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

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Question

How do property rights within marriage, as regulated by divorce laws, affect the behavior and wellbeing of married couples?

- During 70s and 90s, legal systems changed in many US states:
- Unilateral divorce was introduced;
- Three types of property regime (vary across states and over time):
  1. **Title-based**: what’s mine is mine.
  2. **Community Property**: split in half.
  3. **Equitable division of property**: courts decide the share of each spouse, outcome uncertain. Mostly introduced after 1970.
Facts

Consider couples married *before* the reform (PSID, NLS-YMW): after unilateral divorce

1. Households in states with *community property* $\rightarrow$ *save more* w.r.t. those in states with *title-based*.

2. Wives in states with *community property* $\rightarrow$ *work less* w.r.t. those in states with *title-based*.

3. Wives who work less $\rightarrow$ enjoy *more leisure* (rather than other time uses).
Economic Mechanism

- Unilateral divorce $\rightarrow$ **limited commitment** within marriage.

- When spouses have to agree upon divorce, intra-household allocations are not affected by property division laws.

- ...but when one of the two can split whenever (s)he wants...

- If husbands have higher (Pareto) weight than their wives
  1. $\rightarrow$ wives’ consume less and have a lower share of resources;
  2. $\rightarrow$ upon reform, post-divorce allocation is affected by property rights;
  3. $\rightarrow$ wives’ participation constraint becomes binding and they can threaten husbands with divorce;
  4. $\rightarrow$ increases wives’ consumption and leisure inside marriage!
  5. $\rightarrow$ savings increase because divorce law changes returns on savings.
The author builds a model of intra-household allocation and divorce... 
...and estimates it using reform-induced variation on savings and women’s labor force participation.

**Key insight:**

- Introduction of unilateral divorce $\times$ different property rights = different responses to the reform by state.

- Different responses estimable by diff-in-diff regressions. Call response coefficients $\phi_j$.

- Use Simulated Method of Moments to uncover parameters:
  1. Guess parameters.
  2. Simulate policy effects under different law regimes.
  3. Estimate identical diff-in-diff equations on model data. Repeat until you get close to $\phi_j$. 
Model - Environment and Preferences

- Discrete time model; H and W married at time 1 and live until time T.

- Each period they decide:
  1. How much to save (jointly)
  2. How to allocate consumption between spouses
  3. Stay together or divorce
  4. W decide whether to work or not; H always work.

- Period utilities:

\[
U(c^j_t, P^j_t) = \begin{cases} 
\frac{c^j_t}{1-\gamma} - \psi P^j_t + \xi^j_t & \text{if married} \\
\frac{c^j_t}{1-\gamma} - \psi P^j_t & \text{if divorced}
\end{cases}
\]

where

\[
\xi^j_t = \xi^j_{t-1} + \epsilon^j_t, \quad \epsilon^j_t \sim N(0, \sigma^2)
\]
Model - Economies of Scale

- There are economies of scale in marriage. That is,

\[ \chi = \left[ (c^H)^{\rho} + (c^W)^{\rho} \right]^{1\over\rho} \]

- Fertility is exogenous.

- Income evolves according to

\[ \log(y^j_t) = \log(h^j_t) + z^j_t \]
Model - BC

Budget constraint:

\[ A_{t+1} - (1 + r)A_t + x_t = y_t^H + (y_t^W - d_t^k)P_t^W \]

where \( A_t = A_t^H + A_t^W \).

**Title-based property regime:**

- If divorce is not an option \( \rightarrow \) allocation between spouses does not matter.
- If it is \( \rightarrow \) spouses decide each period how to allocate assets.

**Equitable distribution and Community Property regimes:**

- Spouses save jointly. Allocation does not matter.
Problem of Divorcede

- State variables: \( \omega_t = \{ A_t^i, z_t^i, h_t^W, \Omega_t \} \)

\[
V_{t}^{jD}(\omega_t) = \max_{c_t^j, P_t^j, A_{t+1}^j} u(c_t^j, P_t^j) + \beta \left\{ \pi_t^{j\Omega} \mathbb{E}[V_{t+1}^{jR}(\omega_{t+1} | \omega_t)] + (1 - \pi_t^{j\Omega}) \mathbb{E}[V_{t+1}^{jD}(\omega_{t+1} | \omega_t)] \right\}
\]

s.t. budget constraint in divorce
Problem of Married Couple

- **Case 1: Mutual Consent**
- Controls: \( q_t = \{c^H_t, c^W_t, A^H_{t+1}, A^W_{t+1}, P^W_t, D_t\} \)
- State variables: \( \omega_t = \{A^H_t, A^W_t, z^H_t, z^W_t, h^H_t, h^W_t, \xi^H_t, \xi^W_t, \Omega_t\} \)

\[
V_t^M(\omega_t) = \max_{q_t} (1 - D_t)\{\theta u(c^H_t, \xi_t) + (1 - \theta) u(c^W_t, P^W_t, \xi_t) \\
+ \beta \mathbb{E}[V_{t+1}^M(\omega_{t+1}|\omega_t)]\} \\
+ D_t\{\theta [u(c^H_t) + \beta \mathbb{E}[V_{t+1}^{HD}(\omega_{t+1}|\omega_t)]] \\
+ (1 - \theta) [u(c^W_t, P^W_t) + \beta \mathbb{E}[V_{t+1}^{WD}(\omega_{t+1}|\omega_t)]]\}
\]

s.t. \( \begin{cases} 
\text{b.c. in marriage} & \text{if } D_t = 0 \\
\text{b.c. in divorce and } A_t = A^H_t + A^W_t & \text{if } D_t = 1
\end{cases} \)

- Participation constraints, satisfied whenever \( D_t = 1 \):

\[
\begin{align*}
    u(c^H_t) + \beta \mathbb{E}[V_{t+1}^{HD}(\omega_{t+1}|\omega_t)] & > V_t^{HM}(\omega_t) \\
    u(c^W_t, P^W_t) + \beta \mathbb{E}[V_{t+1}^{WD}(\omega_{t+1}|\omega_t)] & > V_t^{WM}(\omega_t)
\end{align*}
\]
Problem of Married Couple

- **Case 2: Unilateral Divorce**
- **Controls:** \( q_t = \{c^H_t, c^W_t, A^H_{t+1}, A^W_{t+1}, P^W_t, D_t\} \)
- **State variables:** \( \omega_t = \{A^H_t, A^W_t, z^H_t, z^W_t, h^H_t, h^W_t, \xi^H_t, \xi^W_t, \hat{\theta}^H_t, \hat{\theta}^W_t, \Omega_t\} \)

\[
V_t^M(\omega_t) = \max_{q_t}(1 - D_t) \{\theta u(c^H_t, \xi_t) + (1 - \theta) u(c^W_t, P^W_t, \xi_t)
\]
\[
+ \beta \mathbb{E}[V_{t+1}^M(\omega_{t+1}|\omega_t)]
\]
\[
+ D_t \{\theta [u(c^H_t) + \beta \mathbb{E}[V_{t+1}^{HD}(\omega_{t+1}|\omega_t)]
\]
\[
+(1 - \theta) [u(c^W_t, P^W_t) + \beta \mathbb{E}[V_{t+1}^{WD}(\omega_{t+1}|\omega_t)]
\]

s.t. \[
\begin{cases}
\theta_{t+1}^H = \hat{\theta}^H_t + \mu^H_t & \text{if } D_t = 0 \\
\theta_{t+1}^W = \hat{\theta}^W_t + \mu^W_t & \text{and } \theta_{1}^W = (1 - \theta) & \text{if } D_t = 1 \\
\end{cases}
\]

- **Participation constraints symmetrical to previous case, always satisfied in marriage.**
## Calibration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial age</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Years in each period</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Age at death</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Retirement age</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Economies of scale in couple ($\rho$)</td>
<td>1.4023</td>
<td>McClements scale</td>
</tr>
<tr>
<td>Economies of scale for children ($e(k)$)</td>
<td></td>
<td>McClements scale</td>
</tr>
<tr>
<td>RRA ($\gamma$)</td>
<td>1.5</td>
<td>Attanasio et al. (2008)</td>
</tr>
<tr>
<td>Market returns on assets ($r$)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Discount factor ($\beta$)</td>
<td>0.98</td>
<td>Attanasio et al. (2008)</td>
</tr>
<tr>
<td>W’s age at childbearing</td>
<td>26 and 29</td>
<td>PSID</td>
</tr>
<tr>
<td>Childcare costs ($g^k$)</td>
<td></td>
<td>Attanasio et al. (2008)</td>
</tr>
<tr>
<td>Remarriage probabilities $\pi^{j\Omega}_{t}$</td>
<td></td>
<td>PSID</td>
</tr>
<tr>
<td>Cost of divorce ($CD$)</td>
<td></td>
<td>Rosen law firm fee calculator</td>
</tr>
</tbody>
</table>
Identification

- Three key parameters left to identify: \( \{\theta, \sigma, \psi\} \).

- *Step 1*: estimate difference-in-difference responses of
  1. labor force participation of women
  2. households’ assets

  on PSID and NLS-YMW data.

- Most households faced one of these cases: introduction of
  1. unilateral divorce while in title-based regime.
  2. unilateral divorce while in community property regime.
  3. equitable distribution in mutual consent states.
  4. equitable distribution in unilateral divorce states.
  5. both equitable distribution and unilateral divorce at the same time.

- Other cases affect too few households to make inference.
Identification

- Assets equation:

\[
\text{assets}_{i,s,t} = \beta_1 (\text{Unilateral} \cdot \text{Com.Prop}_{s,t}) + \beta_2 (\text{Unilateral} \cdot \text{Title}_{s,t}) + \beta_3 (\text{Unilateral} \cdot \text{Eq.Distr}_{s,t}) + \beta_4 \text{Com.Prop}_{s,t} + \beta_5 \text{Eq.Distr}_{s,t} + \gamma'Z_{i,t} + \delta_t + f_i + c_s + \epsilon_{i,s,t}.
\]

- Focus on special case: introduction of unilateral divorce in community property states.

- Motivation: sharper response and ease of computation.

- Auxiliary model:

\[
\text{assets}_{i,s,t} = \beta \text{Unilateral}_{s,t} + \gamma'Z_{i,t} + \delta_t + f_i + \nu_{1,i,s,t} \quad \phi_1 = \frac{\beta}{\text{average assets}}
\]
Identification

\[ employment_{i,s,t} = \phi_2 \text{Unilateral}_{s,t} + \gamma'Z_{i,t} + \delta_t + f_i + v_{2,i,s,t} \]

\[ employment_{i,s,t} = \phi_3 + v_{3,i,s,t} \]

\[ ever\ divorced_{i,s} = \phi_4 + v_{4,i,s} \]

- **Step 2**: estimate the same response in the model when introducing reform in community property regime.

- Important: ages must match those of affected households in PSID (slightly unclear here).

- Underlying assumption: couples do not change residence in response to reforms of divorce law.

- **Step 3**: compute loss function for SMM estimation. Repeat until minimum obtained.
## Results - DD

Table 2: **Household Assets and Female Employment: Fixed Effects Regressions**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) assets</th>
<th>(2) assets</th>
<th>(3) assets</th>
<th>(4) assets</th>
<th>(5) employed</th>
<th>(6) employed</th>
<th>(7) employed</th>
<th>(8) employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uni*Com.Pr</td>
<td>12,159</td>
<td>11,682</td>
<td>11,502</td>
<td>16,867</td>
<td>-0.0377</td>
<td>-0.0389</td>
<td>-0.0575</td>
<td>-0.0488</td>
</tr>
<tr>
<td></td>
<td>(5,542)</td>
<td>(5,313)</td>
<td>(5,338)</td>
<td>(4,639)</td>
<td>(0.0158)</td>
<td>(0.0168)</td>
<td>(0.0168)</td>
<td>(0.0171)</td>
</tr>
<tr>
<td>Uni*Title</td>
<td>-5,959</td>
<td>-5,853</td>
<td>-5,472</td>
<td>-3,300</td>
<td>-0.0234</td>
<td>-0.0215</td>
<td>-0.0230</td>
<td>-0.0123</td>
</tr>
<tr>
<td></td>
<td>(6,737)</td>
<td>(6,788)</td>
<td>(6,883)</td>
<td>(7,279)</td>
<td>(0.0273)</td>
<td>(0.0258)</td>
<td>(0.0252)</td>
<td>(0.0302)</td>
</tr>
<tr>
<td>Uni*Eq.Distr.</td>
<td>8,614</td>
<td>9,346</td>
<td>9,444</td>
<td>12,652</td>
<td>-0.0279</td>
<td>-0.0263</td>
<td>-0.0265</td>
<td>-0.0298</td>
</tr>
<tr>
<td></td>
<td>(8,786)</td>
<td>(8,275)</td>
<td>(8,461)</td>
<td>(8,445)</td>
<td>(0.0294)</td>
<td>(0.0301)</td>
<td>(0.0372)</td>
<td>(0.0400)</td>
</tr>
<tr>
<td>Com.Pr.</td>
<td>13,944</td>
<td>14,387</td>
<td>69,175</td>
<td>-52,723</td>
<td>0.0340</td>
<td>0.0382</td>
<td>0.151</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>(14,520)</td>
<td>(14,699)</td>
<td>(14,250)</td>
<td>(44,727)</td>
<td>(0.0272)</td>
<td>(0.0255)</td>
<td>(0.0544)</td>
<td>(0.0559)</td>
</tr>
<tr>
<td>Eq.Distr.</td>
<td>-13,898</td>
<td>-14,687</td>
<td>-14,833</td>
<td>-17,576</td>
<td>0.00191</td>
<td>0.00282</td>
<td>0.00267</td>
<td>0.00811</td>
</tr>
<tr>
<td></td>
<td>(9,166)</td>
<td>(8,876)</td>
<td>(8,938)</td>
<td>(10,733)</td>
<td>(0.0173)</td>
<td>(0.0174)</td>
<td>(0.0173)</td>
<td>(0.0178)</td>
</tr>
</tbody>
</table>

| Year f.e.          | Yes        | Yes        | Yes        | Yes        | Yes          | Yes          | Yes          | Yes          |
| Age dummies        | Yes        | Yes        | Yes        | Yes        | Yes          | Yes          | Yes          | Yes          |
| Children dummies   | No         | Yes        | Yes        | Yes        | No           | Yes          | Yes          | Yes          |
| State f.e.         | No         | No         | Yes        | Yes        | No           | No           | Yes          | Yes          |
| Polyn yrs. married | No         | No         | No         | Yes        | No           | No           | No           | Yes          |
| Observations       | 15,399     | 15,399     | 15,399     | 12,022     | 44,808       | 44,808       | 44,808       | 39,824       |
| Individual f.e.    | 4,538      | 4,538      | 4,538      | 3,516      | 3,437        | 3,437        | 3,437        | 2,607        |

*Notes:* Columns 1-4: Data from the NLS of Young and Mature Women. Sample of couples married before legal reforms. Dependent variable is real total household net assets. Columns 5-8: Linear Probability Models. Data from the PSID. Sample of couples married before legal reforms. Dependent variable is female employment status. Excluded category for divorce laws: title-based mutual consent regime.
Table 5: **Estimated structural parameters and match of the auxiliary model**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Estimate</th>
<th>Std. error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard deviation of preference shocks</td>
<td>$\sigma$</td>
<td>0.00191</td>
<td>0.0002</td>
</tr>
<tr>
<td>Disutility from labor mkt participation</td>
<td>$\psi$</td>
<td>0.00341</td>
<td>0.0004</td>
</tr>
<tr>
<td>Husbands’ Pareto weight</td>
<td>$\theta$</td>
<td>0.75</td>
<td>0.0114</td>
</tr>
<tr>
<td>Auxiliary model parameter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of uni. divorce on savings in CP</td>
<td>$\phi_1$</td>
<td>16.06%</td>
<td>14.77%</td>
</tr>
<tr>
<td>Effect of uni. divorce on participation in CP</td>
<td>$\phi_2$</td>
<td>-6.02 pcpt</td>
<td>-6.27 pcpt</td>
</tr>
<tr>
<td>Baseline participation rate in CP</td>
<td>$\phi_3$</td>
<td>55.97%</td>
<td>55.90%</td>
</tr>
<tr>
<td>Baseline divorce probability in CP</td>
<td>$\phi_4$</td>
<td>19.44%</td>
<td>19.32%</td>
</tr>
</tbody>
</table>
Figure 3: Dynamic response of assets accumulation and female employment in the simulations and in the data

(a) Assets (simulation and NLSW)  
(b) Female employment (simulation and PSID)
When divorce is introduced, participation constraint of wives becomes binding in Community Property States.

They are likely to divorce → induce reallocation of bargaining power within HH.

Wives don’t have to work as before - they can threaten divorce!

HHs save more to shield against risk of divorce and splitting assets.
The author analyzes effects of introduction of divorce...

...exploiting heterogeneity in divorce laws across states.

In community property states, assets accumulation ↑ and female labor force participation ↓.

A dynamic model of divorce and household choices is estimated.

Results suggestive of extensive reallocation of resources and bargaining power within households following reform.