference shock parameter σ_ϵ^2

Similarly, the variance of the preference shock parameter (σ_ϵ^2) influences the likelihood of divorce. For low values of σ_ϵ^2, divorce is an unlikely phenomenon, since few spouses would receive negative shocks ξ^j sufficiently high to counter-act the positive effect of marriage that derives from the economies of scale parameters. As σ_ϵ^2, the likelihood that a spouse would

prefer divorce increases. Therefore, identification of parameters σ_ϵ^2 comes from the average divorce rate in mutual consent states (Figure 3 panel b).

7.4.3 The bargaining weight parameter θ

The bargaining weight parameter θ is crucial in this model, since it determines spouses' sharing rule of resources inside marriage and thus their incentives work and to postpone consumption to the future by saving depending on the property division law and the grounds for divorce. Thus, the response of spouses' behavior to changes in such laws provides identification for the parameter θ_0. In particular, the estimated response of female labor participation to the introduction of unilateral divorce is decreasing in the bargaining power of men for values of θ_0 that are large, namely at least larger than 0.5. If the wife as large weight, the introduction of unilateral divorce in community property has little effect on the her labor supply, and such effect would be positive. On the contrary, for values of θ_0 sufficiently larger than 0.5 (i.e. when the husband has more decision power) the participation of women drops after the introduction of unilateral divorce. This is explained by a transfer of bargaining power from the husband to the wife driven by the introduction of unilateral divorce: re-bargain is driven by the divorce outside option, which favors women with respect to what she is getting in marriage. It thus follows than the estimated value of θ_0 will be larger than 0.5 to match an auxiliary parameter $\phi_2 = -5.5$ percentage points.

7.5 Estimation results

Table (9) represents the solution to problem (15). The parameters are chosen to minimize the objective function.

Table 9: Estimated parameters

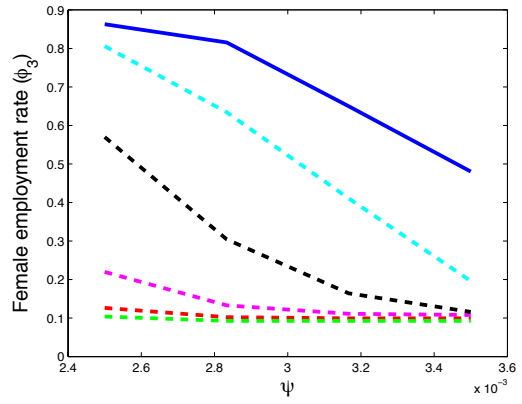
Parameter		Estimate
Variance of preference shocks	σ_ϵ^2	0.0914
Disutility from labor mkt participation	ψ	0.0033
Husbands' initial bargaining power	θ_0^H	0.75

Standard errors are calculated as suggested in Gourieux *et al.* (1993) by obtaining a numerical derivative of the binding fuction.[31]

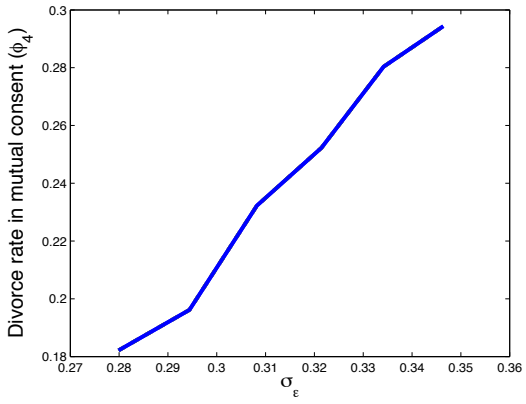
[31]Namely, I compute the variance-covariance matrix of as

$$\hat{Var}(\Xi) = \left(1 + \frac{1}{H}\right)\left[\frac{\partial\hat{\phi}}{\partial\Xi}(\hat{\Xi})\hat{W}\frac{\partial\hat{\phi}}{\partial\Xi}(\hat{\Xi})'\right]^{-1}$$

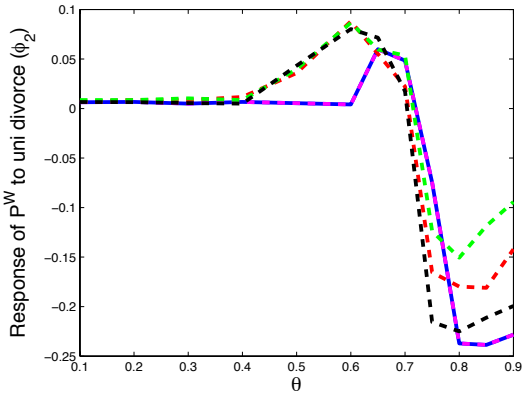
Figure 3: Identification of the parameters



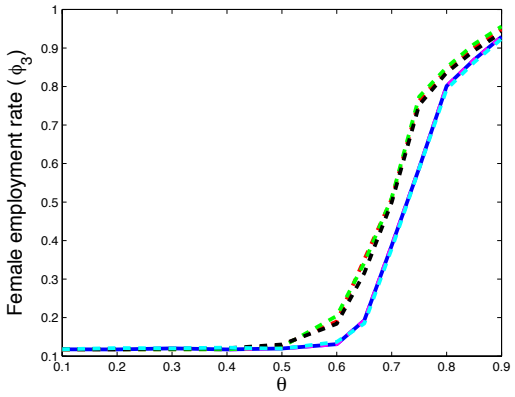
(a) Disutility from participation



(b) Stand. dev. of marriage preference shocks



(c) Husband's bargaining weight



(d) Husband's bargaining weight

Table 10: **Target and simulated moments**

Moment	Target	Simulated
Effect of uni. divorce on savings in CP	19%	25%
Effect of uni. divorce on participation in CP	-5.5 pcpt	-7.4 pcpt
Baseline participation rate in CP	51%	59%
Baseline divorce probability in CP	21%	22%

The structural estimation exercise indicates that, when unilateral divorce was introduced in the sample, women lower weight in household decision was a third of their husband's weight.

where $\hat{\Xi} = [\hat{\theta}, \hat{\sigma_\epsilon^2}, \hat{\psi}]'$

7.6 Welfare analysis

Having estimated the structural model, I can now analyze household welfare and behavior in various economics and legal scenarios. I use the parameters estimated in the previous section to compare the effect of community property and equitable distribution on the resources awarded to women in divorce with respect to a title-based regime. This exercise suggests that common property is beneficial to women in divorce, compared to title-based division: with $\theta_0 = 0.75$, women in divorce obtain about 70 percent more assets in community property than in a title-based regime. On the contrary, men receive an average of 18 percent less assets in a divorce in community property than in a title-based regime.

The introduction of unilateral divorce *increased* the bargaining power of married women by 4.8 percentage points in community property states, which corresponds to an increase in consumption of 4 percent. While this change may appear low, it is substantial for those households that did re-bargain, which were only those where one spouse was indifferent between marriage and divorce.

Previous findings on unilateral divorce support this result, suggesting that unilateral divorce lead to a decrease in domestic violence against women (Stevenson and Wolfers, 2006), which could have been related to an increase in their bargaining power. Other studies are often unable to separately identify whether the effect of unilateral divorce was due to a change in the behavior of married couples or to a compositional effect, such as a higher likelihood of divorce among couples where women were the subject of domestic violence or were in an unfavorable position. My model allows to separately identify these channels, since both selection and re-bargain are modeled, and to show that sorting into divorce is not the only driver of changes in household behavior.

This increase in the bargaining power of women is driven by the fact that in community property and equitable distribution women with initial low bargaining power are awarded more resources that what they consume in marriage, and this contributes to making the divorce option more attractive to them, and thus a valid outside option to marriage.

7.7 Counterfactual simulation

The welfare analysis exercise in the previous subsection suggests that, when women have a low bargaining power, equal division of assets benefits them in a divorce, because it grants them more assets. Furthermore, if unilateral divorce is in place, women can exercise the threat of divorce with the additional assets they would obtain with community property to increase their bargaining power and consume a larger share of household resources during the marriage.

The results of the structural estimation suggest that, when unilateral divorce was intro-

duced in the community property states in the 1970s, the initial bargaining power of women was very low. This leads us to conclude that community property or equitable distribution and unilateral divorce were making women better off when unilateral divorce was introduced.

However, not all women may have such a low bargaining weight in marriage. In particular, it may be argued that new cohorts of women married after these reforms may have higher bargaining power in their households, for example because of faster growth of women wages in the 1980s and 1990s, both in terms of gender wage gap (Machado 2009) and improvements in women education and "attachment" to their profession (Goldin 2006). For instance, a study where the bargaining weight in marriage is the allocation that equates the gains from marriage of husband and wife finds that $\theta = 0.66$ in 1970. Accounting for the raise in women wages in the subsequent decades, it finds that $\theta = 0.59$ for the 1990s (Knowles 2007).

In this section, I analyze the welfare effects of removing the default of community property in favor of a different sharing rule α (share of household assets attributed to the husband in a divorce) that is not necessarily equal to $\frac{1}{2}$ and title-based regime where spouses have individual property rights over household resources. The choice of divorce settlement depends on the distribution of power in the household at the time of marriage. I also relax the assumption that the offer wage of men and women at age 23 differs, but still let women experience a wage gap with respect to men during their career, as a consequence, for instance, of a motherhood wage penalty (Miller 2009).

I also quantify the welfare gains of eliminating uncertainty on the distribution of assets, thus of transitioning from equitable distribution to community property.

7.8 Optimal division rule α

In this section, I analyze the welfare implications of choosing alternative values of the division rule α other than $\frac{1}{2}$ imposed by current community property laws. In particular, I here ask what is the value of α that a household would choose at marriage given the initial distribution of power θ_0. I solve the problem of the couple in unilateral divorce (since it's the most common regime in the United States) for a discrete vector of values of α and values of θ_0. I then find the division rule α^* that the household would choose given the initial distribution of power θ at different stages of the marriage. We could see α^* at time 1 as the sharing rule that spouses would choose if they could write a prenuptial agreement *without* transaction costs, nor stigma, and with certainty about its enforcement. Such division rule solves

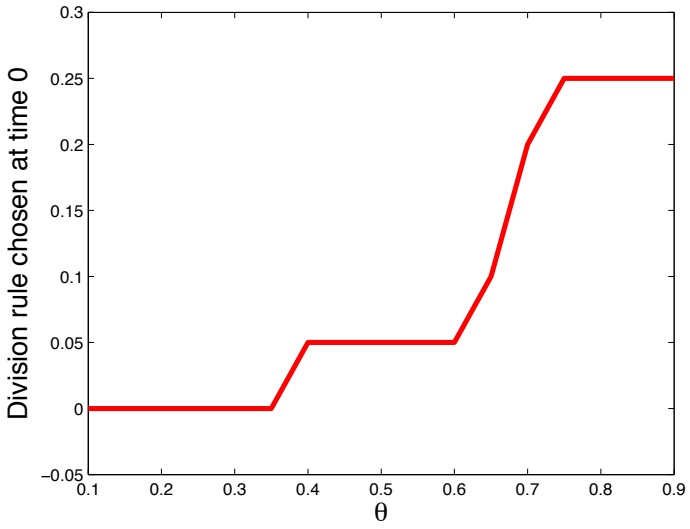
$$Argmax_\alpha \quad \theta_0 U_1^{HM}(\alpha, \theta_0) + (1 - \theta_0) U_1^{WM}(\alpha, \theta_0)$$

for a household that gets married at time 1.

I compute the welfare gains from being able to choose α different from $\frac{1}{2}$ as a share of additional consumption that a spouse receives from time 1 to time T:

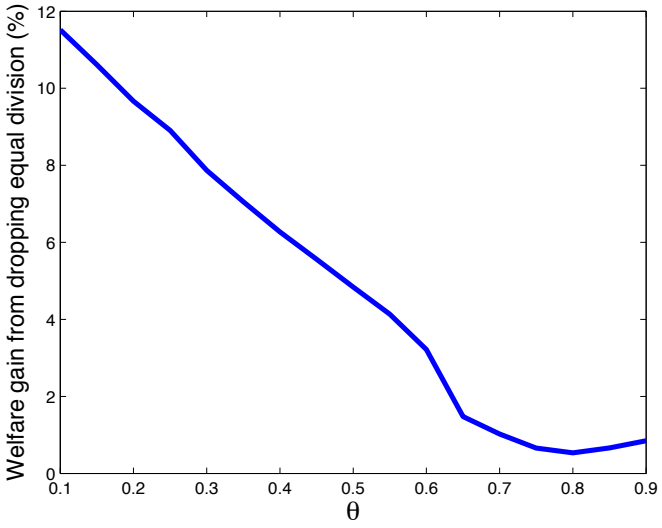
$$\sum_{t=1}^{T} \beta^{t-1} u^j(x \cdot c) - \sum_{t=1}^{T} \beta^{t-1} u^j(c) = \theta[U^H(\alpha^*) - U^H(\alpha = \frac{1}{2})] + (1-\theta)[U^W(\alpha^*) - U^W(\alpha = \frac{1}{2})].$$

Figure 4: Chosen α^* given initial θ



Note: Property division rule chose by the household at time of marriage 0. For values of θ that are less or equal to 0.4, the household would prefer to award all of family resources to the non-working wife.

Figure 5: Welfare gains from choosing α at the time of marriage



Note: Welfare gain from picking α^* instead of $\alpha = \frac{1}{2}$ expressed as percentage of additional consumption. In a household where husband and wife have the same weight ($\theta = 0.5$), the welfare gain for the *household* of choosing the optimal sharing rule (which in this case gives all household resources to the wife) with respect to the community property case of $\alpha = 0.5$ is equivalent to 5% of additional consumption.

Figure (4) describes the relationship between the bargaining power of the husband and optimal property division rule for a grid of values of α. Note that in a household where men and women are equally weighted in household decision ($\theta_0 = \frac{1}{2}$), intra-household bargaining would lead to choosing a division rule that is *different* from $\frac{1}{2}$ and substantially favors the wife. In a household where husband and wife have the same weight ($\theta = 0.5$), the welfare gain for the *household* of choosing the optimal sharing rule (which in this case gives all household resources to the wife) with respect to the community property case of $\alpha = 0.5$ is equivalent to 5% of additional consumption.

This exercise highlights again that women are favored by equal division of assets only when they have little bargaining ability in their household. Women who are as empowered as their husband, but decide to have children and thus suffer a wage gap with respect to their husband, may be better able to self-insure the marginal utility of their consumption by signing prenuptial agreements or by an individual property rights system (see the next section), which is widespread in several European countries such as Italy, France and Switzerland.

7.9 Uncertainty in the division of assets

An implication of the presence of uncertainty in the division of assets is that it negatively affects the welfare of risk-averse households. I quantify such welfare loss by comparing the

community property regime to an equitable distribution regime where spouses are uncertain about the division of assets, but expect that it would be divided equally. In this example, α^{ED} is uniformly distributed on the interval $[\frac{1}{2}, \frac{2}{3}]$.

I compute the welfare gains that households derive from an elimination of uncertainty in a household where $\theta_0 = 0.5$ at the time of marriage:

$$\sum_{t=1}^{T} \beta^{t-1} u^j(x \cdot c) - \sum_{t=1}^{T} \beta^{t-1} u^j(c) = U_1(CP) - U_1(ED) \qquad for \;\; \tau = 1, ...T - R.$$

where $U_1(CP)$ and $U_1(ED)$ are computed for various realization of the preference shocks and at the expected value of the income realizations.

The gains from eliminating uncertainty are small compared to those deriving from the choice of α, but sizable. Assuming that at the time of marriage couples have no assets, eliminating uncertainty in the division of assets is equivalent to giving couples up to 2% additional consumption every year, depending on the initial realization of the preference shock: for couples that have relatively high risk of divorce (about 70%) the benefit of certainty in the division of assets is higher (1.89% additional consumption), while for those with very positive initial realization of the ξs, the difference between $U(ED)$ and $U(CP)$ tends to zero. The benefits of eliminating uncertainty slowly increase in the wealth of the couple. For instance, if at the time of marriage a couple owns 100,000 dollars, the benefits of eliminating uncertainty for high-risk couples increases up to 1.91%.

These quantitative results depend on spouses' perceptions about the distribution of α^{ED}. The uniform distribution for α^{ED} assumption represents a high degree of uncertainty, while households' expectations that place higher probability on realizations around $\alpha = \frac{1}{2}$ would lead to even smaller welfare gains form community property.

8 Conclusion

In this paper, I show that spouses' individual property rights have a large effect on couples' intertemporal behavior during marriage: divorce laws that govern the decision to divorce and the division of property influence both the accumulation of assets of couples and the labor supply of married women. I use data from the NLSW and the PSID to estimate household responses to divorce law reforms in the 1970s and 1980s. My regression results suggest that equal division of assets are associated with over 20 percent more assets accumulated compared to title based regimes. Moreover, when unilateral divorce and equitable distribution were introduced in the United States, savings increased by 17 to 19 percent, while no effect was observed in those states where the title of ownership was the only asset

distribution criterion in a divorce settlement. Finally, the labor force participation of women increased by over 5 percentage points, while the labor supply of men experienced an increase of about 4 percent.

To interpret these findings and undertake welfare analysis, I build a stochastic dynamic model that incorporates features of the U.S. divorce system. This model allows to quantify the welfare implications of divorce law reforms and to understand the mechanisms that drive the behavior that I illustrated above. In the model, spouses are uncertain about their future preferences for remaining married and make collective choices about consumption allocation, wealth accumulation, female labor supply and divorce. I use the responses estimated in the data to estimate the household bargaining parameter at the time of divorce law reforms, using indirect inference. The structural estimation suggests that women had a low weight in the household decision function when these reforms took place, but that their weight increased due to the introduction of unilateral divorce and the possibility of re-bargaining on divorce threat-points, when assets are divided equally in divorce. Then, the increase in the accumulation of assets is consistent with the presence of an income effect for men, who increase wealth accumulation to self-insure against the loss of half of their assets to their less-empowered wives in case of divorce. The fall in female employment is driven by the increased assets awarded to them in divorce and the additional bargaining power in marriage that this generates.

My counterfactual exercise suggests that equal division of assets only benefits women who have little bargaining power in their couple, such as women in my sample, who married before the divorce law reforms of the 1970s and 1980s. As women gain equality in their marriage, well-defined property rights in marriage would be beneficial both for them, i.e. it would allow women to better insure against a loss of consumption in divorce, and would also improve the welfare of the household.

Appendix

A. Divorce laws and divorce probability

A large body of work has examined whether the introduction of unilateral divorce has affected the divorce rate in the United States (recently, Friedberg 1998 and Wolfers 2007). The exercise proposed here is substantially different, as I only focus on those households that were already married at the time of the reform.

I estimate the linear probability model:

$$divorce_{i,t} = a \cdot Unilateral_{s,t} + \gamma' Z_{i,t} + \delta_t + f_i + \epsilon_{i,t} \tag{20}$$

where $Z_{i,t}$ is a vector of control variables, f_i represent individual fixed effects and δ_t year fixed effects. Control variable are spouses' age dummies, years since marriage and number of children.

I estimate equation (20) on both the PSID and the NLSW sample. The regression results suggest that a positive and statistically significant effect is identified among these households (Table 11), while there is no difference in the effect of this reform between different property division rules. The point estimates are surprisingly large (suggesting an increase in the risk of divorce between 30 percent and 100 percent), but very imprecise. The small number of divorces observed in these datasets makes the identification of a precise effect difficult. However, these findings seem to support the hypothesis that unilateral divorce may have raised the likelihood of divorce for the sample that I analyze in this paper.

Table 11: **Probability of divorce for couples married before the reforms: Linear Probability model**

VARIABLES	(1) PSID divorce	(2) PSID divorce	(3) PSID divorce	(4) PSID divorce	(5) NLSW divorce	(6) NLSW divorce	(7) NLSW divorce	(8) NLSW divorce
Unilateral	0.004*	0.004*	0.002	0.006	0.010**	0.010**	0.011***	0.010***
	(0.002)	(0.0024)	(0.001)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)
Children		-0.005***				-0.006***		
		(0.001)				(0.001)		
Uni*Eq.Distr.				-0.004				-0.008
				(0.004)				(0.004)
Uni*Com.Prop.				0.005				0.006
				(0.006)				(0.005)
Eq.Distr.				0.001				-0.001
				(0.001)				(0.004)
Com.Prop.				-0.010**				0.049
				(0.004)				(0.043)
Polyn years since marriage	No	No	Yes	No	No	No	Yes	No
Wifes' age dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53,699	53,699	48,685	53,699	46,684	46,684	36,425	46,684
Household f.e.	4,691	4,691	3,933	4,691	5,131	5,131	4,089	5,131

Standard errors in parentheses, clustered at the state level
*** p<0.01, ** p<0.05, * p<0.1

Note: Data from the NLS of Young and Mature Women and the PSID. Sample of couples married before legal reforms. Dependent variable is divorce status conditional on being married in the previous period.

B. Additional evidence on household behavior

B.1 Analysis of men's hours of work

While my model does not consider the labor supply of men, a shift in household bargaining parameters in favor of women may lead to additional male labor supply (Chiappori *et al.* 2002). I test this prediction by examining the labor supply of men in the PSID. I regress

$$\begin{aligned} hours\,worked_{i,t} = a_1(Uni \cdot Title_{s,t}) + a_2(Uni \cdot Com.Prop_{s,t}) + a_3(Uni \cdot Eq.Distr_{s,t}) \\ + a_4 Com.Prop_{s,t} + a_5 Eq.Distr_{s,t} + \gamma' Z_{i,t} + \delta_t + f_i + \epsilon_{i,t}. \end{aligned}$$

The results suggest that in community property states, when unilateral divorce is introduced, the labor supply of men increase by 90 hours per year (Table 12, column 1). The average number of hours workd by a man in a year in this sample is 2,027 and the increase with unilateral divorce and comminity property is thus of approximately 4 percent.

Table 12: **Hours worked by men: household fixed effects regressions**

VARIABLES	(1) work hours	(2) work hours	(3) work hours
Uni*Title	-41.12	-14.31	-41.22
	(41.99)	(55.71)	(66.73)
Uni*Com.Prop.	90.50**	73.83	89.27**
	(37.57)	(59.83)	(35.38)
Uni*Eq.Distr.	-1.60	26.39	-2.43
	(28.85)	(32.99)	(30.17)
Com.Prop.	-66.40	-49.93	-65.31
	(59.24)	(257.6)	(58.01)
Eq.Distr.	-5.761	0.417	-5.546
	(20.61)	(23.71)	(22.78)
Children			9.342*
			(4.839)
Wife's age dummies	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
State f.e.	No	Yes	No
Observations	9,965	9,965	9,965
Number of id	2,934	2,934	2,934
Standard errors in parentheses, clustered at the state level *** p<0.01, ** p<0.05, * p<0.1			

Note: Data from the PSID. Sample of couples married before legal reforms. Dependent variable is annual hours worked by married, divorced or separated men. Excluded category for divorce laws: title-based mutual consent regime.

C. Inverse Probability Weighting

Inverse Probability Weighting allows to re-weight observations to account for non-random attrition. In this case, the exclusion restriction for this method requires that attrition does not depend on the regressors of equation (4), that will be called x, conditional on a vector of variables u, which may contain lagged values of x:

$$P(attrition_{i,t} = 0|assets_{i,t}, x_{i,t}, u_{i,t}) = P(attrition_{i,t} = 0|u_{i,t})$$

where $x_{i,t}$ represents the right hand side variable in the *asset* regression and the vector $u_{i,t}$ can contain lagged values of *assets* and of x. That is, variables from time t do not provide additional information about the likelihood of attrition once conditioned on variables at time

$t-1, t-2, \ldots 1$.

Under this assumption, equation (12) can be consistently estimated in the presence of non-random attrition.

First, I construct the weights:

$$w_{i,t}(u) = \frac{1}{P(attrition_{i,t} = 0|u)} = \frac{1}{\prod_{\tau=2}^{t} P_\tau(attrition_{i\tau} = 0|u, attrition_{i,\tau-1} = 0)}$$

where u are household characteristics at time $t-1$ (assets, income, age) that influence the fact that the couple would be divorce at time t.

I then estimate equation (12) by weighted least squares (WLS).[32]

D. Identification of spouses' income process parameters

D.1 Men's income process

Parameters λ_0^H and λ_1^H that represent men's income gains from experience are estimated on the PSID income dataset under the assumption that all men participate and that there is no selection bias in this sample:

$$\Delta ln(y_t^H) = \lambda_0^H + \lambda_1^H \cdot t + \Delta u_t$$

Define unexplained growth of log-earnings as (Blundell *et al* 2008):

$$\Delta u_t^j = z_{t-1}^j + \zeta_t^j - z_{t-1}^j + \epsilon_t^j - \epsilon_{t-1}^j = \zeta_t^j + \epsilon_t^j - \epsilon_{t-1}^j \tag{21}$$

for j=H,W.

The variance of the husband's permanent income shocks is identified by the moment

$$E[\Delta u_t^H(\Delta u_t^H + \Delta u_{t-1}^H + \Delta u_{t+1}^H)] = \sigma_\zeta^{2H}.$$

[32] WLS minimizes

$$\min_{\alpha,\gamma,f.e.} \sum_{i=1}^{N}\sum_{t=1}^{T} \mathbf{1}\{attrition_{i,t} = 0\} w_{i,t}(u)(assets_{i,t} - \alpha_1 Unilateral_{s,t} - \alpha_2(Unilateral \cdot Com.Prop_{s,t})$$
$$- \alpha_3(Unilateral \cdot Eq.Distr_{s,t}) - \alpha_4 Com.Prop._{s,t} - \alpha_5 Eq.Distr._{s,t} + \gamma' Z_{i,t} + \delta_t + f_i)^2$$

D.2 Women's income process and of spouses' income correlation

Identification of the income process parameters for women requires controlling for the selection of women into employment. In fact, while in the model all men participate in the labor market, we cannot observe earnings for those women who don't work. Assume that a wife participates in the labor market (P_t^W) if

$$Z_t^{'}\delta + M_t^{\prime}\gamma + \eta_t > 0$$

where M_t are exogenous variables excluded from the earnings equation (divorce laws) and Z_t are variables in the earning equations (in this model age and past employment).

Assume that the income shocks of husbands and wives are correlated. Then, income shocks and participation shocks in each period are distributed as a multivariate normal which is uncorrelated across periods of time:

$$\begin{pmatrix} \zeta_t^H \\ \zeta_t^W \\ \eta_t \end{pmatrix} is\, distributed\, MVN \left(\mathbf{0}, \begin{pmatrix} \sigma^2_{\zeta^H} & & \\ \sigma_{\zeta^H\zeta^W} & \sigma^2_{\zeta^W} & \\ \sigma_{\zeta^H\eta} & \sigma_{\zeta^W\eta} & 1 \end{pmatrix} \right)$$

Define $\alpha_t = -Z_t^{'}\delta - M_t^{\prime}\gamma$. Identifying the wife's income process parameters requires a two-stage procedure. In the first stage, we estimate the probability of female participation in the labor market as

$$P(P^W = 1) = P(\eta_t > -Z_t^{'}\delta - M_t^{\prime}\gamma) = P(\eta_t > \alpha_t)$$

using a probit. Then, since:

$$\begin{aligned} E[\Delta log\, y_t^W | P_t^W = 1, P_{t-1}^W = 1] &= \lambda_0^W + \lambda_1^W \cdot t + E(\Delta u_t^W | P_t^W = 1, P_{t-1}^W = 1) \\ &= \lambda_0^W + \lambda_1^W \cdot t + \sigma_{\Delta u\eta} \left[\frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)} + \frac{\phi(\alpha_{t-1})}{1 - \Phi(\alpha_{t-1})} \right] \end{aligned} \tag{22}$$

I estimate the inverse Mills ratio $\frac{\phi(\alpha_t)}{1-\Phi(\alpha_t)}$ from the entire sample of wives and then insert it in the earnings equation to obtain the correct residuals that account for the unobservables that influence both participation and earnings.

The parameters of the income process are the solutions to the system:

$$E[\Delta u_t^W | P_t^W = 1, P_{t-1}^W = 1] = E[\zeta_t^W | \eta_t > \alpha_t] = \sigma_{\zeta^W \eta} \frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)} \tag{23}$$

$$E[\Delta u_t^W (\Delta u_t^W + \Delta u_{t-1}^W + \Delta u_{t+1}^W) | P_t^W = 1, P_{t-1}^W = 1, P_{t+1}^W = 1, P_{t-2}^W = 1]$$
$$= E[\zeta_t^{2W} | \eta_t > \alpha_t] = \sigma_{\zeta^W}^2 + \sigma_{\zeta^W \eta}^2 \frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)} \alpha_t \tag{24}$$

$$E[\Delta u_t^H | P_t^W = 1, P_{t-1}^W = 1] = E[\zeta_t^H | \eta_t > \alpha_t] = \sigma_{\zeta^H \eta} \frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)}$$

$$E[\Delta u_t^W \Delta u_t^H | P_t^W = 1, P_{t-1}^W = 1] = E[\zeta_t^W \zeta_t^H | \eta_t > \alpha_t] \tag{25}$$
$$= \sigma_{\zeta^H \zeta^W} + \sigma_{\zeta^H \eta} \sigma_{\zeta^W \eta} \frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)} \alpha_t \tag{26}$$

Finally, the parameter δ is identified by:

$$\begin{aligned} &E[log\, y_t^W - log\, y_{t-2}^W | P_t^W = 1, P_{t-2}^W = 1] \\ &= \lambda_0^W + \lambda_1^W \cdot (t-1) + [\lambda_0^W + \lambda_1^W \cdot t] \cdot I(P_{t-1}^W = 1) + \delta \cdot I(P_{t-1}^W = 0) \\ &+ E(\Delta^2 u_t^W | P_t^W = 1, P_{t-2}^W = 1) \end{aligned} \tag{27}$$

where

$$\begin{aligned} &E(\Delta^2 u_t^W | P_t^W = 1, P_{t-2}^W = 1) \\ &= E(\Delta^2 u_t^W | \eta_t > \alpha_t, \eta_{t-2} > \alpha_{t-2}) = \sigma_{\Delta^2 u \eta} \left[\frac{\phi(\alpha_t)}{1 - \Phi(\alpha_t)} + \frac{\phi(\alpha_{t-2})}{1 - \Phi(\alpha_{t-2})} \right]. \end{aligned}$$

Identification of the depreciation parameter thus comes from the gap in earnings between a woman who worked without interruptions for three years and a woman who did not participate in the intermediate year. This equation accounts for the selection into work in periods t and $t-2$ but not for the endogeneity of the decision to not participate in period $t-1$. As robustness check, I verify that the estimates obtained for λ_0^W and λ_1^W from equation (27) are similar to those from (22). The endogeneity bias does not seem to significantly influence the estimates.

E. Appendix Tables

Table 13: **Divorce law reforms in the fifty states**

State	Unilateral divorce (Gruber 2004)	Equitable distribution (FLQ)
Alabama	1971	1984
Alaska	pre-1967	pre-1967
Arizona	1973	community property
Arkansas	no	1977
California	1970	community property
Colorado	1972	1972
Connecticut	1973	1973
Delaware	1968	pre-1967
District of Columbia	no	1977
Florida	1971	1980
Georgia	1973	1984
Hawaii	1972	pre-1967
Idaho	1971	community property
Illinois	no	1977
Indiana	1973	pre-1967
Iowa	1970	pre-1967
Kansas	1969	pre-1967
Kentucky	1972	1976
Louisiana	no	community property
Maine	1973	1972
Maryland	no	1978
Massachusetts	1975	1974
Michigan	1972	pre-1967
Minnesota	1974	pre-1967
Mississippi	no	1989
Missouri	no	1977
Montana	1973	1976
Nebraska	1972	1972

State	Unilateral divorce (Gruber 2004)	Equitable distribution (FLQ)
Nevada	1967	community property
New Hampshire	1971	1977
New Jersey	no	1974
New Mexico	pre-1967	community property
New York	no	1980
North Carolina	no	1981
North Dakota	1971	pre-1967
Ohio	1992	1981
Oklahoma	pre-1967	1975
Oregon	1971	1971
Pennsylvania	no	1980
Rhode Island	1975	1981
South Carolina	no	1985
South Dakota	1985	pre-1967
Tennessee	no	pre-1967
Texas	1970	community property
Utah	1987	pre-1967
Vermont	no	pre-1967
Virginia	no	1982
Washington	1973	community property
West Virginia	1984	1985
Wisconsin	1978	community property (1986)
Wyoming	1977	pre-1967

Note: Data from FLQ 1977-2005, Rasul (2004), Gruber (2004), Golden (1983), Davis (1983), Friedberg (1998), Stevenson (2007) and state-level sources.

Table 14: **Quasi-experimental variation in NLSW and PSID data**

Before	After	Mutual Consent			Unilateral		
		Title	Eq.Distr.	Com.Prop.	Title	Eq.Distr.	Com.Prop.
Mutual	Title	-	**NLSW: 1,149 hh, 2,658 obs. PSID: 1,701 hh, 15,383 obs.**		**NLSW: 398 hh, 814 obs. PSID: 290 hh, 1,710 obs.**	**NLSW: 233 hh, 651 obs. PSID: 178 hh 2,162 obs.**	
	Eq.Distr.		-			NLSW: 12 hh, 28 obs. PSID: 87 hh 628 obs.	
	Com.Pr.			-			**NLSW: 653 hh, 2,213 obs. PSID: 573 hh 7,004 obs.**
Unilateral	Title				-	**NLSW: 206 hh, 465 obs. PSID: 249 hh 2,146 obs.**	
	Eq.Distr					-	NLSW: 0 hh, 0 obs. PSID: 5 hh 19 obs.
	Com.Prop.						-

Note: Reform data from FLQ 1977-2005, Rasul (2004), Gruber (2004), Golden (1983), Davis (1983), Friedberg (1998), Stevenson (2007) and state-level sources. Household data from the PSID (1968-1993), the NLS of Young Women (1968-1999) and the NLS of Mature Women (1967-1999).

References

[1] Adda Jerome and Russell Cooper. 2003. "Dynamic economics: quantitative methods and applications". MIT Press, p.279

[2] Alesina Alberto, Paola Giuliano. 2004. "Divorce, fertility and the value of marriage". Unpublished manuscript

[3] Altonji Joseph and Rebecca Blank. 1999. "Race and gender in the labor market". *Handbook of Labor Economics*, Vol.3: 3143-3259

[4] Attanasio Orazio and Guglielmo Weber. 1995. "Is Consumption Growth Consistent with Intertemporal Optimization? Evidence from the Consumer Expenditure Survey," *Journal of Political Economy*, University of Chicago Press, vol. 103(6), pages 1121-57, December.

[5] Attanasio Orazio, Hamish Low and Virginia Sanchez-Marcos. 2008. "Explaining Changes in Female Labor Supply in a Life-Cycle Model." *American Economic Review*, vol. 98(4): 1517-1552

[6] Aura Saku. 2003. "Uncommitted Couples: Some Efficiency and Policy Implications of Marital Bargaining". Unpublished manuscript

[7] Becker Gary. 1993. "A Treatise on the Family". Harvard University Press, Cambridge, p.424

[8] Bernheim, B. Douglas. 2002. "Taxation and saving," *Handbook of Public Economics*, in: A. J. Auerbach and M. Feldstein (ed.), Handbook of Public Economics, Vol. 3(18):1173-1249 Elsevier.

[9] Bourguignon Francois, Martin Browning and Pierre-André Chiappori. 2009."Efficient Intra-Household Allocations and Distribution Factors: Implications and Identification", *Review of Economic Studies*. Vol. 76, no.2: 503-528.

[10] Brown Meta and Christopher Flinn. 2006. "Investment in Child Quality Over Marital States". Unpublished manuscript.

[11] Browning, Martin and Costas Meghir. 1991. "The Effects of Male and Female Labor Supply on Commodity Demands." *Econometrica*, vol. 59(4): 925-51

[12] Browning Martin. 1995. "Saving and the intra-household distribution of income: an empirical investigation", *Ricerche Economiche*, Elsevier, vol. 49(3)

[13] Browning, Martin. 2000. "The Saving Behaviour of a Two-Person Household", *Scandinavian Journal of Economics*, Blackwell Publishing, vol. 102(2)

[14] Buehler Cheryl.1995. "Divorce Law in the United States." *Marriage & Family Review*, Vol. 21(3/4): 99-120

[15] Casanova Maria. 2009. "Happly Together: A Structural Model of Couples' Joint Retirement Choices." Unpublished manuscript.

[16] Chiappori Pierre-André, Bernard Fortin and Guy Lacroix. 2002. "Marriage Market, Divorce Legislation, and Household Labor Supply". *Journal of Political Economy*, vol. 110, no. 1

[17] Chiappori Pierre-André, Murat Iyigun, Yoram Weiss, 2007, "Public Goods, Transferable Utility and Divorce Laws," IZA Discussion Papers 2646, Institute for the Study of Labor (IZA).

[18] Chiappori Pierre-André, Murat Iyigun, Yoram Weiss. 2008. "An Assignment Model with Divorce and Remarriage". Unpublished manuscript.

[19] Confessore Nicholas. 2010. "N.Y. Moves Closer to No-Fault Divorce". *The New York Times*m June 15th.

[20] Cubeddu Luis and Jose-Victor Rios-Rull, 1997, "Marital Risk and Capital Accumulation", Federal reserve Bank of Minneapolis paper

[21] Cubeddu Luis and Jose-Victor Rios-Rull, 2003. "Families As Shocks," *Journal of the European Economic Association*, MIT Press, vol. 1(2-3): 671-682,

[22] Davis Martha. 1983. "The Marital Home: Equal or Equitable distribution?", *The University of Chicago Law Review*, vol. 50(3):1089-1115

[23] Del Boca Daniela and Christopher Flinn. 1995. "Rationalizing Child-Support Decisions". *The American Economic Review*, Vol. 85, No. 5, December: 1241-1262

[24] Del Boca Daniela and Christopher Flinn. 2009. "Endogeneous Household Interaction". Unpublished manuscript.

[25] Dnes, Antony W. 1998. "The Division of Marital Assets Following Divorce." *Journal of Law and Society*, vol. 25(3): 336-364.

[26] "Family Law in the Fifty States: an Overview", *Family Law Quarterly*, Winter 1977-2005

[27] Friedberg Leora. 1998. "Did Unilateral Divorce Raise Divorce Rates? Evidence from Panel Data". *The American Economic Review*, Vol. 88(3): 608-627

[28] Golden Lawrence J. 1983. "Equitable distribution of property". Shepard's/McGraw-Hill: p.933

[29] Goldin Claudia. 2002. "The Rising (and then Declining) Significance of Gender". NBER Working Paper No. w8915 .

[30] Goldin Claudia. 2006. "The quiet revolution that tranformed women's employment, education, and family." *AEA Papers and Proceedings, Richard T. Ely Lecture*, 92(2):1-21.

[31] Gonzalez Libertad and Berkay Ozcan. 2008. "The Risk of Divorce and Household Saving Behavior". Unpublished manuscript.

[32] Gourieroux C., A. Monfort and E Renault. 1993. "Indirect Inference". *Journal of Applied Econometrics*, Vol. 8, Supplement: Special Issue on Econometric Inference Using Simulation Techniques: 85-118

[33] Gray Jeffrey. 1998. "Divorce-law Changes, Household Bargaining and Female Labor Supply". *The American Economic Review*, Vol. 88, No. 3, June: 628-642

[34] Greenwood Jeremy and Nezih Guner. 2009. "Marriage and Divorce since World War II: Analyzing the Role of Technological Progress on the Formation of Households," NBER Macroeconomics Annual 2008, v. 23, edited by Daron Acemoglu, Kenneth Rogoff and Michael Woodford (Chicago: University of Chicago Press): 231-276.

[35] Gruber Jonathan. 2004. "Is making divorce easier bad for children? The long-run implications of unilateral divorce". *Journal of Labor Economics*, UChicago Press , vol.22(4): 799-833

[36] Herman Robin. 1980. "Major changes in divorce laws voted in Albany". *The New York Times*: p. 1.

[37] Knowles John. 2007. "Why Are Married Men Working So Much?" *IZA Discussion Papers* 2909, Institute for the Study of Labor (IZA)

[38] Johnson William H. and Jonathan Skinner. 1986. "Labor Supply and Marital Separation." *American Economic Review*, 76(3): 455- 69.

[39] Kapan Tumer. 2009. "Property Division Laws: The Effects on Labor Supply and Household Bargaining", Columbia University mimeo.

[40] Klawitter Marieka and Diana Fletschner. 2006. "Banked or Unbanked? Individual and Family Access to Savings and Checking Accounts". Evans School of Public Affairs Working Paper.

[41] Jesus Fernandez-Villaverde and Dirk Krueger. 2007. "Consumption over the life cycle: facts from Consumer Expenditure Survey Data". *The Review of Economic and Statistics*, 89(3): 552-565

[42] Leland John. 2008. "Breaking Up Is Harder to Do After Housing Fall ". *The New York Times*. December 30th.

[43] Ligon Ethan, Jonathan P. Thomas and Tim Worrall. 2000. "Mutual Insurance, Individual Savings and Limited Commitment". *Review of Economic Dynamics*, vol. 3(2): 216-246

[44] Lundberg Shelly and Robert A. Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market." *The Journal of Political Economy*, Vol. 101(6): 988-1010

[45] Machado Cecilia. 2009. "Selection, Heterogeneity and Wage Gender Gap." Unpublished manuscript.

[46] Mahar Heather. 2003. "Why Are There So Few Prenuptial Agreements?". John M. Olin Center for Law, Economics and Business, Harvard University, Discussion Paper No. 436

[47] Mahle Lisa R. 2001. "A Purse of Her Own: the Case Against Joint Bank Accounts". *Texas Journal of Women and the Law*, vol 16(45): 45-102

[48] Marcassa Stefania. 2008. "Divorce Laws and Divorce Rate in the U.S". Unpublished manuscript.

[49] Marcet, Albert and Ramon Marimon. 1992. "Communication, commitment, and growth." *Journal of Economic Theory*, Vol.58: 219-249

[50] Mazzocco Maurizio. 2004. "Savings, Risk Sharing and Preferences for Risk". *American Economic Review*, Vol. 94(4)

[51] Mazzocco Maurizio. 2007. "Household Intertemporal Behaviour: A Collective Characterization and a Test of Commitment", *Review of Economic Studies*, Vol. 74, No. 3: 857-895

[52] Mazzocco Maurizio, Claudia Ruiz and Shintaro Yamaguchi. 2007. "Labor Supply, Wealth Dynamics, and Marriage Decisions". Unpublished manuscript.

[53] Melli, Marygold S. 1996. "Alimony Trends". *Family Advocate*, Vol.19(2): 2124.

[54] Miller Amalia. 2009. "The Effects of Motherhood Timing on Career Path". *Journal of Population Economics*, forthcoming.

[55] Motro, Shari. 2008. "Labor, Luck and Love: Reconsidering the Sanctity of Separate Property". *Northwestern University Law Review*, Vol.102(4)

[56] Olivetti Claudia. 2006. "Changes in Women's Hours of Work: The Role of Returns to Experience". *Review of Economics Dynamics*, vol.9(4): 557-587

[57] Powers Elizabeth. 1998. "Does means-testing welfare discourage saving? Evidence from a change in AFDC policy in the United States". *Journal of Public Economics*, vol.68: 33-53

[58] Rainer Helmut. 2007. "Should we write prenuptial contracts?." *European Economic Review* 51: 337-363

[59] Rasul Imran. 2003. "The Impact of Divorce Laws on Marriage." Unpublished manuscript.

[60] Stevenson Betsey and Justin Wolfers. 2006. "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress," *The Quarterly Journal of Economics*, MIT Press, vol. 121(1): 267-288

[61] Stevenson Betsey. 2007. "The Impact of Divorce Laws on Marriage-Specific Capital". *Journal of Labor Economics*, University of Chicago Press, vol. 25: 75-94

[62] Stevenson Betsey and Justin Wolfers. 2007. "Marriage and divorce: Changes and their driving forces." *Journal of Economic Perspectives*, vol.21(2): 27-52

[63] Stevenson Betsey. 2008. "Divorce Law and Womens Labor Supply". *Journal of Empirical Legal Studies*, forthcoming

[64] Judith Treas. 1993. "Money in the Bank: Transaction Costs and the Economic Organization of Marriage." *American Sociological Review*, vol. 58: 723-34

[65] Turner Brett R. 1998. "Rehabilitative Alimony Reconsidered: The 'Second Wave' of Spousal Support Reform," 10 Divorce Litigation 185

[66] Turner Brett R. 2005 *Equitable Distribution of Property.* West Group

[67] Wooldridge Jeffrey. 2002. "Econometric Analysis of Cross Section and Panel Data. The MIT Press

[68] Wolf Naomi. 2010. "Middle Class: Women on the Verge of Bankruptcy . *La Stampa*, January 8th. In Italian.

[69] Wolfers Justin. 2007. "Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results". *The American Economic Review*, vol. 96(5), December: 1802-1820

[70] Woodhouse Violet and Dale Fetherling. 2006. "Divorce & Money: How to Make the Best Financial Decisions During Divorce". Nolo: p.482