SeLFIES— A Globally Applicable Bond Innovation to Improve Retirement Funding and Support Other Policy Objectives

Robert C. Merton
MIT Sloan School of Management
Arun Muralidhar
Mcube Investment Technologies LLC
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Global Challenges of Funding Retirement
Why current retirement funding systems may not be sustainable

• Sources of potential non-sustainability of current retirement funding systems
  – Shifting demographics: populations aging rapidly
  – Increasing longevity: population living longer
  – Economy shift from rural agriculture toward city industrial
  – Difficult budget positions of governments running deficits
  – Legacy of large unfunded liabilities of defined-benefit and pay-as-you-go (“PAYGO”) pension plans from inadequate contributions and overly optimistic return assumptions
  – PAYGO systems’ sustainable contribution rates are very sensitive to demographics, longevity and growth rate of the economy
  – Contribution and balance sheet risks too great for plan sponsors causes the subsequent exit from defined-benefit plans (“DB”)
  – Traditional role of defined-contribution plans (“DC”) was supplemental and not for core retirement funding, and so current practice is not a suitable solution for core retirement
Korea: Challenges of Funding Retirement
Why current retirement funding systems may not be adequate or sustainable

- National Pension Service (NPS) fund may be on unsustainable long-term path
  - Buffer fund is expected to diminish from 2040 and could be depleted by 2060
  - Increasing the contribution rate from current 9% to correct this may be difficult
  - Cutting benefits may also be difficult and at a 40% maximum replacement ratio which is already inadequate to provide a full retirement funding, may not work
  - Increasing general tax rates to provide government subsidy is not a long-run fix
  - Trying to increase return by taking more investment risk, requires a “safety net” funding plan in case the risk is realized

- About 51% of population is in NPS, which means that 49% is not covered

- Private pensions: 17% of population have a retirement pension and 24% have a personal voluntary one. However those so covered have large overlap with NPS and so a material part of population is uncovered by either a public or private plan

- Conclusion: more of the population will become responsible for funding a larger proportion of their retirement through personal saving and Defined-Contribution plans

- SeLFIES is a proposed innovation to enable people to do so and improve retirement outcomes
“An inflation-protected income for life that allows you to sustain the standard of living you enjoyed in the latter part of your working life.”

Standard of living is measured by income, and not by wealth. Standard-of-living risk is measured by income risk and not wealth risk.

Realty everywhere: Individuals will have to take greater responsibility for funding their own retirement in the future than in the past.

SeLFIES is a bond innovation to address this challenge.
What are SeLFIES?
Standard-of-Living indexed, Forward-starting, Income-only Securities

- SeLFIES payouts are designed to create a pension-like payout pattern desired by individuals for retirement.
- There is a deferred start of payouts until a specified future date (anticipated retirement date) and from that date on there are annual level payouts with indexing, until a specified ending date (a bit longer than life expectancy at retirement).
- SeLFIES would be issued as a series in small denominations with different annual starting dates.
- The payouts are indexed to aggregate per capita consumption, so that the holder is hedged against both consumption inflation and standard-of-living-change risks until payouts begin, and indexed to consumption inflation only, thereafter.
- Robust design to work in any country.
26-Year Old Planning to Retire at Age 65 (2058) with Goal of $50,000 Retirement Income

• Each 2058 SeLFIES has the following:
  – Starts paying periodic level-payout of $10/year in 2058 for a fixed period of 20 years, with no principal or “balloon” payout at its maturity in 2078
  – Payout amounts indexed to per-capita consumption until 2058
  – Protects the holder against both inflation and standard-of-living changes until 2058
  – Payout amounts indexed to inflation only, from 2058 to 2078.[“fixed” standard of living]

• Super simple to figure out what you need to own to meet your goal
  Goal = $50,000/$10 = need to own 5,000 bonds

• Super simple to figure out how close you are to your goal
  Where am I? Own 3,000 bonds = $30,000. You are 60% to your goal

• Addresses the challenge of a lack of financial literacy for savers to take responsibility for their own retirement outcomes
Why Do SeLFIES Have a Payout Time Pattern Different from Traditional Bonds with Periodic Coupon Payments and a Principal “Balloon” Payment at Maturity?

Cash Flows of 2058 SeLFIES
Match Pension Payouts –
No Additional Decisions/Transactions and
No Reinvestment Risk

Cash Flows of 30-Year TIPS
61 Additional Decisions/Transactions and
Considerable Reinvestment Risk

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Goal for retirement is referenced to sustaining the standard of living experienced in the *latter* part of work life just before retirement –

**Average Compound Growth Rates: Korea**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Consumption per Capita*</th>
<th>Inflation (CPI)**</th>
<th>Standard of Living (SoL)</th>
<th>Goal Short-Fall CPI Only / (CPI &amp; SoL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-2017</td>
<td>3.7%</td>
<td>2.3%</td>
<td>1.4%</td>
<td>0.87 / 10 Years</td>
</tr>
<tr>
<td>1997-2017</td>
<td>5.0%</td>
<td>2.2%</td>
<td>2.7%</td>
<td>0.64 / 20 Years</td>
</tr>
<tr>
<td>1987-2017</td>
<td>8.4%</td>
<td>3.9%</td>
<td>4.3%</td>
<td>0.28 / 30 Years</td>
</tr>
<tr>
<td>1965-2017</td>
<td>13.6%</td>
<td>7.4%</td>
<td>5.8%</td>
<td>0.04 / 53 Years</td>
</tr>
</tbody>
</table>

*Covers both inflation (CPI) and standard of living (SoL)  **Covers inflation (CPI) only

Source: Statistics Korea, Bank of Korea Economic Statistics System
Standard of Living Growth in Korea 1965-2017
Annual Inflation-adjusted per Capita Consumption
Who Will be the Users of SeLFIES?
Individual Retail and Institutional Investors

- Individuals who are uncovered by any public or private pension plan and must accumulate assets for retirement through personal saving
- Individuals who are covered by a pension plan but the plan benefits are inadequate to provide for a good retirement and they must accumulate additional assets for retirement through personal saving
- Individuals who are covered by a pension plan but at least part of the plan requires their personal decision-making and responsibility as to what to invest the plan assets in, as in a defined-contribution (DC) plan
- Institutional investors such as pension funds and insurance companies who have pension and annuity benefit liabilities, and want to hedge them effectively and at low cost
- General institutional and retail investors who would want an efficient and low-cost core “best-diversified” portfolio, according to finance theory [Consumption Capital Asset Pricing Model, Breeden 1979]
Why Government Should be the Issuer of SeLFIES?

- SeLFIES will have no credit risk and so made very simple for buyers because do not worry about risk of default and all the associated disclosures
- Reliable supplier—to be successful most be prepared to issue bonds in good and bad times and have the capacity to provide large volume on regular basis
- Governments with VAT are “natural” issuers because the bond payments can be hedged by VAT revenues, since VAT is a tax on consumption
- Issuing SeLFIES ensures more domestic holding of government debt, a material benefit, especially for emerging market countries
- A security issued by government to improve financial market “completion” similar to 2007 issuing of JGB 40-year “ultra longs” or 1997 issuing of US Treasury inflation-indexed bonds “TIPS,” could also reduce debt funding cost
- Governments doing infrastructure financing improve maturity-matching of funding for infrastructure investments which reduces re-financing risk and issuing costs; can also be used to manage government tax-revenue risk
Addressing Multiple Market Needs and Policy Objectives with a Single Bond Innovation: Retirement Income, Funding Infrastructure, and Improving Investors’ Core Diversification… all by Issuing SelfIES

- Principle: match the “best” issuers with the “best” holders and improve to maximize scale and minimize cost
- Retirement funding improvements for individuals and institutions; improve maturity-matching of funding for infrastructure investments to reduce re-financing risk and issuing costs; control government tax-revenue risk
- Pattern of delayed payouts for many years and then level payouts match infrastructure cash inflow pattern and provides a precise match to cash flow needs of retirees, so no further transactions are needed by either issuer or buyer
- Finance science predicts that an asset which is perfectly correlated with aggregate consumption would be an ideal diversification asset for all investors
Appendix

- Scientific papers underlying SeLFIES
- Survey of professional interest in SeLFIES—South Africa
- Public interest in SeLFIES—op-ed and news articles
Scientific Papers Underlying SeLFIES Concept

Survey of Interest in SeLFIES - What feature(s) of SeLFIES appeal to you?

A. Forward Starting / Deferred payment
B. The in-force payment pattern
C. The indexing feature
D. Some or all of the above
E. None of the above

Voted: 136
Survey of Interest in SeLFIES: Assuming it was possible, would you take retirement SeLFIES?

A. Definitely interested – Assuming the economics makes sense

B. Slight interest – Can’t really see the investment merit here

C. No Interest

Voted: 136

Actuarial Society of South Africa Conference  2018
Interest In SeLFIES: OP-ED & Articles

- South Africa: Survey Actuarial Society of South Africa
- USA/Europe: Op-Ed Pensions & Investments Europe & PLANSPONSOR
- UK: The Economist Will SeLFIES Stick?
- France: OP-ED Le Monde
- Japan: Nikkei
- Australia: Investment Magazine
- India: Times of India
- Turkey: RÖPORTAJ
To address the looming retirement crisis, many governments are introducing new pension programmes tied to employment for uncovered workers (NEST in the UK and Secure Choice in some US states). These attempts to improve access to pensions, and continue a trend of transferring responsibility for retirement security from governments and employers (via defined benefit [DB] plans) to the individual (via defined contribution [DC] plans), as neither governments nor companies are willing to bear the liabilities associated with pension obligations. This shift requires new thinking about how portfolios are managed and which instruments are available to investors. Our proposed SelFIES (Standard of Living indexed, Forward-starting, Income-only Securities) make individuals self-reliant and are also advantageous for governments.

For optimal portfolio management, members of DC plans should focus on maximising funded status or retirement income (not wealth, as in traditional investment approaches). Further, unlike multi-generational DB plans, DC plans must achieve their objectives in a single lifetime, and it is hard to pool risks because these plans are inherently flexible: (a) participation is often voluntary; (b) participants may require liquidity; (c) retirement ambitions, risk tolerance and life expectancy vary; and (d) employment patterns change over time (ie, the gig economy does not tether an individual to a single company). A new financial instrument is needed to enable financial security for retirees in the current environment.

DC investors seek to ensure a guaranteed, real income, ideally from retirement to death. It is also reasonable to assume they would want to lead a lifestyle comparable to pre-retirement. Investing in existing assets (stocks, bonds, or REITs) is risky because these do not provide a simple cash flow hedge against desired retirement income. For example, viewed through the retirement income lens, a portfolio of traditional, ‘safe’ government securities, unless heavily financially engineered, would be risky because of the cash flow (and potential maturity) mismatch between traditional bonds and the desired income stream.

There is thus a need for governments to issue a new ‘safe’ bond instrument, which we call SelFIES. These will ensure retirement security and the government is a natural issuer.

The innovative SelFIES design
A default-free bond offers certainty about two characteristics critical for DC retirement portfolios: (i) a commitment to pay over a particular time horizon (how/when one is paid); and (ii) a specific cash flow (what is paid). DC investors require a guaranteed cash flow that protects their real purchasing power in retirement. Two simple innovations could create the ‘perfect’ instrument.

The first innovation addresses (i) ‘how/when one is paid’ by creating forward-starting, income-only bonds. These would start paying investors upon retirement, paying coupons only for a period equal to the average life expectancy...
SeLFIES - Australia

SeLFIES a good look for Australian retirement

By Robert C. Morton and Avan S. Muddiford | 06/06/2018

SeLFIES - India

SeLFIES For India

These long-term bonds can fund India’s infrastructure needs and improve retirement security

Robert C Morton and Aruna S Muraleethar

The Indian government unveiled its Budget and recognizes that the infrastructure sector needs investments of Rs 50 lakh crore to boost GDP. Allocating Rs 50.00 lakh crore as a primary step. Simultaneously, certain provisions in the Budget seek to improve the lives of retirees, and finance minister Arun Jaitley specifically noted that, “Life with dignity is right of every individual, in general, more so for the senior citizens.”

One of the major challenges that India will face is ensuring the income security of its senior citizens, especially in a country where financial literacy is relatively low. The government can use fund infrastructure, especially since it has been given permission to the National Highways Authority of India (NHAI) and other institutions to issue bonds, and these will have an immediate impact on the retirement challenge by issuing a new type of long-term bond, one we call SeLFIES – Standard of Living into Bond, Forward starting Income-only Securities.

SeLFIES address many of the challenges raised in the Budget and are also advantageous to the ministry of finance, especially in light of the recent implementation of a Goods and Services Tax (GST).

“A life with dignity” would ideally include guaranteed, real income, from retirement through death, and the ability to lead a lifestyle comparable to pre-retirement. The Indian government and documentation because they are largely financial illiterate.

The complexity of retirement planning leaves many confused about what constitutes adequate savings for retirement. Individuals are overwhelmed by the information provided and the absence of a robust and uniform method to make these calculations. Moreover, there is uncertainty over what to invest in and how best to de-consist. Most adults can barely answer questions about compound interest, the effects of inflation or the benefit of diversification. Investing in existing assets in risky relative to the retirement objective, because householders fail to provide a simple or basic cash-flow.

SeLFIES are designed to pay people when they need it and how they need it. Even the most financially illiterate individual can be self-reliant with respect to retirement planning.

annuity markets are not sufficiently deep or developed. More importantly, many hesitate to buy annuities because they can be complex, opaque and illiquid; investors fear not being able to meet their retirement needs. The looming retirement crisis can

SeLFIES is a tool that can help citizens plan for their retirement, ensuring they have the financial security they need. It is a simple and accessible way to save for the future, providing peace of mind and the opportunity to enjoy a comfortable retirement.

First, cash Bonas from SeLFIES reflect synergistic cash flows for infrastructure spending, namely, large cash flows upfront for capital expenditure, followed by delayed, inflation-indexed payments, once projects are online. Financing infrastructure has been a challenge and a priority for the current government, especially given the current Budget.

Second, SeLFIES gives the Indian government a natural hedge of revenues against the bonds, through GST.
SeLFIES - Turkey

MİT PROFESÖRÜ NOBEL ÖDÜLLÜ ROBERT MERTON VE GEORGETOWN UNIVERSITY'NİN EMEKLİ ARAŞTIRMALARI MERKEZİ

“ÖNERİDİMIZ YENİLIK: ABD, AUSTRALYA, JAPONYA VE HINDISTAN’DA OLDUĞU GİBİ, TÜRKİYE’DE DE EMEKLİ SİSTEMİNİ YİLEŞTİRİSLER, MILYONLARCA KATILIMCILYA, DÜŞÜK MALİYETLİ KOLAY VE GÜVÈNİRLİ EMEKLİ YOLU AÇABILİR.”

Bugün 55 yaşındadır bir kendi, 2018 yılındaki son dakika ve 65 yaşına geldiğinde kupon ödediği alımı almak ve bu kuponu 20 yıl boyunca 2048’a kadar devam edecek. Finansal yaklaşımın en düşük kılı kılı, emeklilik planlamasını kendi başına yapıla-

Dr. Arun Muralidhar

SeLFIES adlı mide dahil gün SeLFIES tahvileri hakkında bilgi verir misiniz? Bu tahviller OHG'ye nasılsına efektif yapılar kazar-
dırılır?

Onerdimiz yenilik: ABD, Avustralya, Japonya ve Hindistan’da olduğu gibi, Türkiye’de de emeklilik sisteminin iyileştirilmesi, milyonlarca katılmaya, düşük malıyetli, kolay ve güvenli bir emeklilik yol açabilir.

Prof. Robert Merton

Kuyguk: Princeton Headshot

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Raporcu: Raha Kübra KANN

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