How Population Aging Affects the Macroeconomy

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NTA

• NTA goes beyond national accounts in two important new ways.
  • breaks down national accounts by age.
  • estimates transfers within families and households, between households, and through the public sector.
• Andy Mason and I co-direct NTA
• 45 countries have NTA teams working on their accounts.
• Based on existing surveys and administrative data
• Centralized methods, quality control, training, workshops.
Countries with NTA Teams

Recent publications, both free downloads (see ntaccounts.org)

Also coming: special NTA issue of *Journal of Economics of Aging*
The basic budget identity: Inflows = Outflows at each age for individual or for generation

\[
\text{Income inflows} = \text{Expenditure outflows} \\
\text{Asset Inc + Labor Inc + Transfers Rcvd} = \text{Cons + Transfers Given + Saving}
\]

OR, rearrange to

\[
\text{Life cycle deficit} = \text{Reallocations} \\
\text{Cons - Labor Inc} = \text{Transfers Rcvd - Transfers Given + Asset Inc - Saving}
\]

NTA estimates these flows, and subcomponents, public and private, and by specific type. “Age Profiles”.

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**Consumption and Labor Income of High Income and Low Income Countries (averages of the top and bottom income quartile of NTA countries)**

- **Low Inc**: Kenya, Nigeria, India, Philippines, China, Indonesia
- **High Inc**: Germany, Japan, Austria, Finland, Sweden, United States

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Source: US National Transfer Accounts, Lee, Donehower and Miller, 2011

With pop data, calculate total cons by 65+ as share of GDP (US)
Population age distributions and support ratios

• How many working age people are available to support a society’s consumers?
• Calculate hypothetical workers and consumers multiplying changing population age distributions times baseline NTA age profiles.
• “Support ratio” is: \( \frac{\text{hypothetical workers}}{\text{hypothetical consumers}} \)

• Resources available per capita are proportional to this support ratio.
Support ratios based on the average developing country profiles and UN Population Projections

A. Less Developed Countries

<table>
<thead>
<tr>
<th>Rate of change of support ratio</th>
<th>China</th>
<th>India</th>
<th>Nigeria</th>
<th>Costa Rica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trough to Peak</td>
<td>0.67</td>
<td>0.37</td>
<td>0.27</td>
<td>0.67</td>
</tr>
<tr>
<td>Peak to 2100</td>
<td>-0.26</td>
<td>-0.17</td>
<td>na</td>
<td>-0.31</td>
</tr>
</tbody>
</table>

Support ratios based on the average rich country profiles and UN Population Projections

B. More Developed Countries

<table>
<thead>
<tr>
<th>Rate of change of support ratio, 2010-2050 (%)</th>
<th>Germany</th>
<th>Japan</th>
<th>Spain</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.66</td>
<td>-0.66</td>
<td>-0.78</td>
<td>-0.34</td>
</tr>
</tbody>
</table>
How the “life cycle deficit” is financed at each age (US 2003)

Components at Each Age

For Elderly (65+): How is consumption net of labor income funded? Shares of Family Transfers, Public Transfers and Asset income not saved sum to 1.0
The “general support ratio” (GSR) reflects both labor income and asset income: how dependent are the elderly?

- Do the elderly actually depend on workers to fund their consumption?
- Suppose elderly use their own savings for consumption?
- GSR reflects use of asset income by elderly to fund own consumption (asset inc – saving).
- GSR isolates the impact of population aging on transfers (public and private).
- Change in GSR over time shows consequences of pop change if age profiles of consumption, labor income, and asset income remain constant.