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PRIVATE ANNUITIES IN OECD COUNTRIES

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PRIVATE ANNUITIES IN OECD COUNTRIES

This note sets out some issues regarding the development of the market for private annuities. Annuities are financial contracts that provide a monthly or annual sum to a person as long as she lives (life annuities) or for a certain predetermined period (term annuities). They are sold by insurance companies in exchange for a one-time premium payment or flow of premium payments. The date at which payouts begin can be different from, and in some cases many years after, the premium payment date(s). Annuity payments can also be made with reference to more than one life. In these cases, payments continue for as long as two or more persons live (e.g. husband and wife). Annuities are therefore normally used to provide a regular income after retirement and are financed with current savings or with funds from the accumulated balance of a defined contribution pension plan.

While annuities are not very extended in most OECD countries, they are expected to become increasingly important, largely as a result of the promotion of defined contribution occupational and personal pension plans, increasing life expectancy, and better tax treatment. Currently, annuities are most developed in the United Kingdom. In this country, defined contribution personal plans can substitute for public pensions, while annuitisation of the accumulated balance before age 75 is compulsory. In Australia, where a mandatory system has been in existence for nearly a decade, the traditional apathy toward annuities may be gradually reversed as the government makes these products more tax favoured. Annuities are also to play a critical role in the new mandatory defined contribution pension plans of Hungary, Mexico, and Poland.

Annuities and alternative forms of retirement income

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.

The level of risk that an individual is willing to bear in old age, and hence the decision to purchase annuities, also depends on the extent to which other sources of retirement income are subject to risk. In most OECD countries, defined benefit pensions (from both public and occupational pension plans) are still the main institutional source of retirement income. Individuals that have access to these schemes and obtain a relatively high level of earnings replacement thereby may be less attracted by the prospects of a stable and regular income offered by an annuity purchased with their additional savings.

On the other hand, the guaranteed income from both defined benefit plans and annuities may not always be clearly "defined", since, respectively, governments and plan sponsors may renege their promises, while

insurance companies may go bankrupt[1]. To the extent that there are effective safeguards to protect affiliates' benefits, such additional risks may be eliminated. Hence, regulatory policies that promote the solvency of pension funds and insurance companies can have a critical impact on the optimal choice of retirement modality.

Another important factor which determines the choice of retirement instrument is cost. Annuities are costly partly because of the insurance they offer against longevity and investment risk, the presence of adverse selection in insurance markets, and the operational expenses of design, distribution and administration of these products. While administrative costs are largely determined by competitive conditions in the industry, the insurance cost is determined by developments in financial prices and life expectancy. For example, annuities are likely to be most attractive when bond yields are high, since insurance companies use these instruments to match the liabilities created by these contracts.

Hence, the timing of the purchase of an annuity has an impact on the adequacy of retirement income. As a result of volatility in interest rates individuals are exposed to wide variations in the price of annuities at the time of retirement. The simplest strategy to reduce this risk is a planned programme of phased annuity purchases in the period leading up to retirement using the principle of dollar cost averaging (a constant rate of purchase). A more sophisticated form of pre-retirement planning is protected annuity funds which employ derivative instruments.

Finally, tax policy can clearly tilt the attractiveness of different retirement income modalities. To the extent that annuities are offered a more advantageous tax treatment than phased withdrawals, it is to be expected that they will be more popular.

Regulation of retirement income provision in OECD countries

The choice of retirement income modality in defined contribution pension plans is a complicated task. In general, however, certain modalities are not recommended. Limits on lump sum withdrawals and partial mandatory annuitisation, for example, can be justified by the same principles used for requiring mandatory savings into pension schemes, namely individual myopia over old age risks.

Arguments for mandatory annuitisation of a minimum portion of the accumulated balance are based on the presence of a moral hazard problem. This may arise when governments are expected to or, in practice, provide some form of benefit guarantee to privately mandated savings in defined contribution plans. Individuals may then expect to be bailed out by the government and choose not to buy an annuity that would guarantee them a level of income above that guaranteed by the government. In these cases, there might be an argument for ensuring that individuals buy a sufficiently large annuity which will give them access to the minimum income level.

Moral hazard may be more acute problem in those OECD countries that currently have mandated savings into defined contribution plans, such as Australia, Hungary, Mexico, and Poland, since the fiduciary responsibility of the government is greater than in voluntary systems. Interestingly, only Hungary requires partial annuitisation of the accumulated balance at retirement (see Table 1). Hungary is also the only country out of this four which has an explicit, government-backed, replacement rate guarantee.

[1] Annuities expose insurance companies to mismatching risk of assets and liabilities, which can threaten the solvency of the company unless proper asset liability management is in place. In the United Kingdom one large insurance companies faces insolvency as a result of guarantees offered in annuity contracts that were not properly assessed.

In the United Kingdom, where countries can opt out from the earnings-related pension system (SERPS), concerns over individual myopia and the impact of minimum pension guarantees have also arisen and may justify the current requirement to purchase mandatory annuities. More generally, mandatory annuitisation has been supported as a solution to other forms of market failure, such as adverse selection, which are discussed below.

Table 1: Regulation of retirement income from DC plans in selected OECD countries

	Occupational pension plans	*Personal pension plans*
Australia	Choice between lump-sum, term or life annuity (no limits; however lump-sum benefits over $A 506,000 and annuity benefits over $A 1,012,000 are subject to higher taxation).	Choice between lump-sum, term or life annuity (no limits; however lump-sum benefits over $A 506,000 and annuity benefits over $A 1,012,000 are subject to higher taxation).).
Austria	Mandatory annuitisation of full accumulated balance at retirement	No regulation, but more favourable tax treatment for life annuities.
Belgium	Choice between lump-sum, term or life annuity (no limits).	No specific regulations.
Canada	No specific regulation. Benefits usually provided in the form of an annuity, though lump-sums possible.	Registered Retirement Savings Plans must be converted to a registered retirement income fund (RRIF) or an annuity by the end of the year in which the participant turns 69 years of age. A RRIF permits gradual withdrawals subject to an annual minimum (to ensure tax advantages) of between 5 to 20% (rate increases with age).
Czech Republic	Occupational plans are not regulated.	Choice between lump-sum, term or life annuity (no limits).
Denmark	Choice between lump-sum, term or life annuity. Premiums for lump-sum schemes can only be tax deductible within a maximum limit. Annuitisation or gradual drawdown over a period of ten years required for full tax deductibility of premiums to term or life annuity schemes. If the premiums of term or life annuities are lump-sum premiums, the tax deductibility can be restricted.	Annuitisation or gradual drawdown over a period of ten years required for full tax deductibility.
Finland	Lump-sum payments possible but subject to tax penalties. Benefits typically paid as fixed-term or life annuities.	Lump-sum payments possible but subject to tax penalties. Benefits typically paid as fixed-term or life annuities.
France	No specific regulations.	Not available.
Germany	No specific regulations.	Not available.
Greece	No specific regulations.	Not available.
Hungary	For individuals that have contributed to the mandatory individual account system (the second pillar) for more than 15 years, annuity purchase is mandatory for up to twice the minimum pension. The extra savings can be retrieved as a lump-sum or converted into an annuity. For individuals with a shorter contribution period, annuitisation is voluntary.	Same for mandatory individual accounts. There is at present no regulation for voluntary individual accounts
Iceland	Mandatory annuitisation of full accumulated balance at retirement	Mandatory annuitisation of full accumulated balance at retirement.
Ireland	Mandatory purchase up to a certain limit for full accumulated balance at retirement. Rest can be withdrawn as a lump-sum	Not available.
Italy	Mandatory annuitisation of at least 50% of the accumulated balance.	Mandatory annuitisation of at least 50% of the accumulated balance.

Japan	No specific regulations. A bill to introduce a defined contribution pension scheme has been submitted to the Diet.	Not available. A bill to introduce a defined contribution pension scheme has been submitted to the Diet.
Korea	No defined contribution.	Mandatory annuitisation over a period of five years. Lump-sum payment possible but subject to tax penalties.
Luxembourg	Choice between lump-sum, term or life annuity (no limits).	Choice between lump-sum, term or life annuity (no limits).
Mexico	No specific regulations.	Choice between term or life annuity (no limits).
Netherlands	Mandatory anuitisation of full accumulated balance at retirement.	Mandatory anuitisation of full accumulated balance at retirement.
New Zealand	Choice between lump-sum, term or life annuity (no limits).	Choice between lump-sum, term or life annuity (no limits).
Norway	Mandatory anuitisation of full accumulated balance at retirement. (If term annuity, duration must be at least 10 years.)	Mandatory anuitisation of full accumulated balance at retirement. (If term annuity, duration must be at least 10 years.)
Poland	Lump-sum. Instalments only if allowed by the occupational plan statutes and only as an option to the lump-sum form.	No specific regulations for voluntary plans. For the individual accounts component of the social security system, there is mandatory annuitisation at retirement, with possible guaranteed minimum payment period.
Portugal	Mandatory annuitisation of a minimum of 2/3 of the full accumulated balance at retirement. Rest can be withdrawn as a lump-sum.	Mandatory annuitisation of a minimum of 2/3 of the full accumulated balance at retirement. Rest can be withdrawn as a lump-sum.
Slovak Republic	Choice between lump-sum, term or life annuity (no limits).	Choice between lump-sum, term or life annuity (no limits).
Spain	Choice between lump-sum, term or life annuity (no limits).	Choice between lump-sum, term or life annuity (no limits).
Sweden	Mandatory anuitisation of full accumulated balance at retirement.	Mandatory anuitisation of full accumulated balance at retirement for new compulsory individual accounts system.
Switzerland	Mandatory anuitisation of full accumulated balance at retirement.	Choice between lump-sum, term or life annuity (no limits).
Turkey	Occupational plans are not regulated.	Not available.
United Kingdom	The portion funded by tax rebates has to be annuitised in full at some point between age 60 and age 75. Subject to this restriction, up to 25 percent of the fund can generally be taken as a tax-free lump sum. The balance must be annuitised on retirement which must be between age 50 and age 75.	The portion funded by tax rebates must be fully annuitised between age 60 and age 75. Subject to this restriction, up to 25 percent of the fund can generally be taken as a tax-free lump sum. The balance must be annuitised. The annuity may be taken at any time between age 50 and 75 and can be taken before retirement.
United States	Choice between lump-sum, term or life annuity (no limits).	Choice between lump-sum, term or life annuity (no limits).

Source: OECD

The design of private annuities

The degree of protection offered by annuity contracts against longevity and investment risk depends on the type of annuity bought. Only so-called fixed annuities shield the annuitant against both longevity and investment risk. These annuities can offer either a constant payout over the life of the annuitant (level annuities) or a rising / decreasing payout (escalating annuities). The payout can be set in either nominal or real terms (indexed annuities). Variable (or with-profit) annuities only protect against longevity risk. They are calculated by adjusting the annual payment by the ratio of the actual return on a portfolio to an "assumed interest rate" (AIR), set in the annuity contract. Hence, the actual monetary value of a variable annuity varies according to the difference between the actual return earned by the portfolio and the AIR[2].

A further sub-division of fixed annuities can be made into those that provide protection against inflation (real annuities) and those that do not (nominal annuities). To the extent that individuals demand insurance against investment risk, they may also require protection against the loss of earning power of their payout income. Nominal annuities offer no protection against inflation, while variable annuities only do so as far as the return to private sector securities, such as corporate stocks, are positively correlated with inflation. The empirical evidence, however, is not very supportive of such a relationship[3], and real annuities appear to be the only effective protection against inflation.

Insurance companies, however, cannot offer inflation indexed annuities, whose payouts are linked to the CPI or another measure of prices, unless appropriate financial products are available. Hence, governments have a role to ensure that indexed government bond markets exist and can supply insurance companies with the necessary instruments to protect their portfolios against inflation risk. Alternatively, insurance companies could invest in foreign indexed bonds and hedge the resulting currency risk.

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 compulsory annuitisation of personal pension plans is the main factor 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, 1990[4]). 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.

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2 Yet another type are so-called CREF annuities (named after College Retirement Equities Fund). These pass along to the pensioner both investment and demographic risk, so they are truly "defined contribution" in character.

3 Evidence against this relationship was provided for the US by Bodie, Z. (1976), "Common Stocks as a Hedge against Inflation", Journal of Finance, Vol. 31, and, more recently, by Brown, J.R., Mitchell O.S., and Poterba J.M. (1999), "The Role of Real Annuities and Indexed Bonds in an Individual Accounts Retirement Program", NBER Working Paper 7005, March 1999. Brown et al (1999) also confirm that that even if there is no positive correlation between stocks and inflation, the equity premium is high enough so that stocks offer good protection against inflation over the long term.

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

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 markets[5].
- 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 Iceland[6], while other countries like Canada, Australia, Mexico, and the United States have recently began to issue inflation protected government securities. Indexed bonds promising a fixed real return to investors have been available in Britain for nearly two decades. The availability of such bonds has made it possible for U.K. insurers to offer real annuity products by hedging inflation risk.

However, the extent of hedging depends on the availability of sufficient liquid bonds of long enough maturity. In the United States, for example, such bonds have only been available for two years. 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

[5] 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.

[6] 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.

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 denominate 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.

The cost of annuities

Annuities are valuable financial instruments because of the security they offer over the full period of retirement. Insurance companies charge a premium for offering this form of protection. However, the actual price of an annuity also depends on other factors that are independent of the uncertainty over an individual's physical characteristics. In fact, the premium charged by insurance companies for annuities can be decomposed into three main types of charges:

- The cost of insuring against expected longevity risk.
- The cost of insuring against maturity mismatch between the assets and liabilities related to a specific annuity.
- The operational cost of record-keeping, marketing, distribution, fund management, and benefit payment.
- Because life annuity payments run till a person is deceased, insurance is provided against the risk that the person will pass away sooner than may be expected. Insurance companies use mortality tables to estimate this mortality risk and hence charge an appropriate premium. However there are two main obstacles. First, individuals may have some private information about their mortality risk that may not be accessible to the insurance company. If individuals know more about their probability of survival after a certain age than insurance companies, then the latter will expect that only individuals will lower mortality risk will purchase annuities. This problem, known as adverse selection, leads to an additional charge to cover the extra longevity risk of the selected sample. A second problem arises because the future development of mortality rates is uncertain. In general, insurance companies need to cover the cost of potential mortality improvements by the cohort purchasing annuities.
- The second type of insurance contained in an annuity is that of matching the liability of a regular benefit with a portfolio of existing financial assets. In an ideal world, with complete capital markets, insurance companies would be able to buy credit risk free fixed-income government bonds[7] of the same expected term as the annuity and then make the annuity payments from the coupon payments received on the bonds. However, instruments

[7] Government bonds are normally the safest of all financial assets, and are assumed to have no credit risk. Government bond defaults, however, have happened in some countries.

of sufficiently long maturities may not always exist, which exposes insurance companies to reinvestment risk. An instance of maturity mismatching has already been highlighted above for the case of real annuities. If inflation-indexed bonds of sufficiently long maturity do not exist, then insurance companies cannot offer real annuities unless a guarantoor puts up substantial equity capital, which in turn can make real annuities very expensive. Mismatching risk and, hence, the cost of annuities also tend to be higher in the case of deferred annuities since the time horizon for payouts is longer than in immediate annuities.

- Insurance companies, however, can use some of their other policies sold such as whole life insurance instruments to hedge some of the mismatching risk. Life insurance policies in fact have a payout profile that is precisely the inverse of annuities, though their term may vary according to the expected mortality rates of persons who buy life insurance policies and those who buy annuities. Life insurance policies promise a lump-sum after death, while annuity payments stop after death. Hence the investment risk of the two policies can to some extent be netted out.
- The final component of the price of an annuity represents the cost of selling and administering an annuity contract. These operational costs are similar to those during the accumulation phase of a pension plan, namely record keeping, reporting and compliance, marketing, distribution and reserve management. In general, however, these costs are not as high as in the accumulation phase. This cost differential appears to arise from the basic nature of the annuity contract, which is an irrevocable, long term contract. In contrast, during the accumulation phase, individuals can frequently switch between pension fund managers, which can raise administrative costs significantly. Other factors that may lead to lower costs are the fact that once sold, annuities are relatively easy to administer, while active managed pension fund portfolios involve hefty expenses.

Measures of the relative cost of annuities: Money's Worth Calculations

An estimate of the total value of the three costs mentioned above can be calculated by comparing the expected present discounted value of payouts for the average annuity with the premium cost of the annuity. This gives a measure of the so-called money's worth of the annuity (MWR). As a result of the insurance offered against longevity and investment risk, and operational expenses, it is to be expected that the MWR will be lower than 1. While the value of the MWR per se says nothing about the efficiency of the annuities market it can be useful when comparing across types of annuities and countries.

MWR have been used in particular to determine the extent to which annuities markets suffer from adverse selection. This is done by comparing the MWR calculated using population mortality tables with MWR calculated using annuitants' mortality tables. In general, the former are higher than the latter, which indicates that workers buying annuities have higher longevity risk (they are likely to live longer) than the average person in the population.

Adverse selection, however, is not always a sign of market inefficiency. It is possible that self-selection might be taking place by workers choosing particular annuities that are particular well suited for individuals that have low mortality risk, such as escalated annuities. Insurance companies may also use certain "signals" to classify workers according to their mortality risk, such as their level of income.

MWR calculations, moreover, are methodologically cumbersome, especially when adequate mortality tables and long term interest rates do not exist. As shown by James and Vittas (2001)[8], even countries where annuities markets are growing fast, such as Australia, are still using UK mortality tables and have few fixed income securities with a maturity greater than 15 years.

Preliminary evidence, however, seems to coincide in that MWR are between 80-90 percent in most countries surveyed, which include the United States, the United Kingdom, Canada, Israel, Chile, Australia, and Singapore. How much of this cost is due to adverse selection can be estimated by comparing MWR which use annuitants and those that use population mortality tables. Here the evidence seems to suggest a gap of about 10 percent or about half of the total cost of an annuity (see James and Vittas, 2001). In the specific case of the United Kingdom, Murthi et al. (2001)[9] suggest a gap of between one half and two thirds. These results, however, should be treated cautiously as a result of the methodological issues discussed above.

Recent research by Brown et al (1999)[10] has also shown that UK real annuities cost approximately 5 percent more than nominal level annuities, while in the US the gap between the two is about 15 percent. This difference may be caused by any of the three cost factors outlined above, but only two appear to be relevant. First, it is possible that adverse selection is more of a problem in the market for real annuities, since it is more likely that individuals who expect to live longer will demand such products. Second, it is possible that maturity matching in real terms is less complete than in nominal terms. This may be the consequence, for example, of a shallower and narrower indexed bond market.

Policies to reduce the cost of annuities

To the extent that there are market failures in the market for annuities, there might be a role for public policy. Policies to reduce the cost of annuities, however, need to be targeted to the specific area where the market failure arises, be it in the insurance of longevity or investment risks, in the presence of adverse selection, or in the degree of competition in the provision of annuities. A failed diagnosis could in fact lead to counterproductive forms of government intervention.

The portion of the cost of annuity arising from adverse selection, for example, is not always due to asymmetric information problems, as was discussed above. However, it is only to the extent that the high cost of annuities is caused by asymmetric information that individuals may benefit from mandatory purchase of annuities. Moreover, there are other ways in which the problems caused by asymmetric information can be mitigated, such as by introducing deferred and group annuities. Deferred annuities purchased before retirement can reduce adverse selection because individuals tend to have less private information about their mortality prospects at retirement when they are young. Group annuities, meanwhile, are more likely to be priced according to population mortality tables.

There are also a number of ways in which governments could help insurance companies hedge the risk associated with underestimating mortality improvements. The state could issue "survivor" bonds. These

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[8] James, E. and Vittas, D. (2001), "Annuities Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?", this volume.

[9] Murthi, M., Orszag, J.M., Orszag, P.R. (2001), "The Value for Money of Annuities in the UK: Theory, Experience, and Policy", this volume.

[10] Brown, J.R., Mitchell O.S., and Poterba J.M. (1999), "The Role of Real Annuities and Indexed Bonds in an Individual Accounts Retirement Program", NBER Working Paper 7005, March 1999.

are bonds whose future coupon payments depend on the percentage of the population of retirement age on the issue date of each bond who are still alive on the date of each future coupon payment[11].

Costs arising from inaccurate matching of duration of assets and liabilities can be mitigated by issuing government bonds of long maturity and ensuring macroeconomic stability. A stable macroeconomic environment in fact is a precondition for encouraging the development of a long-term bond market. However, as it was argued earlier, the extent to which insurance companies require long term investment instruments cannot be easily calculated because the sale of other products, such as whole life insurance polices can significantly reduce the exposure of insurance companies to reinvestment risk.

Policies to reduce costs arising from operational expenses are probably the most controversial. While the purely administrative costs of annuities do not appear to be high when compared to those of pension fund managers in the accumulation phase, it is possible that the complexity of annuity products might preclude price competition and allow much product differentiation. The high dispersity in premium rates across insurance companies for similar annuity policies has sometimes been used as evidence for this, but more decisive evidence is yet to be found.

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. It is also not well understood whether annuities offer good vale for money, which raises some concern over consumer choices.

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.

[11] Blake, D., Burrows, W., and J. M. Orszag (2000), Pension Research Council Working Paper 2000-12.