A National Pension System for the Homo-Hundred Era

Retirement Strategy Forum 2013
The Westin Chosun Seoul, Sep 27, 2013

Prof. Robert Holzmann
University of Malaya, Kuala Lumpur
Motivation ...

• The populations of all world regions and countries are aging by at least one measure
• But living longer has been a dream of mankind for thousands of years
• So what are we worried about?
  – “Old age” is historically (and now?) associated with being poor, sick, marginalized, and dependent
  – Fear of impact of population aging on society, in particular productivity and government budget
... Key Messages ... 

• Don’t be afraid by the traditional demographic figures about aging – they need to be rethought and redefined – there is hope for effective solutions

• But salvation does not come automatically – one needs to have the appropriate policies and a change in mindset in place

• The solution set includes a national pension system that needs to be selected with, perhaps, never-ending populating aging in mind
... Structure

I. Population Aging: Need of Revision and Aspects of Hope

II. Critical Policy Paths to Address Population Aging well

III. Implications for the Selection of the National Pension Systems
I. Population Aging: Need of Revision

1. Key economic concerns on population aging
2. Population Ageing – Redefined
3. Population aging and productivity growth of an economy
1. Key economic concerns on population aging

- **Distribution of the economic pie** as ratio of elderly (as benefit receivers) to workers (as contributors) increases, proxied by
  - Demographic Old-Age Dependency Ratio (60+/15-59; 65+/15-64; ?)
  - System Dependency Ratio (beneficiaries to contributors)

- **Growth of the economic pie** as lower number of youth/higher number of older workers risk impacting productivity

- **Impact on internal rates of return of benefit programs**: funded/unfunded
Defining and Measuring Population Aging:

- Number of elderly in population
- Share of elderly in the population
- Old-Age dependency ratio (say # 60+/20-59)
- System dependency ratio (# of beneficiaries/contributors)
- Median age of the population (50% are younger/50% older)

But from what age onward is one old?
2. Population Ageing – Redefined (Sanderson and Scherbov)

• Redefining Age (comparing somebody aged 60 now to earlier periods, say 1963)
  – Chronological (retrospective) age: years to date
  – Prospective age: from age to expected death, i.e. adjusted for remaining life expectancy (RLE)

• Examples
  – Australian man of 62 in 2000 had same RLE than 54 old in 1950 (19.6 years)
  – French women of 40 in in 2005 had same RLE as 30 old in 1952 (44.7 years)

• Why rescaling?
  – Much of behavior is determined by remaining RLE
Figure 5: US: Median Age and Prospective Median Age Computed with Period and Cohort Life Tables, 2000-2050, Based on the Assumption that Life Expectancy at Birth Increases by 0.2 Years per Calendar Year

Source: Sanderson and Scherbov 2007 – Demographic Research Vol. 16
Conventional old-age dependency ratio as projected for 2030

- **Yellow**: more than 48%
- **Light Yellow**: 38 to 47.9%
- **Light Blue**: 28 to 37.9%
- **Blue**: less than 27.9%
- **Gray**: no data

Countries shaded in yellow have the highest dependency ratios, while those in blue have the lowest. The map shows the projected distribution across Europe for 2030.
Prospective old-age dependency ratio as projected for 2030

- **Orange**: more than 28%
- **Light Orange**: 23 to 27.9%
- **Light Blue**: 18 to 22.9%
- **Blue**: less than 17.9%
- **Gray**: no data

Prospective Old Age Dependency Ratio is defined as the number of people in age groups with life expectancies of 15 or fewer years, divided by the number of people at least 20 years old in age groups with life expectancies greater than 15 years.
3. Population aging and productivity growth of an economy

- Will productivity decrease as populations age?
  - Potentially yes, as most capabilities decline with age
  - Potentially yes, if elderly are less inclined to innovate and take risks
  - Potentially no, as time horizon of investment in human capital (education & health) increases and thus productivity for a given age

- Mere demographic effects result in projected major productivity reductions

- Other and refined results offer room for optimism and policy
Age and Productivity

Analyzing the causes of age-variation in productivity - the productivity raising effects of experience and the detrimental effects of decline in certain cognitive abilities affect the life cycle variation in productivity.

Age-specific skill levels (relative to 25-34 year olds) (GATB)

Focusing on determinants of productivity variation by age -> experience raises productivity in the first years in the labour market, cognitive ability decline implies lower productivity in the latter half.

Cognitive abilities by cohort, Sweden

(Finkel et al. 2007)
International variation in productivity potential, Secondary education, 2005

(IIASA education estimates, available from World Bank website)
Summing-up

• Do not be afraid:
  – Conventional definition of old and aging need to be revised and newly measured aging may not occur or is substantially reduced
  – An aging population does not need to be less productive – there are promising indications of the contrary

• But the solutions do not come automatically
II. Critical Policy Paths to Address Population Ageing

1. What does it require for individuals to age happily?
2. What does it require to cope with economic implications?
3. What does it require to focus minds of policy makers and society?
4. Elaborating implications for baseline scenario
5. Identifying the most appropriate policy responses to address aging
1. What does it require to age happily?

Result of empirical studies

- A purpose for life (job, hobby, etc)
- Physical exercise (the fountain of youth)
- Social embeddedness (family, friends, etc)
- The birds and the bees
2. What does it require to cope with economic implications

... working longer and productively ...

⇒ Necessary conditions (proposed)

- Keep individuals
  - Healthy
  - Skilled, and
  - Motivated to work longer

- Other necessary ingredients:
  - A change in mind-set
  - A revision of all societal institutions ...
  - To be determined/specified
3. What does it require to focus the mind set of society and policy makers?

- Aging is quite likely the most dramatic socio-economic change to mankind for the last 10,000s of years
  - Life expectancy at birth till 1800 unchanged since hunters and gathers ... i.e. 8000+ generations
  - Life expectancy as an adult has tripled since early 1800 and continues to grow linearly
  - Societal institutions not made/prepared for such a change ...
  - What is the oldest institution of mankind?

⇒ Aging requires sea-change view and reforms (beyond parametric ones ...)
III. Implications for the Selection of the Old-Age Financial Protection System

1. Re-organizing consumption smoothing across a lengthening life-cycle
2. Criteria for and choice of pension schemes in an aging population
3. Complementing the main national pension pillar(s)
1. Re-organizing consumption smoothing across a lengthening life-cycle

- The number of options are limited and apply to both funded and unfunded schemes
  - Contributions/pre-saving up
  - Benefits/de-saving down
  - Working longer/retiring later

- Optimal choice derives from intertemporal decisions by individuals reflecting preferences, expectations and enabling environment

- For most conditions delayed retirement is the optimal reaction to increase in life expectancy
2. Criteria for consumption smoothing pension scheme in an aging population

What is the scheme that adjusts most easily to population aging/what are the key criteria? I propose 5:

i. Incentives to stay on the labor market, remain formal and skilled, healthy, motivated, etc

ii. Capacity to adjust best automatically to change (increase) in life-expectancy

iii. Adjusts broadly automatically to demographic and economic shocks

iv. Offers high intra- and intergenerational fairness (e.g. lowest rate of return variation)

v. Easy and least distortive integration of redistributive objectives/coordination with other programs

⇒ A scheme that supports life-cycle planning by rational individuals in an unbiased manner

⇒ Bias minimization important as effects get magnified with increasing life-span
# Pension Scheme Options: Combining Benefit and Funding Options

<table>
<thead>
<tr>
<th>BENEFIT OPTIONS</th>
<th>FUNDING OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Def. Benefit</strong></td>
<td><strong>Funding Options</strong></td>
</tr>
<tr>
<td>NDB</td>
<td>Unfunded/Non-financial/PAYG</td>
</tr>
<tr>
<td>- Majority of countries (Korea, Philippines)</td>
<td></td>
</tr>
<tr>
<td>- Borrowing from civil service schemes</td>
<td></td>
</tr>
<tr>
<td>( b = na^w )</td>
<td></td>
</tr>
<tr>
<td>FDB</td>
<td>Fully Funded</td>
</tr>
<tr>
<td>- In a few countries only</td>
<td></td>
</tr>
<tr>
<td>- Restricted to sector schemes (South Africa, Netherlands)</td>
<td></td>
</tr>
<tr>
<td>( b = na^w )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Def. Contribution</strong></th>
<th><strong>Funding Options</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC</td>
<td>Unfunded/Non-financial/PAYG</td>
</tr>
<tr>
<td>- Fully implemented in a few countries (Italy, Latvia, Poland, Sweden)</td>
<td></td>
</tr>
<tr>
<td>- Elements in various others</td>
<td></td>
</tr>
<tr>
<td>( b = K/G(LE, i) )</td>
<td></td>
</tr>
<tr>
<td>FDC</td>
<td>Fully Funded</td>
</tr>
<tr>
<td>- Main pillar – decentralized (Chile, Mexico, Hong Kong)</td>
<td></td>
</tr>
<tr>
<td>- Central provident fund (MY, SQ)</td>
<td></td>
</tr>
<tr>
<td>( b = K/G(LE, r) )</td>
<td></td>
</tr>
</tbody>
</table>
## Applying the Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>DB</th>
<th>DC</th>
<th>Unfunded vs Funded DC schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Labor market incentives</td>
<td>Y</td>
<td></td>
<td>Depends on ( r \geq g ), with possible advantages for funding</td>
</tr>
<tr>
<td>ii. Adjustment to life expectancy</td>
<td>Y</td>
<td></td>
<td>broadly neutral</td>
</tr>
<tr>
<td>iii. Ease of adjustment to shocks: Economic, financial &amp; demographic</td>
<td>Y</td>
<td></td>
<td>Depends on type and size of shock and can go both ways</td>
</tr>
<tr>
<td>iv. Intra- and inter-personal equity (similar rate of return)</td>
<td>Y?</td>
<td>Y</td>
<td>Depends on ( r \geq g ) and centralized vs decentralized approaches</td>
</tr>
<tr>
<td>v. Integration of redistribution objectives</td>
<td>Y?</td>
<td>Y</td>
<td>broadly neutral</td>
</tr>
</tbody>
</table>
# NDC and FDC Arrangements and Fairness Criteria

<table>
<thead>
<tr>
<th></th>
<th>Accumulation</th>
<th>Disbursement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unfunded (NDC)</strong></td>
<td>Rate of Return (RoR): uniform</td>
<td>Annuity: uniform</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Funded (FDC)</strong></td>
<td>RoR: uniform (central provident fund)</td>
<td>Annuity: typically none, but may self operate (uniform) or outsource to private sector (hetero)</td>
</tr>
<tr>
<td></td>
<td>RoR: heterogeneous (private pension funds)</td>
<td>May have annuity from private sector (hetero) or social security (uniform)</td>
</tr>
</tbody>
</table>
Summing-up – Scheme Selection

• DC schemes dominate DB schemes in ability to address aging well as it supports very well a lengthening activity span at individual and macro-economic level

• Funded vs unfunded scheme selection is less straightforward with and without population aging (and the latter does not help)

• Too many theoretical, empirical and operational questions left unanswered to offer easy answers
3. Complementing the main pension pillar(s)

- Main mandated pillar(s) suggestion: NDC and/or FDC (or heavily reformed DB schemes)
- Complementary pillars needed to address
  - Old age (and very old age) poverty
  - Coverage gap for informal sector workers
  - Supplementary funded benefit needs for higher income level strata
Complementing pillars – selective issues

• How to design zero pillar to address old-age poverty?
  – Ex-ante or ex-post transfers; universal or means-tested; categorical (social pension) or general (social assistance)

• What is the impact on retirement decisions in main pension pillar?
  – Do pro-poor provisions counteract increase in retirement age – does this call for indexing minimum eligible retirement age?

• How to entice formal workers to additional retirement saving
  – Are tax incentives and/or matching contributions effective?
  – Or alternative interventions inspired by behavioral economics or pure psychology more effective? E.g. default options; advocacy.
V. Concluding Remarks

1. Individual and population aging are new phenomena to mankind and will stay.
2. Emerging economies are particularly challenged: They risk becoming old, even if newly defined, before rich.
3. Realizing opportunities requires a sea-change in mind-set and a review of all societal institutions and policies.
4. The adjustment will have to come largely via the labor market, with extended years of work and productivity.
5. Pension schemes need to support of policies that keep individuals healthy, skilled, and motivated.
6. DC dominate DB plans. As regards funded vs unfunded, the jury is still out, and my view both are needed.
7. For design improvement there is are new avenues to be explored coming from behavioral economics/finance.
Selective References


