Female Labor Market Conditions and Family Formation

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Overview

Slack labor market conditions for women reduce the opportunity cost of marriage and increase the incidence of marriage for young women.

What happens to these marriages induced by labor market fluctuations in the long run?

- Does this rise in marriage incidence mean an increase in the number of women who will ever marry?
- Will they stay married, or divorce after the recovery of labor demand?
- Any implications for fertility?
Literature and contributions of this study

- **Contemporaneous** effects on the fraction of women who are married: Preston & Richards (1975), Schultz (1994), Blau, Kahn & Waldfogel (2000).
  - Theoretical rationale: better labor market conditions for women increase the opportunity cost of marriage, given that married women work less than unmarried women (Becker 1973).
  - Relying on decennial Census; limited to contemporaneous effects.

- This study is the first attempt to examine **long-term** consequences on the number of women who will ever marry and the future divorce rate.
  - Using individual women’s marriage history data from the SIPP.
Preview of findings

- Confirmation of the contemporaneous effects on marriage incidence
  - Worse labor market conditions for women increase marriage incidence for young women.

- Evidence for *acceleration in the timing of marriage* among people who would eventually marry anyway:
  - No effect on the fraction who will marry by age 30 in the affected cohort.
  - No systematic correlation between labor market conditions at marriage and divorce probability.

- Effects of marrying younger on fertility
  - Timing of the first childbirth also shifts.
  - The number of children eventually born doesn’t change.
Methodology

- Regression analyses of individual level outcomes on gender-specific unemployment rates at the state level, experienced at age 18-20 or at the time of marriage.
  - These unemployment rates must have affected marriage formation in the teens and early 20s.

- Individual level marriage history data (SIPP) + state level unemployment rates by gender (CPS).

- Controls for nation-wide year/cohoot effects and state fixed effects.
Initial Evidence (without controls for state and year effects)

Figure 3: Female unemployment rate in youth and various outcomes at the cohort level (without controls for year and state fixed effects)
Individual level data

- Survey of Income and Program Participation (SIPP) 1990, 91, 92, 93, 96, 2001, 04
  - Repeated short panels for 3-4 years + retrospective info. from topical modules
  - Complete marriage history, limited fertility & migration history.
### Summary statistics

<table>
<thead>
<tr>
<th>All incl. never married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
</tr>
<tr>
<td>Education: Drop-outs</td>
</tr>
<tr>
<td>High school grads</td>
</tr>
<tr>
<td>Some college (&lt; BA)</td>
</tr>
<tr>
<td>BA / grad school school</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marriages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
</tr>
<tr>
<td>Average age at first marriage</td>
</tr>
<tr>
<td>5 year divorce rate</td>
</tr>
</tbody>
</table>
Figure 1b: Composition of age at marriage
(sum = 81%, i.e. 19% are not married by 30)
Gender-specific unemployment rates

- Unemployment rates = proxies for aggregate labor demand.
- Universe: 15-40 yr old non-Hispanic white civilian labor force.
- Controls for both female and male unemployment rates.
- Reverse causality (marriage rate \( \Rightarrow \) unemployment rate)?
  - Quantitatively negligible: the unemployment rates of married and unmarried women of the same age are similar. Also women who get married in each year is only 4% of the female population aged 15-40.
  - Yet, currently trying to use "predicted" unemployment rates as instruments (not done yet).
Contemporaneous effects on marriage hazard

Cox’s proportional hazard model:

\[ M_{its} = \lambda(\text{age}_{it}, \text{birthyr}) \exp(\alpha u^w_{ts} + \beta u^m_{ts} + \eta_s + \epsilon_{its}) \]

[\bar{M}, or \Pr(\text{getting married in } t \mid \text{ single in } t-1), \text{ is about } 10\%.]

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Hazard ratio</th>
<th>Marginal change in M</th>
</tr>
</thead>
<tbody>
<tr>
<td>(u^w_{ts})</td>
<td>0.074***</td>
<td>1.076</td>
</tr>
<tr>
<td>(0.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(u^m_{ts})</td>
<td>-0.022*</td>
<td>0.978</td>
</tr>
<tr>
<td>(0.015)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N women 36,056

Consistent with existing studies using the Census data.
Effects of $u$ in youth on marriage timing and # women who will marry by age $X$

(1) Median regression:
\[ Agemar = \alpha \bar{u}_{18-20, \tau \theta} + \beta \bar{u}_{18-20, \tau \theta} + \eta \bar{\zeta} + \xi \tau + \varepsilon_{i \tau \theta} \]

(2)-(4) Linear model at the cohort level:
\[ Pr(married|age) = \alpha \bar{u}_{18-20, \tau \theta} + \beta \bar{u}_{18-20, \tau \theta} + \eta \bar{\zeta} + \xi \tau + \varepsilon_{i \tau \theta} \]

<table>
<thead>
<tr>
<th>Age</th>
<th>Median age</th>
<th>22</th>
<th>26</th>
<th>30</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\bar{u}_{18-20}$</td>
<td>-0.394***</td>
<td>0.027***</td>
<td>0.023**</td>
<td>0.006</td>
<td>0.000</td>
</tr>
<tr>
<td>$\bar{u}_{18-20, \tau \theta}$</td>
<td>0.131***</td>
<td>-0.008</td>
<td>-0.009</td>
<td>0.001</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Observations 9536 486 486 486 397

- A shift in the timing of marriage without changing the number of women who will eventually marry.
Effects of past u-rates on the divorce probability

Probit model:
\[ \text{Pr(divorce in 5 or 10 years)} = \Phi(\alpha u^w_{ST} + \beta u^m_{ST} + \eta_S + \zeta_T + \varepsilon_{iTS}) \]

Marginal effects

<table>
<thead>
<tr>
<th></th>
<th>5yr divorce rate</th>
<th></th>
<th>10yr divorce rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>u at mar</td>
<td>u at age 18-20</td>
<td>u at mar</td>
</tr>
<tr>
<td>(u^w)</td>
<td>-0.002</td>
<td>-0.002</td>
<td>0.006</td>
</tr>
<tr>
<td>(u^m)</td>
<td>-0.001</td>
<td>0.002</td>
<td>0.001</td>
</tr>
<tr>
<td>obs</td>
<td>15,437</td>
<td>19,544</td>
<td>9,191</td>
</tr>
</tbody>
</table>

- Marriage incidence↑ ⇝ Future divorce↑

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Summary of the effects on marriage formation

- Worse labor market conditions for women increase marriage incidence for young women.
- Young women adjust the timing of marriage according to labor market conditions.
- This timing shift does not increase the number of women who will ever marry in the cohort.
- Nor affect the divorce probability.

⇒ Changes in the timing of marriage for women who would eventually marry anyway.
Effects of marrying young on first births

(1) Median regression:
\[ \text{Age}_{\text{birth}} = \alpha \bar{u}_{18-20, \tau \bar{s}} + \beta \bar{u}_{18-20, \tau \bar{s}} + \eta_{\bar{s}} + \zeta_\tau + \varepsilon_{i \tau \bar{s}} \]

(2)-(4) Linear model at the cohort level:
\[ \Pr(\text{have}_\text{child}|\text{age}) = \alpha \bar{u}_{18-20, \tau \bar{s}} + \beta \bar{u}_{18-20, \tau \bar{s}} + \eta_{\bar{s}} + \zeta_\tau + \varepsilon_{i \tau \bar{s}} \]

<table>
<thead>
<tr>
<th>Age</th>
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<th>22</th>
<th>26</th>
<th>30</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bar{u}_{18-20}^w )</td>
<td>-0.516***</td>
<td>0.004</td>
<td>0.021</td>
<td>0.022*</td>
<td>0.010</td>
</tr>
<tr>
<td>( \bar{u}_{18-20}^m )</td>
<td>0.489***</td>
<td>-0.003</td>
<td>-0.020**</td>
<td>-0.020**</td>
<td>-0.005</td>
</tr>
<tr>
<td>Observations</td>
<td>9536</td>
<td>486</td>
<td>486</td>
<td>486</td>
<td>397</td>
</tr>
</tbody>
</table>
Effects of marrying young on total fertility

Linear OLS: \( \# \text{Children} = \alpha u^w_{ST} + \beta u^m_{ST} + \eta_S + \zeta_T + \epsilon_{iTS} \)

\#Children: the number of children at survey for women who were 35-37 years old at survey

<table>
<thead>
<tr>
<th>Age</th>
<th>( u ) at mar</th>
<th>( u ) at age 18-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bar{u}^w_{18-20} )</td>
<td>-0.019</td>
<td>-0.027</td>
</tr>
<tr>
<td>( \bar{u}^m_{18-20} )</td>
<td>-0.005</td>
<td>0.002</td>
</tr>
<tr>
<td>Observations</td>
<td>1927</td>
<td>2621</td>
</tr>
</tbody>
</table>
Interpretation: two possible channels to change marriage incidence

\[ \Pr(\text{getting married}) = \Pr(\text{a woman meets a man}) \times \Pr(\text{agree to marry | meeting}). \]

- Lowering reservation match quality increases \( \Pr(\text{agree to marry | meeting}) \).
  - Poorly matched couples are induced to marry.
- Putting in more search effort increases \( \Pr(\text{meeting}) \).
  - An acceleration of the formation of matches without affecting match qualities.

My empirical findings are consistent with the second explanation.
Concluding remarks

- Changes in marriage incidence for young women due to aggregate labor market shocks reflect shifts in the timing of marriage for those who would eventually marry anyway.
- No evidence that marriages induced by worse labor market conditions are more likely to end in divorces.
- Marrying young in response to labor market fluctuations does not affect the number of children born to each woman.
- Intertemporal substitution in response to labor market fluctuations?