The impact of divorce laws on the equilibrium in the marriage market

ONLINE APPENDIX

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OA More evidence on the impact of unilateral divorce on assortative matching

I present evidence that complements the empirical analysis in section 2 of the paper.

OA.1 Divorce laws and sorting in other measures of human capital at the time of marriage

In this section I show that newlyweds in UD states match more assortatively in other measures of human capital at the time of marriage. In table OA.1 I consider sorting on premarital labor income and in table OA.2 I consider sorting on father's education. Both tables use data from all newlyweds in the PSID in their first marriage.

Premarital LaborIncome in table OA.1 captures the annual labor earnings of individuals in the year previous to the year of marriage. The main effect in columns (1) and (2) indicates that wives who marry a husband whose year-before-marriage annual income was a dollar higher earned 39 cents more the year previous to marriage relative to other wives. On top of this, the association between husbands' and wives' premarital labor income increase by 57% for newlyweds marrying in a UD state. These incremental effects are significant at the 1% level clustering standard errors at state level. Looking at the dynamic specification in column (2), the immediate effects of marrying in states that adopted UD up to two years previous are similar in magnitude and significance. These incremental effects increase over time, possibly reflecting changes in labor supply and career choice when UD is introduced. Specifications in columns (3) and (4) include a linear time trend and show a similar pattern. However, I interpret these specification with caution, because there is a significant positive trend from the years prior to adoption. With this caveat in mind, overall, these results are consistent with those found by Liu (2018).

Table OA.1: Unilateral divorce and assortativeness in premarital labor income for newlyweds (PSID data)

	Dependent variable: *Pre-marital Labor Income*^{w}			
	(1)	(2)	(3)	(4)
$\textit{Pre-marital Labor Income}^h \times UD$	0.2274***		0.1932***	
	(0.0370)		(0.0511)	
Newlyweds after UD introduced:				
$\textit{Premarital Labor Income}^h \times UD^{\{0\}}$		0.5112***		0.8878***
		(0.1106)		(0.1118)
$\textit{Premarital Labor Income}^h \times UD^{\{1,2\}}$		0.2027*		0.5626***
		(0.1094)		(0.1063)
$\textit{Premarital Labor Income}^h \times UD^{\{3,4\}}$		0.4146***		0.7531***
		(0.1177)		(0.1210)
$\textit{Premarital Labor Income}^h \times UD^{\{5,6\}}$		0.2793***		0.6731***
		(0.0921)		(0.0873)
$\textit{Premarital Labor Income}^h \times UD^{\{7,8\}}$		0.3613***		0.7020***
		(0.0973)		(0.0835)
$\textit{Premarital Labor Income}^h \times UD^{\{9,10\}}$		0.1698		0.5473***
		(0.1057)		(0.1035)
$\textit{Premarital Labor Income}^h \times UD^{\{>10\}}$		0.4919***		0.8471***
		(0.0672)		(0.0582)
Newlyweds before UD introduced:				
$\textit{Premarital Labor Income}^h \times UD^{\{-1,-2\}}$		0.1453		0.5161***
		(0.1153)		(0.1056)
$\textit{Premarital Labor Income}^h \times UD^{\{-3,-4\}}$		0.4169***		0.8427***
		(0.1532)		(0.1391)
$\textit{Premarital Labor Income}^h \times UD^{\{-5,-6\}}$		0.3384***		0.7211***
		(0.1135)		(0.1316)
$\textit{Premarital Labor Income}^h \times UD^{\{-7,-8\}}$		0.2282		0.6237***
		(0.1402)		(0.1528)
$\textit{Premarital Labor Income}^h \times UD^{\{-9,-10\}}$		0.1908		0.5909***
		(0.1192)		(0.1305)
$\textit{Premarital Labor Income}^h \times UD^{\{<-10\}}$		-0.0607		0.4185***
		(0.1192)		(0.1343)
Main effect	0.3990		0.4547	
Linear trend	No	No	Yes	Yes
Observations	2691	2691	2691	2691

Notes: The sample consists of all newlyweds (couples married within two years of the survey year) in their first marriage. PSID stands for *Panel Study of Income Dynamics*. *Pre-marital LaborIncome*^{w} and *Pre-marital LaborIncome*^{h} refer to the annual labor earnings of wife and husband, respectively, the year previous to the wedding. All specifications include year and state dummies. Standard errors clustered at the state level are in parentheses. ***Significant at the 0.01 level. *Significant at the 0.10 level.

FatherCollege in table OA.2 is a dummy variable that takes value one if the individual's father attended some college. Because parents of newlyweds in my sample are from a generation previous to the UD revolution, sorting on parental skills cannot be subject to dynamic adjustments; thus, I only show the overall effects. In columns (1) and (2) the baseline association in the education of spouses' fathers is constant, while in columns (3) and (4) I allow it to vary by state and year. The effects are only detected when the main effects are constant. On average, husbands whose father attended college are 5% more likely to marry a wife with a some-college-educated father. Getting married in a UD state more than doubles this probability, which evidences an increment in assortativeness in this dimension of human capital.

Table OA.2: Unilateral divorce and assortativeness in permanent ability for newlyweds

	Dependent variable: $FatherCollege^w$			
	(1)	(2)	(3)	(4)
$FatherCollege^h \times UD$ (γ)	0.1161**	0.1157**	0.1303	0.0996
	(0.0478)	(0.0472)	(0.1470)	(0.1542)
$FatherCollege^h$ (avg β_3, β_4)	0.0483	0.0472	-0.0044	0.18
$FatherCollege^h$ by g and t	No	No	Yes	Yes
Linear trend ($\beta_5(g) \times t$)	No	Yes	No	Yes
Observations	5032	5032	5032	5032

Notes: The sample consists of all newlyweds (couples married within two years of the survey year) in their first marriage. $FatherCollege^w$ and $FatherCollege^h$ are dummy variables that take value one if the husband's or wife's father (respectively) attended some college. All specifications use data from the PSID for the years $t = \{1968, ..., 1992\}$. In specifications (1) and (2) the main effect of $FatherCollege^h$ is constant across states and years, while in specifications (3) and (4) that main effect is allowed to vary by state and year. All specifications include year and state dummies. Standard errors clustered at state level are in parentheses. **Significant at the 0.05 level.

OA.2 Evidence from the Current Population Survey

Finally, I complement the main analysis from section 2 and appendix A of the paper by using data from the Current Population Survey for years 1965 to 1992. Table OA.3 shows the estimation of models (1) and (11) in the main paper on this alternative data. Because in the CPS data I cannot condition on first marriages, I show the results for all newlyweds in columns (1) to (4) and for young newlyweds, who are more likely to be in first marriages, in columns (5) to (8). The overall results are consistent with my findings in the PSID data for the sample of young newlyweds, but smaller and noisier for the sample of all newylyweds. For both samples, the dynamic effects by years since UD adoption are positive and significant over seven years into UD, so I cannot rule out that the effects are driven by adjustments in premarital education in response to UD.

Table OA.3: Unilateral divorce and assortativeness in education for newlyweds (CPS data)

	Dependent variable: Ed^w							
	All couples				Young couples			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Ed^h \times UD$	0.0325		0.0393		0.0581*		0.0651*	
	(0.0284)		(0.0280)		(0.0330)		(0.0328)	
Newlyweds after UD introduced:								
$Ed^h \times UD^{\{0\}}$		-0.0521		-0.0576		-0.0941		-0.1029
		(0.1369)		(0.1334)		(0.1524)		(0.1501)
$Ed^h \times UD^{\{1,2\}}$		0.0054		0.0018		-0.0239		-0.0323
		(0.0647)		(0.0642)		(0.0692)		(0.0691)
$Ed^h \times UD^{\{3,4\}}$		0.0519		0.0522		0.0242		0.0207
		(0.0426)		(0.0439)		(0.0374)		(0.0383)
$Ed^h \times UD^{\{5,6\}}$		0.0332		0.0347		0.0194		0.0169
		(0.0267)		(0.0266)		(0.0263)		(0.0265)
$Ed^h \times UD^{\{7,8\}}$		0.0664**		0.0658**		0.0639**		0.0598**
		(0.0277)		(0.0272)		(0.0262)		(0.0258)
$Ed^h \times UD^{\{9,10\}}$		0.1122***		0.1108***		0.1069***		0.1013***
		(0.0209)		(0.0210)		(0.0224)		(0.0225)
$Ed^h \times UD^{\{>10\}}$		0.0707***		0.0693***		0.0741***		0.0684***
		(0.0159)		(0.0160)		(0.0162)		(0.0163)
Newlyweds before UD introduced:								
$Ed^h \times UD^{\{-1,-2\}}$		0.0511		0.0472		0.0253		0.0172
		(0.0473)		(0.0472)		(0.0508)		(0.0512)
$Ed^h \times UD^{\{-3,-4\}}$		0.0148		0.0103		-0.0339		-0.0412
		(0.0309)		(0.0314)		(0.0350)		(0.0360)
$Ed^h \times UD^{\{-5,-6\}}$		0.0484		0.0441		0.0166		0.0086
		(0.0403)		(0.0410)		(0.0408)		(0.0421)
$Ed^h \times UD^{\{-7,-8\}}$		0.0307		0.0223		0.0076		-0.0070
		(0.0345)		(0.0347)		(0.0351)		(0.0353)
$Ed^h \times UD^{\{-9,-10\}}$		0.0712		0.0507		0.0643		0.0398
		(0.0620)		(0.0646)		(0.0755)		(0.0779)
$Ed^h \times UD^{\{<-10\}}$		-0.0294		-0.0342		-0.0605		-.0703*
		(0.0380)		(0.0374)		(0.0383)		(0.0392)
Ed^h	0.5835		0.5875		0.5918		0.6030	
Linear trend	No	No	Yes	Yes	No	No	Yes	Yes
Observations	23748	23748	23748	23748	22789	22789	22789	22789

Notes: The sample in columns (1) to (4) consists of all newlyweds (couples married within two years of the survey year) in their first marriage. The sample in columns (5) to (8) consists of *young couples*—newlywed couples in which the head is at most 40 years old. CPS stands for *Current Population Survey*—the data comes from the Annual Social and Economic and the June supplements of the CPS for the years $t = \{1965, 1967, 1977, ..., 1992\}$. Ed^w and Ed^h refer to years of completed education for wife and husband, respectively. All specifications include year and state dummies. Standard errors clustered at the state level are in parentheses. ***Significant at the 0.01 level. **Significant at the 0.05 level. *Significant at the 0.10 level.

OB Model Solution

In this section I outline the solution of the model under both divorce regimes: I characterize the individual values of every possible marital choice—singlehood (section OB.1) and marriage (section OB.2)—and describe the computation of the equilibrium matrix of Pareto weights and configuration of couples (section OB.3). For the interested reader, more details on the derivations of the value functions are in the subsequent section OC in this online appendix.

OB.1 The value of singlehood

By replacing the utility function in expression (4) in section 3.2 of the paper, I obtain the value of never marrying for s_f-women and s_m-men, respectively:

$$\overline{U}_{\mathcal{X}}^{s_f\emptyset} = E_0 \sum_{t=1}^{T} \delta^{t-1}\big(ln[\rho w_{ft}(\varepsilon_{ft})]\big) + \overline{\theta}^{s_f} \quad and \quad \overline{U}_{\mathcal{Y}}^{\emptyset s_m} = E_0 \sum_{t=1}^{T} \delta^{t-1}\big(ln[\rho w_{mt}(\varepsilon_{mt})]\big) + \overline{\theta}^{s_m}.$$

OB.2 The value of marrying under two divorce regimes

To derive the value of marriage from the perspective of period $t = 1$ I first compute the value of divorce and, second, the value of continuing to be married at any period t. These values depend on the divorce regime. Recall from section 3 of the paper that a vector of realizations of state variables is an element ω_t of the couple's state space at time t:

$$\omega_t = \{\lambda_t^{s_f s_m}, K_t, \varepsilon_{ft}, \varepsilon_{mt}, \theta_{(f,m)t}\} \in \Omega_t.$$

OB.2.1 The value of divorce

Let t^D denote the period in which a couple divorces (where $2 \leq t^D \leq T$).

Under **unilateral divorce**, spouses live in autarky (that is, they stop cooperating) from period t^D onward, sharing expenditures on the public good noncooperatively by playing a Stackelberg game. At any period $t \geq t^D$, the problem of the divorced woman is to choose how to allocate her income to private consumption and the public good for any given child support transfer τ:

$$\begin{aligned} v_{ft}^A = \max_{x_{ft},q_t} \quad & ln[c_{ft}q_t] + \delta E_t v_{ft+1}^A \\ s.t. \quad [BC_f^D]: \quad & x_{ft} + q_t = w_{ft} + \tau_t \\ & c_{ft} = \rho x_{ft} \\ & \tau_t \geq 0. \end{aligned} \tag{O.1}$$

First-order conditions imply that the ex-wife's optimal choice of expenditures on the public good and her private consumption, for any given transfer from the ex-husband, are

$$q_t(\tau_t) = \frac{w_{ft} + \tau_t}{2} = c_{ft}(\tau_t).$$

Let $q_t^*(\tau_t)$ be the ex-wife's choice of expenditure in the couple's public good based on the divorce transfer. In the autarky stage, the ex-husband anticipates the ex-wife's decision rule as a function of his transfer and chooses the transfer that maximizes his utility:

$$\begin{aligned} v_{mt}^A = \max_{x_{mt},\tau_t} \quad & ln[c_{mt}(q_t^*(\tau_t))^\gamma] + \delta E v_{mt+1}^A \\ s.t. \quad [BC_m^D]: \quad & x_{mt} = w_{mt} - \tau_t \\ & c_{mt} = \rho x_{mt} \\ & \tau_t \geq 0. \end{aligned} \tag{O.2}$$

This problem has either an interior or a corner solution:

$$\tau_t = \begin{cases} \dfrac{\gamma w_m - w_f}{1+\gamma} & \textit{if } \tau_t > 0 \\ 0 & \textit{otherwise.} \end{cases}$$

Let joint divorce resources at period t and state ω_t be denoted by $\mathcal{W}_t^D(\omega_t) = w_{ft}(\omega_t) + w_{mt}(\omega_t)$. By solving the divorcees' problem by backward induction from period T (as show in online appendix OC.1), I obtain the values of autarky at any period $\tilde{t} \geq t^D$—which are the values of divorce under UD—for the ex-wife and the ex-husband, respectively:

$$v_{f\tilde{t}}^D(\omega_{\tilde{t}}) = v_{f\tilde{t}}^A(\omega_{\tilde{t}}) = \begin{cases} ln\Big[\rho\Big(\dfrac{\gamma}{1+\gamma}\dfrac{\mathcal{W}_{\tilde{t}}^D(\omega_{\tilde{t}})}{2}\Big)^2\Big] + \delta E\Big[v_{f\tilde{t}+1}^A(\omega_{\tilde{t}+1}|\omega_{\tilde{t}})\Big] & \textit{if } \tau_{\tilde{t}} > 0 \\ ln\Big[\rho\Big(\dfrac{w_{f\tilde{t}}(\omega_{\tilde{t}})}{2}\Big)^2\Big] + \delta E\Big[v_{f\tilde{t}+1}^A(\omega_{\tilde{t}+1}|\omega_{\tilde{t}})\Big] & \textit{otherwise} \end{cases} \tag{O.3}$$

$$v_{m\tilde{t}}^D(\omega_{\tilde{t}}) = v_{m\tilde{t}}^A(\omega_{\tilde{t}}) = \begin{cases} ln\Big[\rho\dfrac{\mathcal{W}_{\tilde{t}}^D(\omega_{\tilde{t}})}{1+\gamma}\Big(\dfrac{\gamma}{1+\gamma}\dfrac{\mathcal{W}_{\tilde{t}}^D(\omega_{\tilde{t}})}{2}\Big)^\gamma\Big] + \delta E\Big[v_{m\tilde{t}+1}^A(\omega_{\tilde{t}+1}|\omega_{\tilde{t}})\Big] & \textit{if } \tau_{\tilde{t}} > 0 \\ ln\Big[\rho w_{m\tilde{t}}(\omega_{\tilde{t}})\Big(\dfrac{w_{f\tilde{t}}(\omega_{\tilde{t}})}{2}\Big)^\gamma\Big] + \delta E\Big[v_{m\tilde{t}+1}^A(\omega_{\tilde{t}+1}|\omega_{\tilde{t}})\Big] & \textit{otherwise} \end{cases} \tag{O.4}$$

Under **mutual consent divorce**, spouses cooperate in choosing the efficient levels of public and private consumption in the first period of divorce and live in autarky thereafter. Let the vector of choice variables at time t^D be $a_{t^D} = \{x_{ft^D}, x_{mt^D}, q_{t^D}, \tau_{t^D}\}$ and let $\widetilde{\lambda}$ be any weight in the ex-wife's utility in divorce. At the time of the divorce settlement, the couple anticipates that they will live in autarky from the next period on and choose a_{t^D} to maximize a weighted sum of utilities. The couple's value of divorce at any time $1 < t^D \leq T$ is

$$v_{t^D}^D = \max_{a_{t^D}} \quad \widetilde{\lambda}\Big(u_f^D(c_{ft^D}, q_{t^D}) + \delta E v_{ft^D+1}^A\Big) + (1-\widetilde{\lambda})\Big(u_m^D(c_{mt^D}, q_{t^D}) + \delta E v_{mt^D+1}^A\Big) \tag{O.5}$$

$$s.t. \quad [BC_{t^D}] : \begin{cases} x_{ft} + q_t = w_{ft} + \tau_{t^D} \\ x_{mt} = w_{mt} - \tau_{t^D} \\ c_{ir} = \rho x_{ir}, \quad \forall i \in \{f, m\}. \end{cases}$$

By solving the problem by backward induction from the last period T, in online appendix OC.2 I show that the values of a divorce settlement at any time t are, for the ex-wife and the ex-husband, respectively,

$$v_{ft}^D(\omega_t) = ln\Big[\rho\widetilde{\lambda}\kappa(\widetilde{\lambda},\gamma)\Big(\frac{\mathcal{W}_t^D(\omega_t)}{1+\kappa(\widetilde{\lambda},\gamma)}\Big)^2\Big] + \delta E\Big[v_{ft+1}^A(\omega_{t+1}|\omega_t)\Big] \tag{O.6}$$

and

$$v_{mt}^D(\omega_t) = ln\Big[\rho(1-\widetilde{\lambda})\kappa(\widetilde{\lambda},\gamma)^\gamma\Big(\frac{\mathcal{W}_t^D(\omega_t)}{1+\kappa(\widetilde{\lambda},\gamma)}\Big)^{1+\gamma}\Big] + \delta E\Big[v_{mt+1}^A(\omega_{t+1}|\omega_t)\Big]. \tag{O.7}$$

where $\mathcal{W}_{t^D}^D(\omega_t) = x_{mt} + x_{ft} + q_t$ denotes the total resources divorcees have available in period t^D, and where $\kappa(\widetilde{\lambda},\gamma) = \widetilde{\lambda} + (1-\widetilde{\lambda})\gamma$.

OB.2.2 The value of *staying* married

At any period $t \geq 1$ in which the couple arrives married, the couple cooperates if they continue to be married. Let $\widetilde{a}_t = \{c_{ft}, c_{mt}, q_t, k_t\}$ be the decisions a couple makes if the marriage continues in period t. Let λ_t be the woman's weight in the expected utility from the perspective of period t. The individual values of staying married in t and entering period $t+1$ as married are derived by solving the following Pareto problem in marriage, which value is

$$v_t^M = \max_{\widetilde{a}_t} \quad \lambda_t\Big(u_f^M(c_{ft}, q_t, k_t) + \delta E v_{ft+1}\Big) + (1-\lambda_t)\Big(u_m^M(c_{mt}, q_t) + \delta E v_{mt+1}\Big) \tag{O.8}$$

$$s.t. \quad [BC_t^M] : c_{ft} + c_{mt} + q_t = w_{ft}(1-k_{ft}) + w_{mt},$$

where v_{ft+1} and v_{mt+1} in the continuation values denote the value of *arriving* married at period $t+1$ for females and males, respectively (this value will be solved for in the next section). In online appendix OC.3, I follow the *three-stage formulation* described by Chiappori and Mazzocco (2017) to show that the values of staying married and entering the next period as married for wife and husband are, respectively:

$$v_{ft}^M(\omega_t) = ln\Big[\lambda_t\Big(\frac{\mathcal{W}_t(\omega_t, k_t^*)}{2}\Big)^2\Big] + \theta_t + \delta E\Big[v_{ft+1}(\omega_{t+1}|\omega_t, k_t^*)\Big] \tag{O.9}$$

and

$$v_{mt}^M(\omega_t) = ln\Big[(1-\lambda_t)\Big(\frac{\mathcal{W}_t(\omega_t, k_t^*)}{2}\Big)^2\Big] + \theta_t + \delta E\Big[v_{mt+1}(\omega_{t+1}|\omega_t, k_t^*)\Big]. \tag{O.10}$$

where k_t^* denotes the optimal value of the wife's staying-at-home and where $\mathcal{W}_t(\omega_t, k_t^*) = \alpha k_t^* + w_{ft}(\omega_t)(1-k_t^*) + w_{mt}(\omega_t)$ denotes a conditional-on-k_t^* amount of lifetime resources allocated to period t and state ω_t. The continuation values of entering the next period as married are defined by solving the problem of couples by backward induction, considering the possibility of divorce at any period $t > 1$. I derive these values next.

OB.2.3 The value of *arriving* married

The value of *arriving* married at any period t consists of the value from optimally deciding whether to continue the marriage or to divorce in that period. Because the continuation value in any period depends on the current choices of k and D, I solve the model by backward induction.

Period T If the couple stays married in period T, state ω_T, given Pareto weight λ_T, and optimal choice k_T^*, the values for wife and husband are v_{fT}^M and v_{mT}^M, respectively, derived by evaluating expressions (O.9) and (O.10) at vector (T, ω_T, λ_T)—where note the continuation value would be zero. Similarly, the value of divorcing is computed by evaluating expressions (O.6) and (O.7)—under MCD—and (O.3) and (O.4)—under UD—at vector (T, ω_T, λ_T).

The couple decides on the optimal divorce decision, D_T^*, by comparing the values of marriage and of divorce. At any given λ_T and for any state ω_T, the solution depends on the divorce regime.

Under **mutual consent divorce**, the couple stays married unless there exists a value of the ex-wife's Pareto weight in divorce, λ_T^{DS}, such that both are at least better off in divorce: $v_{fT}^D(\lambda_T^{DS}) \geq v_{fT}^M(\omega_T)$ and $v_{mT}^D(\lambda_T^{DS}) \geq v_{mT}^M(\omega_T)$. The divorce settlement negotiation procedure is described in detail in online appendix OC.4. Note that since the allocation *within marriage* does not change in the MCD regime, the weights on the wife's utility, λ_T, remained unchanged.

Under **unilateral divorce**, the couple divorces unless there exists an update in the value of the wife's Pareto weight in marriage, $\lambda_T + \nu_T$, such that both are at least better off in marriage:[1] $v^M_{fT}(\lambda_T+\nu_T) \geq v^A_{fT}$ and $v^M_{mT}(\lambda_T+\nu_T) \geq v^A_{mT}$. The procedure to update the Pareto weight—which builds on Mazzocco (2007); Voena (2015); Bronson (2019); Shephard (2019); and Ligon, Thomas, and Worrall (2000)—is described in detail in online appendix OC.4. Note that the allocation *within marriage* may change under the UD regime, which implies that the wife's Pareto weight, λ_T, may update to $\lambda_T+\nu_T$—with ν_T possibly equal to zero.

In sum, the wife's and husband's values of arriving married at T are, respectively,

$$v_{fT}(\omega_T) = (1-D^*_T)v^M_{fT}(\omega_T) + D^*_T v^D_{fT}(\omega_T) \tag{O.11}$$
$$v_{mT}(\omega_T) = (1-D^*_T)v^M_{mT}(\omega_T) + D^*_T v^D_{mT}(\omega_T). \tag{O.12}$$

Period $t \geq 1$ Continuing this solution method by backward induction (details provided in online appendix OC.4), I compute the wife's and husband's values of arriving married at any period $t > 1$ and state ω_t as

$$v_{ft}(\omega_t) = (1-D^*_t)v^M_{ft}(\omega_t) + D^*_t v^D_{ft}(\omega_t) \text{ for women and}$$
$$v_{mt}(\omega_t) = (1-D^*_t)v^M_{mt}(\omega_t) + D^*_t v^D_{mt}(\omega_t) \text{ for men.}$$

Finally, the value of marriage for household (s_f, s_m) who faces initial Pareto weight $\lambda_0^{s_f s_m}$—for all female of type s_f and all male of type s_m—is the solution to the couple's problem at period $t=1$. Noting that couples do not divorce in the first period after marriage, $t=1$, the expected lifetime value of marriage for women and men are, respectively:

$$\overline{U}^{s_f s_m}_{\mathcal{X}}(\lambda_0^{s_f s_m}) = E v^M_{f1}(\omega_1|\lambda_0^{s_f s_m}) \text{ and}$$
$$\overline{U}^{s_f s_m}_{\mathcal{Y}}(\lambda_0^{s_f s_m}) = E v^M_{m1}(\omega_1|\lambda_0^{s_f s_m}).$$

It is worth remarking that the Pareto weight with which the couple *enters* each period t, λ_t, evolves depending on the divorce regime:

$$\lambda_{(fm)t} = \begin{cases} \lambda_0^{s_f s_m} & \textit{if } \mathcal{D}\textit{=MCD} \\ \lambda_{(fm)t-1} + \nu_{(fm)t-1} & \textit{if } \mathcal{D}\textit{=UD.} \end{cases} \tag{O.13}$$

where note that the initial Pareto weight taken as given in the marriage market is type-of-couple specific. In contrast, the update of such weight will in general be specific to each couple given that it depends on the idiosyncratic income and match quality shocks each couple receives.

[1] For emphasis and to ease notation, I single out element $\lambda_T+\nu_T$ in ω_T in the value in marriage.

OB.3 The marriage market equilibrium

For any matrix of female Pareto weights in all types of couples, $\Lambda = \left\{\lambda_0^{s_f s_m}\right\}_{(s_f,s_m)\in\mathcal{S}^2}$, the solution to the intertemporal household problem of couples results in the mean values that females and males derive from their partner alternatives, $\left\{\left(\overline{U}_{\mathcal{X}}^{s_f s_m}(\lambda_0^{s_f s_m}), \overline{U}_{\mathcal{Y}}^{s_f s_m}(\lambda_0^{s_f s_m})\right)\right\}_{(s_f,s_m)\in\mathcal{S}^2}$. Anticipating these mean valuations and knowing their value of remaining single ($\overline{U}_{\mathcal{X}}^{s_f\emptyset}$ for females and $\overline{U}_{\mathcal{Y}}^{\emptyset s_m}$ for males) and idiosyncratic taste shocks ($\beta_f^{s_f s}$ and $\beta_m^{s s_m}$), individuals choose whether to get married and (if so) the education of their partner by solving problem (9) (or the analogous problem for women). By aggregating females' and males' individual choices within every sub-marriage market, we obtain the supply and demand for females within each type of couple. The model closes by finding the matrix of couple-type *initial* Pareto weights such that all sub-markets clear,

$$\Lambda : \mu_{s_f \to s_m}(\lambda_0^{s_f s_m}) = \mu_{s_f \leftarrow s_m}(\lambda_0^{s_f s_m}), \quad \forall (s_f, s_m) \in \mathcal{S}^2,$$

and the mass of individuals in the marriage market adds up to the mass of married and single individuals.

OC Additional details on the theory

OC.1 Derivation of the value of autarky at time $t \geq t^D$

In this section I provide more details on the computation of the value of divorce outlined in section OB.2.1 of this online appendix.

First note that ex-wives' choices in any period $t \geq t^D$ do not affect the continuation value of problem (O.1). As a result, the solution to problem (O.1) at any period $t \geq t^D$ is found by solving

$$\max_{q_t} \quad ln[\rho(\tau_t + w_{ft} - q_t)q_t]$$

after replacing the constraints into the objective function. Similarly, the current ex-husband's choice of τ does not affect his continuation value of autarky, implying that the solution to his problem (O.2) is found by solving

$$\max_{\tau_t} \quad ln[\rho(w_{mt} - \tau_t)(\frac{w_{ft} + \tau_t}{2})^{\gamma})]$$

after replacing the constraints and the ex-wife's policies, $q_t(\tau_t)$ and $x_{ft}(\tau_t)$, into the objective function. By taking first-order conditions for both problems I obtain the expressions for $q_t(\tau_t)$, $x_{ft}(\tau_t)$, and the interior solution for τ_t shown in the paper.

To obtain the solution of the divorcees problem (O.1) and (O.2) at the last period, T, replace the constraints of those problems into the corresponding objective functions and evaluate them at the period-T optimal values of τ_T, $q_T(\tau_T)$, $x_{fT}(\tau_T)$, and x_{mT}. The values of autarky for the ex-wife and the ex-husband at terminal period T are, respectively,

$$v^A_{fT}(\omega_T) = \begin{cases} ln\Big[\rho\Big(\frac{\gamma}{1+\gamma}\frac{\rho\mathcal{W}^D_T(\omega_T)}{2}\Big)^2\Big] & \textit{if } \tau_T > 0 \\ ln\Big[\rho\Big(\frac{w_{fT}(\omega_T)}{2}\Big)^2\Big] & \textit{otherwise} \end{cases} \tag{O.14}$$

and

$$v^A_{mT}(\omega_T) = \begin{cases} ln\Big[\frac{\rho\mathcal{W}^D_T(\omega_T)}{1+\gamma}\Big(\frac{\gamma}{1+\gamma}\frac{\mathcal{W}^D_T(\omega_T)}{2}\Big)^\gamma\Big] & \textit{if } \tau_T > 0 \\ ln\Big[\rho w_{mT}(\omega_T)\Big(\frac{w_{fT}(\omega_T)}{2}\Big)^\gamma\Big] & \textit{otherwise.} \end{cases} \tag{O.15}$$

The values at any time $t^D \leq t < T$ have analogous expressions—because choices at t do not affect continuation values—and are obtained by working backward from the terminal period, giving rise to expressions (O.3) and (O.4) in the paper.

OC.2 Derivation of the value of a divorce settlement at time t^D

I provide more details on the computation of the value of divorce settlements outlined in section OB.2.1 of this online appendix.

First note that in cooperative problem (O.5) in the paper, neither the period's choices nor the Pareto weight in mutual consent divorce (henceforth MCD), $\tilde{\lambda}$, impact the continuation value of autarky for either of the ex-spouses. Hence, the allocation of expenditures on private consumption and the public good also solves the problem

$$\max_{\tau_{t^D}, q_{t^D}} \quad \widetilde{\lambda} ln[\rho(w_{ft^D} + \tau_{t^D} - q_{t^D})q_{t^D}] + (1-\widetilde{\lambda}) ln[\rho(w_{mt^D} - \tau_{t^D})q^\gamma_{t^D}].$$

The solution to this problem can be found by following a two-step approach. First, conditional on given levels of total expenditure in private consumption, $\overline{X} = x_f + x_m$, and expenditure on public goods, $\overline{q}$, efficient risk sharing implies that

$$x_{ft^d} = \widetilde{\lambda}\overline{X} \text{ and}$$
$$x_{mt^d} = (1-\widetilde{\lambda})\overline{X}.$$

Second, given the total resources divorcees have available in period t^D, $\mathcal{W}^D_{t^D}(\omega_{t^D})$, the couple chooses the efficient level of q_{t^D} and of aggregate expenditures on private consumption X_{t^D} by solving

$$\begin{aligned}
\max_{q_{t^D}, X_{t^D}} \quad & \quad \widetilde{\lambda} ln[\rho\widetilde{\lambda} X_{t^D} q_{t^D}] + (1-\widetilde{\lambda}) ln[\rho(1-\widetilde{\lambda}) X_{t^D} q^{\gamma}_{t^D}] \\
s.t. \quad [BC_{t^D}]: & \quad q_{t^D} + X_{t^D} = \mathcal{W}^D_{t^D}(\omega_{t^D}) \\
\Leftrightarrow & \\
\max_{q_{t^D}} \quad & \quad \widetilde{\lambda} ln[\rho\widetilde{\lambda}(\mathcal{W}^D_{t^D}(\omega_{t^D}) - q_{t^D}) q_{t^D}] + (1-\widetilde{\lambda}) ln[\rho(1-\widetilde{\lambda})(\mathcal{W}^D_{t^D}(\omega_{t^D}) - q_{t^D}) q^{\gamma}_{t^D}].
\end{aligned}$$

For any given Pareto weight determined in the divorce settlement, $\widetilde{\lambda}$, the efficient choice of q_{t^D} and C_{t^D} are given by

$$q_{t^D} = \frac{\widetilde{\lambda} + (1-\widetilde{\lambda})\gamma}{1 + \widetilde{\lambda} + (1-\widetilde{\lambda})\gamma} \mathcal{W}^D_t(\omega^D_t)$$
and
$$X_{t^D} = \Big(1 - \frac{\widetilde{\lambda} + (1-\widetilde{\lambda})\gamma}{1 + \widetilde{\lambda} + (1-\widetilde{\lambda})\gamma}\Big) \mathcal{W}^D_t(\omega^D_t).$$

Note that the efficient levels of expenditure on private and public consumption depend on the Pareto weight in divorce, which reflects the fact that the cooperative program in divorce does not satisfy the transferable utility property. This is because ex-spouses have different valuations in divorce.[2]

Let the proportion of the period resources that are designated as expenditures on the public good as a function of a given Pareto weight in divorce $\widetilde{\lambda}$ be denoted by

$$\kappa(\widetilde{\lambda}, \gamma) = \widetilde{\lambda} + (1-\widetilde{\lambda})\gamma. \tag{O.16}$$

The values of cooperation in the last period for the ex-wife and the ex-husband are, respectively,

$$v^D_{fT}(\omega_T) = ln\Big[\rho\widetilde{\lambda}\kappa(\widetilde{\lambda}, \gamma)\Big(\frac{\mathcal{W}^D_T(\omega_T)}{1 + \kappa(\widetilde{\lambda}, \gamma)}\Big)^2\Big] \tag{O.17}$$

and

$$v^D_{mT}(\omega_T) = ln\Big[\rho(1-\widetilde{\lambda})\kappa(\widetilde{\lambda}, \gamma)^{\gamma}\Big(\frac{\mathcal{W}^D_T(\omega_T)}{1 + \kappa(\widetilde{\lambda}, \gamma)}\Big)^{1+\gamma}\Big]. \tag{O.18}$$

By continuing by backward induction and noting that the choices made in the cooperative

[2]The identical preferences of individuals are necessary for TU to hold in divorce (Chiappori, Iyigun, and Weiss, 2015).

period do not affect the values of autarky, I obtain expressions (O.6) and (O.7) for the value of a divorce settlement at any time t for the ex-wife and the ex-husband, respectively.

Summing up: the value of divorce under two divorce regimes

In sum, the value of divorce for the ex-spouses depends on the divorce regime.

If the regime is one of MCD, spouses cooperate in the first period of divorce and live in autarky for the rest of their lifetime. Hence, individual values are the expected discounted values derived from the efficient divorce settlement at time t^D plus the autarky continuation values. These values are derived by evaluating expressions (O.6) and (O.7) at time t^D.

If the regime is one of UD, spouses cannot sustain cooperation and live in autarky from period t^D onward. The values of divorcing at time t^D for wife and husband are, respectively, derived from expressions (O.3) and (O.4) when $\tilde{t} = t^D$: $v^A_{ft^D}(\omega_{t^D})$ and $v^A_{mt^D}(\omega_{t^D})$.

An important takeaway from the relationship between divorcees is that divorce entails losses of efficiency that may be most harmful to women.[3] First, because of the complementarity between expenditures on public goods and expenditures on private goods, women will invest in the public good even in the absence of child support transfers. Moreover, note that the efficient level of the public good reached in the cooperative phase depends on the female Pareto weight, while the level reached in autarky does not. All else equal, the higher the weight on the female's utility in divorce, the higher the discrepancy between the cooperative and the autarky expenditures on public goods. Depending on the parameters of the model, these two features may imply that the inefficiency losses associated with divorce may be most costly to females with higher shares of household resources. Because only under the MCD regime do couples cooperate for one period, these losses of efficiency are a driver of the effects of introducing unilateral divorce when mutual consent is in place.

OC.3 Derivation of the value of *staying* married

I provide more details on the computation of the value of continuing the marriage at any period $t \geq 1$ in which the couple arrives married—outlined in section OB.2.2 of this online appendix.

Recall that in this model, the only decision variable that influences the lifetime resources of the couple is female labor supply, which affects female future earnings through experience and male future earnings through the spousal support effect. Hence, the solution to the couple's

[3] My modeling of divorcees implies that divorced women bear a disproportionate cost of divorce relative to their ex-husbands, a feature previously incorporated in the models of Guvenen and Rendall (2015) and Fernández and Wong (2014).

problem *if the marriage continues*—problem (O.8) in the paper—can be found following a *three-stage formulation* as described by Chiappori and Mazzocco (2017). Let λ_t be any given wife's Pareto weight at time t (not necessarily the one consistent with the equilibrium in the marriage market).

The first stage corresponds to the *intrahousehold allocation stage*, in which the couple fixes the level of private and public consumption at any level $(\overline{C_t}, \overline{q_t})$ and decides how to allocate aggregate private consumption between spouses. The first-order conditions imply that

$$c_{ft} = \lambda_t \overline{C_t} - (1-\lambda_t)\alpha k_t \text{ and}$$
$$c_{mt} = (1-\lambda_t)\overline{C_t} + (1-\lambda_t)\alpha k_t.$$

The second stage in the solution of problem (O.8) corresponds to the *resource allocation stage*. Given a fixed amount of lifetime resources allocated to period t and state ω_t,

$$\mathcal{W}_t(\omega_t, k_t) = \alpha k_t + w_{ft}(\omega_t)(1-k_t) + w_{mt}(\omega_t), \tag{O.19}$$

the couple decides on the efficient levels of private and public expenditures by solving

$$\begin{aligned} \max_{q_t, C_t} \quad & \lambda_t ln[q_t(\lambda_t C_t - (1-\lambda_t)\alpha k_t)] + (1-\lambda_t) ln[q_t((1-\lambda_t)C_t + (1-\lambda_t)\alpha k_t)] \\ s.t. \quad [BC_t]: \quad & q_t + C_t = w_{ft}(1-k_t) + w_{mt}. \end{aligned}$$

The efficient choice of q_t and C_t are

$$q_t = \frac{\mathcal{W}_t(\omega_t)}{2} \quad \text{and} \quad C_t = \frac{w_{ft}(1-k_t) + w_{mt} - \alpha k_t}{2},$$

which implies—by the intrahousehold allocation stage,

$$c_{ft} = \lambda_t \frac{\mathcal{W}_t(\omega_t)}{2} - \alpha k_t \quad \text{and} \quad c_{mt} = (1-\lambda_t)\frac{\mathcal{W}_t(\omega_t)}{2}.$$

Note that the efficient choices of q and C do not depend on the Pareto weights, which reflects the transferable utility property of the program in this stage.

Finally, the last stage in the solution of program (O.8) corresponds to the *intertemporal stage*, in which the couple decides how to allocate lifetime resources to each period. In this model, the only decision variable that changes lifetime and within-period resources is female labor supply. The couple jointly chooses female household labor supply, k_t, so as to maximize the weighted sum of spouses' expected utilities, given the Pareto weight (that is, by solving problem (O.8) where c_{ft}, c_{mt}, and q_t have already been pined down conditional on k_t).

Let k_t^* be the solution to this problem. The values (O.9) and (O.10) of staying married and entering the next period as married for wife and husband, respectively, are derived by replacing the conditional-on-k_t^*-optimal values of c_{ft}, c_{mt}, and q_t.

The continuation values of entering the next period as married are defined by solving the problem of couples by backward induction, considering the possibility of divorce at any period $t > 1$. I derive these values in section OB.2.3 of this online appendix and provide more details next.

OC.4 More details on the value of *arriving* married

In this subsection I derive the value of arriving married in any period $t \geq 1$. A couple that arrives married in any period t also makes a divorce decision by comparing the values of divorce and of staying married. This decision will depend on the divorce regime. I solve the model by backward induction.

Period T

To determine the value of staying married in period T, state ω_T, and any given female Pareto weight λ_T the couple solves

$$v_T^M = \max_{k_T} \quad \lambda_T ln\Big[\lambda_T\Big(\frac{\mathcal{W}_T(\omega_T, k_T)}{2}\Big)^2\Big] + (1-\lambda_T)ln\Big[(1-\lambda_T)\Big(\frac{\mathcal{W}_T(\omega_T, k_T)}{2}\Big)^2\Big]. \quad \text{(O.20)}$$

Let k_T^* be the solution to program (O.20). The spouses' values of continuing the marriage in period T (considering also the match quality shock) are

$$v_{fT}^M = ln\Big[\lambda_T\Big(\frac{\mathcal{W}_T(\omega_T, k_T^*)}{2}\Big)^2\Big] + \theta_T \quad \text{(O.21)}$$

and

$$v_{mT}^M = ln\Big[(1-\lambda_T)\Big(\frac{\mathcal{W}_T(\omega_T, k_T^*)}{2}\Big)^2\Big] + \theta_T. \quad \text{(O.22)}$$

To make the divorce decision, the couple compares the values of marriage and the values of divorce. This comparison depends on the divorce regime.

Details on the negotiation of the divorce settlement under MCD. At the moment of divorce, before spouses negotiate a divorce settlement, the couple takes the Pareto weight in marriage as the default divorce agreement. Hence, the individuals' "pre-settlement" values of divorce in the last period are the values of cooperation in divorce (derived in expressions (O.17) and (O.18)) when the ex-wife Pareto weight is the Pareto weight in marriage, $v^D_{fT}(\lambda_T)$ and $v^D_{mT}(\lambda_T)$. There are six possible scenarios:

- If $v^M_{fT} > v^D_{fT}(\lambda_T)$ and $v^M_{mT} > v^D_{mT}(\lambda_T)$, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}$ and $v_{mT} = v^M_{mT}$.
- If $v^M_{fT} < v^D_{fT}(\lambda_T)$ and $v^M_{mT} < v^D_{mT}(\lambda_T)$, the couple divorces and the period individual values are $v_{fT} = v^D_{fT}(\lambda_T)$ and $v_{mT} = v^D_{mT}(\lambda_T)$.
- If $v^M_{fT} < v^D_{fT}(\lambda_T)$ and $v^M_{mT} > v^D_{mT}(\lambda_T)$, the couple searches to see if there exists a value of the ex-wife's Pareto weight in divorce, λ^{DS}_T, such that $v^M_{fT} < v^D_{fT}(\lambda^{DS}_T)$ and $v^M_{mT} = v^D_{mT}(\lambda^{DS}_T)$. Then, there are two possible scenarios:
  - If such λ^{DS}_T exists, the couple divorces and the period individual values are $v_{fT} = v^D_{fT}(\lambda^{DS}_T)$ and $v_{mT} = v^D_{mT}(\lambda^{DS}_T)$.
  - If there is no feasible revision of the Pareto weight in divorce, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}$ and $v_{mT} = v^M_{mT}$.
- Finally and analogously, if $v^M_{fT} > v^D_{fT}(\lambda_T)$ and $v^M_{mT} < v^D_{mT}(\lambda_T)$, the couple searches to see if there exists a value of λ^{DS}_T such that $v^M_{fT} = v^D_{fT}(\lambda^{DS}_T)$ and $v^M_{mT} < v^D_{mT}(\lambda^{DS}_T)$. Then, there are two possible scenarios:
  - If such λ^{DS}_T exists, the couple divorces and the period individual values are $v_{fT} = v^D_{fT}(\lambda^{DS}_T)$ and $v_{mT} = v^D_{mT}(\lambda^{DS}_T)$.
  - If there is no feasible revision of the Pareto weight in divorce, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}$ and $v_{mT} = v^M_{mT}$.

Note that the allocation *within marriage* does not change in any of these scenarios, implying that the weights on the wife's utility, λ_T, remained unchanged.

Details on the renegotiation of the Pareto weight in marriage under UD. Note that the values associated with staying married at any female Pareto weight, λ, are $v^M_{fT}(\lambda)$ and $v^M_{mT}(\lambda)$. These values are derived by evaluating expressions (O.21) and (O.22) with weight λ, where k^*_T is the solution to problem (O.20) when the weight is λ. Suppose the couple arrives at period T married with wife's Pareto weight λ_T.

The assumptions of the model when divorce is unilateral imply that divorcees do not go through a cooperative stage. Hence, the value of the divorce if the couple divorces in the last period is the value of autarky at time T $v^A_{fT}(\omega_T)$ and $v^A_{mT}(\omega_T)$ derived in expression (O.14) and (O.15), respectively.

To make the divorce decision, the couple compares the value of marriage at the period's starting Pareto weight, λ_T, against the value of autarky. There are six possible scenarios:

- If $v^M_{fT}(\lambda_T) > v^A_{fT}$ and $v^M_{mT}(\lambda_T) > v^A_{mT}$, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}(\lambda_T)$ and $v_{mT} = v^M_{mT}(\lambda_T)$.

- If $v^M_{fT}(\lambda_T) < v^A_{fT}$ and $v^M_{mT}(\lambda_T) < v^A_{mT}$, the couple divorces and the period individual values are $v_{fT} = v^A_{fT}$ and $v_{mT} = v^A_{mT}$.

- If $v^M_{fT}(\lambda_T) < v^A_{fT}$ and $v^M_{mT}(\lambda_T) > v^A_{mT}$, the couple searches to see if there exists a revision of the Pareto weight in marriage, ν_T, such that $v^M_{fT}(\lambda_T+\nu_T) = v^A_{fT}$ and $v^M_{mT}(\lambda_T+\nu_T) > v^A_{mT}$. Then, there are two possible scenarios:

  - If a ν_T such that $\lambda_T + \nu_T \in (0, 1)$ exists, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}(\lambda_T + \nu_T)$ and $v_{mT} = v^M_{mT}(\lambda_T + \nu_T)$.
  - If there is no feasible revision of the Pareto weight in marriage, the couple divorces and the period individual values are $v_{fT} = v^A_{fT}$ and $v_{mT} = v^A_{mT}$.

- Finally and analogously, if $v^M_{fT}(\lambda_T) > v^A_{fT}$ and $v^M_{mT}(\lambda_T) < v^A_{mT}$, the couple searches to see if there exists a revision of the Pareto weight in marriage, ν_T, such that $v^M_{fT}(\lambda_T+\nu_T) > v^A_{fT}$ and $v^M_{mT}(\lambda_T + \nu_T) = v^A_{mT}$. Then, there are two possible scenarios:

  - If a ν_T such that $\lambda_T + \nu_T \in (0, 1)$ exists, the couple stays married and the period individual values are $v_{fT} = v^M_{fT}(\lambda_T + \nu_T)$ and $v_{mT} = v^M_{mT}(\lambda_T + \nu_T)$.
  - If there is no feasible revision of the Pareto weight in marriage, the couple divorces and the period individual values are $v_{fT} = v^A_{fT}$ and $v_{mT} = v^A_{mT}$.

Note that the allocation *within marriage* changes in some of these scenarios, which implies that the weights on the wife's utility, λ_T, are revised and set equal to $\lambda_T + \nu_T$, with $\nu_T \geq 0$.

Accounting for the optimal divorce decision so described, the values of arriving married at the last period T for the wife and the husband, respectively, are

$$v_{fT}(\omega_T) = (1 - D^*_T)v^M_{fT}(\omega_T) + D^*_T v^D_{fT}(\omega_T) \tag{O.23}$$

$$v_{mT}(\omega_T) = (1 - D^*_T)v^M_{mT}(\omega_T) + D^*_T v^D_{mT}(\omega_T). \tag{O.24}$$

Period $T-1$

From the perspective of the beginning of period T, before shocks realize, the expected value of entering period T married, conditional on the realized state at time $T-1$ are, respectively,

$$E\Big[v_{fT}(\omega_T|\omega_{T-1})\Big] = E\Big[(1-D_t^*)v_{fT}^M(\omega_T|\omega_{T-1}) + D_t^* v_{fT}^D(\omega_T|\omega_{T-1})\Big]$$
$$E\Big[v_{mT}(\omega_T|\omega_{T-1})\Big] = E\Big[(1-D_t^*)v_{mT}^M(\omega_T|\omega_{T-1}) + D_t^* v_{mT}^D(\omega_T|\omega_{T-1})\Big].$$

To determine the value of staying married throughout period $T-1$, the couple chooses k_{T-1} so as to solve problem (O.8) at period $T-1$ and at any given female Pareto weight λ_{T-1}. Let k_{T-1}^* be the couple's choice of female housework supply. The value of continuing the marriage for the wife and the husband, $v_{fT-1}^M(\omega_{T-1})$ and $v_{mT-1}^M(\omega_{T-1})$, respectively are given by expressions (O.9) and (O.10) when evaluated at $t = T-1$, λ_{T-1}, and k_{T-1}^*.

The values of divorce depend on the divorce regime. Under MCD, the values of divorce result from the value of cooperating in divorce in period $T-1$ and living in autarky in period T. These values are obtained by evaluating expressions (O.6) and (O.7) at period $T-1$ and any given Pareto weight. Differently, under UD the values of divorce are the values of living in autarky from the moment of divorce onward, obtained by evaluating expressions (O.3) and (O.4) at time $T-1$. Note that the continuation values from staying married in $T-1$ are different from the continuation values following divorce in period $T-1$, since divorce is an absorbing state.

To make the divorce decision, the couple follows the same procedure described for period T, comparing the values from divorce with the values from marriage. This again depends on the divorce regime. Note, again, that when the regime is of MCD, the Pareto weight in marriage will not be updated. Hence, the couple will carry the same Pareto weight if marriage continues to the final period, which implies that $\lambda_{T-1} = \lambda_T$. In contrast, if the divorce regime is UD, the couple may update their Pareto weight at $T-1$, and thus enter period T with Pareto weight $\lambda_T = \lambda_{T-1} + \nu_{T-1}$.

In sum, the values of arriving married at period $T-1$ for the wife and the husband are, respectively,

$$v_{fT-1}(\omega_{T-1}) = (1-D_{T-1}^*)v_{fT-1}^M(\omega_{T-1}) + D_{T-1}^* v_{fT-1}^D(\omega_{T-1}) \text{ and}$$
$$v_{mT-1}(\omega_{T-1}) = (1-D_{T-1}^*)v_{mT-1}^M(\omega_{T-1}) + D_{T-1}^* v_{mT-1}^D(\omega_{T-1}).$$

Period $t > 1$

Continuing to working backward and taking into account that the continuation value after marriage differs from the continuation value after divorce, the values of arriving married at any period $t > 1$, state ω_t, are:

$$v_{ft}(\omega_t) = (1 - D_t^*)v_{ft}^M(\omega_t) + D_t^* v_{ft}^D(\omega_t) \text{ and}$$
$$v_{mt}(\omega_t) = (1 - D_t^*)v_{mt}^M(\omega_t) + D_t^* v_{mt}^D(\omega_t).$$

Note that while under MCD the female's Pareto weight in marriage will remain constant, under UD it will be updated every period to guarantee satisfaction of the incentive-compatibility constraints in marriage, $[ic_i^M(UD)]$. The Pareto weight with which the couple *enters* each period t, λ_t, evolves depending on the divorce regime:

$$\lambda_{(fm)t} = \begin{cases} \lambda_0^{s_f s_m} & \textit{if } \mathcal{D}\textit{=MCD} \\ \lambda_{(fm)t-1} + \nu_{(fm)t-1} & \textit{if } \mathcal{D}\textit{=UD.} \end{cases} \tag{O.25}$$

Note that the initial Pareto weight taken as given in the marriage market is type-of-couple specific. In contrast, the update of such weight will in general be specific to each couple given that it depends on the idiosyncratic income and match quality shocks each couple receives.

Period $t = 1$

Finally, in the first period newlyweds do not divorce, so their value of getting married in the matching stage, at realized state ω_1, is the value of staying married and entering period two as married:

$$v_{f1}(\omega_1) = v_{f1}^M(\omega_1) \text{ and}$$
$$v_{m1}(\omega_1) = v_{m1}^M(\omega_1).$$

Note that λ_1 in vector ω_1 is the *initial* female Pareto weight with which the couple arrives at the first period. Because couples do not divorce at $t = 1$, $\lambda_1^{s_f s_m} = \lambda_0^{s_f s_m}$. The life cycle problem is solved for all types of couples. Hence, from the perspective of the time of marriage, the values of forming household (s_f, s_m) for any female of type s_f and any male of type s_m are, respectively,

$$\overline{U}_{\mathcal{X}}^{s_f s_m}(\lambda_0^{s_f s_m}) = Ev_{f1}^M(\omega_1|\lambda_0^{s_f s_m}) \text{ and}$$
$$\overline{U}_{\mathcal{Y}}^{s_f s_m}(\lambda_0^{s_f s_m}) = Ev_{m1}^M(\omega_1|\lambda_0^{s_f s_m}).$$

OC.5 Heuristic argument for Identification

Pareto weights, $\lambda^{s_f s_m}$ Variation in population vectors across different marriage markets identifies Pareto weights as shown by Galichon, Kominers, and Weber (2019) for general models with ITU and by Gayle and Shephard (2019) in an ITU model with value functions differentiable in $\lambda^{s_f s_m}$. Under the assumption that different marriage markets only differ in population vectors—assumed exogenous—, the observation of many supply vectors is used to identify the decision process (Pareto weights) independent of the preference and income parameters. Intuitively, differences in population vectors across different marriage markets serve as distribution factors that allow to identify the decision process independent of preferences, as shown by Blundell, Chiappori, and Meghir (2005), Bourguignon, Browning, and Chiappori (2009), and by Browning, Chiappori, and Lewbel (2013) for collective household models.

Variance of match quality, $\sigma^{2 s_f s_m}$ Consider two couples of the same couple-type who differ in their divorce decision. Once controlling for income variance draws—which process is inputted from estimates in the literature, and therefore identified at this point—the two couples face the same income processes and preference parameters. Idiosyncratic deviations from their common lifetime values, leading to heterogeneous divorce decisions, are governed by idiosyncratic match quality draws. Therefore, the variance of match quality is pined down by the fraction of couples within a type who divorces. The frequency of divorcees in four markets provides overidentifying moments for these parameters which are assumed common across markets.

Stay-at-home wife preference, $\alpha^{s_f s_m}$ Consider two couples of the same couple-type who differ in wives' labor force participation. After controlling for income variance and match quality draws—which processes are either inputted or pinned down at this point—the two couples face the same income processes and preference parameters. Consider, for example, the last period T in which there is no continuation value. A couple specializes if the value of $\alpha^{s_f s_m} + w_{mT}$ exceeds the value of joint income $w_{fT} + w_{mT}$.[4] Within couple-type, different couples would only differ in their idiosyncratic joint income and match quality shocks. Given the idiosyncratic income draws across households some couples will specialize and some will not, depending on the couple-type specific value $\alpha^{s_f s_m}$. Therefore, the observed fraction of specializing households within this

[4] In section OC.4 of this online appendix I provide more details on the model that help to see this. In particular, from the objective function in problem (O.20) (together with the definition of $\mathcal{W}(\omega_T, k_T^*)$ from expression (O.19)) it follows that the difference in the married-household value at the two choices is

$$v_T^M(k=0) - v_T^M(k=1) = 2\ln(w_{fT}(\omega) + w_{mT}(\omega)) - 2\ln(\alpha + w_{mT}(\omega)).$$

couple-type identifies the stay-at-home preference parameter. Variation in the couple-type-specific fractions of specializing households across four marriage markets and over the life cycle overidentifies the parameter.

Income process Parameters of the income process (3) are *inferred* from heterogeneity in earnings due to the selection into work produced by the model. Here I ask: what is the wage offer process that produces the selection into work, years of experience, and joint family labor supply such that the earnings equations in the model reproduce the earnings process in the data? Within education group, average initial earnings are used to infer the value of education in the labor market; also within education group, mean changes in earnings due to changes in experience (for women) and to age of the household (for men) are used to infer the experience profile of wages; finally, also within education type, changes in the mean earnings of men due to wives' changes in experience are used to infer the returns to spousal experience. Identification separate from the behavioral parameters of the household (crucially, the preference of staying-at-home) is possible thanks to the fact that wages only vary at the own-type level, but selection into work depends on the type of both the wife and the husband. Once again, these parameters are overidentified from earnings regressions in all four marriage markets. The underlying assumption is that all four marriage markets belong to the same labor market so that wages are determined in the aggregate.

Mean match quality and value of singlehood, $\overline{\theta}^{s_f s_m}$, $\overline{\theta}^{s_f}$, and $\overline{\theta}^{s_m}$ At this point, 15 match quality parameters remain to be identified: nine couple-specific mean match quality and six singlehood noneconomic values, $\{(\overline{\theta}^{s_f}, \overline{\theta}^{s_m}, \overline{\theta}^{s_f s_m})\}_{s_f, s_m \in \mathcal{S}}$. These parameters are disciplined by market-clearing conditions: Conditional on the Pareto weight that determines the distribution of total marital value between spouses—which creates a conflict of interest within couples—the common noneconomic component of utility adjusts such that as many women as men chose a certain type of couple, in all marriage markets. Therefore, these noneconomic terms are disciplined by the fractions of each type of household from the choices of women and those of men in all four marriage markets, which are observed in the data and produced by the model.[5]

[5] Note that to identify the 15 parameters I count on 72 moment conditions from the choices of women and men in nine types of couples in four markets, and 24 moment conditions for the choice of remaining single for women and men in four markets.

OD More details about the model's estimation

Pareto weights by market Table OA.4 shows the implied equilibrium female Pareto weights in couples with s_f wives and s_m husbands in all four marriage markets. Recall that preference and income process parameters are common across markets, which means that the total marital value produced by the same type of couple in different markets is the same. In contrast, the Pareto weights differ across markets because they are determined by the relative supplies of education types of both women and men. Therefore, the comparison of Pareto weights between markets informs us of the total value women of the same education appropriate in one market versus another.

Table OA.4: Pareto weights under MCD by marriage market

		s_m			s_m		
		hs	**sc**	**c+**	**hs**	**sc**	**c+**
		Northeast			**Midwest and West**		
	hs	0.50	0.44	0.38	0.50	0.45	0.40
s_f	**sc**	0.63	0.56	0.43	0.63	0.57	0.43
	c+	0.65	0.56	0.43	0.66	0.58	0.45
		South Atlantic			**South Central**		
	hs	0.50	0.42	0.36	0.50	0.42	0.35
s_f	**sc**	0.64	0.55	0.41	0.64	0.56	0.40
	c+	0.68	0.58	0.45	0.66	0.56	0.40

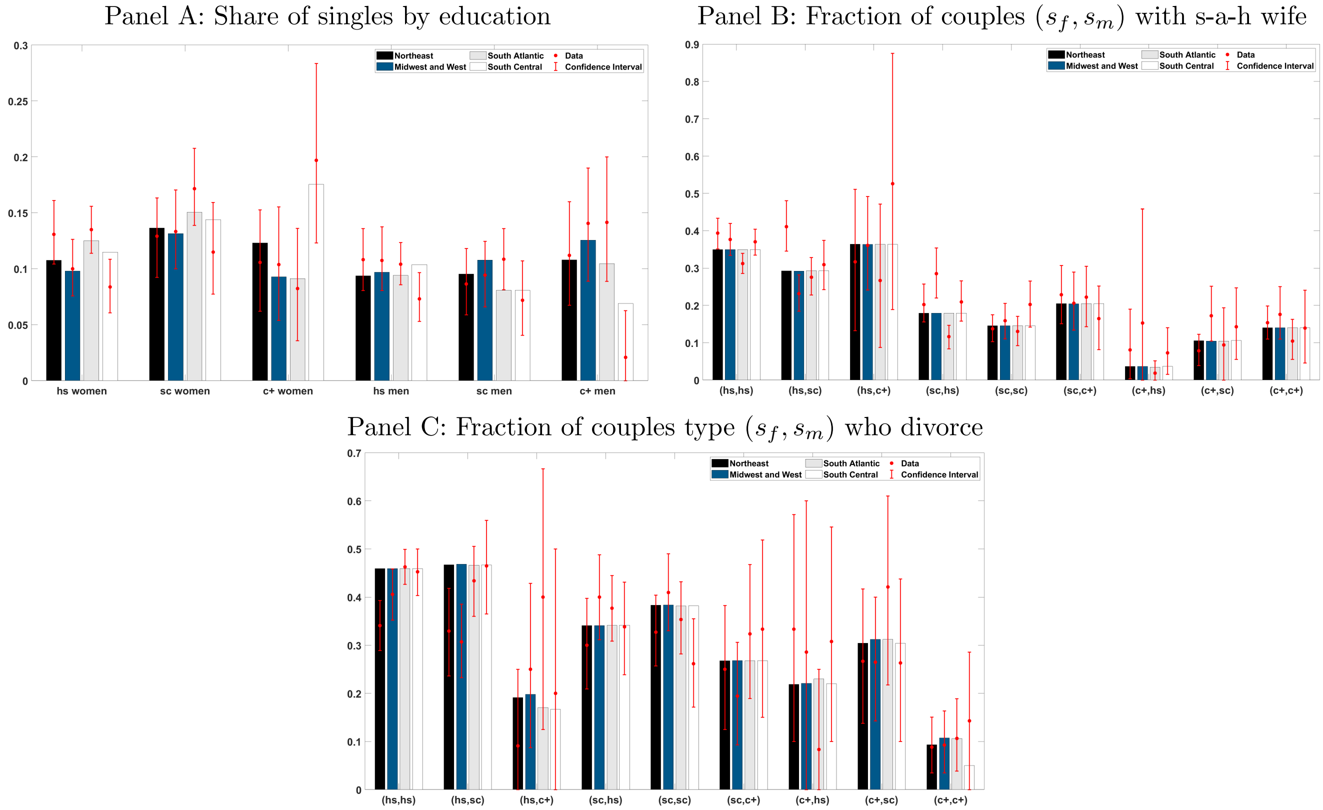
Notes: MCD stands for *mutual consent divorce.* s_f and s_m refer to the education of women and men, respectively, which are high school (hs), some college (sc), and college degree or higher (c+).

The weights for educated women tend to be higher in the less educated markets in which they are in lowest supply. For example, $c+$ in the South Atlantic market (which has a relatively lower supply of $c+$ educated women relative to hs educated women) get a higher share of household value relative to the same type of women in the Northeast and the Midwest and West markets that have a higher fraction of educated women. South Central is an interesting market in which the supply of $c+$ educated women is relatively low compared to that of hs but $c+$ women are in excess supply relative to $c+$ men. As a result, the woman's weight in $(c+, c+)$ couples is the lowest in this market.

Other equilibruim targeted moments The model does a very good job in replicating the observed fraction of singles by education (figure OA.1, panel A).

The model also replicates accurately the frequency of stay-at-home wives (figure OA.1, panel B) and divorce probabilities (Figure OA.1, panel C). In both the data and the model the frequencies of non-working wives are highest in couples with hs women and lowest in couples

Figure OA.1: Selected targeted moments in the model and the data by marriage market



Notes: s_f and s_m refer to the education of women and men, respectively, which are high school (hs), some college (sc), and college degree or higher (c+). *s-a-h* stands for stay-at-home.

with *c+* women. The probability of divorce is highest for couples with low educated spouses in both the data and the model. In the model, this stems from the fact that couples with low educated spouses have a lower match quality and/or a higher standard deviation of the match quality.

Finally, table OA.5 shows the estimates of earnings regression from both the model and the data that inform the parameters of the income process. Here I show results pooling data from all four markets to save space, but in estimation I target the coefficients from all markets' regressions (results by market available upon request).

OE Additional equilibrium impacts of UD

This section provides tables and figures related to the analysis in section 5 of the paper. The structure of figures and tables are described in the paper.

Table OA.6 shows the counterfactual equilibria female Pareto weights along with the change relative to baseline, averaged over markets, which are described in section 5.1 of the paper. Women with *c+* degrees suffer the most, with their Pareto weight reduced by 12% to 28% of

Table OA.5: Earnings regressions in the model and in the data, all markets pooled

	Dependent variable: ln(*annual earnings*)					
	hs		*sc*		*c+*	
	Data	Model	Data	Model	Data	Model
			Men			
Spousal experience	-0.0054	-0.0007	0.0212	0.0550	0.0189	0.0513
	[-0.0104,-0.0004]		[0.0160,0.0265]		[0.0124,0.0253]	
Experience	0.0867	0.1392	0.1202	0.1661	0.1591	0.2851
	[0.0751,0.0983]		[0.1017,0.1387]		[0.1311,0.1870]	
Experience^2	-0.0010	-0.0117	-0.0014	-0.0111	-0.0018	-0.0189
	[-0.0012,-0.0009]		[-0.0017,-0.0011]		[-0.0022,-0.0014]	
Constant	8.1057	10.0591	7.63155	10.1984	7.0968	10.4832
	[7.9153,8.2961]		[7.3257,7.9372]		[6.6064,7.5873]	
			Women			
Experience	0.1809	0.1169	0.1126	0.1122	0.0709	0.0763
	[0.1690,0.1928]		[0.0985,0.1267]		[0.0491,0.0928]	
Experience^2	-0.0056	-0.0082	-0.0028	-0.0081	-0.0006	-0.0049
	[-0.0063,-0.0050]		[-0.0036,-0.0020]		[-0.0017,0.0005]	
Constant	8.1592	10.2276	8.7028	10.4819	9.2279	11.4831
	[8.1181,8.2003]		[8.6541,8.7515]		[9.1500,9.3058]	

Notes: The sample used in estimation in the data is the pooled sample—across four marriage markets—described in table A2 in appendix C.1. The dependent variable is the natural logarithm of real annual earnings (in 1990 prices). Education types are high school (hs), some college (sc), and college degree or higher (c+). *Spousal experience* is a count variable that captures the number of years the man was married to a stay-at-home wife. *Experience* is a count variable that captures the number of years the individual supplied strictly positive hours of work to the labor market. 95% confidence intervals in brackets.

their baseline weight. The least educated women are the next most affected, with their Pareto weight reduced by 8% to 16%.

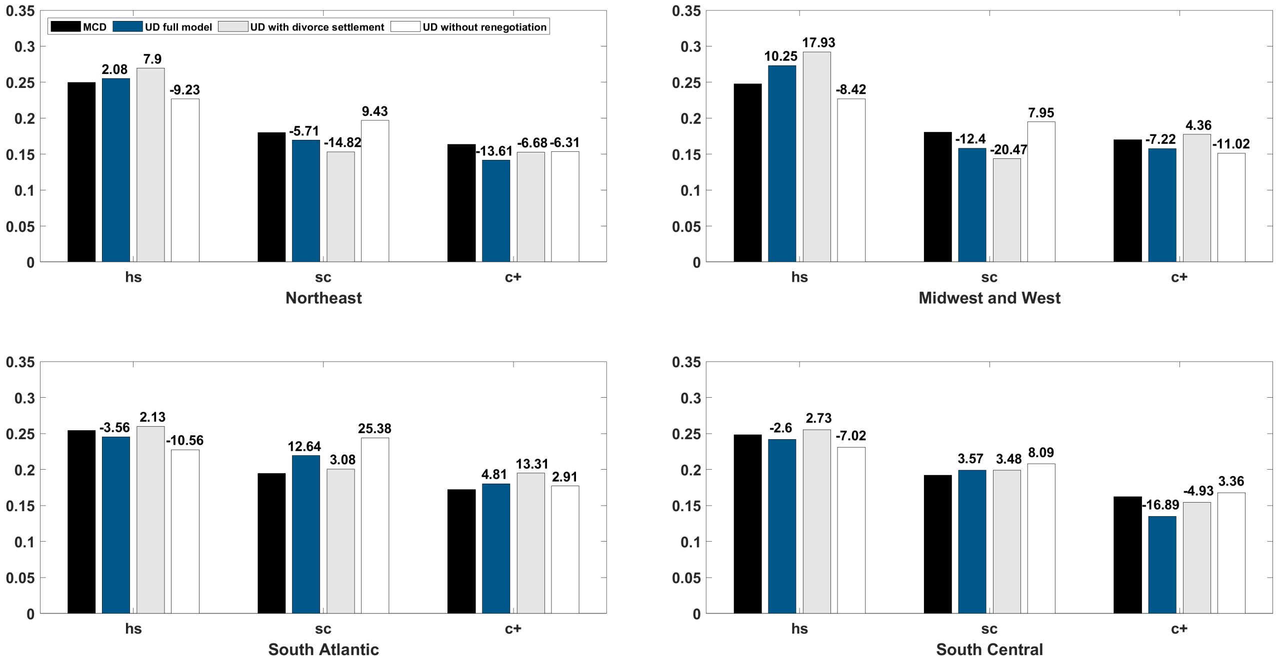
Table OA.6: Pareto weights under UD (% points change relative to MCD), averaged across marriage markets

		s_m		
		hs	**sc**	**c+**
s_f	**hs**	0.44(-0.13)	0.36(-0.16)	0.34(-0.08)
	sc	0.61(-0.04)	0.53(-0.06)	0.37(-0.11)
	c+	0.56(-0.16)	0.41(-0.28)	0.38(-0.12)

Notes: MCD stands for *mutual consent divorce*. UD stands for *unilateral divorce*. s_f and s_m refer to the education of women and men, respectively, which are high school (hs), some college (sc), and college degree or higher (c+). Each cell shows the weighted—by market size—average across markets of the female Pareto weight in couple (s_f, s_m) in the equilibrium under UD where model parameters are set at estimated levels. Weighted average changes relative to MCD shown in parentheses.

In turn, the heterogeneous impact of UD on household specialization by marriage market—analyzed in section 5.3 of the paper—are shown in figure OA.2; and the impact on the gains from marriage for women by marriage market—discussed in section 5.4 of the paper—are presented in figure OA.3.

Figure OA.2: Share of men married to stay-at-home wives by marriage market



Notes: *MCD* stands for *Mutual Consent Divorce*. *UD* stands for *Unilateral Divorce*. Education types are high school (hs), some college (sc), and college degree or higher (c+). Numbers above bars represent percentage changes relative to MCD.

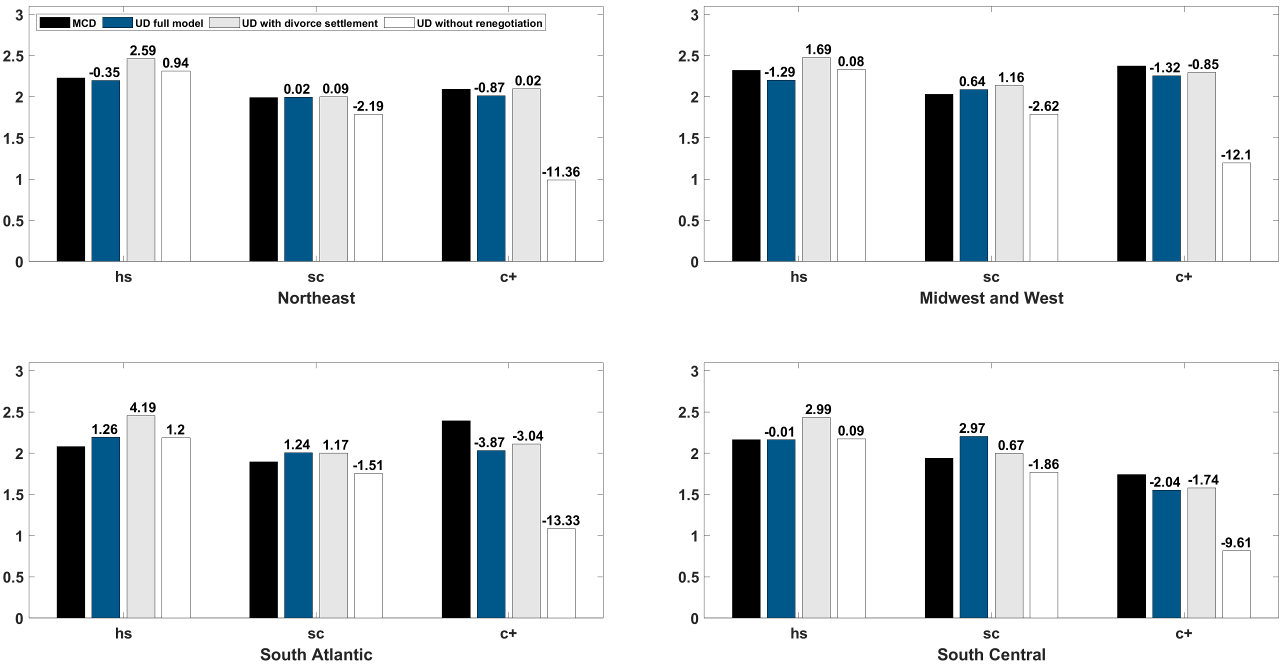
OF Robustness checks

Finally, I briefly comment on some robustness checks I performed throughout this project and verify that the main results of my paper are robust to different specifications. To recap, I find four main equilibrium impacts of UD: overall increment in PAM (section 5.2), reduction in household specialization for educated men and increment in divorce probabilities (section 5.3), and changes in gains from marriage (notably, a reduction for the highest educated women—section 5.4). I focus on robustness with respect to (i) definition of marriage markets; (ii) specification of income process; (iii) specification of behavioral parameters; and (iv) computational shortcuts.

First, I performed my main analysis with different definitions of marriage markets and the main results remain the same. In one exercise, I consider all the US as one marriage market for estimation under MCD and impact of UD. In another exercise, I pool the two Southern markets together and perform estimation under UD and impact of UD working with three markets. The main results outlined above remain in these two exercises.

Second, I considered an alternative specification of my model in which I input the parameters of the income process from the estimates obtained directly from the data. In that external estimation of income, I exploit variation across US states in division of property in divorce as an instrument for female labor force participation. The two strategies—internal versus external estimation—result in different but similar estimates of the income process and under

Figure OA.3: Gains from marriage and consumption equivalence for women, by marriage market



Notes: *MCD* stands for *Mutual Consent Divorce*. *UD* stands for *Unilateral Divorce*. Education types are high school (hs), some college (sc), and college degree or higher (c+). Numbers above bars represent the consumption equivalence measures that capture the percentage change in per-period consumption that would render women indifferent between UD and MCD.

both strategies my main results remain.

Third, I also specified and estimated three more parsimonious versions of the model in which the preference parameters vary at levels more aggregated than the type-of-couple level. In the three models the preference for stay-at-home wife, α, varies by woman's education and by whether the spouse is of the same or different education (6 parameters) and the mean match quality, $\overline{\theta}$, varies by the distance between the education of the spouses (3 parameters). In one specification there is a common variance of the match quality, σ (1 parameter), while in the the other two (which only differ in the set of targeted moments) this variance is further allowed to vary by the spousal distance in education (3 parameters). I estimate all three alternative models and the main results from my paper remain. However, my model fits targeted and untargeted moments better than all these three alternative specifications. Critically, my model dominates these alternative specifications in the fit of marriage patterns.

Finally, I confirm that the increment in divorce probabilities I find in my paper are not due to numerical error when searching over a discrete grid of Pareto weight updates to avoid divorce. Recall that in my model, when participation constraints in marriage are binding, couples revise the Pareto weight, looking for an updated sharing to make marriage profitable for both spouses. In the simulation of the model, I save on computation time by using a grid of 20 points to evaluate updates of the Pareto weight. A sparse grid may lead me to "skip" ranges of the revised Pareto weight in which the marriage would continue, hence leading to excessive divorce. However, when I refine the grid to 100 points, my results are unchanged.

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