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To combat the possibility that retirees might outlive their assets, Singapore's Central Provident Fund (CPF) – the national compulsory savings and social security scheme – made the bold move of mandating annuitisation. This followed the findings of a 2007 government study examining how CPF might respond to an increasing life expectancy as the country's baby boomer generation enters retirement.

CPF ranks among the world's largest defined contribution (DC) schemes, with about 3.23 million members. The CPF Board, a regulatory public agency, runs this national pension fund. By 2013, annuitisation, rather than the current phased withdrawal, will be mandatory for a portion of CPF retirement savings.

Joelle H.Y. Fong, Olivia S. Mitchell and Benedict S.K. Koh explored how this change might impact the value of these life annuities and the government's role as an annuity provider in their paper, Longevity Risk Management in Singapore's National Pension System. The paper, supported by Singapore Management University's (SMU) Centre for Silver Security, has been published in the *Journal of Risk and Insurance*.

Fong is a *SS Huebner Foundation Fellow* at the Wharton School of the University of Pennsylvania, while Mitchell is the *International Foundation of Employee Benefit Plans Professor of Insurance and Risk Management* and the executive director of the Pension Research Council/ Boettner Centre at the Wharton School. Koh is an associate dean and professor of finance at SMU's Lee Kong Chian School of Business.

Given the social impact of retirees running out of money in retirement, governments have been involved with how capital should be managed in the payout phase. In Switzerland, annuitisation is the default payout mode while the United Kingdom has had a long history of annuitisation for DC pension accounts, with retirees able to decide how much to annuitise and the time periods involved. Likewise, in Chile, workers have long been able to choose between phased withdrawals or annuitisation.

Prior to the annuitisation reform or the CPF LIFE scheme, a minimum sum was in place, requiring participants at age 55 to set aside a specific value of assets from their total CPF accumulations. This minimum sum is set by the CPF Board and it increases each year.

Drawdowns on this sum were only permitted at age 65, where the default de-cumulation option was a phased withdrawal paying benefits over 20 years or until the balance was exhausted. “This framework exposed participants to significant longevity risk, since about half of all age 65 members would be expected to outlive their assets”, according to the CPF Board. It was possible then to voluntarily buy a life annuity from a private insurer, but there were few who did so. A National Longevity Insurance Committee was convened in 2007 by the government to study the feasibility of a national longevity insurance scheme. The committee made the following two conclusions:

1) The operations of the scheme would involve significant mortality and investment risks over a very long-term horizon. Providers risked insolvency if they were unable to meet liabilities and if they had not properly managed risks.

2) Since the government has strong public trust and perhaps greater efficiency, they should be the annuity provider. A government-run pooling scheme should yield better annuity pricing due to economies of scale.

Indeed, the private sector experience of providing annuity insurance in the UK left much to be desired. With a captive yet privately run insurance market there, market distortions arose, leading to falling annuity yields and high mark-up fees, accompanied by “mis-selling” incidents.

“By contrast, the Singaporean approach shows that a national government can both mandate and provide a risk-pooling scheme,” explained the paper. As the primary provider, it could pool sufficient members such that the average mortality risk of the pool would decrease.

A pilot of the CPF LIFE scheme was launched in September 2009, accompanied by intensive public education through the media, road shows and pamphlets. In 2010, the CPF Board reported that over 30,000 members had committed about S$1.5 billion to the CPF LIFE scheme.

In the final version of the scheme introduced in 2009, four options are available: The LIFE Plus and LIFE Income plans both have only an annuity component, while the LIFE Plus product permits some bequest.

Retirees opting for the LIFE Income product receive a higher monthly payout while alive. In contrast, the LIFE Basic plan provides the highest bequest amount in exchange for the lowest monthly payouts. The LIFE Balanced plan is an intermediate mix. The amounts that can be annuitised via these schemes were capped at the minimum sum, expected to be S$134,000 in 2013.

The Money's Worth Ratio (MWR), which is the expected present discounted value of the annuity payments to the initial premium, is used to gauge the value of these annuities.

"Whereas a fairly priced annuity with no loadings will have an MWR of unity, in the real world, privately sold annuities have MWRs of less than one due to administrative costs and adverse selection," the authors noted.

"Adverse selection occurs in a voluntary market since those who elect to purchase a payout annuity tend to live longer than those who do not; adverse selection raises prices for all those who do purchase." The authors computed these costs using the difference between the MWRs of annuitant and population survival tables.

The authors reported that MWRs for CPF LIFE offered "excellent value-for-money" to the annuitants. Using a riskless term structure with a long-term rate assumption of 3.44 per cent, MWRs ranged from 1.24 to 1.31 for males and 1.26 to 1.34 for females. In comparison, annuities provided by privately provided life insurers only yielded MWRs of 0.947 for men and 0.955 for women.

With the unusually low interest rate environment in Singapore, the authors recomputed the MWRs using a higher long-term rate of 4.44 per cent, a figure close to the 10-year bond yield in 1998. These still gave MWRs above unity, 1.10 to 1.15 for males, and 1.09 to 1.14 for females.

"The government's higher payout results in part from lower administrative loads compared to those levied by private insurers, and in part from less adverse selection due to the compulsory annuitisation," stated the paper.

The authors suggested that there might intentionally have been a small subsidy to CPF members to jump-start the scheme, with a sign-on bonus for the first five cohorts who joined while the scheme was still voluntary. They assumed constant nominal payouts but acknowledged that payouts may vary in future depending on the evolution of interest and mortality rates.

CPF members can continue to buy life annuities from private insurers, though "few firms appear able to compete", suggesting that the government's move to provide such insurance might crowd out private sector players.

Nine private insurance companies were offering annuities in 2007, but only one remained by late 2009. The authors noted that the lack of competition among annuity providers could hamper product innovation and pricing pressure.

However, since CPF LIFE only permits the minimum sum to be annuitised, the paper suggested that private providers could focus their offerings on any excess wealth such as non-pension wealth or CPF savings in excess of the minimum sum.

The CPF LIFE payouts are also not inflation adjusted, and private providers can fill the gap by providing inflation-linked products. Private insurers who have life insurance and life annuity products might also benefit from "natural hedging" across the two classes.

"By establishing the government as an annuity provider, the CPF Board may have taken advantage of scale economies and reduced the pricing impact of adverse selection, given that the latter was found to be quite a substantial proportion of total loadings", passing on the cost savings to its annuitants, the paper concluded.

However, it remains to be seen if favouring annuity payments over payments to survivors is politically sustainable, and for how much longer the government can continue to subsidise payouts.

Singapore's experience might prove useful for other governments concerned with annuitised DC plans. In the United States, most retirees take their money as a lump sum, exposing themselves to longevity risks. Other academics have proposed that a default option for these participants may be a “trial” annuity product, with an option to opt out, as a way to alleviate these risks.