

PRIVATE ANNUITY MARKETS*

In the past several years, extensive work has been done examining the annuity markets in several countries.¹ While the work stands on earlier analyses, this body of work is noteworthy in its attempt to relate the development of annuity markets to the value that annuitants are receiving for their premiums. Much of the literature postulates that the demand for private sector annuities will be increasing over the next decades, and that the state may have to intervene to otherwise assure predictable retirement income at a socially acceptable level.

The purpose of this paper is to provide an overview of the annuity markets in OECD countries focusing on the counterbalancing forces, which have underpinned the developments. The paper is organised as follows: the first section reviews the changes in the pension landscape. Section two provides an overview of the recent annuity market trends in OECD countries. Section three gives an introduction to basic elements in measuring annuity value. In section four the recent findings of annuity markets value added for consumers are referenced while section five discussed the apparent paradox in the findings: despite good value for consumers demand for annuities remains weak. Given the possible market failure section six reviews the scope for policy intervention in the form of making participation mandatory. Section seven ends the paper with some final remarks.

I. Background: The changing pension landscape

To a large extent the focus on annuities markets has been catalyst by structural changes in pension systems where companies are reducing the supply of defined benefit contracts and governments are cutting back on – or at least limiting the growth in -- public pension schemes. In many countries funded defined contribution arrangements are being promoted as an alternative means of

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retirement savings. This trend takes many forms. In Latin America and Central and Eastern Europe, funded defined contribution regimes have been mandated on individuals as a partial to full substitute for a prior pay-as-you-go system. In Australia and Hong-Kong, the mandate has fallen on employers to complement basic state pensions. The recent German reform includes encouragement of a funded tier through both budgetary support and tax incentives. Though the mandate (or encouragement) in some instances can be satisfied by means of a defined benefit plan, invariably the mandate is expressed as required contributions of some defined amount, and increasingly compliance takes the form of defined contribution arrangements.

In countries with large voluntary occupational pension sectors, traditional employer-based defined benefit plans are eroding in popularity. To some extent the shift toward defined contribution plans reflects underlying economic trends. Thanks to increased productivity and more efficient global markets, sectors such as manufacturing that traditionally used defined benefit schemes (as part of long-term employment contracts with their workers) are declining shares in most countries' labour forces. The shift also may reflect management decisions (and worker preferences) to move toward more flexibility in retirement options (that is, to do away with pension features that are designed to "lock-in" workers to some determined age and/or discourage them from working past the first age of eligibility).²

The shift toward defined contribution also reflects a desire by firms to fix their pension liability as a predictable percent of payroll.³ Partly this shift is in response to the costs of increasing longevity in defined benefit schemes. Mostly, however, it reflects increasing concerns with regulatory burden and uncertainty, as well as changes in accounting rules that have highlighted the contingent liability to which firms are exposed if they sponsor defined benefit plans.

The shift toward defined contribution plans in the United States is well documented. Defined contribution plans have become the dominant form of tax-advantaged retirement savings in the U.S. over the past two decades.⁴ But this shift is not isolated to just one country. Press reports are replete with stories from the U.K. about firms closing down defined benefit plans or closing them to new entrants and shifting to defined contribution schemes. Changes in Portugal, Spain and Italy have promoted defined contribution plans as the preferred (or exclusive) mode of voluntary occupational provision.

Defined contribution plans, however, are not all the same. In some countries (notably Denmark), the defined contribution paradigm is combined with some inter-cohort risk sharing. The consequences of longevity gains and investment

volatility are shared within the retired population and, to a lesser extent, between retirees and active workers. Most defined contribution plans, however, expose participants to market volatility risk at the time of annuity conversion – both the asset value of the accumulation and the interest rate offered by the annuity provider. With heavier and heavier reliance on funded defined contribution plans, the question arises: what happens at retirement? Or, from a policy perspective, what should happen at retirement?

The purpose of the annuity is to protect against the possibility of outliving one's income. The existence of an efficient private annuities market therefore is an important determinant of the adequacy of retirement income in systems that rely significantly on defined contribution schemes. Annuities can provide a predetermined level of income after retirement, and to the extent that they can be bought when young (deferred annuities), they could in principle offer a similar degree of protection against longevity and investment risk as defined benefit schemes.

However, annuities are only one form of transforming accumulated savings at retirement into a stream of income. Depending on their risk and time preferences, individuals may choose to retain their retirement balance invested and carry out phased withdrawals at more or less regular intervals. In a well-diversified portfolio, this modality can ensure higher returns on investment than some types of annuities (though it may do so at the cost of higher risk) and may be cheaper to administer. Individual preferences also affect the decision of whether to buy annuities in other directions. If individuals have a bequest motive they may prefer the phased withdrawal method, though in principle annuities can have bequest clauses in them.

II. The development of private annuities in OECD countries

Except in a few OECD countries, annuities markets either do not yet exist or are still in an incipient stage of development. The main exception is the United Kingdom, where tradition and to some extent compulsory annuitisation of personal pension plans are the main factors behind the growth of the market since the mid-80s. In other countries, annuities markets are restricted to a small group of the population. Evidence from the United States, for example, suggests that less than 3 percent of the elderly population own individual annuities (Friedman and Warshawsky, 1990⁵). In Australia, prior to the introduction of a compulsory defined contribution pension system in the early 90s, annuities were a much less popular choice than lump-sums, largely as a result of their adverse tax treatment. The government has since gradually reversed this policy, to the extent that annuities are currently more favourably taxed. This change in tax

treatment has contributed to the increased take-up of annuities observed in this country in the 1990s.

Short-sightedness, bequest motives, the prevalence of defined benefit plans, the insurance and administrative cost of these products, and unfavourable tax treatment are the main factors which may explain the little enthusiasm observed in most OECD countries towards annuities. For the future, on the other hand, the emerging trend is one where private annuities products will play a central role in the functioning of pension systems. There are various forces that are helping to shape this trend:

- Many countries are replacing or complementing their public pension systems with mandatory defined contribution plans (e.g. Australia, Hungary, Mexico, Sweden, Switzerland, and Poland). Even in countries where take-up of voluntary remains voluntary, there is likely to be a rapid development of the annuities markets⁶.
- In some OECD countries there is a progressive shift away from defined benefit occupational pension plans towards defined contribution plans. In at least one case (the United States), this is caused partly by the transformation of existing plans, while in others (e.g. Finland) defined benefit plans are simply being closed to new members. In some OECD countries where defined benefit plans have traditionally predominated (e.g. Australia, Canada, Italy, Spain, United Kingdom, United States), defined contribution has become the rule for new occupational plans.
- Population ageing is increasing the risk that individuals will outlive their own resources. Hence, products which insure against longevity risk are becoming increasingly attractive.
- More advantageous tax treatment of annuities. In some countries annuities have until recently been subject to a less attractive tax treatment than other modalities of income drawdown. Across OECD countries, governments are rebalancing these policies, introducing more tax advantages for annuities.

In those countries where the annuities market has already taken off, products offering protection against inflation have not been very popular. The limited development of real annuities appears to be caused as much by supply as demand factors. So far, real annuities only exist in those countries that have developed inflation indexed bond markets. This is the case in at least two OECD countries, the United Kingdom and Iceland⁷, while other countries like

Canada, Australia, Mexico, and the United States have recently begun to issue inflation protected government securities. Indexed bonds promising a fixed real return to investors have been available in the United Kingdom for nearly two decades. The availability of such bonds has made it possible for UK insurers to offer real annuity products by hedging inflation risk.

However, the extent of hedging depends on the availability of sufficient liquid markets comprising securities of long enough maturity. In the United States, for example, such bonds have only been available for five years⁸. As yet, very few insurance companies offer real annuities in this country. While this may be an indication of the limited inflation protection that can as yet be obtained with existing fixed income securities, the main causes can probably be traced to weak consumer demand. Consumer apprehension and lack of familiarity with a new financial product, a lessened concern for protective measures against inflation given the current macroeconomic environment, money illusion, and the fact that real annuities are usually costlier than nominal annuities (see below) may account for this. Indexed annuities have also been recently available in Canada and Australia, but their popularity is also rather limited. Even in the United Kingdom, where the indexed bond market is relatively developed, the demand for real annuities has not been as great as may have been expected. It has been estimated that only 10 percent of all annuities purchased are denominated in real terms.

The role of the government in providing adequate inflation hedging instruments is critical in those countries that only permit real annuities. In Hungary, for example, private annuities must be indexed in the same manner as the public pension, that is, they have to keep pace with the combined index of the net wage and consumer price indices. As the Hungarian system is rather new, there have been few retirees and hardly any annuities have been sold yet. However, as the system matures, there will be a heightened need for better matching financial instruments offering good inflation hedging properties.

III. Elements in measuring annuity value: Adverse Selection, Money's Worth and Equivalent Annuity Wealth

In thinking about the value of annuities, four basic concepts need to be kept in mind:

Adverse Selection. First, a systematic difference in expected life spans exists between those who do buy annuities in the voluntary market and the population as a whole. Those who know that they are likely to live for a relatively long period are more likely to buy annuities than the average individual. This difference, which is reflected in the mortality tables used by insurers versus

those derived from general population statistics, is a measure of “adverse selection” and will affect perceptions of “money’s worth”. Another form of adverse selection can occur because of the design of regulations. Consumers may be driven out of annuity markets as a result of regulations that, for example, stipulate common annuitisation rates for different groups of consumers that would otherwise be subject to different rates (the standard example is men and women).

Equivalent Annuity Wealth. The second is what is the alternative to buying an annuity. Most analysts postulate that the pure alternative is purchasing a bond portfolio in which the instruments are investment grade or riskless (government bonds). Assuming that the individual is seeking to maintain some real consumption pattern in the retirement period, the bond yields would be fully or partly linked to inflation and have maturities that match the individual’s expected life during the retirement period (including possibly some period before retirement). By definition, because there is no transfer of longevity risk, an individual’s bond portfolio would have to be large enough to provide some margin that his or her particular life span will exceed the average. The margin would depend on how risk adverse the individual is.

Money’s Worth Ratios. In constructing money’s worth analyses, the analysts examine industry surveys of annuity amounts for a particular product (for example, male life annuity) and determine the mean value of those amounts in a given year. Using a mortality table generally used in industry practice, the expected present discounted value of an annuity with that mean amount is then calculated. That result (the EPV) is compared to the mean premium charged in the same year by annuity providers. If the ratio (EPV/premium) were equal to one (1.0), the annuity purchaser would be receiving a extremely good value for his or her money. Not only is stream of income (EPV) equal to the premium, the purchaser has managed to shift longevity (and possibly inflation) onto the insurance company with no apparent loading cost.

Loading and Administrative Costs. Loading is a term that covers what annuity providers normally charge policy holders for administration and solvency reserving. This “loading cost” contains three items: (a) marketing costs; (b) marginal operating costs (ongoing transactions with policyholders); (c) the opportunity costs on the equity in the firm (by the firm’s choice or by regulatory prescription) to cover deviations from expected investment returns or in life expectancies. One way of measuring the loading is the difference between the premium and the EPV of the annuity stream – what might be called the “residual” measure. Another approach is to try independently to measure the components of loading – what might be called the “bottom-up” approach. One of the recent studies has attempted to independently measure the loading cost

associated with providing annuities by analyses of insurance company reports and balance sheets. The study estimates that taken together these three components are some 10 to 12 percent of premiums among the companies examined.

IV. Recent Findings of Money's Worth and Equivalent Annuity Wealth

When money's worth analyses of the US and UK markets are done using the annuitant tables used by the insurance companies in those markets, the analyses indicate that annuity markets are more efficient than often thought. One series of studies have found money's worth ratios are relatively high, on the order of 0.92 or better, in the US and UK markets for nominal annuities⁹. If we accept as accurate the roughly 10 percent estimate of administrative costs (per above), then annuitants are receiving extremely good value for their money. (Some caveats to this conclusion are discussed later.)

As noted earlier, an alternative measure is how large a bond portfolio would someone need to compensate for not being able to buy an annuity. This is known as "annuity equivalent wealth." The same studies suggest that, depending how risk adverse someone is and whether inflation is persistent or intermittent, he or she would need to have annuity equivalent wealth somewhere between 135 to 160 percent of the annuity cost.

Another set of analysts have extended the money's worth methodology to cover a larger number of countries (Canada, Switzerland, Australia, Israel, Chile, Singapore, as well as the US and UK) with findings that are similar¹⁰. Excluding administrative costs, the money's worth ratios for nominal annuities - again using annuitant tables -- are on the order of 97 percent to 106 percent. If administrative costs were added, then the seeming value/price ratio would uniformly exceed 100 percent. Countries with the highest money's worth ratios before administrative expenses tend to have lower administrative costs, and visa versa, so a uniform 10 percent cannot be added to the money's worth ratios.

Some caution needs to be applied to the findings in the previous paragraph. Not all countries in the analysis had long term government and corporate bond markets or domestically based mortality tables. Accordingly the analysts had to make assumptions about long term rates. The tables used in many countries are UK tables with adjustments made by local actuaries about their best guesses of how the typical mortality of annuity purchasers in their countries match the mortality of annuity purchasers in the UK. But, even if these findings are

hedged for these methodological issues, the results suggest that annuity purchasers are receiving reasonably good value.

Measure of Adverse Selection. When money's worth ratios are done using general population tables, the results are quite different. When using tables that reflect the population as a whole, the money's worth ratios are, for example, some 7 to 12 percentage points less in the United States for 1999 compared to comparable annuitants (i.e. 0.80 to 0.85). The exact difference depends on whether government or corporate bond rates are used in the calculation and whether one is looking at men or women. As noted at the outset, this wedge is the measure of "adverse selection" that occurs in a voluntary annuity market.

Money's Worth for Real Annuities. Annuity purchasers may seek to protect themselves from unexpected inflation as well as longevity risk. In the United States, despite the presence of inflation-linked Federal securities, the demand for indexed securities is virtually nil. In the United Kingdom, the market is more established and active. The money's worth ratio with respect to real annuities in the UK is typically five percentage points lower than comparable nominal annuities. This suggests that at the margin, individuals who value longevity protected are unwilling to pay the extra freight to ensure the real value of their consumption. Not surprisingly, however, a bond portfolio that equates to a real annuity (equivalent annuity wealth) is a higher multiple of the real annuity equivalent than the comparable portfolio/nominal annuity ratio. For a very risk adverse person, they would need a portfolio twice the size of a real annuity.

V. Why Is Annuity Demand So Weak If Annuities are Such Good Value?

These analyses raise two broad analytic questions. In addition, there exist some broad policy questions discussed below. If annuities are such a good deal, why are not more people buying them? And how can insurance companies offer such good money's worth values -- should regulators be concerned that insurance companies are apparently promising more than they can reasonably be expected to deliver?

Why Is Annuity Demand so Weak

Many hypotheses exist concerning this question. One explanation is that certain regulations -- such as the requirement to use unisex mortality tables -- might reduce the attractiveness of annuities for some consumers. It would be expected,

for example, that the money worth ratios for men would be significantly lower than the ones estimated with tables that reflect the population as a whole.

Another popular explanation is that most countries have state pension schemes that already offer annuities that spread longevity and inflation risk-sharing across genders, income classes and generations. In addition, in countries with important occupational scheme, employer schemes have provided early retirement payments and supplemental annuities for many middle and upper income people. Taken together, these greatly lessen the demand for additional voluntary annuities. Indeed, in the United States, the individual voluntary annuity market is dominated by deferred annuity contracts that are used as a second-best tax shelter - - relative to a tax qualified pension scheme - - for voluntary retirement savings. Rarely are these contracts later converted into an annuity (versus lump sum withdrawal).

Households who have large amounts of housing wealth likely believe they can tap that wealth through downsizing, borrowing and reverse annuity mortgages if they start to run out of more liquid assets because they have survived longer than they expected. These effects have been captured in some the analyses discussed earlier. When half of a household's retirement wealth is already assumed to be in a real indexed annuity, the measures of equivalent annuity wealth multiples for the non-annuitised half decline substantially (except among the very risk adverse).

Households may often have strongly competing liquidity preferences. They may face uncertainties for which the insurance market does not offer many products (for example, long-term health care insurance, and nursing home care).

Another answer is a simple lack of consumer awareness and understanding of the potential values of shifting longevity risk. Survey evidence suggests, however, that older people are knowledgeable about their survivor probabilities. However, a high degree of certainty about the timing of a person's death would also lead to self-selection and reduce demand for annuities.

As for inflation risk, households have become used to an environment of relatively low and, more to the point, relatively predictable inflation. Among those who do worry about longevity risk, households can buy other annuity products that offer a close substitute for indexed annuities - - variable rate annuities and annuities that rise at a predetermined level. In any event, the inflation-linked products are relatively new in some markets. And, again, consumers are not often aware of the more inventive ways that the certainty of annuity wealth can be traded off against smaller amounts of liquid assets more aggressively invested.

Are Today's Annuity Prices too Good

The hypotheses that address the second question -- are insurance companies offering annuity products with prices that are “too good to be true” or sustainable -- are more complex. Some argue that the results are implausible and there must be methodological problems. Indeed, because most countries do not have their own long term bond markets or mortality tables, this argument should not be dismissed. In some countries the regulators may not have the tools, or the markets the instruments, for a reasonably stable annuity market.

On the other hand, insurance is and always has been a spread business. Companies can offer annuity purchasers hedges against inflation and longevity, take that money (net of expenses) and invest in riskier portfolios. This intermediation is one of the virtues of insurance companies in the financial sector. Insurance companies also have an inherent hedge with respect to the longevity risk since they also sell life insurance. If annuitants live longer than expected it is likely that younger cohorts are also outliving expectations, and the life insurance business very much dominates the annuity business. In addition, insurance companies with a steady cash flow can adopt a buy-and-hold strategy with respect to bonds that allows them to be less vulnerable to interest rate risk.

James (2001) suggests that insurance companies reduce risk (compared to the total risk of numerous small investors) in a number of ways. These include (a) investment diversification in a large portfolio that includes foreign investment, (b) expert use of derivatives and hedging, (c) risk sharing across product lines, (d) better access to information and lower information costs, (e) continual cash flow that provides liquidity and lessens market timing risks.

In addition, the paper suggests a number of ways that insurance companies shift risk. They include (a) reinsurance (rarely used for the annuity business, however), (b) guaranty pools, (c) cross-subsidies across cohorts if demand is inelastic and competition is imperfect, (d) shareholder equity as a buffer, especially for unexpected events, and (e) bankruptcy queues that give annuity holders priority position. It should be noted, however, that some of these risk-shifting measures are potentially distortionary, unstable and not necessarily fair or transparent in the risk sharing.

It also should be noted that the work reviewed here comes from pre-March 2001 markets. The marked changes in interest rates and equity returns since then might yield a different story. One possible troublesome issue is whether companies were assuming equity returns that in retrospect were unrealistic, particularly in light of increasing life expectancies. Some reports of major

reinsurers being less inclined to underwrite annuity risk underscores the analytic uncertainties in estimating life expectancy.

VI. Policy Issues Regarding Annuity Markets

These studies pose many provocative issues for insurance regulators and policy-makers with respect to the voluntary annuity market. These issues may become more topical if the growing shift from public and employer-based defined benefit schemes continues and public schemes become smaller. Given the weak demand for annuities, this section explores on whether there is scope for mandatory participation in annuity schemes.

It is not obvious what the state should require in the way of mandatory annuities in a world in which public (state) defined benefit pensions are smaller and funded defined contribution pensions are larger. One answer to the question -- should individuals be required to purchase private annuities -- is no. Let individuals choose between annuities and programmed withdrawal. In the absence of any very minimum state pension scheme -- e.g., the UK contributory basic pension or noncontributory old age pension in New Zealand -- the state can provide a back-up minimum pension benefit guarantee. This has been the approach in Chile. The pension rules in Chile are quite complex with complicated incentives both for and against annuitisation (versus programmed withdrawal). The net result, however, is that those with low account balances receive a top-up subsidy financed by all taxpayers, which helps offset any redistribution from low to high income households in the annuity market.

Another answer is yes. Myopia does not end at retirement. If governments must compel individuals to accumulate retirement rights and/or savings, then governments must take care that individuals do not dissipate such savings prematurely. Some would argue that all forced savings should be annuitised; conversely, amounts that are not annuitised should be left to the realm of discretionary savings.

A more complicated answer is yes, but annuitisation should be required only up to “some” level. That is, once some basic level of income sufficiency has been satisfied, households should be allowed discretion in how they manage the remainder. Households differ greatly in how risk sharing takes place or can take place across generations in the extended family. Households also differ in their access to and preferences for other means of preserving assets during retirement e.g., housing and other durables, and in the timing of consumption choices.

It is beyond the scope of this paper to examine the difficult public policy trade-offs that policy makers and regulators face in dealing with to what degree and how to mandate private annuities. Countries have very different standards of paternalism and solidarity. In principle, most all might agree with the proposition that, after taking into account an underlying state public pension of some amount, all households must purchase private annuities up to “some” level. This is especially true if public policy has required individuals to participate in a mandatory funded retirement savings scheme.

By extension, this norm could be extended to apply to households that have acquired significant amounts of “tax-advantaged” savings in the context of voluntary occupational schemes and personal pension plans. Getting a consensus on what is that “some” level would be difficult.

In any such discussion, it is not obvious what is welfare enhancing. If private annuities are mandated with homogeneous annuitisation rates, cross subsidisation will occur from the short-lived who are often poor to the long-lived who are often richer individuals, and from men to women. This would replicate what occurs in most state public pensions and comports with commonly held norms about social risk sharing. However, state public pensions typically also have financing provisions and benefit formulas that redistribute from the lifetime well-off to those with lower lifetime incomes, hence normally offsetting the regressive effect of homogeneous annuitisation rates. Without compensating measures, therefore, a policy of mandatory private annuities might result in unintended transfers of retirement wealth from lower income males to higher income females.

There is also the danger that policy-makers will mandate annuities beyond a level that comports with the solidarity and risk aversion preferences of large segments of the population. Were many households to view the annuity mandate as a tax for which they are not receiving commensurate value, then wide scale evasion and gaming will likely take place absent extremely effective enforcement. Of course, any amount of solidarity and risk sharing requires some level of enforcement. But to the extent that mandatory annuity regimes could be designed to accommodate at least some clearly held differences about risk and solidarity the result is probably more welfare enhancing and requires less resources to enforce.¹¹

As in most matters of public policy, however, past expectations and practices profoundly influence views about what should be. This can be seen in the case of Poland and Hungary. Funded “second pillars” are now being brought on line to substitute for part of now downsized public pay-as-you-go “first pillars.” But because the replacement rate targets in the “old regime” state public pension

schemes were relatively high, there is policy imperative to replicate those outcomes through a combination of the “new regime” first and second pillars. This has led to the proposition that individuals should be required to buy annuities from their second pillar accumulations that look like a first pillar annuity as much as possible.

On the other hand, Australia and many Asian countries have the tradition of mandatory -- and tax encouraged -- retirement savings but with lump sum withdrawals. These moneys are used to purchase physical assets such as housing and other durable goods that provide non-monetary income. In addition, as noted earlier, informal understandings within the household may substitute for formal annuity markets. If households are forced to annuitise more than they want, they can increase their debit to offset the unwanted income. In some instances, this might lead to households taking on more risk. In countries where both the annuity income and the borrowing are tax-advantaged (e.g., the United States), the result can be more tax-arbitrage.

Given the magnitude of the regulatory challenge and the degree of government intervention that may be necessary to make the market, the question naturally arises if some state sanctioned single annuity pool and instrumentality would not be a better alternative. Most often this alternative is posited as a way to hold down transaction costs, such as sales agent fees, especially if the underlying instruments are entirely or mostly government securities anyway.

This alternative raises its own issues: would the single entity be used to invest in designated enterprises or activities according to the political preferences of the moment? What would be lost to the country by not having a large number of insurance companies that underwrite the risk-reducing and risk-shifting techniques outlined earlier?

Yet another alternative is a world in which households were required to buy annuities but with allowed more flexible options within certain bounds. These would include annuities in which individuals were also allowed to participate in investment performance, e.g. variable rate annuities and survivor outcomes i.e. participating annuities along the lines offered by CREF in the United States. Households could then choose between “lower cost” annuities in which they shared in investment/inflation risk and longevity risk to some degree versus “higher cost” annuities in which exposure to those risks was minimal or non-existent.

This world demands, however, that policy-makers believe that consumers can handle such choices and a minimum number of credible insurance companies. It also demands regulators that can assess if premium costs are commensurate

with the risks being transferred or shared, and at least some government bonds being issued that allow larger amounts of risk transfer (or sharing) in the case of some products.

Yet another issue is the scope for purchase of mandatory deferred “Advanced Age” annuities. The principal public policy concern is that individuals or households remain too myopic at retirement and may outlive their assets if they live to some advanced age. This concern can be addressed by forcing households to set aside enough of their assets at retirement to buy a deferred annuity payable at some relatively advanced age -- for example, age 75 or 80 -- equal to some measure of a sufficient level of income. This measure would reintroduce into the public policy discussion the notion of “old age insurance” as a complement to the concept of forced retirement saving which now dominates most discussions. Because of survival probabilities, the cost of a deferred annuity at 75 is probably relatively modest -- based on Australian experience roughly on the order of 10 percent of an average earner’s retirement savings. This option would be most useful in countries that do not have large explicit pay-as-you-go pillars such as Chile, Australia, Hong-Kong.

In this context, one proposal would be to provide deferred “Advanced Age” annuity through the Pay-As-You-Go Pillar. Most countries that are mandating or encouraging defined contribution accumulations also retain a public pay-as-you-go pillar. This forced annuity is a form of retirement savings that can be combined with defined contribution savings in a number of ways. Each does not have to become payable at the same time. As an alternative to buying deferred annuities along the lines of the previous paragraph, individuals might be offered the option instead of delaying receipt of their pay-as-you-go pillar until some later date -- again some relatively advanced age such as 70. This would require adjustments be made to state pay-as-you-go systems so that they are actually neutral from the first age of eligibility, e.g. age 60-62 as is often the case, to age 70. Such changes in pay-as-you-go state schemes are desirable in any event.¹²

Pay-as-you-go pensions have many problems, but they do have one major virtue. They provide annuities with inter- and intra-cohort risk sharing that annuities from funded defined contribution arrangements cannot easily provide. It may be desirable or inevitable to reallocate back to each retiring cohort the consequences of known increases in life expectancy. But what about asset value volatility, interest rate volatility and unexpected gains in life expectancy post-retirement? How to deal with those uncertainties? Pay-as-you-go pensions reallocate these risks across cohorts in a way that classic funded annuities do not (with the exception of some large group annuities such as TIAA-CREF). This argues for concentrating the pay-as-you-go annuity in the

“old-old” years where the capacity to deal with volatility or unexpected gains in longevity are the most limited. In contrast, households might be allowed more flexible payout alternatives from their funded defined contribution accounts in their “young-old” years when they likely have greater options including part-time work to deal with market risks.

VII. Final remarks

Private annuities and related insurance products are likely to play a key role in the private pension systems of most OECD countries in the near future. However, many questions remain over their likely impact on retirement income, their regulation, and their attractiveness vis-à-vis other retirement income modalities, such as phased withdrawals.

Further research and policy discussion is vital to ensure that these concerns are met with effective regulations and oversight mechanisms. Adequate disclosure and transparent pricing mechanisms, for example, can go a long way towards permitting greater comparability between annuity products. Regulations, moreover, must be designed in the light of existing circumstances and must be responsive to structural changes in these. For example, regulations which require annuity pay-outs to be indexed to a measure of the standard of living are misguided unless asset portfolios can be built which adequately match these real liabilities.

Finally, governments should pay attention to the retirement income system as a whole, to ensure that workers are properly preparing themselves for old age, and that annuities provide a good complement to other sources of retirement income.

Notes

1. This recent money's worth work has been undertaken by two groups of analysts. One group consists principally of Jeffery Brown, Olivia Mitchell, James Poterba, David McCarthy, and Mark Warshawsky who have written several papers together in different combinations and with other collaborators. The second group consists of Estelle James working with Dimitri Vitas, Xue Song and other collaborators. In addition, David Blake and Michael Orzsag each have made recent contributions to the money's worth literature. Because the United Kingdom and the United States have the largest annuity markets and best data, most of the analyses have focused on those markets. However, the analyses are now extending to other developed and middle-income countries.
2. In the United States, so-called "cash-balance" plans have developed as another response to perceived problems with traditional defined benefit plans. Cash-balance plans represent a mid-point or "hybrid" solution between conventional defined benefit plans and most defined contribution arrangements. They have the form of individual accounts, but contributions "earn" a rate of return specified in the pension plan with the sponsoring firm absorbing the investment risk (hence, defined benefit). Depending on the annuity option chosen, all or some of the investment risk (and unexpected longevity gains post-retirement) is shifted from participants to the annuity-provider. But unlike in a conventional defined benefit plan, the annuity conversion factor is not determined until a participant reaches retirement, usually through a contract with an insurance company. Participants are also exposed to interest rate risk at the time of conversion.
3. In much the same manner, some countries are attempting to put a ceiling on their future pay-as-you-go liabilities by shifting the so-called "notional defined contribution" (or NDC) state pensions. Though the funding remains largely pay-as-you-go, these NDC schemes attempt to limit future contributions to a fixed percent of payroll. Necessarily, this means shifting back to individuals the consequences of increasing life expectancies.
4. In 1997, active participants in a defined contribution plan (about 48 million workers) were more than twice the number of those in defined benefit plans (about 22 million workers). Because of the legacy of large defined benefit plans, assets in defined benefit and defined contribution plans were nearly equal. Contributions, however, to defined contribution schemes of all types were 130 percent of contributions to defined benefit plans. Some of this disparity reflects good market returns and their effects on the funding rules in defined benefit plans. But it also reflects the significant growth in defined contribution plans as the only form of retirement savings provision in the

firm or as a companion to a defined benefit plan. Older data from the US (1993) indicates that roughly three-quarters of covered workers were covered by only one plan, and among those workers, twice as many reported being covered by a defined contribution than a defined benefit plan. In the remaining quarter of the covered workers, 60 percent reported that they considered the defined contribution plan as the primary plan. In the United States, most of the growth in defined contribution plans has been among the type in which individuals have to affirmatively make portfolio choices and, quite often, also have to make contributions from their own earnings in order to elicit a matching employer contribution.

5 Friedman, B. and M. Warshawsky (1990), “The Cost of Annuities: Implications for Saving Behaviour and Bequests”, *Quarterly Journal of Economics* 105 (1, February 1990).

6 In Chile, which has a mandatory defined contribution pension fund system similar to that of Poland and Hungary (though the latter two have retained a much larger public pillar) workers may choose at retirement between annuities, a programmed withdrawal with a deferred annuity, and programmed withdrawals exclusively. In 1996, according to data provided by the pension fund regulator, 64 percent of all retirees in the system chose annuities, 3 percent chose the deferred annuity option, and the rest chose programmed withdrawal.

7 Outside the OECD, Chile has a well developed indexed bond market. The system of inflation indexation introduced in the mid 70s has led to over 80 percent of all fixed income assets being linked to a measure of inflation (the so-called *Unidad de Fomento*). All annuities in Chile are denominated in real terms.

8 Wilcox, D., The introduction of Indexed Government debt in the United States, *Journal of Economic Perspectives*, 1998, vol. 12, No. 1.

9 See, for instance, Mitchell, O. (2001), “Developments in Decumulation: The Role of Annuity Products in Financing Retirement”, NBER 8567.

10 See, for example, James, E. (2001), “Annuities Markets Around the World: Money’s Worth and Risk Intermediation”, www.estellejames.com.

11. An example from Chile illustrates this point, though it relates more to lump sum preferences. As noted earlier, individuals must choose between either buying an annuity or withdrawing money according to a schedule that is enforced at the pension fund level. Lump sums, however, are limited, and

permissible withdrawal levels vary from year to year in accord with market results (index-linked “annuities” without longevity protection). In Chile there’s been a recent trend in favour of annuities, but this has less to do with greater risk aversion in the wake of greater asset volatility than exploitation of complex rules. By using these rules, the sales agent and the annuity purchaser “share” the sale agent’s commission and the individual gets a back-door lump sum.

^{12.} See, for example, the forthcoming OECD publication “Policies for an Ageing Society: Recent Measures and Areas for Further Reform”.

