The effect of unemployment on the mental health of spouses
Evidence from plant closures in Germany

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MOTIVATION
- Studies on health effects of unemployment usually neglect spillover effects on spouses (e.g. Browning et al. 2000; Deb et al. 2011; Schmitz 2011)
- Not considering these potential negative externalities for spouses might result in underestimated public health costs of job loss and unemployment (e.g. Kuhn et al. 2009).
- When comparing costs and benefits of labor market policies to prevent unemployment, policy-makers need to know more about the non-financial benefits of employment

CONTRIBUTIONS
- Strong focus on causal estimation:
  - Reason for unemployment: only plant closures considered. Other reasons might be endogenous.
  - Study combines diff-in-diff and matching
  - Matching part constitutes one of the first applications of entropy balancing (Hainmueller 2011), which balances conditioning variables more effectively than propensity score methods

DATA
SOEP (German Socio-Economic Panel Study)
- Attractive features
  - Panel data (observation before/after treatment)
  - Large N (analyzing rare events like plant closure)
  - Rich data (broad range of control variables)
  - HHI survey (cohabiting spouses provide data directly)
- Treatment group: couples in which one spouse enters unemployment due to plant closure and the other spouse does not experience a plant closing (109 couples)
- Control group: >=1 spouse employed in the private sector

ESTIMATION STRATEGY
General idea
- Take couples who are affected by unemployment and similar couples without such an unemployment experience (matching) and compare changes in mental health of these two groups (difference-in-difference).
- Identification assumption: no unobserved variables exist that simultaneously influence changes in mental health and the probability of entering unemployment due to plant closure, i.e.
\[ E_{D=1} (Y^0 - Y^1) = E_{D=0} (Y^0 - Y^1) \]
- Formal notation:
\[ ATT = \left( X' W X \right) ^{-1} X' \Delta Y \]

RESULTS
Assessing the matching quality (of selected variables)

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Foreign</th>
<th>Mental health</th>
<th>Tenure</th>
<th>Never unemployed</th>
<th>Income</th>
<th>Big job worries</th>
<th>No job worries</th>
<th>Intermediate school</th>
<th>University</th>
<th>Path: not working</th>
<th>P: works full-time</th>
<th>P: S mental health</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40</td>
<td>--30</td>
<td>--20</td>
<td>--10</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Advantages of entropy balancing
- More effective than propensity score (PS) methods as it better improves balance for all covariates (i.e. smaller standardized bias in absolute terms)
- Makes “manual iteration” between propensity score modeling, matching, and balance checking unnecessary
- PS- Methods often decrease balance on some covariates
- Fully non-parametric

Main results

<table>
<thead>
<tr>
<th>Outcome/Sample</th>
<th>All couples</th>
<th>Partner’s mental health</th>
<th>Husband’s unemployment</th>
<th>Baseline smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own mental health</td>
<td>-2.72***</td>
<td>-2.66***</td>
<td>-2.49***</td>
<td>-1.82***</td>
</tr>
<tr>
<td>(0.74)</td>
<td>(0.72)</td>
<td>(0.73)</td>
<td>(0.68)</td>
<td>(0.65)</td>
</tr>
<tr>
<td>Partner’s mental health</td>
<td>-1.94***</td>
<td>-1.99**</td>
<td>-1.82***</td>
<td>-1.67**</td>
</tr>
<tr>
<td>(0.68)</td>
<td>(0.65)</td>
<td>(0.64)</td>
<td>(0.76)</td>
<td>(0.76)</td>
</tr>
<tr>
<td>Own mental health</td>
<td>-3.18***</td>
<td>-3.09***</td>
<td>-3.44***</td>
<td>-1.70***</td>
</tr>
<tr>
<td>(0.89)</td>
<td>(0.85)</td>
<td>(0.94)</td>
<td>(0.79)</td>
<td>(0.76)</td>
</tr>
<tr>
<td>Partner’s mental health</td>
<td>-2.09**</td>
<td>-2.22***</td>
<td>-1.76***</td>
<td>-1.13***</td>
</tr>
<tr>
<td>(0.79)</td>
<td>(0.68)</td>
<td>(0.68)</td>
<td>(0.79)</td>
<td>(0.68)</td>
</tr>
</tbody>
</table>

Note: Each cell displays the effect of unemployment (ATT) from a separate weighted regression and its robust standard error. Main results rely on entropy balancing. PS-Matching is kernel matching resorting to the linear index of the propensity score and an Epanechnikov kernel with a bandwidth of 0.05. ** p < 0.01, *** p < 0.001

Robustness checks
Results (see column 1) are insensitive to:
- Using kernel matching (column 2)
- Applying propensity score weighting (column 3)

SUMMARY
- Unemployment of one spouse similarly affects the mental health of both spouses.
- About one year after the plant closure, unemployment decreased mental health by 27% of a standard deviation for unemployed individuals themselves and by 19% of a standard deviation for their spouses.
- Decreases in mental health are larger if the male spouse enters unemployment.
- Results are robust over various matching specifications.

DISCUSSION
- The findings highlight that unemployment has severe consequences also for spouses.
- Hence, previous studies underestimate public health costs of unemployment.
- When making cost-benefit analyses of labor market policies to prevent unemployment, policy-makers should take into account that employment has non-financial benefits. These non-financial benefits do not only concern the employed individuals but also their spouses.

SELECTED REFERENCES
- Jan Marcus