Retirement preparedness in the United States
Quantifying saving adequacy standards based on subjective economic well-being

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In a nutshell…

- What is an adequate retirement income?
- Who does not achieve an adequate retirement income?
Background

- Population ageing and concerns about social security benefits
- US context: saving decision are up to the individual
- Uncertainties about the optimal level of private savings
- Too much saving means loss of consumption opportunities
- Too little savings results in poverty or even bankruptcy
- Shocks harm saving plans

Any advice helps
Retirement preparedness: Concepts

• Life-cycle models: max lifetime U(C) by optimal saving decisions (=non-consumption) (e.g., Scholz et al. 2006)

• Monetary poverty thresholds (Love at al. 2008)

• Subjective approaches: direct way to assess utility from income
I. Review three concepts on how to derive an adequate retirement income from subjective income questions. (Focus: identification strategy)

II. Apply concepts to US American Data where possible
Concept 1: Anticipatory adequacy questions

- Subjective poverty line (SPL), e.g., Kapetyn et al.\textsuperscript{1988}; van Praag & Frijters 1999

- (1) \( z = \alpha + \beta \ln y + \pi x + \varepsilon \)

- (2) \( z := y \)

- (3) \( SPL = z^* = \exp \left( \frac{\alpha + \pi x}{\beta} \right) \)

- Special questionnaire (Binswanger and Schunk\textsuperscript{2012})

- Observe later whether people achieve that goal.

\begin{itemize}
  \item Individual preferences
  \item Data requirements
\end{itemize}

\textsuperscript{1} Source: Pradhan & Ravallion (2001): Review of Economics and Statistics
Concept 2: Subjective adequacy line

- Likert approach to identify SPL (Pradhan & Ravallion 2001)
- Recall \( z = \alpha + \beta \ln y + \pi x + \varepsilon \)
- \( z \) but: \( P(Z = 1 | Y) \)
- \( (4) P(y_i > z_i) = F(\ln y - (\alpha + \beta \ln y_i + \pi x)) \)
- \( (5) z^* = \exp \left( \frac{(\bar{\alpha} + \bar{\pi}x)}{1-\bar{\beta}} \right) \)
- Use more ambitious indicator cross-sectional data

Own illustration based on the HRS Wave 11
Concept 3: Maintain utility from pre-retirement

- Equivalence scales (e.g., Deaton & Muellbauer 1986)
- Applied to retirement preparedness by Dudel et al (2016)
- \[ U(y_0) := U(y_1) \]
- \[ z_{it} = \alpha + \beta \log y_{it} + \partial d_{it} + \pi X + \varepsilon_i \]
- Plug in \( d = 1; d = 0 \) and solve for \( \frac{y_0}{y_1} = \)
  
  Replacement rate
- \[ R = \exp \left( -\frac{\beta}{\partial} + (X_1 + X_0) \frac{\pi}{\partial} \right) \]
  
  Gives a relative parameter to individual working incomes
- What if income is inadequate before retirement?
A short application: Data

- Health and Retirement survey (HRS): biennial longitudinal study, 50+
- Psychosocial and Lifestyle questionnaire aka Leave-behind questionnaire W5-W12
- Wording of key variable: How difficult is it for (you/your family) to meet monthly payments on (your/your family's) bills? 5=Not at all difficult; …; 1=completely difficult.
- How satisfied are you with your financial situation? 1=not at all, 5=very much so
- Sample selection: i) retired within the time of observation; ii) not dying before retirement iii) retired at age 60-69; n=3,500
Results concept 2

<table>
<thead>
<tr>
<th></th>
<th>P(satisfied w/ Financial situation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log Income</td>
<td>0.506*** (0.035)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.149*** (0.048)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.190*** (0.341)</td>
</tr>
<tr>
<td>Observations</td>
<td>3,469</td>
</tr>
</tbody>
</table>

- \( P(y_i > z_i) = F(\ln y - (\alpha + \beta \ln y_i + \pi x)) \)
- \( \log z = \frac{4.190 + D(female) \cdot 0.149}{-0.506} \)
- Adequacy line at \( \sim 5000 \) US Dollar a year
- About 30% are not achieving that goal
# Results concept 3

- Individual fixed effect model
- $R = \exp(-0.013/0.037) = 0.71$
- On average, individuals need 71% of their working to maintain the subjective economic well-being
- Vulnerable groups

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Difficulties paying bills (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(Retired)</td>
<td>0.013 (0.044)</td>
</tr>
<tr>
<td>log Income per capita</td>
<td>0.037 (0.031)</td>
</tr>
<tr>
<td>Age</td>
<td>0.077 (0.062)</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.0004 (0.0004)</td>
</tr>
<tr>
<td>N</td>
<td>3,516</td>
</tr>
<tr>
<td>F Statistic</td>
<td>5.767*** (df =4;1619)</td>
</tr>
</tbody>
</table>
Discussion

Assumptions:
- well-defined income norms
- no measurement error (but mood variability).

Issues:
- Personality traits
- Estimation strategy?

Summary:
- Presented 3 money metrics with different data requirements and different interpretations
- Which one is the best? Context
- Metrics can also be used for the design of pension systems.
- Supplemental approach to the monetary methods
Questions, Concerns, Ideas?

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