Health Shocks and Disability Transitions among Near-Elderly Workers

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Motivation

• Fiscal outlook $\Rightarrow$ need for reform

• Enormous heterogeneity in response to a major health shock among near-elderly workers
  – 12% apply for DI within 4 years, 60% continue FT work
  – 27% of high school drop-outs apply, 21% of blacks

• How do individuals respond to health shocks?
• Why do some take SSDI, others don’t?
Two Broad Theories

- **Health capital**
  - In a perfect world, you only receive DI benefits if health is too poor to work
  - Fewer papers emphasize health: Bound et al. (2010), Meara and Skinner (2011), Cutler, Meara, R-S (2011)

- **Labor supply**
  - Repl. rates (Parsons 1991)
  - Recessions, demand for low-skill workers (Autor and Duggan 2003, 2006)
  - Health benefits (A & D)
  - Allowance rates (Burkhauser et al. 2001; Maestas et al. 2011; French and Song 2011)
Our Contribution

• Focus on dynamic response to well measured, exogenous health shocks

• *Preliminary analysis* – How important are these rapid health declines in transition to DI among near-elderly workers?

• *Main analysis* – How and why the response to health shocks differs across groups?
  – Draw on health capital and labor supply theories
  – Strongest evidence is for effect of high earnings
Health & Retirement Study sample:

- All waves from 1992-2008
- Age 50-64 (censored at age ≥65)
- Full-time workers prior to health shock
- Have ~14,500 male, ~12,500 female person-wave observations on ~10,500 individuals
- Use rich data on health conditions, functional limitations, work, earnings and other income, health insurance, household members
Defining Health Shocks

• Follow Jim Smith (1999)
  – HRS asks about a series of health conditions:
    “Has a doctor ever told you that you have _____?”
  – New diagnoses define shocks
  – Major shocks: cancer, lung disease, heart disease, stroke, or psychiatric condition
  – Minor shocks: hypertension, diabetes, or arthritis

• More objective than self-reported health status or “a condition that limits ability to work,” less objective than physical exam (e.g., NHANES)
Health shocks among full-time workers (age 50-62 in year $t$):

<table>
<thead>
<tr>
<th>New diagnosis between year $t$ and $t+2$</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major health shock</td>
<td>0.069</td>
<td>0.068</td>
</tr>
<tr>
<td>Cancer</td>
<td>0.018</td>
<td>0.013</td>
</tr>
<tr>
<td>Lung disease</td>
<td>0.009</td>
<td>0.013</td>
</tr>
<tr>
<td>Heart disease</td>
<td>0.025</td>
<td>0.020</td>
</tr>
<tr>
<td>Stroke</td>
<td>0.007</td>
<td>0.004</td>
</tr>
<tr>
<td>Psychiatric condition</td>
<td>0.016</td>
<td>0.023</td>
</tr>
<tr>
<td>Minor health shock</td>
<td>0.121</td>
<td>0.125</td>
</tr>
<tr>
<td>Hypertension</td>
<td>0.051</td>
<td>0.051</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.025</td>
<td>0.020</td>
</tr>
<tr>
<td>Arthritis</td>
<td>0.052</td>
<td>0.062</td>
</tr>
</tbody>
</table>
Preliminary Analysis:
Health Shocks in DI Transition Prob’s

• Estimate regressions for future SSDI (or SSI) application/receipt among full-time workers
  – Just as a function of demographics:

\[
\Pr(DI_{t+k} \mid FT_t) = \pi_1 \text{demog}_t + \pi_t
\]

  – Then add health and economic variables:

\[
\Pr(DI_{t+k} \mid FT_t) = \beta_1 Hshock_{t+2} + \beta_2 Hstock_t + \beta_3 hhold_t
+ \beta_4 econ_t + \beta_5 \text{demog}_t + \beta_t
\]
Timing in models

- Working (year $t$)
- DI status? ($t+2$)
- DI status? ($t+4$)

Shock occurs $(t : t+2)$
Effect of health shocks is large:

<table>
<thead>
<tr>
<th>Control variables: new diagnosis t to t+2</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DI in t+2</td>
<td>t+4</td>
</tr>
<tr>
<td>Major health shock</td>
<td>0.0538***</td>
<td>0.0638***</td>
</tr>
<tr>
<td></td>
<td>[0.0086]</td>
<td>[0.0118]</td>
</tr>
<tr>
<td>Minor health shock</td>
<td>0.0045</td>
<td>0.0171***</td>
</tr>
<tr>
<td></td>
<td>[0.0039]</td>
<td>[0.0066]</td>
</tr>
<tr>
<td>Mean of dep. var. (DIt+k)</td>
<td>0.015</td>
<td>0.034</td>
</tr>
</tbody>
</table>

Models include age, year, census division, occupation and industry dummies; race and Hispanic ethnicity, marital status, # of hh members; existing and new health diagnoses, # of ADLs & IADLs; earnings and income quintiles, health insurance, and health requirements for job. SEs in [ ]’s.
Change in demographic variables when health & econ factors are added:

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Males (t+4)</th>
<th>Females (t+4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic model</td>
<td>Full model</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 12 years</td>
<td>0.0248**</td>
<td>0.0195*</td>
</tr>
<tr>
<td></td>
<td>[0.0098]</td>
<td>[0.0100]</td>
</tr>
<tr>
<td>13-15 years</td>
<td>-0.0156***</td>
<td>-0.0093</td>
</tr>
<tr>
<td></td>
<td>[0.0060]</td>
<td>[0.0063]</td>
</tr>
<tr>
<td>16 + years</td>
<td>-0.0281***</td>
<td>-0.0090</td>
</tr>
<tr>
<td></td>
<td>[0.0054]</td>
<td>[0.0073]</td>
</tr>
<tr>
<td>Black</td>
<td>0.0126</td>
<td>0.0141</td>
</tr>
<tr>
<td></td>
<td>[0.0091]</td>
<td>[0.0093]</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.0281***</td>
<td>-0.0262***</td>
</tr>
<tr>
<td></td>
<td>[0.0078]</td>
<td>[0.0080]</td>
</tr>
</tbody>
</table>

Models include age, year, census division, occupation and industry dummies; race and Hispanic ethnicity, marital status, # of hh members; existing and new health diagnoses, # of ADLs & IADLs; earnings and income quintiles, health insurance, and health requirements for job. SEs in [ ]’s.
Main Analysis: Differential Response to Health Shocks

- **Health capital** – more likely to apply for DI if
  - Low initial health stock
  - Bigger health decline (worse shock)
  - Greater health requirements at available jobs

- **Labor supply** – application depends on
  - Prices (wages, health insurance)
  - Non-labor income (spouse, retiree benefits)
  - Preferences for work vs. leisure
Regressions for SSDI (or SSI) application/receipt after health shock

• We estimate the following regressions, separately for men and women:

\[ \Pr(DI_{t+k} \mid FT_t, Hshock_{t+2}) = \beta_1 Hdiag_{d,t+2} + \beta_2 Hstock_t + \beta_3 Hreqs_t + \beta_4 prices_t + \beta_5 income_t + \beta_6 demog_t \]

– Same variables as before, organized in terms of the two theories
– Restricting to workers with health shocks is like interacting major shock with all variables
Results

- Fraction applying/receiving after 4 years: 12.4% males, 13.1% females
- Health stock – no consistent effects of existing conditions, but maybe ADLs (+5 to 10%)
- Type of shock – strokes are relatively severe (+15% vs. heart disease)
- No clear effects of health requirements at job
- High earners less likely to apply (-3 to -10% in top 2 quintiles), low earning males more likely
- Some evidence for high unearned income
What have we learned?

• Major health shocks are strong predictors of transition to DI among full-time workers
  – Health differences appear to account for differential between college and high school grads
  – Not so for high school drop-outs or race differential
  – Our economic variables do not strongly predict transition to DI among near-elderly workers (but not exactly a fair comparison, need economic shocks)

• In terms of differential response to health shocks among near-elderly workers
  – Some support for price effect and income effect in a standard labor supply decision
  – Little consistent evidence on health capital effects
What can we do with this?

• Account for differential arrival of health shocks by education when thinking about interaction of retirement and disability policies
  – Raising the retirement age or limiting disability benefits will have unfavorable equity implications
  – Considering age in eligibility decision could help to offset some of this adverse distributional effect

• Provide earnings support for at-risk workers before they decide to apply for SSDI
  – e.g., workers with ADLs

• To extent that health insurance affects the response to shocks, health reform may help