

# Labor Market Transitions over the Business Cycle: Gender Differential in the United States from 2001 to 2020

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# Gender Differential in Cyclical Sensitivity

- **The gender differential in cyclical sensitivity is attributable to several reasons.**
  - Sectoral gender segregation
  - Flexible reserve
  - Segmentation and added worker
  - Substitution
- **There exists gender differential in labor market performance across countries and over the business cycle.**
  - There has been sustained rises in female participation and systematic falls in male participation from 1970-1995 in OECD: Japan, France, Sweden, and U.S.
  - Labor force participation in developing countries were altered by the cyclical shock of the 1997-1998 Asian crisis.
  - The effect of cyclical shocks is more intense on male unemployment than for female unemployment over the decades before 2008 in UK and US.

# Data and Methodology

- **Data**

- Individual-level CPS data matched across adjacent months from January 2001 to January 2020, all males and females aged 25-64.

- **Transition rate**

$$\text{Prob} \{L_{i,t+1} | L_{i,t}\}$$

- **Business cycle measure**

*BC = the State-level Unemployment Rate – the National Natural Rate of Unemployment*

- **Empirical strategy**

- Flows among employment, unemployment, and nonparticipation
- Heterogeneous test
- Great Recession test

$$P_{ist} = \beta_0 + \beta_1 \text{Female}_{ist} + \beta_2 \text{BC}_{st} + \beta_3 \text{Female}_{ist} \times \text{BC}_{st} + \chi_{ist} \delta + \alpha_s + \gamma_t + \varepsilon_{ist}$$

# Transitions to Employment over the Business Cycle

|                                | Transitions to Employment |                        | Transitions to Unemployment |                        | Transitions to Nonparticipation |                        |
|--------------------------------|---------------------------|------------------------|-----------------------------|------------------------|---------------------------------|------------------------|
|                                | (1)                       | (2)                    | (3)                         | (4)                    | (5)                             | (6)                    |
|                                | U-to-E                    | NILF-to-E              | E-to-U                      | NILF-to-U              | E-to-NILF                       | U-to-NILF              |
| Female                         | -3.6962***<br>(0.4883)    | -2.4917***<br>(0.1238) | 0.3995***<br>(0.0280)       | -0.4447***<br>(0.1002) | 1.3743***<br>(0.0381)           | 6.7153***<br>(0.4496)  |
| BC                             | -1.9738***<br>(0.0509)    | -0.2303***<br>(0.0170) | 0.1430***<br>(0.0038)       | 0.4964***<br>(0.0155)  | -0.0272***<br>(0.0038)          | -0.7889***<br>(0.0412) |
| Female x BC                    | 0.0961<br>(0.0655)        | 0.0640***<br>(0.0189)  | -0.0773***<br>(0.0047)      | -0.1914***<br>(0.0171) | -0.0242***<br>(0.0060)          | 0.0132<br>(0.0614)     |
| Family and Job Characteristics | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| State Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Month Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Observations                   | 433,238                   | 2,525,587              | 9,000,566                   | 2,525,587              | 9,000,566                       | 433,238                |
| Mean of Dependent Variable     | 0.2259                    | 0.0569                 | 0.0108                      | 0.0313                 | 0.0195                          | 0.1879                 |

- Women are *more likely to transit into employment (NILF-to-E)* for each percentage point increase in local unemployment rate.
  - Added worker effect: women tend to compensate household income as a second earner as the economy worsens.
  - Substitution hypothesis: women become attractive workers to substitute for men during economic downturns.

# Transitions to Unemployment over the Business Cycle

|                                | Transitions to Employment |                        | Transitions to Unemployment |                        | Transitions to Nonparticipation |                        |
|--------------------------------|---------------------------|------------------------|-----------------------------|------------------------|---------------------------------|------------------------|
|                                | (1)                       | (2)                    | (3)                         | (4)                    | (5)                             | (6)                    |
|                                | U-to-E                    | NILF-to-E              | E-to-U                      | NILF-to-U              | E-to-NILF                       | U-to-NILF              |
| Female                         | -3.6962***<br>(0.4883)    | -2.4917***<br>(0.1238) | 0.3995***<br>(0.0280)       | -0.4447***<br>(0.1002) | 1.3743***<br>(0.0381)           | 6.7153***<br>(0.4496)  |
| BC                             | -1.9738***<br>(0.0509)    | -0.2303***<br>(0.0170) | 0.1430***<br>(0.0038)       | 0.4964***<br>(0.0155)  | -0.0272***<br>(0.0038)          | -0.7889***<br>(0.0412) |
| Female x BC                    | 0.0961<br>(0.0655)        | 0.0640***<br>(0.0189)  | -0.0773***<br>(0.0047)      | -0.1914***<br>(0.0171) | -0.0242***<br>(0.0060)          | 0.0132<br>(0.0614)     |
| Family and Job Characteristics | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| State Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Month Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Observations                   | 433,238                   | 2,525,587              | 9,000,566                   | 2,525,587              | 9,000,566                       | 433,238                |
| Mean of Dependent Variable     | 0.2259                    | 0.0569                 | 0.0108                      | 0.0313                 | 0.0195                          | 0.1879                 |

- Women are *less likely to transit into unemployment* for each percentage point increase in local unemployment rate.
  - Segregation hypothesis: the sectoral and occupational structures provide women with relative protection in downturns.

# Transitions to Nonparticipation over the Business Cycle

|                                | Transitions to Employment |                        | Transitions to Unemployment |                        | Transitions to Nonparticipation |                        |
|--------------------------------|---------------------------|------------------------|-----------------------------|------------------------|---------------------------------|------------------------|
|                                | (1)                       | (2)                    | (3)                         | (4)                    | (5)                             | (6)                    |
|                                | U-to-E                    | NILF-to-E              | E-to-U                      | NILF-to-U              | E-to-NILF                       | U-to-NILF              |
| Female                         | -3.6962***<br>(0.4883)    | -2.4917***<br>(0.1238) | 0.3995***<br>(0.0280)       | -0.4447***<br>(0.1002) | 1.3743***<br>(0.0381)           | 6.7153***<br>(0.4496)  |
| BC                             | -1.9738***<br>(0.0509)    | -0.2303***<br>(0.0170) | 0.1430***<br>(0.0038)       | 0.4964***<br>(0.0155)  | -0.0272***<br>(0.0038)          | -0.7889***<br>(0.0412) |
| Female x BC                    | 0.0961<br>(0.0655)        | 0.0640***<br>(0.0189)  | -0.0773***<br>(0.0047)      | -0.1914***<br>(0.0171) | -0.0242***<br>(0.0060)          | 0.0132<br>(0.0614)     |
| Family and Job Characteristics | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| State Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Month Fixed Effects            | Yes                       | Yes                    | Yes                         | Yes                    | Yes                             | Yes                    |
| Observations                   | 433,238                   | 2,525,587              | 9,000,566                   | 2,525,587              | 9,000,566                       | 433,238                |
| Mean of Dependent Variable     | 0.2259                    | 0.0569                 | 0.0108                      | 0.0313                 | 0.0195                          | 0.1879                 |

- Women are *less likely to leave the labor force (E-to-NILF)* for each percentage point increase in the state unemployment rate.
  - Female workers are becoming more strongly attached to the labor force than men are over the business cycle.

# Heterogeneity by Family and Job Characteristics

| Number of children | Marital status                                 | Educational attainment | Major industry                     |
|--------------------|--|------------------------|------------------------------------|
| No child           | Married, spouse present                        | High school or less    | Agriculture                        |
| One                | Married, spouse absent                         | High school degree     | Construction                       |
| Two                | Widowed, divorced, separated,<br>never married | Bachelor's degree      | Manufacturing                      |
| Three or more      |  | Graduate degree        | Wholesale and retail trade         |
|                    |  |                        | Information                        |
|                    |  |                        | Financial activities               |
|                    |  |                        | Professional and business services |
|                    |  |                        | Educational and health services    |
|                    |  |                        | Public administration              |

- Impacts are found strongest among women with relatively *lower educational attainment*. Women's cyclical sensitivity is also greater when their *first child* enters the household and when the number of children in the household increases to *three or more*.
  - Flexible reserve and added worker: female workers, especially those with lower human capital endowments, serve as a flexible reserve and their labor market behavior over the cycle depends on the organization of the family.

# Structural Change Brought by the Great Recession

|                               | Transitions to Employment |           | Transitions to Unemployment |           | Transitions to Nonparticipation |           |
|-------------------------------|---------------------------|-----------|-----------------------------|-----------|---------------------------------|-----------|
|                               | (1)                       | (2)       | (3)                         | (4)       | (5)                             | (6)       |
|                               | U-to-E                    | NILF-to-E | E-to-U                      | NILF-to-U | E-to-NILF                       | U-to-NILF |
| Post-2007 x Female x BC       | -0.3215                   | 0.0105    | -0.0027                     | -0.0122   | -0.0385**                       | 0.4605*   |
|                               | (0.2763)                  | (0.0681)  | (0.0139)                    | (0.0522)  | (0.0190)                        | (0.2607)  |
| Controls and other regressors | Y                         | Y         | Y                           | Y         | Y                               | Y         |
| Observations                  | 433,238                   | 2,525,587 | 9,000,566                   | 2,525,587 | 9,000,566                       | 433,238   |
| Mean of dependent variable    | 0.2259                    | 0.0569    | 0.0108                      | 0.0313    | 0.0195                          | 0.1879    |

- With the onset of of the 2007 Great Recession, there is a *secular increase in women's employment*.
  - Women were less likely to transition from employment to not in the labor force following the onset of the Great Recession.
  - Women demonstrate a stronger pattern in terms of not exiting the labor market.



## Conclusions and Discussion

- Over the business cycle, female workers are *more likely to transit into employment (from NILF)* and *less likely to transit into unemployment and nonparticipation* as the economic condition becomes worse.
- The impacts are found strongest among women with relatively *lower educational attainment* and *substantial childcare responsibility*.
- The test of structural change of the Great Recession indicates that there is a *secular increase in women's employment* and that women experienced a lower probability of transitioning from employment to not in the labor force in the post-2007 period.

# Conclusions and Discussion

## Differences between the Great Recession (“Man-cession”) and the COVID-19 pandemic recession (“She-cession”).

- The most recent COVID-19 related downturn (NOT covered by the sample period of this study) is different than previous recessions and might result in a different gendered impact.
- Due to government mandated business closure policies, workers in non-essential industries such as leisure and hospitality were hit hardest by the pandemic recession.
- Women’s labor market outcomes in the pandemic recession may be disproportionately affected.
  - Increased child caregiving demands.
  - Being more concentrated in service-type jobs that cannot be performed remotely.

Thank You.



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