Addressing Longevity Risk Through Private Annuities: Issues and Options

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Local Motivation

**Motivation:** Request by Central Provident Fund in Malaysia (EPF) for a think piece on the future of EPF. As EPF does not offer any **annuity** nor encourages **annuitization** of accumulations a review seems required...

**Objective:** To review key analytical, empirical and policies issues and raise policy and research questions around private sector life annuities and the need to prepare against **longevity risk** (level, change, and heterogeneity)

**Focus:** Public policy perspective that reviews demand and supply issues of private sector annuities and the role of government to improve outcomes (or take back the **annuity business**) across countries and region(s)

**Perspective:** From an economist having worked on financial markets’ issues but not being a financial economist, yet with substantial international experience
Figure 1: Total Mean Balance of Malaysians’ EPF Accounts (as of end-2012, by age group and decile, in Ringgit)
International Motivation (2/4)...

- Policy developments across the world in recent decades should be creating strong demand for life annuities due to
  - Systemic public pension reforms moving from unfunded DB to funded DCs require new payout modes (31 countries till 2008, since then a few countries withdrew such as Argentina)
  - Decreasing generosity of public annuities and encouragement for private saving due to fiscal constraints while life expectancy continues increasing [OECD countries]
  - Moving from FDB to FDC for corporate pensions shifts investment and longevity risk to individuals [globally]
  - Public interest in annuity payouts when offering basic provisions and mandating retirement savings [AUS, NZ]
  - Population aging and withering family support in centralized savings countries [South-East Asia, e.g. SQ, MY]
Figure 2: Evolution of number of countries with (mandated and funded) “Second pillars” as of 2008

Note: "Second pillar" is defined here as a pension system that has "mandatory personal retirement accounts". Exceptions and other detailed information in the source. Source: Forthcoming World Bank database.
Yet the autonomous demand for life annuities is mostly but not always low across the globe, and away from traditional annuities when alternatives are freely available

- **US**: around 1% of 401(k) plan retirees purchase (EBRI 2011, LIMRA 2013)
  - Immediate life annuities 2012: US$ 7.7 billion
  - Equity indexed annuities 2012: US$ 35 billion o/w 75% bought with guaranteed lifetime benefit
- **AUS**: 100 policies per year in market of a few millions (Plan for Life 2012), i.e. less then 1/100% of flows
- **Switzerland**: around 80 percent of accumulated balances
- **Chile**: around 70 percent of accumulated balances, rest Phased Withdrawal (PW)
Motivation ...

- Limited interest by insurance companies in life annuities; globally, many are talking of getting out

- Supply of life annuities by financial sector is challenged by a number of developments, including
  - Uncertainty with regard to aggregate longevity development and distribution across socio-economic groups
  - Low interest rate environment for public bonds and uncertainty how long this will last/turn to inflation
  - Lower rates of financial market rate of returns with higher volatility ("new normal?")
  - Increase in reserving requirements under new solvency rules
  - Regulatory uncertainty with regard to own business, counterparts and derivative markets, but also w/r taxation
  - Elevated counterpart/credit risk and investment risk

- Traditional life annuities are increasingly difficult to supply and new products are proposed
Motivation and Structure

I. Demand Constraints

II. Supply Constraints

III. Role of Government

Selective References
I. Demand Constraints

- Strong theoretical support for annuitization (Yaari 1965, Davidoff et al, 2005)
- Contrasts with weak global demand giving rise to “annuity puzzle”, that may not exist (e.g. Brown et al. 2008).
- Low demand for private annuities may have distinct sources, reflecting, inter alia
  1. Rational decisions by individuals
  2. Behavioral limitations by individuals
  3. Informational limitations from industry and by individuals (“financial literacy/capability”)


1. Selective rationales for not buying annuities

- Existence of **basic benefits and other annuities** – public and corporate (Brown 2007)
- **Family as risk sharing unit** (Kotlikoff & Spivak 1981, Brown and Poterba 2001)
- **Bequest motive** (Bernheim 1991); dynastic - not LC optimization; strategic bequest motive
- **Incomplete financial markets** (Davidoff et al. 2005, Holzmann et al. 2005)
- **Liquidity demand for uncertain health expenditure** (Turra and Mitchell 2008)

⇒ These arguments and selective empirical support have been around for some time, but little progress on (absolute and relative) relevance has been made.
2. Behavioral limitations

- Well known from accumulation phase, only recently investigated for decumulation phase /annuitization, e.g.

- When annuitization is default option or on offer, high participation compared to alternatives; decision environment matters (Buettler & Teppa 2007)

- Complexity of annuity for decision and payment need to be reduced and decision environment simplified (Benartzi et al 2011)

- Framing of annuitization (Brown et al. 2008)
  - Consumption frame (70%) vs investment frame (21%)
  - DB vs cash balance (Benartzi et al 2011): dif. up to 17pp

- Mental accounting and loss aversion (Kahnemann & Tversky 1979, 1992): Check writing for annuity has higher costs then future stream of payments

- All seem highly relevant for annuity design and implementation

- More recent research has a stronger empirical base due to RCT approach/laboratory experiments but sense about importance and policy direction still lacking
3. Informational limitations from industry and by individuals ("financial education")

- Annuities (or similar) are complex products (Table 1)
  - They got more complex in low interest environment and search for higher returns/ introduction of new products
  - No established knowledge what information and in which manner should be provided to what client

- Low reported level of financial literacy (knowledge) and capability (that includes skills, attitude and behavior) for planning decisions
  - Life annuities are once in a life-time purchase and thus unfamiliar to most pre-retirees (and DCs are new)
  - Involves beside the house the most important financial decision, often irreversible
  - Choosing from menu is a difficult financial decision
  - People with low financial literacy seem in particular confused by annuities (Brown, Kapteyn, and Mitchell 2011)
<table>
<thead>
<tr>
<th>Protection Against</th>
<th>Provision Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longevity Risk</td>
<td>Investment Risk</td>
</tr>
<tr>
<td>Fixed Real Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Fixed Nominal Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Escalating Real Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Escalating nominal Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Variable Life Annuities: Guaranteed Benefits</td>
<td>Yes</td>
</tr>
<tr>
<td>Variable Life Annuities: Bonus Payments</td>
<td>Shared</td>
</tr>
<tr>
<td>Variable Life Annuities: Unit-Linked</td>
<td>Shared</td>
</tr>
<tr>
<td>Deferred XY Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Period-certain XY Life Annuities</td>
<td>Yes</td>
</tr>
<tr>
<td>Lifetime Phased Withdrawls</td>
<td>No</td>
</tr>
<tr>
<td>Term Annuities</td>
<td>No</td>
</tr>
<tr>
<td>Lump Sums</td>
<td>No</td>
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<tr>
<td>Self-Annuitization</td>
<td>No</td>
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</tbody>
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Notes: Annuetization risk is present in all fixed and escalating annuities but does not affect variable annuities.

Bankruptcy affects all types of retirement products but is particularly important in life annuities.

Source: Based on Rocha, Vittas and Rudolph 2011, with author's additions.
II. Supply Constraints

- What is the short market side for annuities – supply or demand?
  - UK Pension Commission (2005) suggests that projected annuity demand risks being constraint by supply capacity
  - Examples of USA and AUS vs CH and Chile suggest opposite
  - Strong suggestion that demand and supply creation’ support though public policy actions critical

- Supply side issues much less investigated
  - Intensive analyses of UK and US annuity markets
  - Much less deep in other countries also because there is less there (Fornero & Luciano 2004, Mitchell et al. 2011)
  - Some emphasis in last decade and need to guide new de-cummulation phase in ECA and LAC (Rocha et all. 2011)
  - Major data and information constraints to undertake comparative analysis (Rusconi 2008, OECD 2008)
  - What are the constraints/challenges for Islamic annuities?
The annuity business model

- Exchange of lump-sum payment by annuitant against an unconditional commitment by provider to a series of future payments till death of the annuitant

- To minimize the (idiosyncratic) longevity risk the annuity provider has an interest in the largest possible risk pool (so industry is by nature oligopolistic)

- To immunize the portfolio of liabilities against the rate of return/interest rate risk, the provider does best by matching the profile of liability and assets (with low risk log-term public bonds)

- The value-added by annuity providers is the conversion of these bonds into mortality contingent income streams (subject to capability to manage aggregate longevity risk)
Supply constraints and complications

Annuity is claimed to be a low margin business, so distortions have main effects on supply.

Investigations into money worth ratios do not signal major pricing issues.

1. Regulatory burden of annuity providers
2. Availability of matching assets to manage investment risk
3. Capability to manage aggregate longevity risk
4. The search for alternative annuity products
1. Regulatory burden of annuity providers

- **The political correctness burden**
  - Insurance theory: If and as risks can be differentiated they should be priced separately
  - Reality: Major political intrusion that is likely to increase
    - Forced gender pooling (EU); forced race pooling (US); forced pooling across genetic differences (...)

- **Solvency requirements and reserving**
  - Capital adequacy and reserving critical to protect annuity holders; strengthened in Basel II
  - Has not always worked in the past (Equitable Life in the U.K.)
  - Financial crisis and move toward risk-based supervision is increasing reserving demand
2. Availability of matching assets (bonds)

- Scope of government bonds in requested term structure
  - Few countries had and have government bond markets in the required depth and maturity structure
  - Critical benchmark for corporate bond market
  - Current monetary policy results in low public bond returns and shrinks long-term bond market
  ⇒ Results in reductions of annuity rates and guarantees

- Price-indexed bonds to match annuities in real terms
  - Demand for real annuities trails global supply of 1.5 trillion (2008) in particular from US and UK
  - Not an issue for current deflationary environment but expectation/fear of future may constrain supply

- Reduction in/lack of matching assets leads to
  - reduced annuity rates and guarantees
  - proposals for more risk sharing and flexible annuities
Chart 1: Annuity Rate, Gilt Yield, and FTSE 100 since 1990

Male age 65, £10,000 purchase, Single Life, Guaranteed 5 Years and Level Payments.

Yield on 15 year gilts.

The FTSE 100 Index is a share index of the 100 most highly capitalised UK companies listed on the London Stock Exchange.

Source: http://thisismoney.brgl.co.uk/ratetables/key.aspx
### Single Standard Basis 1/

<table>
<thead>
<tr>
<th>Age</th>
<th>Level rate no guarantee</th>
<th>Level rate + 10-year guarantee</th>
<th>3% escalation no guarantee</th>
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<tbody>
<tr>
<td>55</td>
<td>£4,446</td>
<td>£4,429</td>
<td>£2,850</td>
</tr>
<tr>
<td>60</td>
<td>£4,828</td>
<td>£4,788</td>
<td>£3,224</td>
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<tr>
<td>65</td>
<td>£5,494</td>
<td>£5,404</td>
<td>£3,782</td>
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<tr>
<td>70</td>
<td>£6,344</td>
<td>£6,135</td>
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<tr>
<td>75</td>
<td>£7,538</td>
<td>£7,124</td>
<td>£5,822</td>
</tr>
</tbody>
</table>

1/ Standard annuity rates as of March 1, 2015 for a pension fund of £100,000 after the tax free lump sum of £33,333 has been taken from the full fund of £133,333 for a single life annuity based on a central London postcode.

Source: [http://www.sharingpensions.co.uk/annuity_rates.htm#text5](http://www.sharingpensions.co.uk/annuity_rates.htm#text5)
Figure X: Government Bond Yield Curve by Selective Maturity

People's Republic of China

Republic of Korea

Japan

Hong Kong, China

Malaysia

Singapore

Source: http://asianbondsonline.adb.org/regional/data/bondmarket.php
Asia Government Bonds by Maturity (as of Dec 2014)
3. Addressing the aggregate longevity risk

- Demographic information/mortality rates to price annuities is in most countries of the world bad/non-existent.

- Despite a broadly linear trend in life-expectancy at birth are cohort mortality rates at higher ages difficult to predict and, say, medical break-through threatening profits.

- Options to hedge are limited and include the “natural hedge” of life insurance and annuity provisions (with little known scope).

- Longevity bonds (LB) are considered by some economists as “ideal” matching asset that transfer risk from insurers, reinsurers and DB pension funds to financial market (Blake 1999, OECD, etc)
  - Proposed structure (Blake et al 2007): Bond coupons payable each year depend on the proportion of a given pension cohort is alive that year; no principal repayment; maturation, say 40 years after issue.
  - Some limited and little successful attempts in early 2000.
  - The financial asset does not seem to interest hedge seller nor hedge buyer ...

- Recently the direct swapping of longevity risks between (private sector) pension funds and global re-insurer (such as Munich Re) has taken off ... with little information about details.
4. The search for alternative “annuity” products

- Immediate fixed, nominal life annuity products have been around for centuries
- The search and provision of new products have been driven
  - supply issues with traditional annuity products
  - demand for more flexible products by (some/all?) consumers
- Recent innovations include
  1. Phased Withdrawals (PW)
  2. Guaranteed Lifetime Withdrawal Benefit (GLWB)
  3. Advanced Life Deferred Annuity (ALDA)
  4. Singapore’s CPF LIFE that offers minimum annuity coverage with sharing of longevity & return risks
III. Role of Government

- Positive and negative externalities on both demand and supply side of private annuities call for a role of government in addressing longevity (et al.)

- Scope and intensity of intervention will depend role of other pension pillars and thus on the envisaged role of private annuities

- Role of the government can range from market facilitator, market maker, product provider, to lead advocate
Do we have the knowledge to guide governments priorities?

What is the main reason for limited annuity market size:

- Is it mainly the supply constraint while there is strong latent demand for well designed and priced annuities?
  - Policy focus on barrier reduction and product innovation

- Is it the demand constraint due to, say, behavioral biases?
  - Policy focus on financial education, nudges, decision environment, etc

- Is it the result of rational decisions by individuals?
  - No need for action ...?
Research priority list

Suggested key elements of an operational policy research agenda include:

i. Understanding latent consumer demand using modern exploration techniques (Decision State Models, Discrete Choice Experiments, etc).

ii. Testing product innovations with rigorous analytical approaches (RCT).

iii. Investigating service annuities at advanced ages (long-term care and beyond), reverse mortgages innovations, et al.

iv. Data and models on longevity developments.

v. Risk diversification through reinsurance and capital markets – exploring potential and limits.
If we are not successful to accumulate sufficient savings and translate into life annuities accordingly, do we have to change our retirement perspectives ....?
YOUR MONEY 2014

1950s
THE DAWN OF RETIREMENT

1960s
HELLO, LUXURY WORLD

1970s
THE GOLDEN AGE OF PENSIONS
1980s  
DUI  MARKET AHoy

1990s  
THANKS, 401(K)!

2000s  
WHICH WAY TO K2?
Terima kasih untuk perhatian anda

感謝您的關注

आपका ध्यान के लिए धन्यवाद
Selective References


