SOCIAL SECURITY
PAYGO vs Full Funding

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The Essence of Social Security

- Macro-economic concept: a system to decide how much of a country’s GNP a non-active retiree can consume
- Micro-economic concept: a system to decide how much of a worker’s product will be transferred to a non-active retiree to consume
- Definition results in smashing several “myths”
How Different is PAYGO vs Fully-Funded

- Assume 10% contribution rate either way
- Equivalent to saying a worker foregoes one-half day’s product so that an elderly retiree can consume those goods and services
How it works: PAYGO

• Worker sends in a 10% contribution in the morning which goes out in the afternoon as benefits to the elderly retiree

• Worker foregoes consumption

• Elderly gets consumption
How it works: Fully-Funded

• Worker saves 10% of pay (foregoes 10% of consumption)

• Wants to buy assets (e.g., stocks and bonds)

• Elderly has stocks and bonds but wants cash to pay for consumption

• Retiree gets cash from Worker and consumes

• Worker delays consumption and gets assets from Elderly

• Impact equivalent to PAYGO
Plan Assets are all Government Bonds (U.S.)

- Workers are both Social Security Contributors and Tax-Payers
- To provide benefits (consumption) to the elderly, worker either pays contributions to Social Security or pays taxes to the government to buy back bonds
- End result is absolutely the same both as to the size and the timing of the cash flow requirements as pure PAYGO
Social Security System holds “real” assets Offshore

• May be difficult politically
• Don’t invest in a country with similar demographics
• Creates foreign exchange risk
• Overall impact is minor
Are Fully-Funded Systems Demographically Immune?

• Ratio of retirees to workers as important to Fully-Funded system as to PAYGO system

• We need a balance between the demand for assets and the demand for cash for consumption

• Individual plans appear to be demographically immune, but macro-economic scheme is not (Fallacy of Composition)

• The extreme: If there are no workers, there will be no GNP and no consumption
Drivers of Cost/Contributions

- Fully-Funded: Rate of return on invested assets
- PAYGO: Rate of growth of earnings upon which contributions are based (which is growth rate of economy) which is a product of:
  - Labor Force Growth Rate
  - Rate of Productivity Improvement

- Will be times when PAYGO is preferred
- Will be times when Fully-Funded is preferred
Volatility of Cost: PAYGO vs Fully-Funded

- Fully Funded: Volatility is that of investment rates
- PAYGO: Volatility is a combination of:
  -- Fertility Rates
  -- Migration Rates
  -- Labor Force Participation Rates
  -- Productivity Improvement Rates
- Life expectancy affects both systems similarly
- Which would you rather predict?
What to Avoid in Design of Social Security System

• Optimal system would minimize risk (volatility) and expenses

• Avoid (do not allow) Individual Account (IA) Defined Contribution (DC) Social Security
Why Not IA DC Social Security?

• Assumptions required are:
  1. Workers can save and invest wisely.
  2. Or they can get asset management inexpensively.
  3. Workers will adhere to “life-cycle” investing.
  4. Workers can buy fair-value life annuities.

• All assumptions are patently false.
Workers Can Save and Invest Wisely

- They have zero training and education in investing
- Equities have unacceptable volatility
- Fixed Income has unacceptable low returns
- And the deaccumulation phase is even more difficult
- There is also a “timing” risk (e.g., retire in 2009)
- Workers will typically invest conservatively with low rates of return
- Nicely illustrated in the following Graph
Replacement rate obtained from personal account savings of workers who invest in alternative portfolios

Source: Burtless (2009)
Workers can get Asset Management Inexpensively

- MER of 2% of assets per annum is not uncommon
- Over 35 years this decreases the fund by 31.7%
- Over 40 years, each added 1% MER decreases the fund by 20%
- Actively managed funds under-perform Indexed funds even before expenses
- Broker sold mutual funds perform worst of all
The impact of investment fee ratios on pension adequacy

<table>
<thead>
<tr>
<th>Management expense ratio (basis points)</th>
<th>0</th>
<th>40</th>
<th>150</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulated value ($ after 40yrs)</td>
<td>777,000</td>
<td>707,000</td>
<td>551,000</td>
<td>400,000</td>
</tr>
<tr>
<td>Payout ($/yr)</td>
<td>45,000</td>
<td>41,000</td>
<td>32,000</td>
<td>23,000</td>
</tr>
<tr>
<td>Replacement ratio (%)</td>
<td>90</td>
<td>82</td>
<td>64</td>
<td>46</td>
</tr>
</tbody>
</table>

Assumes annual contributions of $10,000 over a worker’s 40 yr career with average annual income of $50,000

Source: Ontario Expert Commission on Pension Reform
At the least, run the DC Acct as a “Collective” Acct

- Much Lower MERs
- Opportunity for Private Placements/Infrastructure
- Large funds also achieve stability of large numbers
- Target funds of $10B minimum
The cost of investment fees in pension funds (by fund size) and individual savings accounts

<table>
<thead>
<tr>
<th>Fund Size</th>
<th>Average management expense ratio (basis points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large cap equities</td>
<td></td>
</tr>
<tr>
<td>$10 million</td>
<td>60</td>
</tr>
<tr>
<td>$1 billion</td>
<td>42</td>
</tr>
<tr>
<td>$10 billion</td>
<td>28 to 35</td>
</tr>
<tr>
<td>Individual account</td>
<td>250 to 300</td>
</tr>
</tbody>
</table>

Source: Ontario Expert Commission on Pension Reform
Worker will Invest Wisely and Use Life-Cycle Model

• No support for this in the literature
• If given a large number of choices, Workers tend to choose the Default Option
  --80% in Australia; majority in Sweden
• At the least, have a good default option
• Annuitizing brings its own problems
Annuities are available at a Fair Actuarial Price

• Need annuities to cover the longevity risk
• Low interest rates mean high costs
• Plus, I.C. must cover “anti-selection”
• Healthy applicants buy more and bigger annuities
• Those with low Life Expectancy do not buy
• Most I.C. in North America price all annuities assuming the applicant’s health is five star (no risk classification)
• Result is over 50% of population can’t get a fair price
• System is regressive since wealthy live longer
Annuities are Available at a Fair Market Price

- If no annuity, then must manage draw down
- No one knows their life expectancy
- Should plan for life expectancy plus standard deviation
- Result is living at a low standard of living and still having the longevity risk
DC Plans have Perverse Labour Force Impact

• When times are good, DC funds are strong and worker can retire just when needed in the labour force
• When times are bad, DC funds are weak and worker must continue to work when labour force wants retirement
Result: Don’t use Individual Acct. DC Systems

- Inadequate education of the public
- Poor investment choices
- Lack of smart default options
- Inadequate regulation of investment managers
- High MERs
- Low investment returns (even before MERs)
- Low retirement replacement ratios
Conclusion

• PAYGO systems are not remarkably different from Fully-Funded systems
• Fully-Funded systems are not demographically immune
• Fully-Funded systems are not inherently cheaper nor more stable than PAYGO systems
• The most problematic system is Individual Acct. DC Social Security
Q & A