

Variable Uninsured Life (Value) Annuities: Theory, Practice and Country Cases

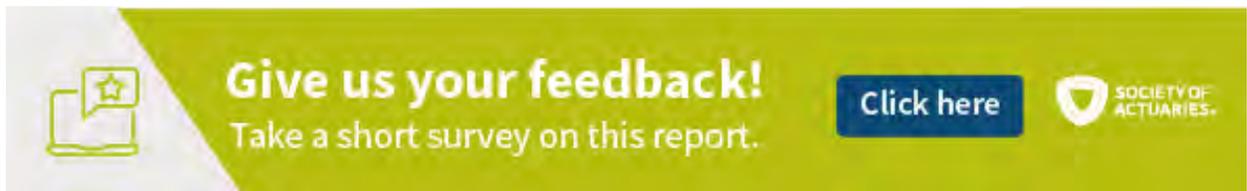




Variable Uninsured (Value) Life Annuities

Theory, Practice and Country Cases

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Note on Exchange Rates: U.S. dollar: Malaysian ringgit, US\$1:RM 4; U.S. dollar: Indian rupee, US\$1:Rs 67.

Executive Summary

The aim of this project is to present proposals for Variable Uninsured Life Annuities—or “Value annuities.” The report and the accompanying models illustrate how Value annuities work. The practicalities of designing and administering a Value pool are addressed, and legislative, regulatory and supervisory implications are illuminated by case studies on two countries (India and Malaysia). This set of material is broader than most contributions to the literature and is aimed at making the approach more feasible and accessible to policymakers, thereby facilitating actual introduction and implementation.¹

The basic financial efficiency of annuity income can be delivered even in situations where traditional annuities are not viable. A retirement system that does not have access to a deep market for insured annuities can still provide lifetime income instead of lump-sum payments. Lifetime income solutions provide more income than other payout options by pooling risk and making payments only to living retirees. Some actuarial expertise is required to design and administer a Value longevity pool, but members bear all risk so that no insurance is required. The costs and regulations related to insurance are avoided.

Value annuities guarantee an income until death, but members bear the risk of adjustments to income as life expectancy changes and investment performance develops. Payouts are higher, on average, than for traditional annuities because of investment flexibility, and because there is no compensation paid to another party for taking on risk. An insurer does not need to provide for profit and capital buffers related to risk that unfolds over a 30–40-year period.² Since payouts adjust as investment and mortality experience materialize, members can still be sure that there will be a payout until death—delivering one of the most important features of a pension.

The advantages of lifetime income and the potential for uninsured solutions are explored in other literature, but this report includes working administrative tools, a guide to real-world design, considerations for how to regulate and supervise Value annuities and case studies for implementing them in India and Malaysia. The tools included with the report would allow policymakers to move from recognizing issues to delivering a real, workable solution. This means they do not have to rely on “black box” proprietary approaches. The outputs are based on a working model for administering the approach, which is provided as one of the project deliverables. The approach could be useful in a wide range of countries, both developed and developing, and those with or without existing annuity markets.

The report shows how Value annuities can improve the payout phase for governments and retirees in both developed and developing countries. Value annuities can ensure that saving for retirement leads to a more secure old age. This report is informed by decades of experience working in retirement systems around the world, many of which are struggling to move beyond providing a lump-sum account balance at retirement. It recommends leveraging scale and well-governed organizations to deliver better outcomes using the Value approach. The maximum benefit from annuities comes when they are mandatory or a default option as this avoids adverse selection and complex choices or misleading sales practices. Adding Value annuities as a voluntary option is possible but will not maximize the benefits of the approach. Given the size of the pension challenges for many retirement systems it will be necessary to take bold action—and Value annuities could be a key part of a reform package.

¹ The broad approach is similar to “tontines,” and this report acknowledges many contributions that share a similar aim to that of the current researchers—in particular work by Richard Fullmer and Moshe Milevsky among others. The authors of this report do not use the term tontines—in this report or their work with governments around the world—as they find that the history (and past failures) of tontines locate the concept as a past failed idea that makes the pivot to understanding how powerful they can be for current problems difficult for some. The word “tontine” also has an unfortunate connotation in Spanish. Hence, we coined the term “Value annuities” as it helps understanding of the power of longevity pooling and more joined-up accumulation and decumulation phases and incorporates the concept that the annuities are uninsured and hence non-insurers could offer them.

² Capital buffers may be needed for operational capital but not for “insured” risks because the members of the pool are bearing the risk on mortality and investment, and hence they are not paying for—or receiving—an insurance product.

Section One makes the case for improving the way accumulated assets are translated into retirement income. The general case for lifetime income as a payout solution is presented. Better retirement income solutions reduce poverty where public pension pillars are inadequate or nonexistent.

Section Two provides an overview of the modeling and other tools included with the report to facilitate understanding and adoption of the Value approach.

Section Three looks at the cases of India and Malaysia to explore how the Value approach could improve pension outcomes for a country and its citizens in a real-world context. This work has benefited from many discussions with regulatory, academic and industry representatives in both countries, for which we are very grateful. All errors and omissions are the responsibility of the authors and no endorsement of the proposals by those with whom they were discussed should be assumed or implied.

Section Four takes the specific discussion of these two countries to a more general review of the legislative, regulatory and supervisory implications that need to be tackled to introduce the Value approach. The concept of variable uninsured life annuities could help strengthen the payout phase in countries from the United Kingdom (U.K.) and United States (U.S.), India and Malaysia to Ghana and Guyana.

Section Five concludes with the key message that the Value approach is simpler to operate than traditional life annuities and provides superior outcomes to traditional annuities. The outcomes are generally far superior to the effective default of lump sums, phased withdrawals and poorly managed attempts at self-annuitization seen in many countries across the world.

Appendix 1 is an overview of the Actuarial Administrative model that provides the means to implement a Value annuity approach in a small system or the specifications for implementation in a larger system. **Appendix 2** is an introductory document that illustrates some of the key concepts underlying the Value approach. **Appendix 3** provides a detailed Design and Technical Guide addressing many of the considerations in designing a Value longevity pool in specific settings. **Appendices 4 and 5** present examples of many of the factors that may impact income levels for retirees in a Value pool. Examples are provided for both India and Malaysia.

Section 1: How Retirement Income Can Be Improved by Value Annuities

1.1 Introduction

This section sets out the case for improving the payout phase in pension systems. It describes how Variable Uninsured Life (Value) annuities can make lifetime income a more viable option for countries at many different development levels. The payout phase is fundamental to pension policy and design but has often been an afterthought in reform efforts.³ This is particularly an issue when reforms introduce defined contribution (DC) pensions. They will deliver an unknown future stock of assets based on contributions and investment returns and make the translation of these assets into a retirement income subject to an additional decision. For some this freedom will be a benefit well used. But for many the problems with choosing among complex financial products will lead to the exhaustion of assets or unnecessarily cautious spending. In addition, expensive and aggressive sales practices at the point of decision making can negatively affect outcomes.

Defined benefit (DB) pensions, the more dominant approach in past years, provide lifetime income by default.

However, in a pure DC design, there could be any number of payout options—from a 100% lump sum to a single-premium annuity. The individual is typically left to assess these complex issues alone or with minimal support even where there has been strong governance and well-designed default funds during the accumulation phase.

There is an enormous amount of academic literature on payouts, including the question of why more people do not choose annuities given the benefits of lifetime income (the “annuity puzzle”).⁴ Part of the puzzle is that people who dislike annuities in a private market may also be vehemently opposed to public pensions that do not last until death. In addition to the general theoretical literature on annuities, many useful contributions outline either a specific potential approach or the key design issues that need to be considered when developing the payout phase.⁵

The aim of this project is to present a specific suggestion for a payout product, illustrate how it would work with modeling, discuss practical considerations and include the legislative, regulatory and supervisory implications illuminated by case studies on two countries (India and Malaysia). This material covers a broader spectrum than other contributions to the literature and is aimed at making the approach more feasible and accessible to policymakers, thereby facilitating actual introduction and implementation.

The need for this project is particularly acute as pension systems mature and previous reforms generate increasing stocks of assets. Total assets in pension plans are now over USD\$32 trillion.⁶ India and Malaysia, featured in this report as case studies, demonstrate that the growth of pension assets is significant outside of the traditional markets in Europe and North America. The Indian National Pension System now has over US\$100 bn in assets

³ R. Rocha and others, *Annuities and Other Retirement Products: Designing the Payout Phase* (Washington, DC: World Bank Group, 2011).

⁴ This modern literature on annuities is often dated to the seminal early contribution from M.E. Yaari, “Uncertain Lifetime, Life Assurance and the Theory of the Consumer,” *Review of Economic Studies* 32 (1965): 137–50 with some important and interesting contributions from, among others, J. R. Brown, O. Mitchell, J. Poterba, and M. Warshawsky, *The Role of Annuity Markets in Financing Retirement* (Cambridge, MA: MIT Press, 2001); O. Mitchell, J. Piggott, and N. Takayama, *Securing Lifelong Retirement Income* (Oxford: Oxford University Press, 2011); E. Cannon and I. Tonks, “Annuity Markets: Welfare, Money’s Worth and Policy Implications,” Netspar Panel Paper 24, The Netherlands (June 2011); M. Milevsky, “Life Annuities: An Optimal Product for Retirement Income” (Charlottesville, VA: CFA Research Foundation, 2016); and R. Fullmer, “Tontines: A Practitioners Guide to Mortality-Pooled Investments” (Charlottesville, VA: CFA Research Institute Foundation, 2019). All these publications contain very detailed references and bibliographies for the literature for anyone interested in this part of the discussion.

⁵ See, for example, A. Chen, S. Haberman, and S. Thomas, “Combining Flexible Asset Allocation, Sustainable Withdrawals, and Deferred Annuities to Provide an Adaptive Lifelong Investing Solution” (London: NEST [National Employment Saving Trust], 2020); “The Future of Retirement Consultation on Investing for NEST’s Members in a New Regulatory Landscape” (London: NEST, 2015); D. Ezra, B. Collie, and M. Smith, “The Retirement Plan Solution: The Reinvention of Defined Contribution” (Wiley, 2011); H. Bateman, C. Eckert, F. Iskhakov, J. Louviere, S. Satchell, and S. Thorp, “Default and 1/N Heuristics in Annuity Choice,” School of Risk and Actuarial Studies Working Paper 2014/1 (University of South Australia, 2013); and W. Price, and E. Inglis, “Paying the Pension: Markets, Products and Choices,” chapter 20 in *Saving the Next Billion from Old Age Poverty* (New Delhi, India: Narosa Publishing, 2017).

⁶ “Pension Funds in Figures” (Paris: OECD Publishing, 2020), <https://www.oecd.org/pensions/Pension-Funds-in-Figures-2020.pdf>.

following reforms in 2004—in addition to the US\$134 bn in the separate Employees Provident Fund. Malaysia’s Employees Provident Fund had US\$250 bn in assets under management at the end of 2020.⁷

The growing stock of assets is an important part of meeting demographic challenges. However, the positive asset growth trend is being undermined by failures in payout policy that do not translate assets into streams of income that will help people achieve a sufficient standard of living in old age. The issue has become even more challenging in cases where the Covid-19 crisis has led some countries (including Peru, Chile and Australia) to allow access to pension assets to help during the terrible impact of the pandemic. It is also exacerbated by rules that allow early access to pensions or the use of “pension” assets for alternatives such as health, education or housing. While each of these priorities has merit in isolation, using pension assets to achieve them makes it more difficult for private pensions to complement public pensions. The consequent reduction in pension assets means people have to work longer or have less income in retirement unless withdrawals are made up in some way.

1.1.1 LIMITATIONS OF LUMP-SUM AND PHASED WITHDRAWALS

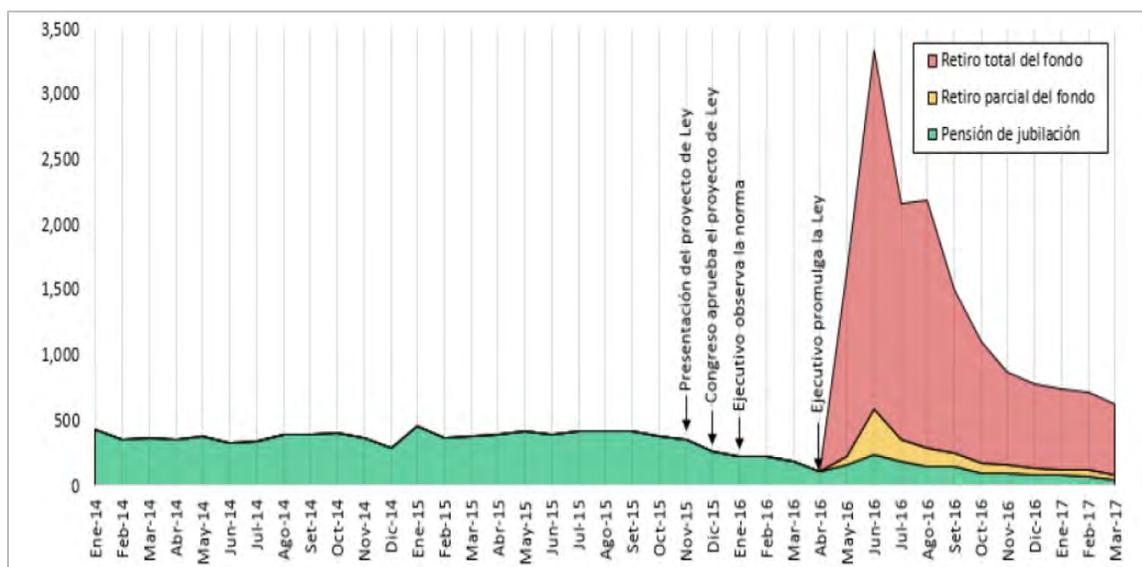
Lump-sum and phased withdrawals allow assets remaining at death—bequests—which reduces the direct financial efficiency of providing income in old age. Lifetime income solutions maximize income while retirees are living, thereby enhancing retirement security, which is typically the fundamental objective of a pension system. Since no bequests are paid, retirement savings provide only for retirement security. Lump-sum and phased withdrawals are popular with members but reduce the impact of retirement security of each dollar of retirement savings.

Access to lump-sum payouts at retirement can lead to a rapid reduction in the stock of assets dedicated to old-age income. Policies to ensure assets are translated into income are partly operating as insurance against the approach people would take as individuals. The effect of removing requirements to take an income from pension assets can be seen in recent examples. In Peru, as shown in Figure 1, a previous policy of focusing pension assets on income was altered in 2016 to allow access to greater lump-sum payouts. As Figure 1 shows, there was a dramatic increase in withdrawals (the red *retiro total del fondo*) compared to the previously dominant retirement pension (the green *pensión de jubilación*), with a smaller increase in the partial withdrawals from the fund (the yellow *retiro parcial del fondo*).

In the U.K., decades of settled policy to require a lifetime income from pension assets was ended with the “Pension Freedoms” in 2015. This led to a significant decrease in the percentage of people taking annuities. Compared to the earlier requirement to annuitize, the figures for 2019–20 show only 10% of people now take an annuity. Thirty-four percent took some form of phased withdrawal—of which 42% were withdrawing more than 8% a year. The remaining 56% withdrew 100% of their money in a single lump sum. While many of the accounts from which there was a 100% withdrawal were relatively small, there has been an overall collapse in the proportion of people who have an income guaranteed until death by participating in some form of longevity pooling. Even these figures for 2019–20, essentially unaffected by Covid-19, show that a significant proportion of people will now have lower, and potentially zero, additional income in “older” old age from their private pension.

⁷ KWSP/EPF, “EPF Navigates Safely Through Pandemic-Stricken 2020” (Kuala Lumpur: KWSP, 2021), <https://www.kwsp.gov.my/-/epf-navigates-safely-through-pandemic-stricken-2020>.

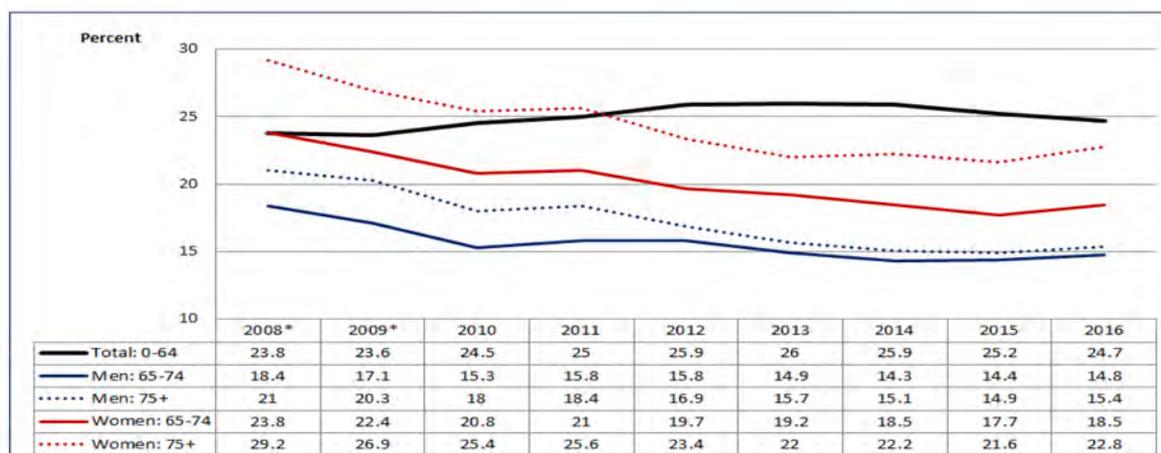
FIGURE 1: IMPACT OF ALLOWING LUMP-SUM WITHDRAWALS FROM PENSIONS IN PERU



Source: SBS Peru.

This need for secure income until death is particularly important because the “older” old have higher rates of poverty than “younger” old. Since women tend to live longer, this is one reason why pension outcomes by gender are often so unequal. Figure 2 shows the percentage of the European Union (EU) population “at risk of poverty or social exclusion” (AROPE) between 2008 and 2016. It shows the risk for all citizens aged 0–64 and then those aged 65–74 and 75+ split by male and female. The total at risk of poverty is around 25% and fairly stable for the 0–64 age group. For men aged 65–74 the risk is consistently lower. It has fallen over time and was around 15% by 2016. The figures for women show higher rates of poverty than for men for both the 65–74 group and the 75+ group. In 2016 the poverty rate of the women in the 75+ group was close to 25%, whereas that for the women in the 65–74 group was less than 20%. So, if pension policy is going to tackle key issues like relative poverty in old age, it will need to have a solution that addresses the oldest citizens and in particular women. This requires sufficient combined income until death which public pension pillars alone cannot afford.

FIGURE 2: AT-RISK-OF-POVERTY OR SOCIAL EXCLUSION (AROPE) RATE BY AGE AND SEX: EU 2008–2016



Source: Eurostat. Notes: AROPE rates of older people and working-age people are not directly comparable, as the latter rate includes a third component: joblessness. Cut-off point: 60% of median equivalised income after social transfers. *2008-2009: EU-27; 2010-2016: EU-28.

Australia has one of the largest mandatory DC private pension pillars in the world. At retirement, the assets can be taken without restrictions on the type of product or any requirements to take an income stream at the retirement or “preservation” age. Known as Superannuation and begun in 1992, the assets under management have grown rapidly and are now close to 150% of gross domestic product. For many years the freedom to take a full lump sum from the mandatory Superannuation pillar was justified on the basis that the public “Age Pension” provided a minimum floor for all through a noncontributory but means tested pension. However, there have been concerns about overconsumption of Superannuation pension balances—which will lead to lower incomes in older old age—as well as the opposite problem that fears over outliving one’s assets will lead to very low spending.⁸ In either case the lack of longevity pooling means that individuals will be self-annuitizing in a way that is less efficient than the collective solution.

The 2014 Murray Review in Australia started a renewed debate on the need for a default payout product that would provide income for pension savers in retirement. The aim is to mirror the governance already set up for the accumulation phase, where trustees develop a default fund and engage providers for the pension members, in the payout phase. Under the proposals in the 2014 review and in subsequent discussions, trustees would develop a Comprehensive Income in Retirement Product (CIPR) into which members default at retirement and receive the benefits of a pooled longevity product purchased at scale in the best interests of members.

1.1.2 LIMITATIONS OF EXISTING ANNUITIES

Annuity markets are typically robust only when they are mandatory—and such cases are the exception rather than the rule. As the case of the U.K. shows, even many decades with an annuity as the mandatory product has very little impact on the innate desire for access to assets over income that is a feature of many markets. As soon as the new rules on pension freedoms were created the demand for annuities collapsed.

⁸ “Retirement Income Review: Final Report,” July (Canberra: Commonwealth of Australia, 2020).

The demand side of the “annuity puzzle” is a fundamental issue. When given a choice, most retirees choose lump sums. The many innovations such as guarantee periods, nominal, rising and inflation-protected payouts do not seem to change the fundamental decision for most people. Annuities that pay out for a fixed period of, say, 10 or 15 years are not substitutes for life annuities and do not negate the case for developing better options for lifelong payouts. Moreover, in many markets, annuities have become associated with legitimate concerns about excessive commissions and aggressive sales agents such that the product becomes tainted regardless of the underlying features or benefits.

Problems with annuity markets are found on the supply side as well as the demand side. A traditional single-premium annuity requires the insurer to take make assumptions about life expectancy for the next 30 to 40 years. Even in countries with good data there is plenty of risk over this kind of time horizon. But in many countries the good data are not available. While it may be progressively improved over time (a feature that the Value approach can exploit), this does not help an insurer to provide an irrevocable contract now for a lifetime payout. Significant capital needs to be set aside to back the potential downside risk.

In addition to mortality issues, providing basic annuity products and addressing inflation risk present problems. Some countries do not have deep, liquid markets for long-dated fixed income assets that back traditional annuity products. In countries with high inflation, a lack of inflation-linked bonds can make it challenging to offer protection against increases in spending needs. Volatility in equity returns makes them a poor fit for backing fixed or gradually rising payouts, but the absence of significant equity exposure over a 30-year investment horizon can have a large impact on returns and payout levels.

In addition to mortality and investment risks, there are sales and marketing costs. Introducing Value annuities may not change the basic structure of the market—and hence they could still be subject to sales and marketing costs. But, as outlined in Section 4, introducing the Value approach together with changes that make the approach mandatory or make better use of defaults can help ensure the most efficient delivery and pricing.

1.1.3 THE CASE FOR VALUE ANNUITIES

The advantages of Value annuities arise from the risk profile shown in Table 1. The basic advantage of all annuity income derives from pooling longevity risk. The risk for each annuitant that they must provide for a long life is pooled so that all annuitants can be paid based on the average expected lifetime. However, a Value annuity pool also shares population longevity risk—the risk that the general life expectancy of the population increases—among the members rather than transferring it to an insurance company. Insured annuities can eliminate investment risk by investing in fixed income or allow annuitants to take it on, while the Value approach is based on members bearing investment risk.

TABLE 1: RISK PROFILE OF ANNUITY INCOME SOLUTIONS

	Individual Longevity Risk	Population Longevity Risk	Investment Risk
Traditional fixed annuity	Pooled	Insurer	Insurer invests in fixed income
Variable income annuity	Pooled	Insurer	Annuitant
Value pool annuity	Pooled	Annuitant	Annuitant

The Value annuity is based on a group of members who pool individual longevity risk. This means that the pool shares the risk of living relatively longer or shorter lives. This creates a very powerful efficiency in terms of the stock of assets required to ensure everyone in the pool has an income until death as compared to the approach where everyone is self-annuitizing. Securing the same retirement security in a system using self-annuitization can cost 20% more than using annuities, because bequests by those who must keep assets in reserve to avoid running out of

money reduce the efficiency of the overall amount of savings in a retirement system.⁹ The net efficiency of annuity payouts can be determined using the Money's Worth Ratio, which compares the market annuity prices to an actuarially "fair" annuity.¹⁰

Value annuities adjust as population mortality experience develops. This eliminates the pricing risk in traditional annuities and reduces the need for risk-based capital. In the Value annuity, the pool shares the risk that mortality experience will be different from the initial mortality assumption—the population or systematic longevity risk. With commercial annuities, that risk is insured, and the insurance company expects to profit from insuring the risk. Thus, the Value pool of members can expect to "profit" from keeping this risk but must accept that it is a risk. Sharing the risk among the pool will be expected to provide higher payouts, and the impact of changing mortality assumptions can be smoothed over time. Countries without robust mortality data can provide life annuities right away with the understanding the income provided by the Value pool will adjust as mortality data are improved. As new data come on stream the payouts for the Value annuity will be updated. This is explained in the Design Guide and Technical Addendum in Appendix 3.

The Value annuity allows more exposure to higher-returning assets than a standard life cycle accumulation phase that transitions to a high allocation to low-duration bonds at retirement. A Value pool will generally be invested in a diversified portfolio including growth-oriented assets like equities that, over time, protect against inflation and provide higher returns. It is important to compare the market payout of a traditional annuity to the higher average payout of the Value annuity to understand that the payout certainty with a traditional annuity has a potential cost. The right investment approach does need to be assessed in the context of the local market and preferences of the membership and domestic regulatory authorities. Section 2 and the Technical Guide show the impact of investment volatility and uncertainty, which are important.¹¹

In addition to financial efficiency, eliminating the possibility that retirees run out of money has value. The latest U.K. data showed that over 40% of those in drawdown are taking out 8% or more of their assets per year. Rules of thumb such as the "4% rule" on plausible rates of drawdown for self-annuitization are no guarantee of success, but a drawdown of 8% is very likely to lead to earlier exhaustion of assets. Other rules of thumb for drawdown do exist that would be a considerable improvement for many people to manage their assets (Inglis 2016).¹² However, the fact remains that the person who is self-annuitizing has no guarantee that their assets will be sufficient to last their full life. While the annual income from the Value annuity prevents excessive drawdown, it also ensures a higher income than when spending is restricted based on a fear of outliving assets.

Providing a guarantee of income until death without the perceived downsides of a traditional annuity is a challenge. The main features and modeling outcomes for the Value annuity are set out in Section 2 and the Design Guide, and the later sections of this report address issues and design considerations. Examples of approaches that are already

⁹ D. Bauer, "Longevity Risk Pooling, Opportunities to Increase Retirement Security" (Schaumburg, IL: Society of Actuaries, 2017).

¹⁰ There are many papers on the Money's Worth Ratio with a range of estimates. A recent NBER paper by Poterba and Solomon has a central estimate of 92%, e.g., the actual annuities pay out 92 cents relative to \$1 from the theoretically fair annuity. J. Poterba and A. Solomon "Discount Rates, Mortality Projections, and Money's Worth Calculations for US Individual Annuities," NBER Working Paper No. 28557 (Cambridge, MA: NBER, 2021).

¹¹ There are good arguments in the presence of a significant payout from a Zero or First Pillar public pension plan that the optimal private pension investment portfolio might be more risk-seeking than is often thought because the relevant consideration of risk to investment income should be seen in relation to total pension income, not just the private component. See, for example, R. Inglis, "A Risk-Based Framework for Making Retirement Income Decisions," First Prize winning essay for the 2020 Society of Actuaries competition, "Products, Tools, and Strategies that Address Retirement Risks." <https://www.soa.org/resources/research-reports/2020/products-tools-strategies-retirement-essays/>

¹² R. Inglis, "The "Feel Free" Retirement Spending Strategy," First Prize winning essay in Society of Actuaries 2016 Competition <https://www.soa.org/globalassets/assets/files/resources/essays-monographs/diverse-risk/2016-diverse-risks-essay-inglis.pdf>

working in Sweden and Singapore are also described below to highlight that the use of Value annuity-type approaches is innovative but not untested.

1.1.4 EXISTING EXAMPLES OF VALUE-TYPE ANNUITIES

Value- or tontine-like structures may raise questions about whether the ideas work in practice. There are at least two existing examples in the world of Value-type approaches, which can help provide confidence to policymakers.

The first is in Sweden in the payout phase of their Second Pillar mandatory DC pension plan known as the Premium Pension Plan (following reforms in the 1990s). The second is in Singapore through a mandatory DC component for workers as part of the Central Provident Fund (CPF) and the payout phase “CPF Life,” introduced in 2009.¹³

The Swedish approach for the Premium Pension component is part of an integrated public and private saving approach where the core of the public pillar is a Notional Defined Contribution (NDC) pension. NDCs are similar to the Value approach in that payouts are updated as mortality experience evolves but there are no actual assets in member accounts—hence the “notional” label. In the accompanying Premium Pension pillar there are real assets as workers must contribute 2.5% of wages. Members can choose their own investment fund from eligible providers or go into the default fund that is run as a not-for-profit and known as AP7 S afa, which has a lifestyle investment strategy.

At retirement members can choose between “Traditional Insurance” and “Unit Linked Insurance.” The Unit Linked Insurance is most similar to the Value approach. Member funds remain invested, and unit-linked payouts are determined using an annuity factor applied to the current fund balance. Members have a choice between investing in the default fund AP7 S afa or choosing alternative funds with different risk profiles. Their pension payout is then calculated each year with an annuity factor incorporating mortality and discount rate terms, based on Swedish experience. The actual mortality data are updated periodically with new data from the national statistical agency Statistics Sweden. Full details of the annuity factors and the formulas used to calculate pension payments under the Notional Defined Contribution pension pillar are published by the Swedish Pension Agency.¹⁴ This is an important aspect of transparency, since although members are highly unlikely to understand the technical material that is published, it means that there is preannouncement of the approach and the formulas to be used to calculate payout.

The CPF Life payouts in Singapore are broadly similar to the Value approach with some important differences. There is less transparency than in the Swedish system about the precise formulas used, but there is scope to vary payments based on changes in the mortality and investment assumptions. The investment side is different from the Swedish system because contributions to the CPF used to purchase Special Singapore Government Bonds (SSGBs). SSGBs earn an interest rate that is equal to the 12-month average yield of the 10-year Singapore Government Security plus an additional 1%. However, the investments in the Retirement Account (which was founded in 1987) are subject to a minimum return of 4% per year.

Despite the differences, the CPF Life plans provide an interesting illustration of a pooled variable uninsured life annuity of the Value or tontine type. Unlike the Swedish case where there is only one type of flexible annuity

¹³ Value-type annuities were recently authorized in Canada but as a product offering by individual firms rather than a part of the core retirement system.

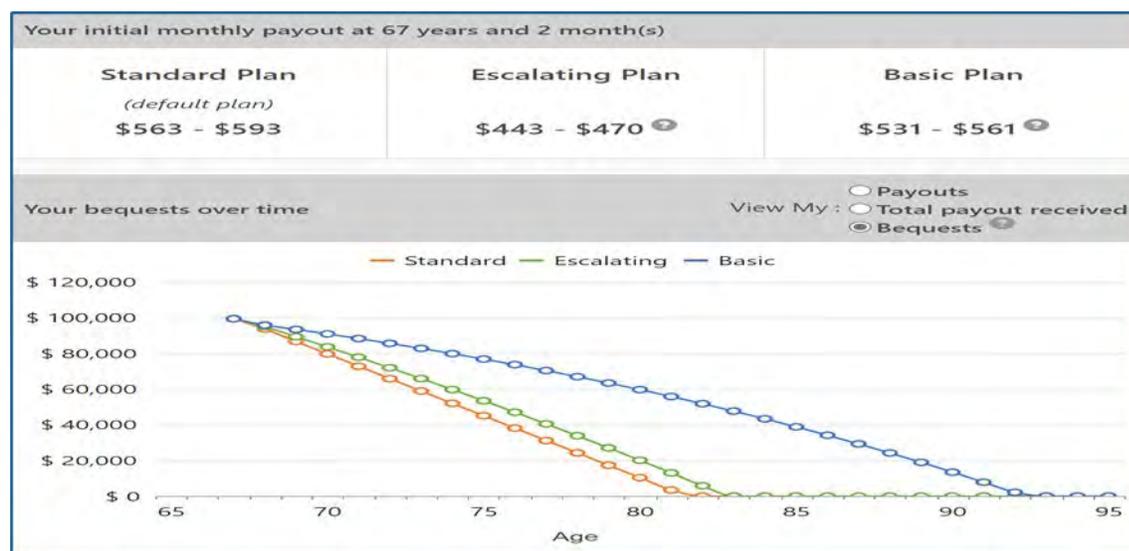
¹⁴ The main legislative vehicle for its functions is the “Social Insurance Code.” As part of that legislation the Swedish Pension Agency is given the duty to conduct the “premium pension operations” (the mandatory DC second pillar in Sweden) “according to sound insurance principles” as part of the Social Insurance Code part 64 chapter 3. The Swedish Pension Agency has to calculate the annuity divisors used to determine annual payments based on account balances and the latest mortality data, as well as the “inheritance gains”—the redistribution of the longevity pool. It also calculates the fee levied on invested assets to pay operating costs (with additional fees paid directly to the fund managers for their services). The Swedish Pension Agency publishes the full details of the approach under the delegated authority from the legislation in the Social Insurance Law. For example, its Annual Report on the system includes the exact formulas used for each part of the system.

offered, there are three options in the Singaporean case. This gives an example of tailoring a Value-like approach to a country by focusing on a limited range of issues for which there may be strong preferences. In the Singaporean case there is an option for the payout to grow at 2% a year, an option for a lower fixed annuity amount that will increase the chance of providing a bequest and the default option that has a higher starting amount, fixed in nominal terms, with a lower chance of providing a bequest. The default option with the higher starting amount and the escalating payment option cease to provide a bequest if someone lives beyond around 80 years. The lower starting fixed amount option will provide a bequest up to around aged 92. In all three cases the size of the bequest will fall over time.

The similarity of the CPF Life payouts to the Value approach is described in the CPF Life Illustration footnotes: “The monthly payouts, total payout received, and bequest amounts shown are estimated based on the Retirement Account balance provided, current CPF interest rates, and current mortality assumptions. They may differ from the actual figures. The displayed ranges are based on interest rates between 3.75% and 4.25%, and do not represent the lower and upper limits of the payouts.” The footnotes continue: “CPF LIFE monthly payouts may be adjusted to consider factors such as CPF interest rates and the latest mortality experience. Such adjustments will change the bequest and total payout received figures as well.” Along with the lifetime payment guarantee, this is essentially describing a variable life annuity approach. However, unlike Sweden, there is no publication of the precise annuity factor formula used to make the calculation of monthly payment or the annuity factors themselves.

Figure 3 shows how the three payout options are illustrated under CPF Life. The figure shows the payouts for a woman. Since women live longer and Singapore does not use unisex mortality, a given level of savings will pay less per year than for a man. In the Singapore case the difference is around 7% a year.

FIGURE 3: PROJECTIONS FOR PAYOUTS AND BEQUESTS IN SINGAPORE’S CPF LIFE—FOR A WOMAN



Source: CPF 2020 (based on female born May 1, 1954 and retiring aged 67 and 2 months with SGD\$100,000). Note that the CPF have recently updated their website and interactive calculator which now shows the options in a different way.

Section 1 of this report has described how a lifetime income payout helps achieve policy goals of retirement security and poverty reduction, especially for the older old above the age of 75. It has presented the problems with lump-sum payouts and the difficulties faced by traditional annuities. There is a large amount of research supporting the concepts that underlie the Value annuity concept. This section has also highlighted the potential benefits of a Value annuity approach and presented examples of similar approaches that are already implemented. The next section sets out the modeling on the features of the Value annuity set out in this report and the pros and cons relative to

other examples. This is followed by discussion of application of the approach to two specific countries—India and Malaysia—in Section 3 before the discussion of general legislative, regulatory and supervisory issues in Section 4.

Section 2: Modeling Variable Uninsured Life (Value) Annuities and Value Toolkit

This project was undertaken to provide education about variable uninsured longevity pools and to facilitate their adoption by raising awareness, increasing knowledge and providing tools to implement the concept. A working model for administering the member account balances has been created. Also, the key characteristics of an uninsured lifetime income pool are shown with the help of stochastic modeling. Finally, a Design and Technical Guide was created to provide background information and guidance on issues that need to be considered when designing a Value longevity pool. The modeling efforts supporting this project include the following:

- The working administrative model that incorporates all the actuarial functions needed to implement and maintain a Value longevity pool.
- A stochastic model of various retirement income solutions, used to
 - Create educational illustrations about the Value concept
 - Illustrate the range of retirement income that might be expected for individuals from a Value pool compared to other typical retirement income solutions.
- A model of a full pool of members that introduces new members each year and tracks the progress of the entire pool. This was used to illustrate the factors that contribute to the variability of outcomes in a Value pool.

2.1 THE WORKING ACTUARIAL ADMINISTRATIVE MODEL

A working model for administering a Value longevity pool, including all the actuarial calculations required, was developed. The model keeps track of investment income and allocates it to individual member accounts. It allows for the entry of new member data and the relevant mortality tables. It creates all the necessary actuarial factors using generational mortality improvement factors and parameters for expected investment return and inflation. It allows for death benefits to be paid and adjusts actuarial factors for this election by pool members. It also permits dynamic actuarial factors, which are adjusted based on some measure of income or wealth. This allows a system to address one criticism of longevity pooling, which is that it tends to favor individuals with higher income or wealth since they tend to have longer life expectancies.

The administrative model determines the gain or loss for each member related to deaths in the pool. When members die, the portion of their account balance, i.e., net of any death benefit, is transferred into the longevity pool via a longevity fund that is adjusted with investment earnings until the end of each year. The fund is allocated to the members of the pool that are living at the end of the year. The longevity credit allocated to each member depends on the mortality risk that each has borne during the year, adjusted for any death benefit they have elected. This model is available at <https://www.soa.org/resources/research-reports/2021/variable-uninsured-annuities/>. As part of this report, Appendix 1 shows the administrative process and an outline of the Excel workbook containing the administrative model.

2.2 VALUE CONCEPT ILLUSTRATIONS

The Value Concept Illustrations are intended to introduce the Value concept to interested parties. They explain, at a high level, what a Value pool is, how the outcomes compare to fixed annuities and systematic withdrawals and how the size of the pool impacts the variability of income for the members. The Concept Illustrations document is found in Appendix 2.

2.3 STOCHASTIC MODEL OF RETIREMENT INCOME SOLUTIONS

The Lifetime Income Comparisons for India and Malaysia show key metrics at the median, 5th and 95th percentiles for several different retirement income solutions. These metrics are intended to provide a concise look at the total value delivered and the risk related to the retirement income solutions analyzed. Each solution has advantages and disadvantages relative to the other solutions, so there are no definitive answers provided by the analysis. However, it serves as a basic resource for evaluating the Value concept as a solution relative to other common approaches. These comparisons are shown in Section 3 for India and Malaysia.

2.4 FULL POOL MODEL

The Dispersion of Outcomes charts for India and Malaysia in Appendices 4 and 5 show the variability in income delivered by a Value pool and how it is impacted by specific aspects of the mortality assumption, actual mortality experience and investment returns. The potential range of results is an important aspect of the Value approach and understanding the specific causes of uncertainty is intended to inform the design of a pool.

2.5 DESIGN GUIDE AND TECHNICAL ADDENDUM

The Design Guide and Technical Addendum in Appendix 3 is intended to provide additional background and education and provide additional detail for policymakers and those concerned with creating and implementing the Value approach. The design portion of the guide covers basic concepts such as actuarial factors and adverse selection. Important optional aspects of design such as allowing for death benefits, cost-of-living increases and addressing equity among different classes of members are addressed. It also discusses investment strategy and building the supporting mortality data as experience develops. The technical portion of the guide explains the underlying economic and actuarial concepts for a Value pool and provides the formulas used to allocate mortality and investment gains to members in a pool.

Section 3: Applying Value Annuities to India and Malaysia

This section sets out how Value annuities could be applied in India and Malaysia. It illustrates some of the key issues that need to be addressed if the benefits shown in Section 1 and 2 are to be delivered in real-world situations. This discussion highlights important areas that are covered in Section 4 on the general legislative, regulatory and supervisory issues. The discussion uses the concept of pension pillars, adapted from the World Bank.¹⁵ These are outlined in a footnote for readers not familiar with the concept.¹⁶

3.1 INDIA

3.1.1 THE INDIAN PENSION SYSTEM

Zero Pillar or Social pensions in India are delivered through a means-tested noncontributory transfer program funded through the Ministry of Rural Development as part of the National Social Assistance Program. This was started in 1995.

India does not have a traditional First Pillar pension plan akin to a Social Security pillar that is mandatory for all workers. In this respect it is similar to Australia (where there are mandatory Second Pillar workplace pensions but no mandatory Social Security pillar). The Employees Provident Fund—a mandatory DB and DC scheme for workers in firms with over 20 workers—may be considered a First Pillar Pension plan. However, it is more accurate to see that as a mandatory workplace pension program—similar to the Malaysia Employees Provident Fund discussed in the Malaysia example below. Either way the EPF is important for pensions in India and is covered below.

In the Second Pillar occupational pension space there are a range of different pensions in a system that is fragmented. There are some long-established Provident Funds set up for specific groups with bespoke legislation. There are pensions for civil servants—with a legacy DB plan and a new DC plan for workers who started after 2004 that is part of the National Pension System (NPS) discussed below. Pensions for the Armed Forces are covered by a separate regime.

The two main parts of the occupational pension market are the following:

- (a) the Employees Provident Fund—run by the Employees Provident Fund Organisation (EPFO) and
- (b) the National Pension System—regulated and supervised by the Pension Fund Regulatory and Development Authority (PFRDA).

EMPLOYEES PROVIDENT FUND

The Employees Provident Fund is mandatory for all employees in firms with 20 or more employees (other firms can participate voluntarily). There are two main pension schemes—the Employees Provident Fund (EPF) and the Employees’ Pension Scheme (EPS).¹⁷ Both are administered by the EPFO, but the EPFO has outsourced fund management to asset management companies. Figure 4 sets out the key features of each plan and highlights that the DB EPS plan pays an income in retirement, whereas the DC EPF plan pays a lump sum at retirement age.

¹⁵ See R. Holzmann and R. Hinz, *Old Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform* (Washington, DC: World Bank, 2005).

¹⁶ The “zero” pillar provides non-contributory poverty-alleviating payments. The First Pillar is from Social Security—typically mandatory and often Pay-As-You-Go but sometimes funded. The Second Pillar in the World Bank framework is mandatory private pensions, but in common with practice in many regions it is used here to be occupational or workplace pensions both mandatory and voluntary. Third Pillar pensions are individual voluntary pensions. Finally, Fourth Pillars are non-pension old age assets and income including housing, family transfers and non-pension savings and insurance products.

¹⁷ The EPFO has a third scheme known as the Employees Deposit Insurance Linked Scheme (EDLIS). This gives insurance to covered workers rather than a pension accumulation and payout phase.

FIGURE 4: SUMMARY OF THE EPFO INDIA EPF AND EPS SCHEMES

		INDIA	
		EPF	EPS
	Year Established	1952	1995
	Administrator	EPFO	
	Effective Coverage Rate (% Employment)	9%	
	Contribution Rate		
	Total	15.7%	9.5%
	Earmarked for Retirement	0%	na
	Retirement Age	55	58
	Lifetime Income Requirement	None	DB Annuity
Portfolio Allocation	Gov't Bonds & Deposits (% Portfolio)	88%	na
	Foreign Investment (% Portfolio)	0%	na

Source: R. Jackson and E. Inglis, *Asian Provident Funds: Meeting Tomorrow's Challenges* (Washington, DC: World Bank, 2021).

The EPFO is a complex organization, and it can be challenging to obtain data related to it. The use of a declared rate of interest that is not derived directly from actual asset returns creates a disconnect between assets and liabilities in the DC plan. Asset-liability issues are also inherent in managing the DB-based EPS. The EPFO has recently gained greater investment flexibility, but restrictions are still significant and would reduce the benefit gained from full Value annuity concept. Given these challenges, the illustrations and considerations of applying the Value approach in India are focused on the National Pension System not the EPFO.

National Pension System (NPS)

The NPS was created with a common architecture of account management and separate pension fund management that could be used for different purposes. This has created an efficient and flexible structure that helps to deliver pensions for public and private sector employees as well as workers in the informal sector. It also allows common delivery of the core components while allowing flexibility in contribution levels, mandatory or voluntary options, government incentives and payout rules.

One significant component of the NPS is the mandatory pension scheme for all central government workers from January 1, 2004. The NPS plan for central government workers is a DC plan. Employees contribute 10% of their salary. The government originally provided 10% of the salary in addition as the employer, but in 2019 it announced this would rise to 14%. The assets are managed by professional fund managers using an institutional model where the choice of fund managers and investment approach by individual members are aggregated rather than each member having an individual relationship with the fund manager for their own balance. Partial withdrawals up to 25% of a person's own contributions is permitted after three years for items such as children's education or marriage, purchase of a house, disability situations, treatment of an illness, skill development and for starting individual business ventures. Recently, the maximum age of joining NPS was increased from age 65 to age 70.

In addition to the civil service scheme there is a corporate plan where companies can voluntarily offer a group pension plan to their employees. There are also individual voluntary NPS plans, similar to third pillar pension plans in other countries. These use the same administration and fund management infrastructure as the voluntary corporate and mandatory civil service plans.

The government has created a number of bespoke individual NPS schemes over the years targeted at low-income workers to encourage savings.¹⁸ This is important in a pension system in which the “Zero Pillar” or social pension amounts are very low and targeted only at old people with the lowest income.

3.1.2 THE PAYOUT PHASE FROM THE NATIONAL PENSION SYSTEM

The regulator and supervisor of the NPS is the Pension Fund Regulatory and Development Authority (PFRDA). The PFRDA has broad, flexible powers for payout phase from the National Pension System.¹⁹

The retirement age is 60. The current requirement is to annuitize 40% of assets from age 60 (which can be delayed until 70).²⁰ The remaining 60% can be taken as a lump sum or used to increase the annuity. The PFRDA has created an “empanelment” process that allows them to screen the insurance companies that provide annuities. This means only a subset of all insurance companies are selected from all those life insurers licensed by the Insurance Regulatory and Development Agency (IRDA).

In addition to ensuring that only the most suitable insurance companies are providing annuities, the PFRDA also specifies a specific set of annuity products that can be offered. This creates a simpler menu of options for members rather than the much larger full range of options available in the wider insurance market. Each of the annuity options available for NPS subscribers is thus far chosen from products already approved by the insurance supervisor. In other words, the PFRDA’s power to specify annuity solutions is currently limited by the fact that they have to be chosen from IRDA-approved products.

The annuity types currently provided under the process are the following:²¹

- Option 1: Annuity for life
- Option 2: Annuity for life with return of purchase price on death
- Option 3: Annuity for life with a provision for 100% of the annuity to the spouse of the annuitant for life on death of the annuitant
- Option 4: Annuity for life with a provision for 100% of the annuity payable to the spouse of the annuitant for life on death of the annuitant, with return of purchase price on the death of last survivor

The most popular annuities in the Indian market are those that provide for the return of the principal on death.

Figure 5 shows indicative quotes for the monthly payout in rupees (Rs or INR) for a man who wants to take an

¹⁸ A third scheme has now been created known as the PM-SYM Scheme, introduced in 2019. It is not part of the NPS because it is administered by the Ministry of Labour and Employment. For more details, see Brief on Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM) (EPF India). <https://maandhan.in/shramyogi>

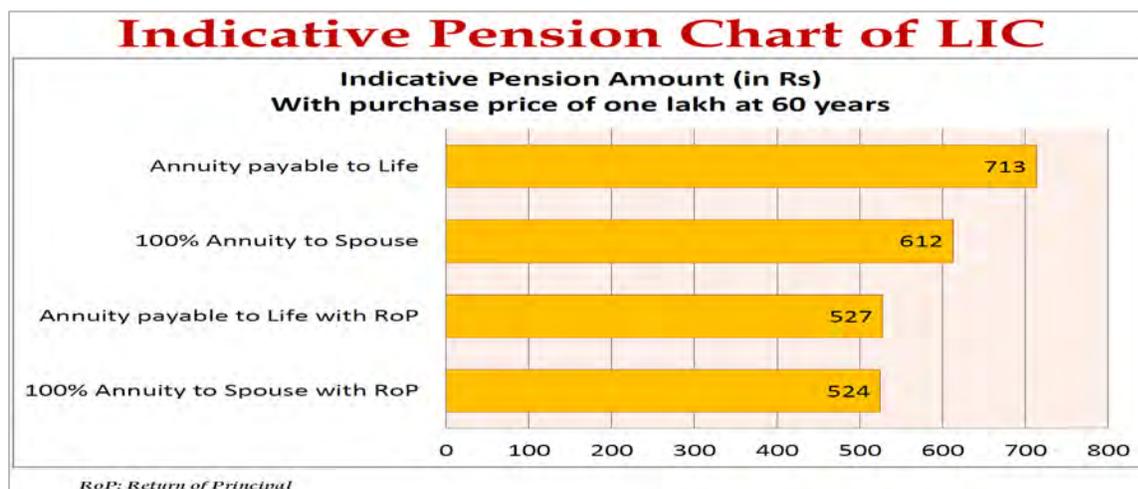
¹⁹ These are provided by subsection (1) of Section 52 read with subclauses (g), (h), and (i) of subsection 2 of Section 52 of the Pension Fund Regulatory and Development Authority Act, 2013 (Act No. 23 of 2013). The “Exits and Withdrawals” regulations from 2015 provide important information. They have been amended eight times, most recently on June 14, 2021.

²⁰ A regulatory change published on June 14, 2021, allowed anyone with Rs 500,000 (US\$7,463) or less to be exempt from the requirement to use 40% of the balance to buy and annuity and can withdraw the whole amount as a lump sum. See PFRDA/12/RGL/139/8, “Pension Fund Regulatory and Development Authority (Exits and Withdrawals Under the National Pension System) (Amendment) Regulations” (2021). <https://npscra.nsdl.co.in/acts-and-regulations.php>

²¹ There are some quite complex survivor and dependent rules for the annuities: sometimes only for government workers who are part of the NPS (after 2004) and sometimes for other types of annuities.

annuity at age 60 with Rs 100,000 (one lakh rupees) in assets (US\$1,500). These are identified via the central portal that then links to the individual companies and the example in Figure 5 is taken from LIC, which is India's largest insurer. The highest monthly payout is for the single life annuity, which pays Rs 713 a month. Adding a 100% surviving spouse annuity reduces the payout to Rs 612 a month—a roughly 15% reduction. The single life annuity with the Return of Principal pays Rs 527 a month compared to the Rs 713 for the simple single life. Finally, the joint life with Return of Principal pays Rs 524 a month.

FIGURE 5: MONTHLY PAYOUTS FOR DIFFERENT ANNUITIES IN THE NPS



Source: LIC.

3.1.3 INTRODUCING VALUE ANNUITIES TO INDIA—LEGISLATIVE AND REGULATORY ISSUES

If the insurance supervisor approved the use of the Value annuity, the PFRDA could add a Value annuity option to the list in Figure 5 by adding it to the list of annuities in the Empanelment Procedures under existing powers. It could also make it the default annuity using similar powers from the 2013 Act and 2015 Regulations. It appears that changes would be needed to the 2013 Act if the PFRDA were to use an annuity product that had not been previously approved by the insurance supervisor, but this would be a relatively simple change from a technical point of view. Similarly, changes would be needed to allow noninsurers to be empaneled as annuity providers because at this point providers have to be drawn from those approved by the IRDA. However, since the Value annuity is not an insurance product as highlighted in Sections 1 and 2 because the members rather than an insurance company bear mortality and investment risk, it could be offered by a wider range of providers.

Introducing the Value annuity in India is likely simpler than in most countries because of the centralized portal operated by the original centralized account administrator. This allows members to input their information and review the payout amounts from different providers. The same details for age, gender and fund balance and percentage of balance to annuitize (if above the minimum level of 40%) would be needed to get an illustration from a Value annuity.

Once the details are entered, the portal provides a table with (indicative) offers from companies for the different type of annuities. An extract is shown in Table 2. Not all companies offer quotes on all products. There is some variation by product for which company provides the best quotes. The modeling in this report typically shows that the Value annuity would provide a higher average payout than the traditional life annuity, but the presentation of the results would need to illustrate the potential for variability.

TABLE 2: ANNUITY QUOTATIONS BY COMPANY AND ANNUITY TYPE IN THE NPS

Provider/Product	Life Annuity	Life Annuity and Return of Premium	Life annuity with 100% survivor annuity	Life annuity, 100% survivor annuity and Return of Premium
Provider 1	656	501	NA	500
Provider 2	592	497	553	501
Provider 3	631	490	503	488
Provider 4	634	428	557	427
Provider 5	666	454	577	499

Source: Authors using indicative quotes via NPS payout portal from Indian annuity providers quoting for all products. Actual prices may vary when completing transaction with the relevant provider.

3.1.4 MORTALITY TABLES AND POPULATION DIVERSITY

The large diversity in income and wealth in India mean that using a single mortality table for all members of the NPS would tend to transfer income from lower income participants with shorter lives to higher income participants.

There are tax advantages available for the NPS, so it is important that scarce fiscal resources are targeted to encourage old-age income for those most in need. However, the size of the population and the fact that the NPS has developed targeted schemes in the accumulation phase for workers in the formal and informal sector means it is possible to use different mortality tables reflecting differences in life expectancy among population subgroups.

There is a process for creating and updating mortality tables that are published by the Institute of Actuaries of India.

The industry level mortality studies of life insurers are undertaken as a joint exercise by the Institute of Actuaries India, the Insurance Information Bureau of India and the Life Insurance Council. There is an Actuarial Oversight and Review Committee that provides guidance and supervision of the work. The tables are reviewed and agreed upon with the Insurance Regulatory Development Authority and then published. For example, March 2021 saw the publication of the Individual Annuitant's Mortality Table (2012–15) as the latest contribution to mortality tables for the profession and the regulators to use. Issues in relation to regulations and mortality tables are discussed in more detail in Section 4.

3.1.5 RETIREMENT INCOME COMPARISONS FOR INDIA

This section compares the hypothetical outcomes of different retirement income solutions to the Value annuity for India. The illustrations are intended to provide insights about how different approaches to delivering retirement income meet different objectives. They display results in local currency and use diversified portfolios that are believed to be appropriate for the country. They are not based on capital market conditions at any specific point in time, but the underlying assumptions do represent general conditions in the country in recent years. All of the capital market assumptions are on a real basis, reflecting returns above inflation. A Value Pool does not need to use a real basis for returns. It is used in these illustrations to make comparisons easier.

Figure 6 shows how the Value annuity might compare to a standard fixed income annuity in India, using assumptions about real returns and costs. The figure shows that the average payout for the Value annuity is significantly higher. There is potential for Value payouts to be lower than the traditional annuity because the investment returns are uncertain. However, the Value annuity is presumed to have the advantage of being invested in a diversified portfolio of assets rather than just fixed income, as well as lower costs for administration and sales and no profit. Assumptions are shown in Table 2.

FIGURE 6: VALUE VERSUS FIXED ANNUITY IN INDIA

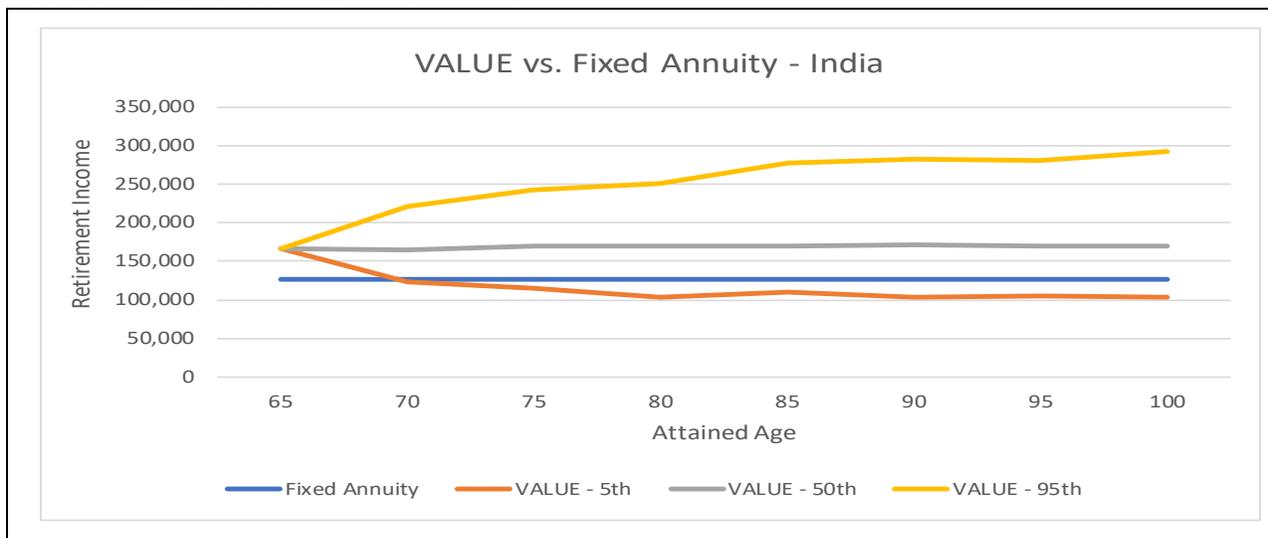


Figure 7 and Table 2 compare outcomes for various retirement income solutions. The outcomes are measured on a real basis—no inflation is assumed, so all returns are assumed to be real, and fixed annuities are assumed to be adjusted with inflation. The Value pool is assumed to be a mandatory or default option administered as part of a government reform program so that educational materials replace the individual sales and marketing model that a commercial insurer might provide in a traditional market. The Value annuity is presumed to have lower overall costs for sales and marketing and no profit. Three key metrics are shown:

- **Present value (PV) of lifetime payments**—For commercial annuities, this amount is equal to the account balance at retirement age less the profit earned by the insurer and the costs related to selling the annuity. For systematic withdrawals, the amount for the lifetime payments to the person is less than the account balance at retirement age because any balance left when the person dies goes in a bequest rather than to the person themselves in lifetime income.
- **PV of bequest**—For annuities this is zero. For systematic withdrawals, the actuarial present value of the expected remaining account balance is determined. This metric is important for systematic withdrawals. Policymakers focused on providing retirement security may see the value of this amount differently from individuals who tend to place substantial value on it.
- **Maximum drop from initial income**—For a fixed annuity this is zero, indicating no risk to the income level. The income from other solutions is subject to investment, and in the case of the Value annuity to systematic longevity risk. This metric should be viewed in the context of the initial income amount shown in the first column.

The key assumptions for the baseline results are shown in Table 3.

TABLE 3: KEY ASSUMPTIONS FOR INDIA MODELING

Assumption	Value	Description
Retirement age	65	
Lump-sum value	Rs 2,500,000	Retirement savings account balance at retirement age
Group size	1,000	Impacts volatility of Value option where longevity risk is shared by group
Population mortality volatility	2.50%	Represents short-term factors such as pandemics or natural disasters
Geometric portfolio real return	3.00%	Arithmetic real return of 3.32% adjusted for volatility
Portfolio real return volatility	8.00%	Standard deviation of real returns for a diversified portfolio
Fixed annuity discount rate	1.00%	Assumed to be fixed income (real rate)
Sales, administration (admin) and profit charges		
Fixed annuity	12%	Sales 3%, admin 1%, risk and profit 8% of annuity premium
Installment + deferred annuity at 80	12%	Sales 3%, admin 1%, risk and profit 8% of annuity premium
Value pool annuity	3%	Education and administration
Variable annuity	10%	Sales 3%, admin 1%, risk and profit 6% of annuity premium; lower risk than fixed annuity

NOTES ON PORTFOLIO ASSUMPTIONS

- 250 scenarios
- Fixed annuities are assumed to be covered with low-risk bonds with a 1.0% real rate of return.
- Mortality base table is the Indian Individual Annuitants Mortality Table (2012–15) published March 31, 2021
- Mortality improvement is 0.75% per year
- Mortality uncertainty
 - Mortality volatility based on random variation from the binomial distribution with a standard error of $\sqrt{p * q * N}$ where N is the number of participants at each age in a particular year.
 - In addition, population mortality is assumed to have a standard error of 2.5% per year. In other words, in about two out of three years, actual population mortality would be between 97.5% and 102.5% of mortality predicted by the mortality table with the variation due to things like bad flu seasons or natural disasters.
- Investment returns (real) are 3.0% representing the following portfolio:
 - 50% growth-oriented assets/50% fixed income
 - Arithmetic mean of real investment return of 3.32% with volatility of 8%, producing a 3.0% geometric average.

Portfolio returns are assumed to mean revert at extremes. Mean reversion takes effect when accumulated actual returns are more than X% higher (or lower) than accumulated expected returns, i.e., price levels of the assets have increased (or decreased) by X%. X is equal to 20 + 0.2 per year, so that accumulated excess returns must be higher (or lower) further in the future for mean reversion to take effect. Expected portfolio returns are reduced to target reverting back to price levels that are (X/2)% higher (or lower) than original price levels.

The main results are then shown in Tables 4 and 5. Table 4 shows the impact of having additional sources of income on some of the key metrics. The key point is that other (guaranteed) sources of income allow a retiree to bear more volatility in a variable payout because the percentage drop in total income will be lower than if they had only the variable payout. Given low pension coverage in India this consideration would mainly be relevant to those in the formal sector.

TABLE 4: PAYOUT SOLUTION COMPARISON FOR INDIA

	Initial Income at 65	Median			5th Percentile (Downside)			95th Percentile (Upside)		
		PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income
Fixed annuity	126,013	2,232,143	0	0%	2,232,143	0	0%	2,232,143	0	0%
Fixed 4.00% withdrawal	100,000	1,582,037	1,253,468	48%	1,254,526	931,282	67%	2,020,494	1,691,624	20%
Installment + deferred annuity at 80	108,333	2,432,315	233,453	1%	2,060,968	184,202	22%	2,898,412	289,401	0%
Value	167,097	2,985,244	0	26%	2,273,990	0	51%	3,834,181	0	0%
Variable annuity	156,463	2,769,005	0	28%	2,106,754	0	53%	3,672,246	0	0%

TABLE 5: PAYOUT SOLUTION COMPARISON ASSUMING A BASE PENSION INCOME OF RS 25,000

	Initial Income at 65	Median			5th Percentile (Downside)			95th Percentile (Upside)		
		PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income
Fixed annuity	151,013	2,674,982	0	0%	2,674,982	0	0%	2,674,982	0	0%
Fixed 4.00% withdrawal	125,000	2,061,939	1,285,619	38%	1,720,861	946,813	53%	2,517,571	1,760,617	14%
Installment + deferred annuity at 80	133,333	2,898,558	234,770	1%	2,522,286	186,066	18%	3,331,950	289,408	0%
Value	192,097	3,412,074	0	23%	2,681,734	0	47%	4,422,841	0	0%
Variable annuity	181,463	3,259,363	0	24%	2,616,822	0	44%	4,061,697	0	0%

3.2 MALAYSIA

3.2.1 OVERVIEW OF THE MALAYSIAN PENSION SYSTEM

Malaysia's pension system has four main parts (or pillars). The "Second Pillar" Employees Provident Fund (EPF) and the Third Pillar Private Retirement System (PRS) are the most likely candidates to benefit from Value annuities. The Zero Pillar in Malaysia, designed to protect anyone without contributory pensions from severe old-age poverty, has two main cash transfer programs that are most important for senior citizens.

There is no traditional "First Pillar" or Social Security program. There are two separate programs for public sector workers and private sector workers that follow the "Provident Fund" model. These are work-related contributory pension plans. The plan for civil servants (known by the Malaysian acronym KWAP) is funded from contributions from government employers but no direct employee contributions.

Private sector workers pay into the Employees Provident Fund (EPF, also known as KWSP). The EPF is a DC plan, with an annual nominal return guarantee of 2.5% a year. This has not had any effect since the EPF was established by the 1951 EPF Act due to the level of inflation but could have an impact in future years. At the end of 2019 the EPF had 14.6 million members, of whom 7.6 million were active. Over 500,000 employers pay into the EPF on behalf of their workers. The EPF had assets of around US\$243 bn at the end of 2020 (RM 1 trillion), making it the 11th largest pension fund in the world in terms of assets under management.²²

The EPF has no mandated payout vehicle and provides full lump-sum access at retirement. There is no default payout or even a phased withdrawal option. Members frequently access their entire savings as a lump sum. There is a high rate of spending out of EPF balances, with many members using their entire balances within 10 years of retirement. As a consequence, many observers have recommended later retirement ages and a focus on an income payout rather than the lump-sum approach. A recent World Bank report projected that around 75% of members had a balance at age 54 that would produce only a monthly income of US\$260 (RM 1,050) if transferred into a (theoretically modeled) traditional annuity at that early age.^{23,24}

Individual voluntary or "Third Pillar" pensions were introduced in 2012 as the "Private Retirement Scheme" (known as the PRS system). It is also a DC plan, and like the EPF it allows 100% lump-sum payouts from the age of 55. By the end of 2020, there were around 490,000 contributors, which is small compared to the EPF but represents reasonable growth since being established in 2012.²⁵ It is supervised by the Securities Commission of Malaysia, which covers the capital markets (while the Central Bank of Malaysia, Bank Negara Malaysia, supervises banks and insurance companies). As with the EPF there is no mandatory or default payout product. Life insurance company payout annuities are not common in Malaysia.

Hence, both the Second and Third pillars of the Malaysian pension system lack a payout product that delivers income until death. More than this, there is a high take up of lump-sum payouts and evidence of rapid use of those

²² WTW Thinking Ahead Institute and Pensions & Investment Global Top 300 Pension Funds <https://www.thinkingaheadinstitute.org/research-papers/the-worlds-largest-pension-funds-2021/>

²³ The available assets for some EPF members will be lower in the future if members use the "i-SINAR" program that allows exception access to the Account One Retirement balance due to the Covid-19 pandemic. This gave limited access to account balances that were normally restricted until age 55. See KWSP/EPF, "Simplified Approval for i-SINAR Beginning 8 March 2021" (Kuala Lumpur: KWSP, 2021), <https://www.kwsp.gov.my/-/simplified-approval-for-i-sinar-beginning-8-march-2021>.

²⁴ See the World Bank report *Case Study on the Employees Provident Fund of Malaysia* (Washington, DC: World Bank, 2020), <http://documents1.worldbank.org/curated/en/197861540400101962/pdf/131289-WP-WorldBankReport-PUBLIC.pdf>. With respect to the recommendations to increase the retirement age to 65 over time, the EPF put out a statement that "no such steps on raising the withdrawal age have been discussed with any party at this point in time." See KWSP/EPF, "EPF: Full Withdrawal at Age 55 Remains" (Kuala Lumpur: KWSP, 2020), <https://www.kwsp.gov.my/-/epf-full-withdrawal-at-age-55-remains>.

²⁵ Securities Commission Malaysia Annual Report (2020), p. 90. <https://www.sc.com.my/ar-2020>

lump sums by significant numbers of people. This makes Malaysia a good candidate for the introduction of a Value annuity. The next section sets out how this could occur from a regulatory and supervisory perspective.

3.2.2 INTRODUCING VALUE ANNUITIES IN MALAYSIA FOR THE EPF

The main legislative instrument for the Employees Provident Fund is the 1991 EPF Act, as amended. Part VI of the Act deals with withdrawals and mostly addresses those related to Account Two from which withdrawals are allowed throughout the accumulation phase. For example, withdrawals are permitted for specified reasons (e.g., in relation to housing or education). There are age requirements for access—with an access age of 55 for Account One (focused on retirement) and 50 for Account Two. A relatively new provision (Section 55B) requires that any contributions made after a member is 55 can only be withdrawn after the age of 60.

The amendments needed to implement Value annuities in this part of the Act would depend on the way the approach was introduced. There is a complex and potentially contentious debate needed to approve any reforms. However, the structure is simpler—a new clause could be added to Section VI, potentially in Section 55. There are legal and procedural issues, discussed below, related to who can make the rules, whether the new product is mandatory, a default or voluntary and key provisions needed to ensure transparency and good governance.

There are various options for the level of authority and detail for the product to be included in the Act based on a review of the legislation and comparison with other countries. One is to specify in the Act significant detail on the payout product. This can be risky because it makes it more difficult for the product to be updated over time. A second option is to establish the high-level objective for and the nature of the product in legislation, leaving the details for a regulation. There are options here too, with the most stringent requiring a formal regulation approved by the Minister. This would link to the existing EPF Act under Part VIII Section 71, “Powers of Minister to Make Regulations.” This identifies a range of circumstances in which “The Minister may, on the recommendation of the Board, make regulations.” Hence an amended Act could set out the objective of the product and add to the list of areas for which the Minister can make regulations. Section 73 of the EPF Act covers “Powers of the Board to Make Rules.” These include powers to make rules in relation to withdrawal from the fund (73(h)). However, even if the change in approach could be viewed as a change in procedure, it would be more appropriate to have clear legal authority in the Act for an important change in the nature of the payout phase.

One option would be a clause mirroring others in the EPF Act that give the Board broad authority to decide and implement certain actions. For example, the new clause could read: “The Board is empowered to create a payout option that will provide an income until death for participating members who would pool the mortality risk among themselves, maintain their assets invested and be in receipt of an annual dividend. The details of the product and rules will be set out by the Board.” Or this clause could empower the Minister to make regulations on the recommendations of the Board.

A high-level authority would be followed by a more detailed regulation with supporting procedures that would set out exactly how the approach would work. This would need to describe the key features, as outlined in previous sections, in sufficient detail for members to understand and provide the EPF with the operational parameters to make the product work. A critical feature is the source of the mortality rates. Transparency and good governance would be enhanced if the entity delivering the Value product does not control the mortality estimates. This helps ensure that changes are made to keep the payouts in actuarial balance rather than avoiding or distorting adjustments to mortality. The approach should also specify the type of mortality table to be used—incorporating generational mortality (sometimes known as dynamic or cohort mortality) that builds in future improvements in mortality as opposed to a static or “period” mortality assumption.

The underlying investment strategy for a Value annuity is critical, and here it is useful that the EPF has significant experience and expertise in developing and implementing investment strategies. It currently does this for its two major funds that are the single option fund for all members and the newer fund for those choosing a Shariah-

compliant fund. The EPF acts requires that at least 2.5% nominal annual return be provided to members, and there is an additional self-imposed target to deliver an average 2% real return over any three-year period.

The simplest approach from a legislative and regulatory point of view would be to task the EPF with developing the investment strategy for the new payout product in the same way that they develop the investment strategy for the accumulation phase. It may be expected that this strategy will be more cautious than that for the accumulation phase. However, the EPFs current approach has only about 40% of its total assets invested in equities, and around 33% invested outside Malaysia (see Table 6). It is not excessively risky.

TABLE 6: ASSET ALLOCATION OF MALAYSIA’S EPF 2002–2019

Asset	2002	2006	2010	2016	2019Q1
Malaysian government securities	37%	36%	27%	25%	28%
Loans and bonds	26%	34%	32%	24%	22%
Equity	23%	19%	35%	42%	39%
Property and infrastructure	1%	1%	0.4%	4%	5%
Money market instruments	13%	11%	5%	5%	6%
Total	100%	100%	100%	100%	100%

Source: EPF.

The type of language required in legislation or regulation would be something of the form “The Board will determine the precise terms of the investment strategy to underpin the payout product and whether a choice of investment options will be allowed. The Board will be required to use the latest official statistics, appropriate to the population using the product, for future life expectancy in Malaysia in order to calculate payments each year to members and can allow a reasonable period to adjust from the current mortality projections to the newly released projections.”

A key decision is whether to make the new approach mandatory, a default or a voluntary option but not the default.

For most of its existence the EPF had a single mandatory investment strategy for members—so the notion of a single mandatory approach is not alien to the model. Since 1996 members have been able to use the “EPF-MIS” or EPF Members Investment Scheme to invest some of the balance of “Account One” retirement assets with other fund managers. Members can invest up to 30% of their balance above the “Basic Amount” (a required minimum balance that rises with age and reaches RM 240,000 [US\$60,000] by 55). This limits the scheme to a relatively small number of higher income members.

So any new payout product could be introduced as a mandatory solution. Or it could be the default option for everyone, with the choice to take a different form. Given the strong cultural and historical preference for the lump-sum payout, it may be that a default option for a Value-type annuity may see higher opt outs than other default arrangements. The Value approach could be added as an option at retirement age so that members could take the lump sum as now or choose to enter the Value payout product. Again, it would be expected that the voluntary approach would not lead to large numbers of members choosing the product. Finally, a hybrid approach is possible building on the approach for offering EPF members investment choice in the accumulation phase above the Basic Amount. A default approach to the payout into a Value annuity up to a certain amount delivering a significant amount of income could also provide greater flexibility for lump sums or other options above this limit.

3.2.2.1 SUPERVISORY ISSUES FOR THE EPF AND VALUE ANNUITIES

Supervisory adaptations for the EPF are complicated by the fact that there is effectively no supervisor for the institution. It is governed by law and responsible ultimately to the Minister of Finance and through the Minister to Parliament. The key “supervisory” implementation would be a replication of the risk management and governance framework that already exists in the EPF, in particular with regard to investment. If the EPF started to deliver the Value annuity as a payout option, it would need to add this function to its existing structure and ensure the strategy

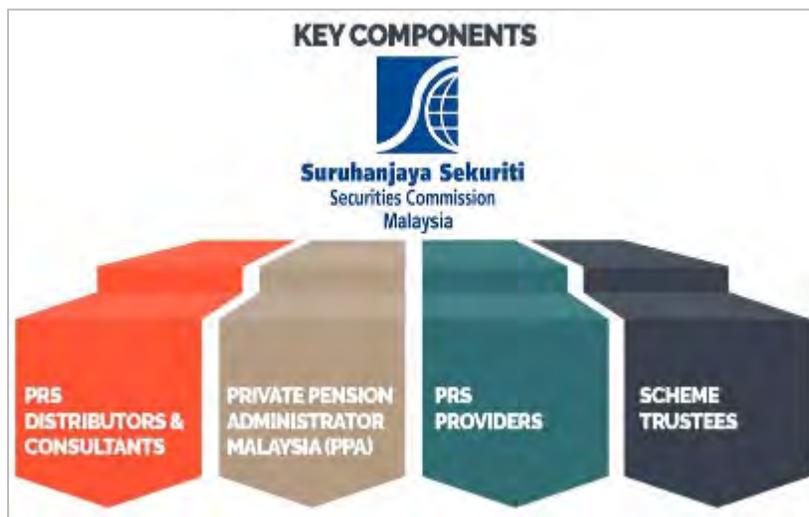
and implementation were subject to the same risk controls as the investment strategy. It would also be possible for the EPF to use external providers to deliver the Value payout option. The issues related to the use of external insurance or other capital market institutions in delivering Value annuities for the voluntary Third Pillar individual private pensions in Malaysia are discussed below.

3.2.3 VALUE ANNUITIES IN MALAYSIA FOR THE PRIVATE RETIREMENT SCHEMES

The Private Retirement Schemes introduced in 2012 are similar to the EPF in a number of respects. At the point of retirement (age 55), a member has complete freedom with their savings balance. It may be spent or invested in a new form of savings, or it can be left within the PRS system to use later. Hence, there is a potential role for any payout product—and thus for the Value approach. The Value approach described in this report may be of special interest because it can be offered and implemented by both insurers and non-insurers. This widens the pool of potential participants and could be a useful addition to the capital market options for Malaysian providers as well as pension members.

The regulatory framework for the PRS is governed by the 2007 Capital Markets and Services Act 2007 (CSMA).²⁶ The Private Retirement Scheme is covered in Section IIIA of the Act, which sets out the key institutional and product structure. This introduces the Private Pension Administrator Malaysia, Private Retirement Scheme Providers and the main details of the Private Retirement Schemes. The CMSA was followed by detailed regulations in 2012 (the Private Retirement Scheme and Industry Regulations).²⁷ The regulations in turn were followed by Guidelines on the Private Retirement Scheme.²⁸ These regulatory instruments created an industry structure under the supervision of the Securities Commission Malaysia, as set out in figure 7.

FIGURE 7: THE KEY COMPONENTS OF THE PRIVATE RETIREMENT SCHEME (PRS)



Source: Securities Commission Malaysia.

This market structure is similar to many private retirement “Third Pillar” voluntary plans elsewhere in the world. One exception is the Private Pension Administrator Malaysia that has a number of functions including providing a

²⁶ For the details of the Act, incorporating amendments to the dates specified, see “Capital Markets and Services Act 2007” <https://www.sc.com.my/regulation/acts/capital-markets-and-services-act-2007> on the website of the regulator and supervisor, the Securities Commission of Malaysia.

²⁷ Securities Commission of Malaysia, “Capital Markets and Services Act 2007: Capital Markets and Services (Private Retirement Scheme Industry) Regulations 2012,” <https://www.sc.com.my/api/documentms/download.ashx?id=4d748306-6ba2-4e69-b3e3-a0bca4da5ffa>.

²⁸ Securities Commission of Malaysia, “Private Retirement Scheme,” <https://www.sc.com.my/regulation/guidelines/private-retirement-scheme>.

central information hub where members can access their PRS account information, and the combined balances if they have accounts with multiple providers. The role of the scheme trustee is not as extensive as for a trustee of an occupational pension fund as found in many countries. However, it is more significant than just the safekeeping of assets. The trustee has a fiduciary duty to act in the best interests of the members and can, for example, require that the PRS provider alter their investment policies if the trustee finds that they are not in the best interests of the members.

This range of institutions in the PRS value chain provides some options for introducing the Value annuity within the current regulatory model. If insurers were providers, this would introduce an additional element (and regulator) as explained below. If the Value annuity were to be introduced as a core component of the Malaysian PRS, this would require amendments to all of the regulatory instruments described above but could be achieved with the existing range of providers.

One key issue would be whether to allow all of the current PRS providers to deliver a Value annuity approach. They all provide investment management services, so it would be a natural approach. However, as highlighted in the main discussion of the Value approach it is important to ensure that a large enough group are included in the pool for efficiency, to reduce volatility in payout amounts and to reduce adverse selection. It may make sense to require a certain scale be achieved before a current PRS provider were allowed to offer the Value annuity option.

A final option would be to leverage the infrastructure of the Malaysian Private Pension Administrator, which would become a critical player in the payout phase. Since it has member information, it could become the provider for the whole industry to ensure sufficient scale and mitigate adverse selection. It could develop in-house investment management capacity, but it would be simpler to procure investment management services from one of the existing providers. Through a broad competition and with better scale it would access better value for members, which would drive better payouts. Another approach would use an auction at the point of annuitization where PRS providers, or other capital market participants with appropriate skills, could compete to deliver the Value annuity to members. This would open the market to a broader range of providers in both the capital market and insurance space.

It may be argued that members should have freedom to choose at the point of retirement due to the wide range of personal circumstances. This is a fundamental reason for creating the PRS, which provides greater choice in investment strategy for the accumulation phase. However, even in the accumulation phase, each provider is required to have a default life-cycle-type approach aligned with international best practice.

So a default payout option would also be a natural approach, even given the preference for lump-sum payouts at retirement. As for the EPF, a hybrid option would have a requirement to annuitize up to a certain balance but allow greater flexibility above this minimum balance. This is similar to the approach used historically in Chile in the mandatory pillar where members need to secure a minimum income in retirement but after that have more freedom of choice. For the PRS there are no technical difficulties with adding a Value (or other) payout phase. Still, it should be noted that the existing default investment approach would need an adapted glide path.

The regulatory implications and required text then flow from the choices made. The principles for where and how to implement the changes would also be the same as those discussed for the EPF. It appears to be preferable to enact simple enabling legislation in the CSMA with the details provided in amendments to the PRS Regulations and additional detailed information in the PRS Guidelines.

3.2.4 ILLUSTRATIONS FOR MALAYSIA

This section compares the hypothetical outcomes of different retirement income solutions to the Value annuity for Malaysia. The illustrations are intended to provide insights about how different approaches to delivering retirement income meet different objectives. They display results in local currency and use diversified portfolios that are

believed to be appropriate for the country. They are not based on capital market conditions at any specific point in time, but the underlying assumptions do represent general conditions in the country in recent years. All of the capital market assumptions are on a real basis, reflecting returns above inflation. A Value pool does not need to use a real basis for returns. It is used in these illustrations to make comparisons easier.

Figure 8 shows how the Value annuity might compare to a standard fixed income annuity in Malaysia, using assumptions about real returns and costs. The figure shows that the average payout for the Value annuity is significantly higher. There is potential for Value payouts to be lower than the traditional annuity because the investment returns are uncertain. However, the Value annuity is presumed to have the advantage of being invested in a diversified portfolio of assets rather than just fixed income, as well as lower costs for administration and sales and no profit. Assumptions are shown in Table 6.

FIGURE 8: VALUE VERSUS FIXED ANNUITY PAYOUTS IN MALAYSIA

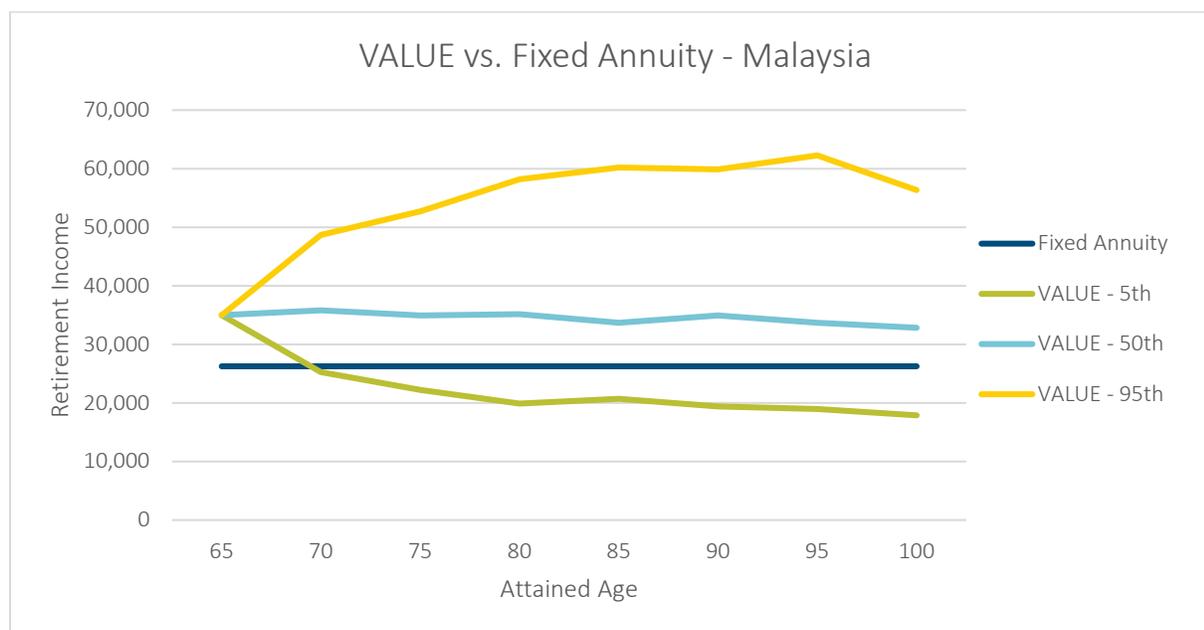


Figure 8 and Table 7 compare outcomes for various retirement income solutions. The outcomes are measured on a real basis—no inflation is assumed, so all returns are assumed to be real and fixed annuities are assumed to be adjusted with inflation. The Value pool is assumed to be a mandatory or default option administered as part of a government reform program so that educational materials replace the individual sales and marketing model that a commercial insurer might provide in a traditional market. The Value annuity is presumed to have lower overall costs for sales and marketing and no profit. Three key metrics are shown:

- **Present value (PV) of lifetime payments**—For commercial annuities, this amount is equal to the account balance at retirement age less the profit earned by the insurer and the costs related to selling the annuity. For systematic withdrawals, the amount for the lifetime payments to the person is less than the account balance at retirement age because any balance left when the person dies goes in a bequest rather than to the person themselves in lifetime income.
- **PV of bequest**—For annuities this is zero. For systematic withdrawals, the actuarial present value of the expected remaining account balance is determined. This metric is important for systematic withdrawals. Policymakers focused on providing retirement security may see the value of this amount differently from individuals who tend to place substantial value on it.
- **Maximum drop from initial income**—For a fixed annuity this is zero, indicating no risk to the income level. The income from other solutions is subject to investment, and in the case of the Value annuity to

systematic longevity risk. This metric should be viewed in the context of the initial income amount shown in the first column.

The key assumptions for the baseline results are shown in Table 7.

TABLE 7: KEY ASSUMPTIONS FOR MALAYSIA MODELING

Assumption	Value	Description
Retirement age	65	
Lump-sum value	RM 500,000	Retirement savings account balance at retirement age
Group size	1,000	Impacts volatility of Value option where longevity risk is shared by group
Population mortality volatility	2.50%	Represents short-term factors such as pandemics or natural disasters
Geometric portfolio real return	3.00%	Arithmetic real return of 3.50% adjusted for volatility
Portfolio real return volatility	10.00%	Standard deviation of real returns for a diversified portfolio
Fixed annuity discount rate	1.00%	Assumed to be fixed income (real rate)
Sales, administration (admin) and profit charges		
Fixed annuity	12%	Sales 3%, admin 1%, risk and profit 8% of annuity premium
Installment + deferred annuity at 80	12%	Sales 3%, admin 1%, risk and profit 8% of annuity premium
Value pool annuity	3%	Education and administration
Variable annuity	10%	Sales 3%, admin 1%, risk and profit 6% of annuity premium; lower risk than fixed annuity

NOTES ON PORTFOLIO ASSUMPTIONS

- 250 scenarios
- Fixed annuities are assumed to be covered with low-risk bonds with a 1.0% real rate of return.
- Mortality base table is based on the United Nations 2020–25 five-year central rates of mortality with linear interpolation for each age
- Mortality improvement is 1.25% per year
- Mortality uncertainty
 - Mortality volatility based on random variation from the binomial distribution with a standard error of \sqrt{pqN} where N is the number of participants at each age in a particular year.
 - In addition, population mortality is assumed to have a standard error of 2.5% per year. In other words, in about two out of three years, actual population mortality would be between 97.5% and 102.5% of mortality predicted by the mortality table with the variation due to things like bad flu seasons or natural disasters.
- Investment returns (real) are 3.0% representing the following portfolio:
 - 60% growth-oriented assets/40% fixed income
 - arithmetic mean of real investment return of 3.50% with volatility of 10.0%, producing a 3.0% geometric average.
- Portfolio returns are assumed to mean revert at extremes. Mean reversion takes effect when accumulated actual returns are more than X% higher (or lower) than accumulated expected returns, i.e., price levels of the assets have increased (or decreased) by X%. X is equal to 20 + 0.2 per year, so that accumulated excess returns must be higher (or lower) further in the future for mean reversion to take effect. Expected portfolio returns are reduced to target reverting back to price levels that are (X/2)% higher (or lower) than original price levels.

The main results are then shown in Tables 8 and 9. Table 9 shows the impact of having additional sources of income on some of the key metrics. The key point is that other (guaranteed) sources of income allow a retiree to bear more volatility in a variable payout because the percentage drop in total income will be lower than if they had only the variable payout.

TABLE 8: PAYOUT SOLUTION COMPARISON FOR MALAYSIA

	Initial Income at 65	Median			5th Percentile (Downside)			95th Percentile (Upside)		
		PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income
Fixed annuity	26,253	446,427	0	0%	446,427	0	0%	446,427	0	0%
Fixed 4.00% withdrawal	20,000	307,776	267,158	55%	225,424	187,402	72%	418,651	380,367	19%
Installment + deferred annuity at 80	21,667	471,011	63,871	6%	390,818	49,187	28%	591,980	86,457	0%
Value	34,985	603,476	0	34%	438,199	0	58%	804,034	0	4%
Variable annuity	32,759	572,967	0	33%	422,947	0	55%	765,770	0	4%

TABLE 9: PAYOUT SOLUTION COMPARISON ASSUMING A BASE PENSION INCOME OF RM 5,000

	Initial Income at 65	Median			5th Percentile (Downside)			95th Percentile (Upside)		
		PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income	PV of Lifetime Payments	PV of Bequest	Max Drop from Initial Income
Fixed annuity	31,253	531,450	0	0%	531,450	0	0%	531,450	0	0%
Fixed 4.00% withdrawal	25,000	382,572	259,371	42%	299,209	176,565	58%	500,328	377,736	14%
Installment + deferred annuity at 80	26,667	553,258	64,622	4%	470,480	48,332	25%	656,096	81,494	0%
Value	39,985	680,280	0	29%	512,673	0	52%	901,428	0	0%
Variable annuity	37,759	642,313	0	29%	526,038	0	49%	840,440	0	0%

Section 4: Regulatory and Supervisory Issues for Value Annuities

The discussion of the Indian and Malaysia cases and the overall rationale and modeling approach for Value annuities highlights the range of issues to address if a country is to change its payout phase to enable Value annuities. Section 4 now focuses on these general legislative lessons and in particular on the regulatory and supervisory requirements to make a success of adopting the Value-type approach. Some of these changes are not unique to a lifetime variable uninsured annuity and would be useful for any reform of the payout phase that seeks to increase the role of income until death as an essential hedge against longevity risk for pension fund members.

4.1 STRATEGIC, LEGISLATIVE AND REGULATORY ISSUES

4.1.1 REVISING THE MAIN STATUTORY INSTRUMENTS GOVERNING A PENSION PLAN

Given the enormous variety in pension plans and schemes and pillars across the world, there is obviously no single legislative change that will work in all countries. But there are broad types of reform that will be needed depending on the system to be changed. These are set out below and focus on changes to Second and Third Pillar pensions—the employer-based and individual pension plans that should have a clearly defined payout phase but often do not.

The Value annuity projections shown in Section 2 include a dispersion of outcomes. In the case of the bottom 5% of projections where the projected payouts are lowest, some countries could set up the Zero or First Pillar pensions to offset some of the downside using means testing. In this case the higher average payouts under a Value approach are even more valuable to people because the risk of the very lowest payouts is offset by other parts of the pension system. As long as this does not create incentives to take excessive risk in the Value annuity portfolio it would be an example of the benefits of having a multipillar pension system in which the different pension pillars focused on different key outcomes but also helped to offset risks through a diversification of pension income from different sources. The avoidance of perverse incentives and controls on excessive risk taking would be achieved through the regulation and supervision of investments.

4.1.2 MAIN LEGISLATIVE REQUIREMENTS

Key enabling legislation would set the purpose of the pension pillar under question as delivering income until death. However, all that is needed is that the Value or annuity approach is one of the options allowed for payouts. It is possible to specify the nature of the lifetime income product and processes in legislation, but this may make it harder for the system to adapt over time. An approach that is seen in many countries is to require annuitization of a certain proportion of assets with the remainder (often 25%) being accessible as a lump sum. The 25% parameter is 30% in some countries, and, as described earlier, in India there is a minimum of 40% that must be annuitized, and up to 60% can be taken as a lump sum after retirement age is reached.

Once a high-level objective to deliver an income in retirement is legislated, then a relevant authority can set out the details of the Value annuity in regulations. In some countries the lead agency will be the Ministry of Finance and in others the Ministry of Labor or Social Welfare. In some countries both will have a role with defined scopes.

The organization that will lead on regulation of Value annuities also differs between countries. In some cases, a financial sector regulator has the power to make regulation (secondary legislation) as well as be the lead supervisor. In other cases, the financial sector “regulator” is responsible only for direct supervision of the different actors involved in the pension (or banking or insurance) value chain but needs to get the lead ministry to make regulatory changes. In some cases, a country may mix both kinds of approaches.

However, this discussion of the many permutations should not get in the way of the core hierarchy of changes to enable a Value annuity being relatively straightforward.²⁹ There is a top-level legislative change to enable the use of the Value annuities in the relevant pension pillar. There is then a detailed regulation that sets out all the parameters of the approach (discussed in more detail below) as well as a guidance note to educate participants. There will be differences in terms of which agency leads on which part, but the need for each of these three main levels is relatively standard.

One option is for a specific agency to be assigned to deliver the Value annuity, in which case there would need to be more details in legislation to establish the Agency, give it legal form and set out its objectives. For example, in Sweden the Swedish Pension Agency has a range of functions related to the accumulation and payout phases. In each of the phases an individual can use a default fund that is created by the government, or they can choose private fund managers. In this way, the Swedish Pension Agency has a critical but not monopolistic role in the investment and payout of pensions.

4.1.3 SIZE OF THE LONGEVITY POOL AND HOW TO DELIVER VALUE ANNUITIES

As highlighted in the Design Guide and the Modeling (Section 2) the size of the longevity pool influences the variability of the outcomes. A larger pool reduces variability and improves the certainty of outcomes. More importantly, a larger pool helps to exploit the economies of scale inherent in all parts of the pension value chain. Value annuities can be a relatively simple, low-cost solution, and this efficiency is enhanced as the size of the pool of annuitants increases.

In addition, a larger pool relative to the size of the population or mandatory annuitization can reduce adverse selection. Adverse selection means that individuals with longer life expectancy are more likely to choose an annuity and thereby increase the cost of the solution.³⁰ Insurers then need to charge higher prices for annuities (offer lower payments for a given premium) to cover the risk. If annuities are mandatory or there are other reasons why there is no bias in the pool, then adverse selection can be reduced.³¹ If the pool is large relative to the population (e.g., because annuities are mandatory), then adverse selection may be lower because there is less potential for differential mortality between annuitants and non-annuitants.

The question of mandatory annuitization is a regulatory issue. If many providers are permitted to provide a Value annuity product, it is quite possible that the available market will be split into small slices—with relatively small numbers of annuitants for each provider. In Malaysia, the Third Pillar private retirement schemes currently have around 490,000 members. If one assumes that around 1/40th of them enter a Value pool each year, that would be 12,250 per year. If this is split evenly among the eight providers, this is a little over 1,500 per provider. However, this assumes 100% entry into a Value product. This would be the case if there were a mandatory requirement. But if the Value (or other annuity option) were a default or voluntary option, there would be a lower percentage entering the pool. If only 25% enter, then the average number per provider per year would be 400. If it were only 10% in a

²⁹ There is an important caveat to this general view, which is that in a few countries there will be constitutional barriers to the Value approach working. This is the case, for example, in Colombia and Uruguay, where the constitution defines a pension in such a way that it has to mirror the approach of a pension in the main social security pillar. For example, in Uruguay this means that pensions have to rise by the rate of wage inflation. In these cases the variability—even if on average to the benefit of workers— would not be permitted because a pension could not fall or be flat for a year in nominal terms. In Uruguay there is a very interesting development with the launch of wage-inflation-linked government bonds that will enable annuities to be provided with appropriate hedging instruments newly available. This is an innovative solution to the constitutional issue

³⁰ A. Finkelstein and J. M. Poterba, “Selection Effects in the UK Individual Annuities Market,” *Economic Journal* 112 (2002): 28–50; A. Finkelstein and J. M. Poterba, “Adverse Selection in Insurance Markets: Policyholder Evidence from the U.K. Annuity Market,” *Journal of Political Economy* 112, no. 1 (2004): 183–208.

³¹ E. Cannon, I. Tonks, and R. Yuille, “The Effect of the Reforms to Compulsion on Annuity Demand,” *National Institute Economic Review* 237, no. 1 (2016)

voluntary model, then the average number would only be around 150. Moreover, if the distribution across providers were unequal, some providers with lower market share would have very small numbers.

The possibility of low numbers of annuitants is a problem for both variability and scale if each accumulation provider was delivering the Value annuity in the decumulation phase. The issue is exacerbated in smaller countries, which is precisely where the benefit of a low-cost effective annuity solution can be most valuable. In these cases, there is a strong case for the regulations to have a limited number of providers (even just one) to ensure a large enough pool or to use other mechanisms to ensure an adequate allocation of members to a provider. While normal market forces may weed out the providers that were not achieving scale, pension markets do not necessarily work well using traditional price signals for a wide range of well-documented reasons even if they function well in many other markets.³² Of course, behavioral economic solutions, such as automatic enrollment, have arisen in other parts of the pension system to address this same issue.

A single-provider model can be matched with competitive markets using an auction to deliver the Value annuity.

This type of approach is seen in Chile for delivering the life and survivorship insurance element of the private pension pillar. In this case the providers bid for the right to take tranches of the pool for a given year.³³ However, in smaller countries there is still risk that multiple providers will end up with relatively small pools and higher idiosyncratic risk from cohorts concentrated in single years rather than spread evenly across multiple years.

An obvious regulatory solution is that a single organization would deliver the payout phase, but others are possible. But these considerations are not incidental to the success of the Value or indeed other payout options. Rather, they are fundamental to ensuring that a good product innovation is not simply added into a defective basic delivery system. In countries like Malaysia and Singapore with a single (Provident) fund provider for the accumulation phase in the Second Pillar this may be a natural approach. Indeed, in Singapore the Central Provident Fund is the sole provider of the relatively new CPF Life approach highlighted in Section 1. For Malaysia, it would be relatively simple for the EPF to deliver the payout phase as it has the expertise and governance capacity to do so and is a trusted institution in the country.

4.1.4 INVESTMENT REGULATION

Regulations and supervision are required for investment during the Value annuity phase just as it is for the accumulation phase. While there is much diversity in investment regulations globally, one key trend is requirements for a core default fund for members who do not wish to or are not able to make investment decisions. Default investment regulations have a very powerful role since the defaults are likely to cover 90% or more of the members.

The right degree of investment risk to allow will differ between countries as it does for the accumulation phase. The OECD have an annual survey of investment regulations that documents in the global diversity in investment regulations. Surprisingly, the use of a full prudent person approach with no limits on assets or jurisdiction in which to invest is relatively unusual. Generally, large pension markets such as the U.S., U.K. and Australia have such an approach. At the other extreme, requirements restricting all investments to the home country (such as in India's National Pension System) is not recommended as best practice by most organizations involved in advising on pension policy, including the OECD, World Bank and International Organization of Pension Supervisors.

³² G. Impavido, E. Lasagabaster, and M. Garcia-Huitron, *New Policies for Mandatory Defined Contribution Pensions: Industrial Organization Models and Investment Products* (Washington, DC: World Bank, 2010).

³³ See "¿De qué forma se efectúa la licitación del seguro de invalidez y sobrevivencia (SIS)?" (Santiago, Chile: Superintendencia de Pensiones, 2021), <https://www71.spensiones.cl/portal/institucional/594/w3-article-8046.html>.

The right balance for the payout phase will inevitably be anchored by the approach for the accumulation phase and integrating the two phases is a critical benefit of the Value approach. The approach should be based on country-specific modeling of potential outcomes from different investment strategies. While restrictions can be seen as constraining pension fund managers from obtaining the best outcomes, it may be more acceptable politically to start with some relatively cautious “speed limits” and to allow progressively greater investment freedom over time. One area that should be included from the beginning is proper attention to the Environment, Social and Governance factors that are important considerations for any long-term investment strategy where the aim is to deliver the best risk-adjusted return for members.

4.1.5 MANDATORY, DEFAULT OR VOLUNTARY OPTIONS FOR VALUE ANNUITIES

There is a critical decision to make about whether the Value annuity (or any payout option) is mandatory, a default or one of a range of options. The implications for the size of the market and the impact on scale and adverse selection were highlighted above, so the considerations are not incidental to the reforms but a fundamental part of getting them right for any payout option chosen, including a Value approach. This section focuses on the benefits for the member or the country.

The benefit of hard wiring the payout option as a mandatory or default option is very valuable when the public policy objective is to deliver retirement income until death. This is typically the objective set out in reform discussions, but the failure in many cases to develop a robust payout phase puts this objective in jeopardy. In systems that provide tax and other incentives to members and employers to provide pension income, but then do not ensure an income is provided, it seems that the public policy objective is missed, and the use of scarce fiscal resources is not optimized.

There are variants of a mandatory requirement that focus on ensuring that people have a secure level of income until death and then have freedom to take a lump-sum or phased withdrawal with additional assets. This approach is seen in various countries. Another variant would allow significant freedom in cases where someone had already sufficient income until death from other sources and/or a significant level of other savings.

In the accumulation phase the use of default settings has become increasingly popular to boost enrollment and the use of good long-term investment strategies. Autoenrollment at national scale as in New Zealand, the U.K. and Turkey has boosted coverage. Default investment accumulation strategies have simplified the process for members and improved the asset allocation for individuals, especially those without financial expertise. The approach has effectively passed on the benefits of scale and the reduced need for sales and marketing to members where autoenrollment into default products is linked to fee caps (the U.K., Hong Kong and Turkey).

However, as discussed in the Malaysia example, it is not clear whether a default into an annuity would have the same impact given the tendency of individuals to avoid them. In Italy autoenrollment into pensions has not achieved significant increases in coverage, showing the limited impact when the alternative to the default is something people value highly.³⁴ If a country is starting with an option for 100% lump sums, it may be politically difficult to move straight to mandatory use of Value (or other) annuities. Whether a default option is sufficient to achieve the public policy objective would then be an empirical issue. But if a default were used rather than a mandatory approach, care would have to be taken with the other issues described above such as provider numbers and pool size to ensure sufficient scale and efficiency. There are clearly challenges to a government introducing the Value annuity as a mandatory or default option, but on the other hand the benefits are far greater than if it were introduced only on a voluntary basis. In a world where pension reforms are urgently required and there are few

³⁴ A. Rinaldi, “Pension Awareness and Nation-wide Auto-enrolment: The Italian Experience,” CeRP Working Paper No. 104 (Turin: Center for Research on Pensions and Welfare Policies, 2011).

easy reform options, it would make a lot of sense to take the braver steps needed and ensure the benefits of Value annuities can reach the widest group possible.

4.1.6 CHOICE OF TYPES OF VALUE ANNUITY

Value annuity design options include the amount to put into the annuity, the amount from the annuity balance to leave as a bequest and segmenting the population into annuities based on different mortality tables. These options are discussed in the Design Guide in Appendix 3.

4.1.7 GENDER

Many pension systems fail to deliver good outcomes, and in particular good outcomes for women.³⁵ The key considerations for the design of the Value annuity relate to the survivorship options, accounting for mortality and the rules on splitting pensions on divorce. Gender equality in outcomes at retirement is driven partly by differences in labor market participation and wages. One way to reduce the impact on retirement income is to mandate that the annuities must be joint-life annuities—they pay out to the surviving spouse on the death of the initial annuitant. Joint-life annuities have a lower starting payout since they need to pay out for more years on average than a single life annuity such that there is risk that members choose the single life annuity option. In Chile, joint-life annuities are required in the mandatory second pillar private pensions. A second decision is the portion of pension payments to continue to the surviving spouse, which may be between 50% and 100%.

The choice of mortality table is vital to any annuity and one key question is whether to use different mortality rates by gender or to use joint mortality rates. International practice varies. The EU has prohibited gender-based annuity pricing in key markets so that an insurance company must use unisex mortality rates despite the fact that women live longer than men. In (most) other countries gender-specific mortality is still used.

The Value approach can incorporate either gender-specific or unisex mortality. This must be considered in light of adverse selection and mandatory versus optional annuities since men may opt out if they were to realize that the unisex approach makes it actuarially expensive for them. Policymakers who want to use this cross-subsidy to offset gender inequality in other parts of the pension system will want to estimate the impact of “adverse selection” on the financial efficiency of the system. Whatever approach is used, it is important that the mortality tables used reflect the actual mortality of the participants in the Value pool over time. If not, gains and losses will be shared unfairly among various gender and generational cohorts

A final area to consider is the legal control of pension rights in the case of a divorce. This is not specific to Value annuities, but policymakers will need to take a view on the issue, and this will need to be reflected in the Value calculations. In the U.K. there is “pension splitting” on divorce. A married couple in which one person had a private pension and the other did not would need to split the pension between both parties (or otherwise compensate for this in other parts of the settlement).

4.1.8 EQUITY CONSIDERATIONS ON ASSET SIZE OR INCOME LEVEL

A common criticism of pooling longevity risk is that it tends to increase inequality because higher wealth and income are correlated with longer life, and hence an annuity transfers value from lower income to higher income participants in the pool. In many countries a progressive tax system will offset the potential inequality in outcomes since richer members of the pool with higher balances will face higher rates of taxation.

Another option is to segment the population into groups that are similar in income and wealth characteristics. This is not straightforward and may reduce the overall size of each longevity pool, creating the problems with scale and

³⁵ OECD, *Towards Improved Retirement Savings Outcomes for Women* (Paris: OECD Publishing, 2021), <https://doi.org/10.1787/f7b48808-en>.

variability in outcomes discussed above. Also identifying occupations, such as miners, that are at risk of lower life expectancy has been the basis for “special” pension provisions such as early retirement in many countries. Although there are legitimate issues in differential life expectancy by occupation, such regimes typically focus on only a limited number of favored groups who may or may not have lower life expectancy than many other groups, including agricultural and service workers. If the population covered by the system is big enough and mandatory annuitization is used, it would be possible to have relatively large pools by occupation. The Indian case in Section 3 provides an example where segmentation could be used since within the National Pension System (NPS) there are at least six different regimes using the common core infrastructure for account administration, investments and payouts.

4.1.9 RULES ON PRODUCTION AND USE OF MORTALITY DATA

Data on current rates of mortality and rates of mortality improvement are an important input into the administration of a Value pool. A central benefit of the Value approach is that it can adapt as progressively better mortality data are developed. This allows lifetime payouts to be offered before full mortality data are available, which may take many years to collect. There is a minimum level of data needed to allow the model to calculate the payouts—but a pool can be established using UN Population Division mortality projections. Countries that do not have their own mortality statistics sometimes use projections from other countries—often the U.K., Canada and the U.S.—scaled to local experience. Many countries will have experience data from domestic social security or “First Pillar” pension plans. Mortality data will progressively improve, and data from the Value system itself will ultimately be significant—another reason for seeking to increase the size of the longevity pool. New mortality data are fed into the Value calculations, and updated payout amounts are determined. If there are large changes, these can be implemented gradually rather than making the full change in a single year.

It is important to think through the governance of the production and dissemination of mortality statistics and that the mortality data are not manipulated to produce favorable (or unfavorable) outcomes. For example, it is not prudent to increase pension amounts by weakening the mortality basis. Some countries will want to mandate the use of a particular mortality table, while others will use supervisory oversight to ensure that appropriate tables are used.³⁶

Legislation and regulation should ideally identify an independent statistical agency that produces mortality data, along with rules on how often changes should be implemented. Annual updates may be possible, but a cycle with improved estimates every three years that blended into payments gradually over three years could be a useful balance between using the newest data and having stability in the annual payouts. Administrators of Value pools that are part of the insurance industry may also have the resources to track and update mortality assumptions.

4.2 SUPERVISION

This section identifies some of the key supervisory issues that will need to be addressed to deliver a Value annuity approach successfully. Many of the issues are not unique to Value annuities but are included to give a full overview.³⁷ The Value concept does not present any new supervisory challenges to countries that already have functional supervisor of insurance and insurance annuities. But it does offer advantages to countries that do not have a functional life insurance supervisor or indeed a viable life insurance industry providing annuities. This is because a Value annuity pool shares risk among the participants, there is no need for capital adequacy rules or a Solvency I or Solvency II framework and/or to meet the full Insurance Core Principles of the International Association

³⁶ OECD, *Mortality Assumptions and Longevity Risk: Implications for Pension Funds and Annuity Providers* (Paris: OECD Publishing, 2014).

³⁷ The supervisory priorities identified are informed by best practices for the payout phase developed for 19 Latin American and Caribbean countries with a broad range of development outcomes, sizes, capital market complexity and supervisory capacity. See W. Price et al., *Guidelines for the Design and Implementation of the Payout Phase*, IDB-TN-02036, February (Washington, DC: Inter-American Development Bank, 2020).

of Insurance Supervisors. Rules for operational capital to meet the costs of administration or internet/infrastructure failures would still be useful, however, and form part of the regulatory and supervisory oversight by the government.

4.2.1 GOVERNANCE, SCALE AND EXPERTISE OF PROVIDERS

The most fundamental supervisory requirement is to ensure that only organizations that have *scale, expertise and good governance* are used to deliver the Value annuity. This requirement is not unique to Value annuities, of course, but the benefits of the new approach will not be realized if the Value option is simply added as one of many options available to all providers regardless of scale, expertise or performance standard. The Value approach is useful for countries with a limited number of capital market providers that may have concerns about the supply of well-governed providers with scale and expertise. This is because it is possible for insurance companies and fund managers as well as bespoke pension accumulation providers that may be public sector, not-for-profit (such as large occupational pension plans or Provident Funds) or for-profit providers to provide a Value annuity. Thus, a country can focus on the parts of the capital market where providers are strongest rather than having to use only pensions, or only insurance or only fund management options.

The Value approach may be perceived as a challenge by insurance companies since it allows a bigger group of providers to offer an annuity option. However, since many markets in the world have little demand or supply for annuities, the introduction of Value annuities may facilitate the establishment and growth of a market for annuity products. Indeed, given how many countries have a payout “phase” that effectively defaults to lump sums, the Value approach offers tremendous potential for improvement in this area.

A supervisory agency will need to ensure that entities involved in the delivery of the Value annuities meet high governance standards, reviewing their performance and taking corrective action as needed.³⁸ Supervisors are typically concerned about a wide range in quality among providers. Some are good, but others have problems ranging from poor governance, small scale or gaps in expertise among other issues. The benefit of introducing Value annuities as part of a new initiative is that there can be a bespoke set of regulations for it. These can establish higher standards for entities providing the approach. In addition, regulation may restrict the number of providers (perhaps even to just one) and allow for the use of a default fund and/or auctions between different providers.

This approach can be particularly useful where it desirable to establish higher standards by reducing the number of providers. This can be achieved with a license requirement for offering Value annuities so that only providers that demonstrate the best standards would be given the additional license to deliver Value annuities. The authorities can also include limits on fees that can ensure that only the most efficient providers will be part of the market. A hybrid approach such as the one in the U.K. is also possible. There the government created a new not-for-profit provider (National Employment Saving Trust or NEST) with a mandate to accept all business and a limit on fees to no more than 0.5% of assets under management for NEST and 0.75% for default investment funds offered by other providers.

4.2.2 SUPERVISORY SCOPE

The relevant supervisory body for the Value approach will depend on how the Value approach is delivered. There is no technical need for it to be supervised by the financial market supervisor (which could be a bespoke pension or insurance supervisor, an integrated capital markets supervisor or a Central Bank with supervisory responsibilities depending on the institutional set up in a given country). However, as a general principle it is important to ensure transparent oversight of the operation of the Value (or any other) approach. Transparent and independent oversight

³⁸ Guideline 10 of the Guidelines for the Design and Implementation of the Payout Phase.

is more common in the Second and Third Pillar pensions covering occupational and individual voluntary private pensions than it is in First Pillar pension plans and Provident Funds. These are usually subject to oversight by a parent ministry that reports to the country's parliament and are typically covered by some form of national auditing body. So scrutiny and oversight are built in as part of the design, but there can be less independence and transparency. Some countries do have First Pillar pensions overseen by the financial market regulator so that it is covered alongside other pension plans. But this change would not need to be made to implement Value annuities.

The examples of India and Malaysia covered earlier broadly follow this pattern. In India, the Employees Provident Fund, the mandatory pension plan for all employees with 20 or more employees, is not covered by the main pension regulator, the Pension Fund Regulatory and Development Authority (PFRDA). The PFRDA does, however, regulate the National Pension System (NPS). Similarly, in Malaysia the Employees Provident Fund (EPF) is not regulated by the Securities Commission, which is the regulator of the Third Pillar Private Retirement Schemes.

4.2.3 SUPERVISORY COOPERATION AND ALIGNMENT

There is always a need to ensure that the payout phase of pensions integrates well with the accumulation phase, and the option for a Value annuity is considered in an integrated way with other payout options that may include traditional annuities with guaranteed payments and a regime of capital adequacy. In a country with integrated pension and insurance regulators, the fact that pensions and insurance are covered by the same agency does not mean that the approaches will automatically be integrated smoothly.

In the Indian case reviewed in Section 3, the regulatory framework could complicate the adoption of a Value approach. The payout phase in the NPS falls under the pension regulator, the PFRDA, which has a process to “empanel” or select providers with a limited list of payout options. However, both the providers and the products must already be authorized by the Insurance Supervisor (the Insurance Regulatory and Development Agency [IRDA]). A rule like this can make sense if the aim is to simplify the process of selecting a providers and products. But if the aim is to innovate payout options and explore noninsured solutions, a link to insurance regulation may be a complicating factor. Since the Value annuity is a noninsured rather than an insured product, there is no formal need for an insurance regulator or supervisor.

Even when there is no formal link between insurance and pensions supervisors it is useful to ensure good communication and data and risk sharing. This is particularly useful if there are potential providers that may operate a Value annuity under pension rules but have an existing footprint under the insurance regulator. It is also useful to ensure that all the various kinds of risks in the payout phase are considered when people have a range of options. Risk sharing is also useful where there are sales, marketing and product illustration practices that are common to both sectors. The same benefits from collaboration and data sharing would apply for the pension and securities regulator if fund management firms were to deliver Value annuities.

4.2.4 DATA

The Design Guide, Technical Manual and the legislative and regulatory issues part of this report have all emphasized the importance of the mortality data for the Value approach. It is also important to have accurate data, such as gender and date of birth, for the individuals participating in the pool. A real-world example of a recommendation for improving supervision of the payout phase was stated like this: “Supervisors should collect, improve, and publish data, including on mortality, to assess and mitigate risks to their objectives.” This is particularly relevant to Value annuities. As described above, one benefit of the Value approach is that the product can be established with a low level of mortality information, knowing that progressive improvements in the data will improve the accuracy of actuarial calculations and minimize the extent of payout adjustments. This makes it possible to have an annuity-like product without the huge risks of pricing an annuity now based on unknown factors over the next 30 years. It is not essential that the Supervisor leads this process to enable Value annuities if there are other organizations such as a central statistical agency taking the lead, but an independent agency in the country needs to ensure a base level of mortality data and a viable process to update assumptions (which the relevant law must mandate are then used to

update Value annuity payouts). Each individual pension pillar or plan may not have sufficient data to project mortality, but if the data are pooled for the country as a whole, then each plan can make an important contribution to the aggregate mortality data. However, regulatory action and a promise of anonymity and confidentiality that a regulator and supervisor can offer will help to bring together available data.

4.2.5 FINANCIAL LITERACY AND SYSTEM DESIGN

Financial literacy is a particularly difficult issue to tackle in general and given the technical complexities of products like annuities.³⁹ However, if the Value annuity is a mandatory or default option, the financial education challenge will be less daunting. Supervisors will still need to create material that can highlight the key features and choices involved—with the Singapore example offering a nice lesson in simplicity. Depending on the market structure, some providers may also need to develop information and educational material. All of this should be undertaken with the *expectation* that financial literacy is low and likely to remain low for the foreseeable future. The system and the related products and choices need to be safe and viable without the need for consumers to be experts. In the words of some recently developed guidelines for the payout phase: “Supervisors should address consumer protection with good overall design rather than rely on members making informed, active choices.”⁴⁰

If there are multiple variants of the Value approach provided by multiple providers, it may be more complicated to navigate the market for consumers, in addition to the issues already noted on scale and volatility of outcomes.

Given the practical barriers to understanding different types of annuities, it is unlikely that simply adding the Value annuity as an option to many others would do much to move the market forward. Annuity markets are typically small unless there is some form of mandate or a link to DB pensions. The costs of individual advice for each individual would be very high, even if it was possible to deliver such advice in an unbiased way without different commissions between different types of products. Moreover, there would be a need to regulate and supervise the different marketing projections offered by different providers for their different variants of the Value approach. All of these additional features add cost, complexity and risk to the delivery model.⁴¹ Moving to a mandatory or default Value option would likely be more challenging politically, but the benefits are far greater and hence are worth the effort.

4.2.6 SUPERVISORY RESOURCES AND EXPERTISE

Since the Value approach does not transfer risk outside the pool, formal insurance regulation and supervision are not required. Actuarial expertise is needed to design the pool and to maintain the benefit amounts at the appropriate level, but since assets will always be equal to the liability for benefits, traditional actuarial asset-liability management is not needed. Each country would determine whether a formally qualified actuary is needed for the actuarial elements of a Value pool. If desired, a formal sign-off could be required for the overall model design, and qualified nonactuaries may or may not be approved to do some of the development work. This will partly be influenced by the supply of formally certified actuaries in a country. Some nonactuaries such as statisticians, economists or investment experts may have the relevant knowledge on mortality risk and interest rates to provide the actuarial expertise required.

The benefit of the Value approach is that the actuarial input can be front-loaded with the development, testing and establishment of the product and then focused on periodic reviews of the simpler system. The balance between

³⁹ O. Fuentes and W. Price, “How Supervisors Can Improve the Effectiveness of Financial Education,” Webinar, October (Toronto: Toronto Centre, 2020), <https://cursos.iadb.org/sites/default/files/4.WilliamPricePPT.pdf>.

⁴⁰ Guideline 13 of the Guidelines for the Design and Implementation of the Payout Phase.

⁴¹ The issue of getting clarity and consistency in consumer projections at the point of sale of in member benefit statements, as well as having projections that are understandable for consumers has recently received increasing attention. The European Insurance and Occupational Pensions Authority (EIOPA) published *Implementation of IORP II: Report on the Pension Benefit Statement: Guidance and Principles Based on Current Practices* (Frankfurt: EIOPA, 2018). The OECD’s *2020 Pension Outlook* included a chapter “Communicating on Investment Strategies” (Paris: OECD, 2020).

actuaries developing the overall approach as opposed to signing off on development work by other professionals will need to be considered as highlighted above. It should then be possible for audits to ensure that the calculations and procedures are being carried out effectively and accurately between the reviews. Such an audit could be part of a review by an actuary or a technical review by a suitably experienced non-actuary as part of the work of an annual audit that also covers other issues. The main focus of the reviews would be the benefit amounts, new mortality data and the investment approach.

For many supervisors with a history of focusing on DC pensions, the review of investment issues will be less challenging than that of the actuarial issues. Actuarial skills within some jurisdictions, particularly smaller countries, can sometimes be scarce. But the ability to develop a framework that has risk adjustment and sustainability built into the product design reduces the need for scarce actuarial resources. The most significant effort would be a one-off design project that would then move into an implementation mode that has less intense ongoing need for significant actuarial input. This specific effort on Value annuities could be integrated with other requirements for actuarial input, which is the subject of recent useful work from the International Organization of Pension Supervisors on considerations and best practice.⁴² Policymakers wishing to reform the overall system could usefully draw in international expertise to help improve overall design of a system as well as focusing on the specific technical requirements for annuities and lifelong payments.

⁴² International Organisation of Pension Supervisors (IOPS), "Synthesis Paper: The Role of Actuarial Calculations and Reviews in Pension Supervision," No. 23-09/2015 (Paris: IOPS, 2015), and IOPS, "Background Paper: The Role of Actuarial Calculations and Reviews in Pension Supervision," No. 24-09/2015 (Paris: IOPS, 2015).

Section 5: Conclusion

The report shows how Value annuities can improve the payout phase for governments and retirees in both developed and developing countries. Value annuities can ensure that saving for retirement leads to a more secure old age. Given the size of the pension challenges for many retirement systems, it will be necessary to take bold action—and Value annuities could be a key part of a reform package.

The advantages of lifetime income and the potential for uninsured solutions are explored in other literature, but this report includes working administrative tools, a guide to real-world design, considerations for how to regulate and supervise Value annuities and case studies for implementing them in India and Malaysia. The tools included with this report would allow policymakers to move from recognizing issues to delivering a real, workable solution. This means they do not have to rely on “black box” proprietary approaches. The outputs are based on a working model for administering the approach, which is provided as one of the project deliverables. The approach could be useful in a wide range of countries, both developed and developing, and those with or without existing annuity markets.

The basic financial efficiency of annuity income can be delivered even in situations where commercial annuities are not viable. A retirement system that does not have access to a deep market for insured annuities can still provide lifetime income instead of lump-sum payments. Lifetime income solutions provide more income than other payout options by pooling risk and making payments only to living retirees. Some actuarial expertise is required to design and administer a Value longevity pool, but members bear all risk so that no insurance is required. The costs and regulations related to insurance are avoided.

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