

Designing the Payout Phase of Funded Pension Pillars in Central and Eastern European Countries

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April 2010



Abstract

Over the past decade or so, most Central and Eastern European countries have reformed their pension systems, significantly downsizing their public pillars and creating private pillars based on capitalization accounts. Early policy attention was focused on the accumulation phase but several countries are now reaching the stage where they need to address the design of the payout phase.

This paper reviews the complex policy issues that will confront policymakers in this effort and summarizes recent plans and developments in four countries (Poland, Hungary, Estonia, and Lithuania). The paper concludes by highlighting a number of options that merit detailed consideration.

This paper—a product of the Private and Financial Sector Department and Central Europe and the Baltics Country Department of the Europe and Central Asia Region—is part of a larger effort to provide policy guidance on regulatory and market design, in establishing pension payout mechanisms and annuity markets after the investment accumulation phase, in countries with mandatory defined contribution privately funded pension schemes. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at dvittas@worldbank.org, hрудolph@worldbank.org and jpollner@worldbank.org.

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Executive Summary

Most Central and Eastern European (CEE) countries have reformed their pension systems in the past decade. The reforms involved a significant restructuring and downsizing of the public pillar and the creation of a private pillar based on individual capitalization accounts. Early policy attention was focused on the accumulation phase to ensure the stable and efficient functioning of the new system.

Several countries are now reaching the stage where they need to address the design of the payout phase. This paper first reviews the main policy issues that will confront policymakers in designing the payout phase. It then summarizes the current plans in four countries that appear to be more advanced in their preparatory work (Poland, Hungary, Estonia and Lithuania). The paper concludes by highlighting a number of options that merit detailed consideration.

Key Policy Questions: The first half of the paper focuses on several key policy questions. These include: the advisability of imposing restrictions on payout options; the offer of constrained choice from a specified menu of retirement products; the use of joint life annuities and guaranteed periods of payment; the use of default options; the centralized or decentralized provision of retirement products; the regulation of marketing, pricing and solvency policies; and the offer of government guarantees.

Restrictions on payout options: A liberal approach with no restrictions on payout options is not consistent with a mandatory pension pillar that is predicated on the inability of workers to make adequate provision for their retirement needs. Some restrictions on lump sum withdrawals are therefore advisable.

Pensioners face several risks that often pull in opposite directions. For example, purchasing life annuities protects against longevity risk but eliminates the possibility of bequests, while investing in long-term assets addresses the investment risk but exposes their holders to liquidity risk. Policymakers should target an adequate level of annuitization but should be wary of causing excessive annuitization.

A pragmatic approach is to adopt an integrated threshold replacement rate from the compulsory public and private pillars and mandate some form of annuitization in the second pillar up to the level that reaches the integrated threshold rate. An integrated threshold of between 50 and 70 percent of the average real earnings (i.e., adjusted for inflation) over the last 10 years of employment is eminently sensible. Under this approach, unrestricted lump sum withdrawals are not permitted but, once the threshold replacement rate is attained, any excess balances can be withdrawn.

Product shortcomings and constrained choice: All retirement products have their advantages and strong points but they also suffer from major shortcomings. Fixed nominal annuities do not protect against inflation. Fixed real annuities require access to long-duration inflation-indexed securities, issued by both the public and private sectors, otherwise they are overly expensive. Variable annuities are exposed to investment risk

and require a very high level of transparency and integrity on the part of providers. Deferred annuities are difficult to price. Phased withdrawals and term annuities do not protect against longevity risk. Self annuitization requires considerable financial expertise and is very difficult to manage in advanced old age.

Mandating a single retirement product for all retirees avoids market fragmentation and self selection and has the advantage of simplicity. However, it is not optimal because it disregards the significant shortcomings of all types of retirement products and forces all retiring workers to use the same product despite potentially large differences in risk preferences, longevity and economic circumstances.

Taking into account the merits and drawbacks of different types of retirement products and the varying preferences and circumstances of retiring workers, policymakers should allow constrained choice from a specified menu of retirement products to be offered. This would vary across countries but in principle it should favor a combination of payout options, covering different products at a particular point in time as well as different payout options over time.

Joint life annuities and guaranteed periods of payment: The use of joint life annuities and guaranteed periods of payment deserve public policy support. These products address the bequest motive and the fear of capital loss in case of early death. They also help overcome the problems caused by impaired health and adverse selection. In addition, joint life annuities mitigate the distorting effects of unisex life tables, the use of which is compulsory in European Union countries.

Annuities with guaranteed periods of payment are very popular when they are offered but they do not need to be mandated. However, the use of joint life annuities should ideally be imposed on both working spouses and the reversion rate, the pension of the surviving spouse, should not be lower than 60 percent of the original pension.

Financial literacy and default options: A constrained choice of retirement products presents a major challenge to retiring workers with limited financial expertise. To address this challenge, the authorities should prepare detailed pamphlets and other guidance material that explain, in detail, the characteristics of different products and should undertake regular programs to expand financial literacy. They should also compile and disseminate comprehensive data on the prospects of different retirement products and the performance of different providers.

The authorities also need to specify a default option that would apply to all retiring workers who are unable or unwilling to make a timely decision. They should specify the product and provider that will be used in the default option. This will reflect local conditions and preferences and may require the use of an auction mechanism for identifying the default provider.

Centralized or decentralized structures: Centralized provision of account administration, benefit payment and risk pooling benefits from a larger base for risk

pooling, economies of scale and the avoidance of heavy marketing costs. Centralized provision of these services may be combined with decentralized asset management.

Countries that favor a decentralized competitive market structure need to monitor trends toward growing market consolidation closely. They need to ensure that profit margins are not excessive and the benefits of greater competition and innovation are not eroded by increasingly oligopolistic and wasteful marketing practices.

Marketing and pricing regulation: Marketing and pricing policy issues vary between fixed and variable annuities. Adopting a centralized electronic quotation system to lower search costs and to improve the pricing and marketing of fixed nominal and real annuities as well as escalating annuities is a high priority. For variable annuities, the creation of a central register is of major importance. Extensive comparative data on profit-sharing policies, levels of operating costs, levels of commission fees and consistency and soundness of investment policies should be compiled. Data collection needs to be more than mere reporting of past performance.

Risk management and prudential regulation: The regulation of risk management needs to focus on the maintenance of adequate levels of technical reserves and risk capital. It should cover asset and liability management, appropriate valuation rules, the conduct of well-designed stress tests and the management of longevity risk.

In principle, 'fair value' accounting and market-based maturity-dependent discount rates should be used. However, to avoid misleading market valuations, the use of book values should be allowed when financial markets are not sufficiently liquid. In such cases, unmatched liabilities of individual institutions should be subject to more onerous technical and capital reserves.

Effective management of the longevity risk in fixed nominal and real annuities as well as escalating annuities requires access to long-duration assets. For the more uncertain tail end of the age distribution, annuity providers should be encouraged to resort to global reinsurance. This will require removal of any asset localization requirements.

Government guarantees: The introduction of government guarantee schemes covering all types of retirement products merits serious consideration. The government guarantees should cover benefit payments and could emulate the practice evolving in deposit insurance schemes, including upper limits on the amounts insured and a reasonable amount of coinsurance by pensioners in order to minimize the possible loss of market discipline at the point of purchase. The potential cost of government guarantees should be estimated and such estimates should be used to determine risk-based premiums on annuity providers.

The high volatility of financial markets, which was recently underscored by the 2008 global crisis, highlights the need for a safety net to cover accumulated balances at the point of retirement. The offer of a lifetime government guarantee that retirement savings will earn a specified minimum real rate of return deserves special study. Restrictive

conditions on asset allocation policies, strongly favoring lifecycle strategies, should be adopted in order to contain moral hazard and prevent gaming of the guarantee schemes by retiring workers.

Country plans: The four countries (Poland, Hungary, Estonia and Lithuania) have undertaken considerable preparatory work but so far only Estonia has enacted a new law on the payout phase. In Poland and Hungary, the national Parliaments passed new acts but the Presidents of the respective countries have not signed them into law. In the case of Poland, this was based on concerns about the lack of adequate inflation protection, while in the case of Hungary it reflected questions about the constitutionality of a provision that compelled pension funds that had been set up as mutual benefit societies to convert into joint-stock companies, and the limited options given to pensioners for receiving retirement income. However, all four countries have advanced plans.

Despite the presence of reasonable public pensions, the plans in all four countries do not permit lump sum distributions and mandate full annuitization of accumulated balances, except in the case of very low balances or balances that exceed specified levels. However, no attempt has been made in any of the countries to define an integrated threshold replacement rate.

The general disallowance of lump sum withdrawals has been combined with the offer of a restricted menu of retirement products. In three of the four countries (Poland, Hungary and Estonia) this includes fixed and escalating nominal annuities but with the possibility of sharing in any excess profits on the investment portfolio. These are very similar to variable ‘guarantee and bonus’ annuities. Lithuania’s proposal mandates the use of life annuities in the form of fixed or escalating nominal annuities with or without guaranteed periods of payment but without a profit sharing rule. Hungary is the only one of the four countries that includes the offer of inflation-protected annuities. Estonia is the only one that includes the right to switch providers.

Poland and Hungary do not authorize the use of annuities with guaranteed periods of payment, while none of the countries mandates the use of joint life annuities, despite the compulsory use of unisex mortality tables. Poland proposes a compensating mechanism for providers that have a disproportionate number of high-risk (i.e., long-living female) annuitants.

Three of the four countries do not specify a default option that could be used for workers who lack the financial expertise to make a timely decision. Hungary uses fixed real annuities as the default product and names the centralized public agency as the default provider. Specifying a default option would allow the offer of a wider, though still constrained, choice of retirement products. This would avoid imposing products on retiring workers that do not take account of differences in risk preferences and financial circumstances and could thus be sub-optimal.

Probably because of the bad experience with state-owned institutions during the communist era, policymakers in three of the four countries have rejected the centralized

solution. However, this legacy should not obscure the advantages of centralized structures for handling the various pension payment risks. Hungary includes the offer of fixed real annuities by a public agency.

The creation of decentralized competitive markets presents a major challenge to develop a robust and effective system of regulation and supervision. This challenge is magnified by the decision to mandate the use of fixed nominal annuities with a profit sharing rule. Granting annuitants the right to switch provider, which is allowed in Estonia, is bound to complicate further the regulatory and supervisory challenge.

The four countries require the use of quotations through centralized public agencies. Poland and Hungary specify rules for the calculation of initial annuity payments, while Estonia allows providers to set their own terms.

Hungary, Estonia and Lithuania propose the use of market rates of interest for the calculation of reserves for guaranteed benefits but Poland proposes the use of a zero rate of interest for this purpose. This approach has serious adverse implications for asset allocation strategies and benefit levels.

The regulation of profit-sharing policies is also very different. Poland specifies a minimum profit participation rate of 90 percent of annual profits, while Hungary sets minimum distributions at 95 percent of net annual profits, after deducting operating costs and any transfers to reserves required to cover increasing longevity. Estonia follows a more liberal approach, requiring a minimum profit participation rate of 50 percent.

The four countries will follow EU practice on both solvency rules and government guarantees. Hungary and Poland propose a 100 percent guarantee of benefit payments without limits, Estonia provides 100 percent guarantees up to a basic level of benefits and 90 percent for amounts above these levels. Lithuania proposes 100 percent guarantees up to a basic level and 75 percent for amounts above these levels with a cap.

Policy issues for detailed consideration: Several issues meriting further detailed consideration have been identified. These include:

- The adoption of an integrated threshold replacement rate for benefits from the compulsory public and private pillars.
- The offer of constrained choice from a number of retirement products, including fixed nominal and real annuities, escalating annuities, variable annuities, and phased withdrawals.
- The organization of the market for variable annuities (or fixed annuities with a profit sharing rule) by centralizing account administration and longevity insurance in combination with decentralized asset management.
- The promotion of the market for fixed real annuities to address the needs of people with long life expectancy and low levels of risk tolerance.
- The promotion of escalating annuities instead of fixed nominal annuities.

- The offer of government guarantees to cover a specified lifetime minimum real rate of return for accumulated balances at the time of retirement.
- The close monitoring of the marketing and pricing policies of annuity providers to ensure effective protection of pensioners by deterring deceptive practices, preventing excessive fees, promoting sound asset valuations and ensuring a fair distribution of profits.
- The development of efficient electronic quotation systems to lower search costs and minimize the influence of brokers and the creation of central registers with comparative data on the performance and bonus policies of different providers.
- The use of a centralized agency for variable annuities and a decentralized competitive market for fixed real and nominal annuities.
- The specification of a default option, covering both the product and provider, for retiring workers who are unable or unwilling to make a timely decision.
- The further study of the complex issues that arise from granting annuitants the right to switch providers.

1. Introduction¹

Over the past two decades 13 of the 21 countries that can be described as Central and Eastern European (CEE) countries have implemented systemic pension reforms that include the creation of mandatory privately managed funded pension pillars based on individual capitalization accounts.² Two countries (the Czech Republic and Slovenia) have authorized the creation of voluntary funded pension plans, while the remaining 6 countries³ are either still debating the merits and drawbacks of systemic reforms or have deferred the introduction of funded pillars until they develop more stable and deeper financial systems (Holzmann et al 2009).

The 15 countries that have introduced funded pillars have undertaken important reforms of their public pillars, lowering promised benefits, increasing retirement ages, reducing distortions emanating from preferential treatment of various privileged groups and lowering contribution rates. The downsizing of the public pillars has been motivated by the unsustainable levels of expenditures on public pensions caused by demographic aging and widespread evasion as well as low retirement ages.

The countries that have introduced mandatory privately managed funded pillars have focused their attention in the first decade after the reform on ensuring that the new pillars operate on sound principles. These have included a robust regulatory framework, effective protection of worker balances and a high level of transparency.

In general, the design of the payout phase received little attention. Original provisions mandated the use of fixed real annuities, which in some cases had to follow the Swiss indexation formula that links benefits to the average of price and wage inflation. The lack of detailed attention to the payout phase is explained by the pressing urgency to ensure that the new pillar operates efficiently during the accumulation phase and by the fact that the reforms excluded workers near retirement from joining the new funded schemes. In most cases, this was achieved by limiting mandatory participation in the funded pillar to new entrants to the labor force or to workers below a specified age, ranging from 30 years in several countries up to 50 years in Russia. In most cases, the reforms prohibited participation by workers over 50. Thus, except for the special cases of disability and survivorship pensions, the number of retirees was expected to be very low for the first 10 or 15 years after the reform.

¹ We are grateful to the peer reviewers, Tony Randle and Anita Schwartz, as well as to Estelle James, Peter Holtzer, Leszek Kasek and Sophie Sirtaine for their comments and insights. We also acknowledge with thanks the assistance provided by several officials from Estonia, Hungary, Lithuania and Poland in ensuring the accuracy of our material on developments and plans in their respective countries. The usual disclaimer applies.

² These countries include in alphabetical order, Bulgaria, Croatia, Estonia, Hungary, Kosovo, Latvia, Lithuania, Macedonia FYR, Poland, Romania, Russia, Slovakia and Ukraine.

³ Albania, Belarus, Bosnia and Herzegovina, Moldova, Montenegro and Serbia.

The fact that survivor and disability pensions were in most cases retained in the first pillar and were not part of the funded pillar was another reason for the limited attention that was initially paid to the payout phase. These are now likely to be transferred, at least in part, to the funded pillar, adding some urgency to the discussions on how to redesign the payout phase.

Systemic pension reforms in CEE countries started in 1998 in Hungary, followed a year later by Poland. The Baltic countries, Russia and a few Balkan countries implemented their reforms in the first few years of the current decade, while the Slovak Republic, Romania and Ukraine introduced their funded pillars in the second half of the decade. Thus, a handful of countries are approaching the time when the payout phase will begin. However, given that developing an efficient system for the payment of retirement benefits requires considerable preparatory work, now is the time for addressing the many and complex issues involved.⁴

This paper has two main objectives. The first is to review the main policy issues that will confront policymakers in CEE countries in redesigning the payout phase. The second is to summarize the current plans in four countries that appear to be more advanced in their preparatory work (Poland, Hungary, Estonia and Lithuania).

The next section focuses on several key policy questions that cover both the regulation of payout options, which is effectively the regulation of demand and the regulation of providers of retirement products, i.e., the regulation of supply. The third section reviews the current plans of the four countries in the context of the discussion and analysis of section two. The paper ends with some concluding remarks.

2. Key Policy Questions for the Payout Phase

The following key policy questions are addressed:

On the demand side:

- Should the authorities impose restrictions on payout options?
- Should they mandate a single type of retirement product or allow constrained choice from a specified menu of retirement products?
- Should they mandate the use of joint life annuities with guaranteed periods of payment?
- Given the complexity of the products and choices facing retiring workers and the lack of adequate financial expertise by the majority of retiring workers should the authorities specify a default option that would apply to workers who are unable or unwilling to make a timely decision?

On the supply side:

⁴ This point is forcefully made in Rudolph and Rocha (2009).

- Should the authorities adopt centralized provision or should they opt for a decentralized competitive market?
- What types of regulations should be applied to the pricing policies of providers of retirement products?
- What types of regulations should be applied to the marketing activities of providers of retirement products?
- What regulations should be applied to ensure the solvency of providers?
- Should the authorities offer lifetime guarantees covering minimum returns during the accumulation phase and protecting retirees against provider insolvency?

The answers to these basic questions will shape the design of the payout phase in different countries.

2.1 Restrictions on payout options

Liberal approach and reliance on self-annuitization

Australia and Hong Kong require mandatory saving for retirement but do not impose any upper limits on lump sum withdrawals. Canada and the United States provide tax incentives to encourage retirement savings but also adopt a liberal approach to payout options. Australia, Canada and the US impose minimum annual withdrawals (or distributions) to prevent wealthy workers from prolonging their access to the favorable tax treatment of retirement savings in old age. Although there are no upper limits on distributions, tax considerations discourage retirees from making large lump sum withdrawals.

The absence of any restrictions on payout options results in a very limited use of life annuities. Retiring workers in these countries rely on self-annuitization to complement their public pensions, which range between 25 and 40 percent of pre-retirement incomes for workers on average earnings.

Self-annuitization involves the continuing investment of accumulated balances in combinations of mutual funds (and other assets) with regular withdrawals to cover living expenses. It has several advantages, including greater liquidity and flexibility, the right of bequest, participation in the higher, albeit more volatile, returns of equities and other real assets and avoidance of annuitization risk.

But it also has several disadvantages. It exposes retirees to longevity, investment and inflation risks. It requires considerable investment expertise by average pensioners, an ability to estimate accurately their life expectancy and retirement needs and a long-term commitment and discipline to maintain the selected withdrawal rule.

Self-annuitization is especially difficult to manage in advanced old age when pensioners face an increased risk either of outliving their savings or of suffering a significant decline

in their standard of living.⁵ It is for this reason that, when self-annuitization is recommended, it is combined with advice to purchase a deferred annuity that will start making regular payments 10 or 15 years after retirement.

Rather surprisingly, Switzerland is another high-income country that does not impose any upper limits on lump sum withdrawals. However, the level of annuitization is very high in Switzerland, probably because the pension mandate is imposed on employers who tend to favor the offer of life annuities. In fact, to counter the risk of excessive annuitization, the Swiss authorities require pension funds to offer to their members the option of taking at least 25 percent of accumulated balances in the form of a lump sum.

Payout restrictions and the presence of public pillars

Most other high-income countries impose some restrictions on payout options, usually involving upper limits on lump sum withdrawals, ranging between 25 and 33 percent of accumulated balances, or allowing withdrawals of any excess balances once a prescribed type of annuity has been purchased. In some cases, such as the funded components of public pillars in Denmark and Sweden, full annuitization is imposed. Other countries, including Germany and the UK, allow the use of phased withdrawals during the first 10 or 15 years of retirement but require annuitization after age 75 or 80.

Adopting a very liberal approach with no restrictions on lump sum withdrawals and total reliance on self-annuitization is not consistent with a mandatory pension pillar. Imposition of compulsory saving for retirement is predicated on the argument that workers fail to make adequate provision for their retirement needs. It is then difficult to argue that retiring workers are able to make accurate estimates of their life expectancy and their needs in retirement and should not be constrained in their payout options.

The presence or absence of public pensions is a crucial factor in determining the regulation of payout options. In countries where public pensions have been eliminated or substantially curtailed, most retiring workers are expected to rely on balances accumulated in their mandatory individual accounts for their retirement income. Tight restrictions on lump sum distributions and a requirement to use either fixed real annuities or life expectancy phased withdrawals are essential in these countries.

In Chile, retiring workers are required to purchase fixed real annuities or use phased withdrawals or a combination of the two. Lump sum distributions are not permitted except for any excess balances that can be withdrawn as a lump sum once a fixed real annuity equal to 70 percent of average real earnings over the preceding 10 years has been obtained.⁶ This is a sensible limit that represents 64 percent of final year earnings with a 2 percent real growth and 59 percent with a 4 percent growth.

⁵ For a thorough discussion of this issue, see Milevsky and Robinson (2000).

⁶ The Chilean pension system underwent a major transformation in 2008. The main changes that are relevant to the issues discussed in this paper are summarized in Annex B. With regard to early retirement rules, prior to 2008, the annuity payment had also be at least equal to 150 percent of the minimum pension guarantee (MPG). Since the MPG ranged between 23 and 27 percent of average wages (the exact amount

In other countries the presence of more or less generous public pillars cautions against imposing overly severe restrictions that might result in excessive annuitization. A sensible policy approach favors adoption of an integrated threshold replacement rate from the compulsory public and private pillars and mandating annuitization in the second pillar up to the level that reaches the integrated threshold rate. An integrated threshold of between 50 and 70 percent of the average real earnings (i.e. adjusted for inflation) over the last 10 years of employment is eminently sensible. Under this approach, unrestricted lump sum withdrawals are not permitted but, once the threshold replacement rate has been attained, any excess balances can be withdrawn.

2.2. Menu of retirement products

Product shortcomings and constrained choice

The second question on the demand side is whether to mandate one particular type of retirement product (for example, fixed nominal or fixed real or variable annuities) for all retiring workers or to allow constrained choice from a specified menu of products. Given the offer of first pillar pensions and given the significant shortcomings of all types of retirement products (see below), mandating one type of product for all retirees does not seem to be optimal. All retiring workers will then be forced to use one particular type of product despite large differences in risk preferences and economic circumstances.

Voluntary annuity markets are not well developed anywhere in the world. A main reason for this has been the offer of social security and company pensions that reduced the need for additional voluntary annuitization. Other possible factors include the strength of the bequest motive, the tendency of most people to underestimate their longevity, the lack of liquidity and flexibility of annuity contracts and the irreversibility of annuity decisions. The lack of financial expertise by the average retiring worker and the highly complex nature of retirement products have also been contributing factors. Life annuities are long-term contracts that are neither revocable nor portable across providers. Annuity markets require a high degree of confidence in the integrity and long-term solvency of annuity providers. For these reasons, annuity decisions are difficult to make and this is aggravated by the fact that all retirement products suffer from significant shortcomings.

Fixed nominal and real annuities

Fixed nominal annuities protect against investment and longevity risks but are exposed to inflation risk. Even with moderate inflation, the real value of pensions suffers significant declines over time. At an inflation rate of 3 percent per year, the real value of annuity payments will fall by 26 percent after 10 years and by 45 percent after 20 years. Depending on life expectancy at retirement, between one-third and one-half of retirees

was set in the annual budget), the 70 percent rule was the binding constraint for all workers earning more than 60 percent of the average wage. The latter requirement was also changed in 2008 as detailed in Annex B.

will still be alive 20 years after retirement and will suffer heavily from the decline in the real value of payments.

Fixed real annuities avoid this problem but may be more expensive than fixed nominal annuities. This may be due to two causes. First, real returns on inflation-linked bonds may be lower than those on nominal bonds because of the inflation protection that is provided to investors. The real return differential between nominal and real bonds can be seen as a premium for insuring against uncertain future inflation. However, empirical evidence on this point is inconclusive, probably because the inflation risk premium on nominal bonds is offset by a liquidity premium that burdens the less liquid inflation-linked bonds. Second, another reason why fixed real annuities may be more expensive relates to the absence in most countries of inflation-linked corporate and mortgage bonds.⁷ In contrast, nominal annuities benefit from the ability of annuity providers to invest in corporate and mortgage bonds that offer higher returns than government bonds.

Fixed nominal annuities start with higher initial payments than other types of annuities. For this reason and despite their exposure to inflation risk, they appeal to workers with short life expectancy or to those who underestimate their longevity. In contrast, fixed real annuities start with lower initial payments that increase over time in line with inflation. Fixed real annuities appeal to people with long life expectancy and low levels of risk tolerance. This self-selection bias is reflected in annuity quotations of fixed nominal and real annuities.

The gap in monthly payments between nominal and real annuities depends on the differential between the *real yields* on inflation-linked bonds and the *nominal yields* on nominal bonds. Even with moderate inflation, the gap in monthly payments can be large. Data on quotations obtained from the website of the UK FSA show that initial monthly payments of fixed real annuities can be lower by 36 percent for single annuitants and by 42 percent for joint annuitants (see Annex A for further details). The gap also reflects differences in the life expectancy of the groups of people who select the different types of annuities.

Escalating and reserve currency annuities

Escalating nominal annuities provide partial protection against inflation, depending on the rate of escalation (which is usually set at 3 or 5 percent) and the rate of inflation. If they increase at a rate that is higher than the rate of inflation they entail an increase in the real value of annuity payments and thus contribute to preserving the value of pensions relative to wages. However, escalating nominal annuity payments decline in real terms when the inflation rate exceeds the escalation rate.⁸

⁷ Chile is a notable exception in this respect (see below).

⁸ Escalating real annuities provide full protection against inflation and also allow for a gradual increase in the real value of pensions. Their main disadvantage is that early payments are further reduced compared to fixed nominal annuities and are therefore even less attractive to people with short life expectancies.

Escalating nominal annuities also start with lower initial payments than fixed nominal annuities and are exposed to a selection bias like real life annuities. The same UK data (see Annex A) show that for a 3 percent escalation rate, initial annuity payments are lower by 28 percent for single life annuities and by 33 percent for joint life annuities (the latter reflects the longer life expectancy of the covered annuitants).

Annuities denominated in a reserve currency (either the US dollar or the euro) also provide some protection against inflation and are often recommended when there is a limited supply of domestic inflation-linked bonds.⁹ However, reserve currency annuities provide protection against runaway domestic inflation and domestic currency depreciation but not against global inflation. In addition, persistent deviations from purchasing power parity imply that, for prolonged periods, reserve currency annuities do not provide adequate protection even against domestic inflation. This is corrected when large devaluations take place.¹⁰

Fixed annuities and annuitization risk

Fixed annuities involve exposure to annuitization risk. This is the risk that at the time of retirement, financial markets are depressed, lowering the value of accumulated balances, especially those invested in equities and real estate, while long-term interest rates may be low, implying a high cost of fixed annuities. Annuitization risk is greater when retiring workers purchase fixed nominal or real annuities and the accumulated assets are heavily invested in instruments other than long-term fixed income securities. It does not arise with variable annuities.

Various measures can be taken to address annuitization risk. Retiring workers may be allowed, or even encouraged, to purchase fixed nominal or real annuities in installments, with purchases spread over a number of years before and after retirement. They may also be encouraged to switch their investments into bonds as they near retirement. Use of lifecycle funds, which increase their allocations into long-term bonds as workers approach retirement, significantly mitigates their exposure to annuitization risk. Retiring workers should be discouraged from investing in short-term debt instruments because these maximize their exposure to annuitization risk.

⁹ Reserve currency annuities may be offered in two forms: those where the benefits are actually paid in the reserve currency; and those where the benefits are indexed to the value of the reserve currency but are actually paid in local currency. The former clearly provide greater protection against domestic currency depreciation but they still do not protect against global inflation.

¹⁰ Reserve currency annuities require access to reserve currency assets to enable their providers to hedge their risks.

Box 1. Policy Measures for Crisis Effects on Pension Accounts

The recent global financial crisis had a strong impact on equity markets worldwide. While many second pillar pension funds were not severely exposed to equities, for those that were, policy makers have considered various measures to prevent annuitizing retirees from suffering large losses and ensuring a minimum acceptable pension from the private pillar. The measures taken, or being considered, include:

(a) Legislation delaying the scheduled conversion of accumulated account balances into fixed annuities or providing a 5-year (or other specified period) for the conversion to take place to avoid locking-in annuitization during inopportune market conditions.

(b) Government offering one-off topping-up of accumulated invested balances for cohorts retiring in a “crisis” year to ensure access to a minimum annuity income.

(c) Offering a minimum lifetime real rate-of-return guarantee on private pension funds with consideration on how this might be funded (e.g., additional fees) and defined (e.g., a lifetime zero real rate of return as the minimum guarantee level).

(d) Requiring the use of lifecycle funds as a long-term measure to ensure that retiring workers are protected but without being allowed to game the system. Lifecycle funds make increasing allocations over time to long-term bonds and thus reduce the risk exposure of retiring workers. They could make it easier to meet the financial costs of a moderate lifetime guarantee.

The recent global financial crisis has prompted the authorities of many countries to consider policy initiatives that would provide support to retiring workers who may have suffered heavy losses in their retirement accounts. Some of these policy measures are summarized in Box 1.

Regulatory Requirements of Fixed Annuities

As long-term, irrevocable and non-portable contracts, fixed annuities require a robust and effective system of prudential regulation and supervision to ensure the long-term solvency of annuity providers. They need to be supported by reasonable government guarantees. They also require an effective regulation of marketing policies because they are exposed to potentially misleading broker influence and marketing campaigns and may suffer from wide price dispersion. These regulatory requirements also apply to variable annuities but the latter raise more difficult issues of regulation and supervision.

Variable annuities

Variable annuities with or without minimum guaranteed benefits allow participation in the higher, but more volatile, returns of equities and real assets. Investment, inflation and longevity risks for benefits above the minimum guaranteed levels are shared among annuitants through risk-sharing arrangements. Variable annuities require a high level of integrity and transparency by providers and a robust system of regulation and supervision to ensure that excess returns are fairly allocated between providers and pensioners. Protecting the rights of pensioners and ensuring fair treatment of both low-risk and high-risk individuals is a major challenge.

Variable annuities are offered in two forms: ‘guarantee and bonus’ annuities; and ‘unit-linked’ (or ‘market-linked’) annuities. In the former, annuity providers assume the longevity and investment risks up to the level of the guaranteed benefits, but these risks are shared among annuitants for additional bonus-based benefits. In the unit-linked case, the longevity risk is shared among annuitants but the investment risk is borne by individual annuitants and reflects the investment risk of the portfolios of their choice. ‘Unit-linked’ annuities may be offered with a minimum guaranteed return. ‘Guarantee and bonus’ annuities depend on transparent profit-sharing policies for the declaration of annual bonuses whereas in ‘unit linked’ annuities, annual payments are determined by net investment returns, subject to any rules regarding caps and floors. In both, the net impact of longevity experience is taken into account.

Bonus reversibility and longevity risk pooling

Variable annuities are faced with two difficult policy issues. The first concerns the reversibility of annual bonuses of ‘guarantee and bonus’ products.¹¹ To avoid declining bonuses annuity providers may use a low interest rate and conservative mortality tables in calculating initial payments. However, under this approach, initial payments will in most cases be even lower than in fixed real annuities. This approach entails the creation of a large reserve to cover future bonuses. Unless special measures are taken, such as partially funding the bonus reserve with long-term debt, this approach gives rise to an involuntary (unfair) transfer from older to younger cohorts.¹²

The second issue concerns the pooling of longevity risk. If one pool covering all retirees is created, there will be unintentional transfers from people of impaired health and short life expectancy to those of strong health and long life expectancy. This issue is complicated by the observed correlation between short life expectancy and low socioeconomic status. The problems created by socioeconomic differences in risk patterns are common to all annuity products and are difficult to resolve¹³, but people of impaired health can be placed in a special pool and encouraged to purchase fixed real or escalating nominal annuities or even (and perhaps preferably) use phased withdrawals.¹⁴

¹¹ This issue does not arise in the case of ‘unit-linked’ annuities.

¹² There is a fundamental difference in the treatment of bonuses between the accumulation and payout phases. Despite their shortcomings, terminal bonuses have some value for policyholders during the accumulation phase, but they have no value for annuitants during the payout phase. Annual bonuses in the payout phase entail a difficult conflict between stability and fairness.

¹³ Some insurance companies in the UK have started to use postcodes as a factor in annuity pricing since people who reside in the same neighborhood tend to have similar backgrounds and similar life expectancies (Sigma 2008).

¹⁴ The need for a separate class of annuity policies for people of impaired health also arises in the case of fixed nominal and real annuities. The difference is that in the case of fixed annuities the decision is made once at the time of purchase whereas in the case of variable annuities maintaining a separate pool is a continuous requirement.

Exposure of variable annuities to investment risk

Variable annuities are often criticized because they expose pensioners to investment risk. There is concern that if variable annuities are heavily invested in equities they may suffer early depletion in a large and prolonged decline of equity prices. However, this criticism disregards the gradual accumulation of retirement balances over the active life of workers and the historical mean-reverting pattern of equity returns. Accumulated balances are likely to be very high at the end of a prolonged strong performance of equities. While the probability of a prolonged decline in equity prices will then be high, accumulated balances will be better able to sustain the impact of falling prices without suffering catastrophic erosion. Admittedly, mean reversion does not occur with precise regularity. This is a strong argument against total reliance on variable annuities, but it does not justify exaggerating the exposure of variable annuities to the risk of depletion.

Another concern is that annuity payments may fluctuate widely from year to year, causing large changes in the annual consumption patterns of retirees. However, pensioners are not likely to spend all their increased income when annuity payments are higher than average. Some of their increased retirement income is likely to be saved and their consumption patterns may well prove to be more stable than their income.

Concern about the exposure of variable annuities to investment risk and the high volatility of equity returns may also be mitigated by the use of more stable-value asset allocations and by the offer of minimum guaranteed benefits. Both of these measures protect pensioners from the high volatility of equity returns although at the cost of lower average returns. Since workers retiring at 65 have a life expectancy of around 20 years, they may benefit from the higher returns of variable annuities provided they have the required level of risk tolerance.

Regulatory requirements of variable annuities

Variable annuities are able to handle the diversifiable parts of longevity and investment risks, while they share among annuitants the non-diversifiable risks of major changes in longevity, inflation and investment performance above a specified level of guaranteed benefits. This implies lower solvency requirements for annuity providers.

However, variable annuities require a robust and effective regulatory and supervisory framework to ensure a fair treatment of different cohorts of annuitants and different stakeholders. This is a major challenge when variable annuities are offered in a decentralized competitive market. This issue is addressed further below.

Phased withdrawals and term annuities

All types of life annuities suffer from lack of liquidity and flexibility and the failure to provide for bequests. Joint life annuities with guaranteed periods of payment address in part the bequest motive. Phased withdrawals avoid these problems but expose pensioners to investment, inflation, and longevity risks. Life expectancy phased withdrawals reduce

the risk of early depletion of accumulated savings but do not protect pensioners against the risk of outliving their savings over a longer life.

The demand for phased withdrawals often depends on the level and structure of first pillar benefits. In Chile, under the pre-2008 system, three groups of retiring workers used phased withdrawals. The main group was represented by workers with low balances that were insufficient to purchase a fixed real annuity equal to the minimum pension guarantee (MPG). These workers were compelled to use phased withdrawals that were equal to the MPG. When the account balance was exhausted the government assumed responsibility for payment of a pension for the remaining life of the retiree. Two other groups also used phased withdrawals. Those with balances that were higher but close to the minimum pension and some workers with very high balances and other sources of income who preferred to use phased withdrawals because of their tax advantages (Iglesias 2009).¹⁵

In other countries, the use of phased withdrawals is encouraged when public pensions and other public services are high. In some countries, temporary phased withdrawals are the only retirement products, other than life annuities, that are permitted in the first 10 or 15 years of retirement (e.g., Germany and the UK).

Term annuities have both similarities and differences with phased withdrawals. Like phased withdrawals they do not cover longevity risk, while allowing bequests. But unlike phased withdrawals, they provide protection against investment risk while lacking flexibility. In Denmark and Sweden, there is a strong demand for term annuities. This is because relatively large numbers of pensioners wish to have higher retirement incomes in their early years of retirement. This preference is supported by their access to universal healthcare services (Andersen and Skjodt 2007, Palmer 2008).

Because of their exposure to investment, inflation and longevity risk, total reliance on phased withdrawals is not advisable. Similarly, the exposure of term annuities to inflation and longevity risks argues against complete reliance on them. However, both these products can play a part in a combination of retirement products, especially in countries with strong first pillars. Both products have several advantages for people of impaired health.

Self-annuitization and deferred annuities

Given the shortcomings of all types of retirement products,¹⁶ it is not surprising that in countries that do not impose restrictions on payout options, retiring workers and financial advisers favor a policy of self-annuitization. This is often combined with advice to purchase deferred annuities to provide protection in advanced old age.

¹⁵ Changes in the rules covering phased withdrawals in 2008 lowered their attractiveness for the second group of workers and also limited the potential fiscal cost to the government. See Annex B for more details.

¹⁶ The advantages and disadvantages of fixed and variable annuities are summarized in Tables 1 and 2.

Deferred annuities start paying benefits a specified number of years after purchase. They require a smaller capital premium for a given level of monthly payment than immediate annuities both because they pay benefits for a shorter period of time and because the capital that is paid at the time of retirement earns investment income during the deferment period. However, the required capital premium depends on whether refunds are allowed in case of death before the expiration of the deferment period.

Deferred annuities are also affected by the greater uncertainty faced by insurance companies in projecting long-term longevity trends, especially as they impact the tail end of the age distribution. For this reason it remains to be seen whether life insurance companies will be able to develop a deferred annuity market in the absence of appropriate instruments for hedging this risk.

Table 1. Advantages and Disadvantages of Fixed Annuities

	Advantages	Disadvantages
1A. Fixed Annuities	<p>They provide protection against longevity and investment risks.</p> <p>They provide certainty of monthly payments.</p>	<p>They prevent participation in the higher, though more volatile, returns on equities and other real assets.</p> <p>They are exposed to annuitization risk.</p> <p>They suffer from wide dispersion in annuity prices.</p> <p>They are exposed to potentially misleading broker influence and marketing campaigns.</p> <p>They require a robust and effective system of prudential regulation and supervision to ensure provider solvency.</p>
1B. Fixed Real Annuities	<p>As in Panel 1A.</p> <p>They provide protection against inflation risk.</p> <p>They appeal to retiring workers who have a long life expectancy and a low level of risk tolerance.</p>	<p>As in Panel 1A.</p> <p>They start with relatively low initial payments but these grow over time.</p> <p>The cost of inflation protection may be high.</p> <p>They require access to inflation-linked long-duration debt instruments issued by both the public and private sectors for risk-hedging purposes.</p>
1C. Fixed Nominal Annuities	<p>As in Panel 1A.</p> <p>They start with relatively high initial payments.</p> <p>They appeal to retiring workers who have a short life expectancy or underestimate their longevity.</p>	<p>As in Panel 1A.</p> <p>They are exposed to inflation risk.</p>

Table 2. Advantages and Disadvantages of Variable Annuities

	Advantages	Disadvantages
2A. Variable Annuities	<p>They provide protection against diversifiable longevity risk, while sharing non-diversifiable longevity risk among annuitants.</p> <p>They allow participation in higher returns on equities and real assets.</p> <p>They avoid annuitization risk.</p> <p>They avoid the wide dispersion of prices of fixed nominal and real annuities.</p> <p>They appeal to retiring workers who have a long life expectancy and a high level of risk tolerance.</p> <p>Because providers do not assume longevity, investment and inflation risks, they require lower capital requirements for provider solvency.</p>	<p>They are exposed to investment and inflation risks.</p> <p>They may start with relatively low initial payments.</p> <p>Annuity payments may fluctuate widely from year to year.</p> <p>They are exposed to potentially deceptive or even perverse marketing policies, affecting their risk-sharing arrangements.</p> <p>They require a robust and effective system of regulation and supervision, especially of marketing and profit-sharing policies.</p>
2B. ‘Guarantee and Bonus’ Annuities	<p>As in Panel 2A.</p> <p>They are supported by the offer of minimum guaranteed benefits.</p> <p>Annual bonuses provide protection against inflation.</p> <p>Stable-value asset allocations mitigate exposure to investment risk.</p>	<p>As in Panel 2A.</p> <p>Annuity payments depend on future investment performance and the declaration of bonuses.</p> <p>Depending on how bonus reserves are funded, their creation may cause an unfair transfer from older to younger cohorts</p> <p>They depend on the profit-sharing policies of annuity providers.</p> <p>They require a high level of transparency and integrity by annuity providers.</p>
2C. ‘Unit-linked’ Annuities	<p>As in Panel 2A.</p> <p>They are more transparent than ‘guarantee and bonus’ variable annuities.</p> <p>They do not depend on the profit-sharing policies of annuity providers.</p> <p>They may benefit from minimum guaranteed rates of return.</p>	<p>As in Panel 2A.</p> <p>They may be exposed to greater volatility of investment returns and annuity payments.</p> <p>The pricing of the minimum rate-of-return guarantees faces difficult challenges.</p>

2.3 Joint life annuities and guaranteed periods of payment

One of the shortcomings of life annuities is that they do not provide for bequests. Joint life annuities and annuities with guaranteed periods of payment provide some protection to dependents but entail lower payments than single annuities with no guaranteed periods.

Joint life annuities

Joint life annuities protect nonworking spouses after the death of the primary beneficiary. Their lower payments depend on the differences in age and life expectancy between spouses. The analysis of annuity quotations obtained from the website of the UK FSA shows that monthly payments for joint life annuities covering a male aged 65 and a female aged 60 (with a 67 percent reversion rate for the surviving spouse) are lower by about 13 percent compared with those of single life annuities in the case of fixed nominal annuities with a 10-year guaranteed period of payment. The gap widens to 19 percent for an escalating annuity and to 20 percent for a fixed real annuity (see Annex A).

Traditionally, most countries did not mandate the use of joint life annuities. Chile used to require men to purchase joint life annuities but allowed working women the freedom to choose between single or joint annuities. This reflected the traditionally lower labor force participation of women and their lower earnings. However, a recent change in the rules mandates the purchase of joint life annuities by both spouses.

A useful contribution of joint life annuities is that they mitigate the distorting effects of adopting unisex mortality tables.¹⁷ The distortions emanate from the significant difference in the life expectancy of men and women and the tendency of annuity providers to target male retirees. It is advisable that countries in which the use of unisex mortality tables is compulsory should also impose the requirement to use joint life annuities on both working spouses.

Guaranteed periods of payment

Annuities with guaranteed periods of payment provide protection to the dependents and heirs of primary beneficiaries if death occurs during the guaranteed period. The protection for a nonworking wife or other secondary beneficiary is not as effective as in the case of a joint life annuity but, where they are allowed, single or joint life annuities with guaranteed periods of 10 or 15 years prove very popular. Annuities with guaranteed periods of payment entail very small decreases in monthly payments, at least for periods

¹⁷ According to the EU Directive 2004/113/EC, men and women should receive equal access to goods and services. The implementation of such directive on the life insurance market implies that insurers are not entitled to use gender risk as a factor for pricing annuities. Since women have a longer life expectancy than men, in the presence of unisex mortality tables the latter subsidize the former.

up to 10 years.¹⁸ This is because in the early years of retirement survival probabilities are very close to unity.¹⁹

Annuities with guaranteed periods of payment are effectively a combination of term annuities (for the period of the guarantee) and deferred annuities (starting after the end of the guarantee period). The wide popularity of annuities with guaranteed periods of payment suggests that the operation of deferred annuities, which is advocated by a growing number of observers (Milevsky 2005, Antolin 2008), will not face insuperable problems. Offering deferred annuities will deprive annuity providers of the profits they would make on the term annuity part of traditional products. This will imply a need for adding a margin in their pricing and underwriting models but will not weaken the case for promoting deferred annuities to provide protection to pensioners in advanced old age.

2.3.1 Default Options and Transparency

Mandating the use of a single retirement product for all retiring workers has the advantage of simplicity. However, it runs the risk of imposing suboptimal solutions on those retirees whose risk preferences and financial circumstances may favor a different type of product. Offering a constrained choice of retirement products avoids this problem but faces a major challenge. How can retiring workers with limited financial expertise and poor understanding of the merits and drawbacks of complex products make rational and timely decisions?

The authorities can help in three ways. Firstly, they can improve transparency and disclosure by preparing pamphlets and other guidance material that explain in detail the characteristics, advantages, costs and risks of different products. They may consider undertaking regular programs to expand financial literacy.

Secondly, the authorities should compile comprehensive databases of the prospects of different retirement products and the performance of different providers. The collection of data on annuities and other types of retirement products is very limited in most countries. Denmark and Sweden are notable for failing to collect any data on the distribution and performance of different types of retirement products, despite the preponderant use of variable annuities. A mitigating factor in both Denmark and Sweden is that annuity contracts are based on collective labor agreements where representatives of employers and workers monitor the performance of annuity providers. In other high-income countries the limited collection of data is explained by the poor state of development of the national annuity markets.

Chile is a notable exception. It has a very rich database of life annuities and has also introduced a centralized electronic quotation system. However, even in Chile the

¹⁸ The same analysis of UK FSA annuity quotations shows that single annuities with 10-year guaranteed periods of payment lower monthly payments by slightly less than 2 percent compared to payments under single annuities with no guaranteed period (Annex A).

¹⁹ Data from the US show that the one-year survival probability of annuitants is 98.98 percent at age 65 and 97.02 percent at age 75 (Poterba 2009).

available information is incomplete. There are limited data on the performance of phased withdrawals and there are no data that allow the calculation of replacement rates at retirement.

Thirdly, the authorities need to specify the product and provider that will act as the default option for retiring workers who are unable or unwilling to make timely decisions. The design of the default option will reflect local preferences and conditions. One alternative is to opt initially for a temporary solution that could apply for a small number of years, say up to 3 or 5 years. This would most likely involve the use of temporary phased withdrawals and would allow retiring workers more time to learn about the characteristics of different products. At the expiration of this period, the default option should specify the type of product, with the best candidates being fixed real annuities, escalating nominal annuities, or variable 'guarantee and bonus' annuities. Other alternatives can also be explored, including the use of deferred annuities at retirement age.

The default option should also specify the provider. This could be either a centralized public agency, if one is in operation, or one of the providers from the competitive market. An auction mechanism should be specified for allocating undecided retirees to the provider with the lowest operating fees or the provider with the highest payout benefits. A simple allocation mechanism may be chosen at first, but this could be modified and become more sophisticated as greater experience is gained over time.

2.4 The choice between centralized and decentralized provision

Merits and drawbacks of centralized provision

Centralized provision of life annuities, usually through a public entity although it can in principle also be based on a highly regulated private entity, has several potential advantages. It allows for a larger base of risk pooling, especially if annuitization is compulsory. It also benefits from scale economies and avoids the heavy marketing costs that are incurred by decentralized providers.

Its main disadvantages are the potentially weaker incentives for product innovation and operational efficiency that may result from compulsory participation and monopoly power. With public ownership and/or extensive public regulation, there is also a high risk of extraneous interference in annuity pricing and asset management. Such interference may well result in transferring the investment and longevity risks back to the state. The key requirement is to adopt robust governance safeguards with high levels of transparency and public accountability.²⁰

Centralized provision is quite common. The zero and first public pillars, where they exist, rely on centralized provision through a single public agency. As they almost always

²⁰ In recent years, several countries have made considerable progress in streamlining and strengthening the management and governance of their public pension funds. Vitas et al (2008) review the performance of four public pension funds under improved governance structures in four OECD countries.

involve the offer of inflation-indexed compulsory lifetime annuities, their products play a central part in the annuity markets of most countries.

Centralized provision in Denmark and Sweden

Denmark and Sweden go one step further and use centralized public agencies for the offer of supplementary lifetime annuities. These operate alongside private providers that offer industry or employer schemes covered by collective labor agreements as well as personal pension plans. Their presence and the prevalence of collective labor agreements clearly have an important impact on the functioning of private annuity providers.

The Danish ATP operates a compulsory pension scheme with centralized asset management and offers variable ‘guarantee and bonus’ annuities. Despite its public status, it has often taken the lead in promoting product innovation and adopting sophisticated asset management (Vittas 2008).

The Swedish PPM is responsible for the maintenance of accounts and the payment of benefits as well as for handling the longevity risk of life annuities. For ‘guarantee and bonus’ annuities it also retains responsibility for centralized asset management and appoints internal and external asset managers for this purpose. But in the case of ‘unit-linked’ annuities, asset management is decentralized.

This system, which is also used for the accumulation phase, allows participants to select investment funds from an approved list of asset managers. The PPM collects all individual asset mandates and transfers funds to the selected asset managers without revealing the names of their clients. Sweden authorizes 70 asset managers that operate 700 funds, offering a bewildering choice to retirees (Palmer 2008). In most countries, half a dozen asset managers, each with 5 or 6 funds, will be more than sufficient.²¹

Advantages and disadvantages of decentralized competitive markets

Decentralized competitive market structures promote competition, innovation and efficiency. These features are particularly important when innovation is risky and socially controversial and small-scale experimentation plays a significant part in testing the feasibility of specific market solutions. The introduction of impaired life annuities in decentralized markets offers a good example of the potential benefits of competition, innovation and efficiency.

However, because of scale economies and high marketing costs, decentralized markets veer over time toward market consolidation and oligopolistic structures. The prevalence of a small number of providers weakens competition as well as the incentives for innovation and efficiency and thus negates the main potential advantages of decentralized

²¹ The combination of centralized administration and decentralized asset management was put forward by a public entity and is a reminder that public sector institutions can have a good record of innovation. This approach has since been adopted by several private pension schemes that are based on collective labor agreements (Palmer 2008).

structures. Decentralized market structures suffer from high administrative and marketing expenses and require a strong regulatory framework to discourage annuity providers and their selling agents and brokers from engaging in deceptive practices and market abuses that harm retiring workers.

The case for a decentralized competitive structure relative to centralized provision is significantly weakened when strict restrictions are applied to annuity products and their pricing. It is also weakened if annuity providers use common life tables, in which case competition is effectively limited to asset management and marketing campaigns. Decentralized competitive structures need to be closely monitored to ensure that profit margins are reasonable and the potential benefits of competition and innovation are not eroded by increasingly oligopolistic and wasteful practices.

Another possibility is to have decentralized account administration and decentralized asset management with centralized management of the longevity risk. This will address the problems posed by the non-diversifiable component of longevity risk. However, decentralized account administration will not provide any significant benefits and will suffer from wasteful marketing expenses and from a potential misuse of economies of scale by large insurance groups that have a poor record as asset managers. The centralization of both account administration and longevity insurance, combined with decentralized asset management, would seem a superior option.

2.5 Regulation of pricing policies

The regulatory issues of pricing policies vary between fixed and variable annuities. Fixed nominal or real annuities as well as escalating annuities (which are essentially ‘fixed’ annuities that increase at a predetermined rate) entail pricing decisions that are made once at the time of purchase. A high level of transparency to ensure fairness is required at the time of purchase. Once the purchase is concluded, the main concern is the long-term solvency of the annuity provider. In contrast, in variable annuities, pricing decisions are made continuously over the life of the contract. They require a high level of transparency and integrity over the life of the contract to ensure fair treatment of all groups of annuitants.

Pricing policies for fixed annuities

In the case of fixed annuities, providers operating in decentralized competitive markets determine the prices of their products on the basis of their assumptions regarding future mortality rates, investment returns and operating costs. They change their prices to fit the stance of their marketing campaigns. However, brokers and selling agents play an important part in influencing individual decisions and reduce the effectiveness of price competition. The ineffectiveness of price competition is underscored by the wide dispersion in the prices of fixed nominal or real annuities. The range of annuity quotations exceeds 20 percent in most markets, including Chile and the UK.

One way to address the dispersion of annuity prices is to resort to regulated prices. The setting of annuity conversion factors eliminates the dispersion of annuity prices across annuitants with similar characteristics. It also protects retiring workers of different cohorts from large fluctuations in the market prices of both assets and annuities. However, large income transfers across annuitants of different gender and marital status may be generated by price regulation that is not carefully calibrated. In addition, the solvency of annuity providers may be jeopardized if regulated prices are not flexibly adjusted to market conditions, including changing interest rates and longevity experience.²² Thus, the costs of rigid regulation of annuity conversion factors may exceed its benefits.

A more promising way is to centralize the offer of annuity quotations (see section 2.6 below). By lowering search costs and improving access to competitive prices, an electronic quotation system is likely to reduce the dispersion of annuity prices, especially for contracted prices. This has been introduced with encouraging success in Chile, while a less effective variant is used in the UK.

Pricing policies for variable annuities

The regulation of pricing policies for variable annuities in a competitive decentralized market is a much more complex issue. If providers are free to set initial payments, there could be a strong temptation to offer annuitants high initial payments in order to attract their business and rely on relatively low, and even negative, bonuses in subsequent years to offset the elevated initial payments. Such providers may also apply high commission fees. Negative publicity and its potentially adverse impact on the generation of new business may act as a deterrent against such practices. However, retail financial markets are replete with examples of irresponsible behavior by large and small providers and their brokers that is not penalized by the response of consumers.

To protect retirees from such practices, policymakers may specify the calculation of initial payments and may also apply caps on commission fees. When initial payments are subject to detailed regulations and are common to all providers, competition in the variable annuity market is restricted to the level and stability of prospective bonuses. The latter are a function of investment returns, operating costs, longevity experience and the policy of profit distribution between annuitants and shareholders.

Competitive concerns

This approach to competition raises a number of concerns. A basic concern relates to the prospective investment performance of annuity providers. Most life insurance companies

²² These two problems were experienced in Switzerland between 1985 and 2002. A fixed annuity conversion factor was imposed in 1985 on the decentralized market when the mandatory pillar was introduced. This was set at 7.2 percent, was the same for single and joint life annuities and was kept constant for 17 years despite large fluctuations in interest rates and a secular increase in longevity. It caused significant transfers from single male to female pensioners and also put the finances of pension funds under considerable strain (Buetler and Ruesch 2007).

around the world are notorious for their inferior performance as asset managers compared with most mutual funds.²³ The involvement of insurance companies, which is necessary when longevity insurance is decentralized, may depress investment returns. Admittedly the creation of specialized entities with a high level of transparency may propel insurance groups to become more efficient asset managers but this remains to be seen.

A second concern is connected with the level of operating costs. High administrative costs are often incurred and large commissions are paid to agents and brokers as part of aggressive marketing campaigns to increase market share. Annuity providers amortize these costs over the longer run and charge high commission fees to annuitants. Annuity providers may also engage in transfer pricing whereby internal services offered by another unit of a large group are billed at artificially high prices. High operating costs depress the level of distributable profits.

A third concern is linked to the policy of profit distribution. Together with the level of operating costs, the rate of profit sharing should be one of the most important criteria for selecting providers of variable annuities. Past returns, which are often emphasized by sales agents, are not a good predictor of future performance, while regulating profit-sharing rates introduces rigidity and may cause competitive distortions. A high level of transparency is a minimal and essential requirement.

Central register of pricing policies and performance

To strengthen competition in the market for variable annuities, a central register needs to be created to compile comparative data on a consistent and informative basis on the performance and bonus policies of different providers. This will enhance the transparency of the system. The register should focus on key aspects of pricing policies and performance such as profit-sharing policies, levels of operating costs, levels of commission fees and consistency and soundness of investment policies rather than on a mere reporting of past performance data. At the same time, annuitants should be encouraged to select providers on the basis of factors that affect long-term performance.

However, retail financial markets are notorious for their limited responsiveness to improved sources of information. A certain degree of price dispersion, poor investment performance, and high operating fees are likely to persist under even a tight regulatory framework. Policymakers need to weigh the relative merits and drawbacks of decentralized competitive markets against the corresponding advantages and disadvantages of centralized provision.

Pricing policies of centralized providers

The regulation of pricing policies of centralized providers faces fewer challenges. There is little concern about price dispersion and deceptive policies. The main requirement is for a high level of transparency and public accountability. Pricing policies need to reflect

²³ An interesting study that documents in great detail the underperformance of insurance mutual funds is contained in Chen et al, 2006.

all relevant variables, ensure long-term sustainability and avoid inter- and intra-generational transfers. Data on life tables, investment returns, operating costs and bonus policies need to be regularly published and to be available for public scrutiny.

2.6 Regulation of marketing policies

Marketing policies of centralized providers

As with pricing policies, the regulation of marketing policies is much simpler in a centralized market structure. There is no need for elaborate controls on marketing campaigns and the creation of electronic quotation systems. The irrevocability and non-portability of life annuities do not present the same difficulties and challenges as under a decentralized competitive structure. The centralized institution needs to respond to enquiries from retiring workers by providing appropriate quotations taking into account the choice of product and age of applicants. To be able to do this effectively, it needs to construct life tables by product and age cohort and also apply the appropriate yield curves to calculate the initial annuity payments by type of product.

The main challenge is the creation of a sophisticated delivery system where trained professionals have access to detailed data and are able to respond in a prompt and efficient manner to enquiries from retiring workers. To ensure a high quality of service, this component of the centralized structure can be outsourced through competitive bidding to a small number of private operators, subject to clearly defined standards of accuracy and speed.

Marketing in decentralized competitive markets

In contrast, the regulation of marketing policies presents a major challenge in a decentralized competitive market. Providers of retirement products need to be deterred from engaging in deceptive practices and from undertaking mis-selling and misleading marketing campaigns.²⁴ The adverse effects of these campaigns are magnified by the involvement of brokers and agents, who are remunerated on a volume basis, receive their commission income upfront and often adopt aggressive tactics in selling the products of particular providers. Special rules need to apply to them, covering training, certification and probity.

The first requirement of an effective regulation of marketing in a decentralized competitive market is compliance with basic conduct rules, such as the 'know-your-customer' rule and an adequate disclosure of the terms and conditions of different products. However, because annuity products are highly complex, there is also a need for extensive training of agents and brokers. In addition to adequate training, brokers need to pass a certification test as well as the standard 'fit and proper' test. Licensed brokers must

²⁴ Insurance companies, which are expected to play a central part in most annuity markets, have a global reputation of using unclear practices and promoting aggressive selling campaigns. They also excel in utilizing detailed contracts with innumerable provisions in small print that are incomprehensible to the average consumer but are then used to decline claims.

be legally obligated to represent their clients, must generate their income from commissions on the sale of annuities and must not be permitted to accept volume-related remuneration from providers.

Marketing issues in fixed annuities

The selling of fixed nominal or real life annuities requires considerable marketing effort by their providers and deployment of brokers and agents in explaining the relative advantages of life annuities over lump sums and phased withdrawals. Brokers tend to have strong incentives to influence the decision of retiring workers to annuitize. They also derive considerable benefits from channeling retiring workers to providers who offer the highest commissions and not necessarily the best prices and returns to annuitants.

Adopting an electronic quotation system, such as the one introduced in Chile in 2004, merits serious consideration.²⁵ This is a centralized service that compiles and validates individual data on retiring workers and solicits quotes from participating institutions. Such a system reduces the influence of brokers, lowers the search costs of retiring workers, enhances the quality of information available to them and ensures broad access to competitively priced annuities.

The structure and level of commissions payable to brokers and agents need to be closely monitored and to be subject to caps if they become too high and give rise to market distortions. In addition to being subject to an upper limit, commissions should be made payable over the whole duration of the annuity contract and not concentrated in the first few years. One way to achieve this is by prohibiting the levying of upfront fees on retiring workers and only allowing fees on regular monthly payments.

In response to very high levels of broker commissions in the 1990s, Chile imposed a cap of 2.5 percent since 2004. The level of commissions now amounts to 2.3 percent. Colombia has gone one step further and has prohibited the use of brokers. In fact, an efficient and well-understood system of electronic quotations, supported with adequate information material from the authorities, should eliminate the need to use brokers.

Marketing issues in variable annuities

The marketing of variable annuities raises some special concerns. There is a risk that competition in the market for variable annuities, where longevity risk is shared among annuitants, may on occasion take a perverse form. In order to increase their market share and expand their business, annuity providers with a preponderance of low-risk clients may decide to offer attractive terms to new clients with higher-risk characteristics, effectively forcing low-risk annuitants, i.e. individuals with short life expectancy, to share the higher longevity risk of high-risk annuitants and thus causing unfair transfers across different groups.

²⁵ For a detailed explanation of the system, see Rocha and Thorburn (2007).

Admittedly such marketing campaigns may not be easy to design and implement. A more likely occurrence is a friendly or hostile merger of two providers with different risk profiles. When mergers take place or marketing policies undergo drastic change, an exception should be applied to the non-portability rule. Annuitants should be allowed to switch within a specified period to another provider without incurring any exit fees.

Such measures may not prove adequate if annuitants do not respond with effectiveness and alacrity to the period of no exit fees. In fact, given their old age and the general lack of consumer responsiveness to price signals in retail financial markets, it is unlikely that they will do so in sufficiently large numbers. A more drastic and effective protection of the rights of low-risk annuitants would need to be provided by regulators and supervisors.

Providers of variable annuities depend on their investment performance and their management of longevity risk to attract new business. It is important that marketing regulations deter providers and their brokers from emphasizing recent investment returns that are not good predictors of future performance but rather focus on factors that affect long-term performance such the soundness of their investment policies, the level of their operating costs and fees and their profit-sharing policies.

2.7 Prudential regulation of providers

The prudential regulation of providers addresses the levels of technical reserves and risk capital that are required to support the specific risks undertaken by different providers of retirement products. It also covers the use of internal risk management and control systems and the application of stress tests for assessing the vulnerability of individual institutions to internal and external shocks.

Similarity of prudential issues for centralized and decentralized providers

The prudential issues are conceptually the same for centralized and decentralized structures, although in competitive markets individual institutions may be tempted to adopt more risky policies. Centralized single providers face different risks, such as the risk of complacency, persistence with misguided policies and failure to take corrective action. Thus, despite the absence of competitive pressures for imprudent initiatives, the risk management policies of centralized entities need to be monitored as closely as those of competitive entities in a decentralized market. In fact, both the ATP in Denmark and the PPM in Sweden broadly follow the same regulatory and accounting rules as private insurance companies and pension funds in these countries (Andersen and Skjodt 2007, Palmer 2008).

Operational, counterparty and liquidity risks

The management of operational, counterparty and liquidity risks presents the same challenges to all types of institutions, irrespective of the risk characteristics of the products they offer. Losses from operational risk can result from fraud or administrative failure, such as, for example, failure to comply with the requirement of legal segregation

and external safe custody of assets, while losses from counterparty risk can arise from performance failure of a contractual counterparty. Installation of appropriate internal control systems helps lower losses from such risks. Control systems need to segregate duties and avoid conflicts of interest in assigning responsibilities.

Management of underwriting risk

The regulation of underwriting risk, which covers investment, inflation and longevity risks as well as the impact of operating costs is more complex. This depends on the risk characteristics of the products offered by different institutions.

Providers of phased withdrawals and unit-linked products without any guaranteed benefits do not face underwriting risk because they do not assume either investment or longevity risk. As a result, they do not need to build any technical reserves. Their liabilities are equal to the value of their assets and their capital requirements are relatively simple and straightforward. A small minimum initial capital and a capital adequacy requirement linked to the volume of assets under management (AUM) are required. The latter normally ranges between 1 and 2 percent of AUM.

The regulation of risk management of institutions that assume investment, inflation and longevity risks faces much greater challenges. In countries with advanced financial and insurance markets, the first step is to require 'fair value' accounting for the valuation of both assets and liabilities. Market values are used as fair values for assets that are traded on active and liquid markets but for less liquid assets fair valuation is obtained by applying acceptable valuation models.²⁶ All value changes - realized and unrealized - should ideally be shown in the profit and loss account.

The valuation of liabilities faces more difficult conceptual issues since there is no active market for insurance and pension liabilities and there are therefore no readily observable market prices. By necessity, fair valuation must be based on valuation models.

The first step is to calculate future actuarial liabilities by applying appropriate survival probabilities that reflect reasonable estimates of future improvements in longevity. Actuarial liabilities are calculated by product and cohort. Individual institutions may be allowed to use their own mortality tables, reflecting the demographic characteristics of their own clienteles but they should be required to justify their choice, both with regard to their pricing decisions and with regard to their reserving policies.

The present value of estimated actuarial liabilities is then calculated by applying market-based maturity-dependent discount rates, obtained from a zero-coupon yield curve. Ideally, this should be based on AA corporate bond and swap rates. The decomposition and maintenance of separate technical reserves by type and level of guaranteed benefits should also be required.

²⁶ Problems arise if the valuation of illiquid assets becomes highly problematic, as has been highlighted by the recent experience of the market for sub-prime mortgage securities. A prudent institution invests only a small proportion of its assets in such potentially illiquid and unstable markets.

Stress testing and asset/liability mismatching

Asset and liability valuations should then be subject to stress tests that calculate the impact of significant changes in market prices on the financial position of individual institutions. Stress tests on insurance companies and pension funds are now applied in several countries. However, the various stress tests are still at an early stage of development, are specified in static terms, do not reflect past experience and are invariant to the state of financial markets.

If individual institutions maintain reasonably matched positions between their assets and liabilities, the stress tests will indicate that changes in market prices will have little impact on their equity positions or buffer funds. Full matching of assets and liabilities minimizes exposure to investment and inflation risks but is expensive and may not even be feasible. It requires full access to long-duration financial instruments for hedging the investment risk of fixed nominal annuities. Such instruments must be inflation-linked in the case of fixed real annuities. However, most countries do not have an adequate supply of either nominal or real long-duration debt instruments.

If individual institutions exhibit considerable deviation from full matching, the stress tests will indicate the size of the buffer fund that will be required to ensure solvency. The stress tests should also cover changes in future longevity and should assess the adequacy of the longevity risk fund. Ideally, the stress tests should take into account the historical variance and covariance of asset returns and should allow for the state of financial markets. The required solvency margin should be related to the size of the deviation of current prices from long-term trends.

This approach cannot be followed in countries where financial markets suffer from low volumes of trading, assets are illiquid, and institutions adopt 'buy and hold' strategies. In these cases, the approach used by Chile has considerable appeal. Market rates of interest are used for calculating the technical reserves of liabilities that are matched by assets of similar duration but the regulatory authorities mandate lower prescribed discount rates for calculating the present value of unmatched liabilities. Coupled with higher capital reserve requirements for unmatched liabilities, this approach protects providers of fixed life annuities from adverse changes in interest rates.

Management of longevity risk

The regulation of the management of longevity risk also faces major challenges. An essential requirement is to avoid the use of outdated mortality tables, which are particularly detrimental in annuity pricing but also cause problems for reserving policies. A serious effort must be made to build reliable, up-to-date and detailed data on longevity.

Variable annuities share investment and longevity risks among annuitants. Such risk-sharing arrangements are widely used in Denmark and Sweden for both traditional participating 'guarantee and bonus' annuities and for 'unit-linked' annuities. In the former

case, providers assume the investment and longevity risks up to the level of guaranteed benefits but share these risks among annuitants beyond that level. In the case of unit-linked annuities, the investment risk is borne by annuitants reflecting the portfolio of the investment funds they select but the longevity risk is shared among annuitants either on a cohort and product basis or across all annuitants of each type of product. Improvements in longevity as well as changes in investment returns are reflected in annual benefits.

Risk-sharing arrangements have many potential advantages but also introduce their own challenges. A high level of transparency and integrity on the part of annuity providers is required as well as transparent and robust rules to ensure consistent long-term fairness in the distribution of profits between shareholders and policyholders. This is clearly a more important issue in the case of decentralized markets, where market discipline may be less powerful than is often assumed, but it is also relevant in the case of public monopolies, especially in ensuring a fair treatment of all cohorts and avoidance of the use of surpluses for extraneous purposes.

2.8 Government guarantees

Bankruptcy risk

Bankruptcy risk is present in all types of financial products, but is particularly important in the case of life annuities, which are long-term contracts that are neither revocable nor portable. In recent years, it has become increasingly possible for fixed life annuities to be transferred among providers, magnifying the risk exposure of annuitants, who have no control over the transfer process. This places a clear responsibility on the regulatory authorities to adopt a robust and effective system of prudential regulation and supervision.

In variable annuities, providers assume the risks of the minimum guaranteed benefits. Annuitants need to be protected against provider insolvency for their guaranteed benefits and also for losses that might arise from fraud or gross negligence. However, they should not be covered against losses resulting from fluctuations in asset prices.

Guarantee schemes

Thus, in addition to adopting a robust and effective system of prudential regulation and supervision, the authorities should also establish guarantee schemes covering most, if not all, types of annuities and phased withdrawals. Guarantees are necessary in the case of mandatory pension pillars, especially for fixed nominal or real life annuities. But guarantees for variable annuities as well as term annuities and phased withdrawals should also be considered.

The guarantees need to cover 100 percent of payments up to a specified basic threshold and then a very high percentage, perhaps 75 or even 90 percent, of amounts above the threshold up to a reasonable upper limit. In the case of variable annuities and phased withdrawals the guarantees should cover the guaranteed benefits and losses arising from

insolvency resulting from fraud and gross negligence but they should not cover investment losses that arise in the normal course of business.

Annuitization risk

The recent global financial crisis has shown that retiring workers face considerable annuitization risk at the time of their retirement, especially if they have a heavy exposure to equities and other assets with volatile prices. Annuitization risk is greater when retiring workers purchase fixed nominal or real annuities, and when accumulated balances are invested in instruments other than long-term fixed income instruments. It is not a factor when variable annuities are used.

Governments may address annuitization risk by promoting the use of lifecycle funds that increase the allocations into long-term bonds as workers approach retirement. The authorities could also authorize gradual purchases of fixed nominal or real annuities, spread over a number of years before and after retirement. These measures are suitable for the purchase of fixed annuities. The role of these approaches is less important in the case of variable annuities.

Lifecycle funds are widely used in several countries. They may start with very high equity allocations when workers are young and involve gradual shifts to long-term bonds as workers age. Lifecycle funds may target very low equity allocations at the time of retirement, especially if accumulated funds are to be used for the purchase of life annuities. Annuitization risk is eliminated when the asset portfolio consists of a portfolio that replicates the underlying assets of an annuity (long-term bonds). However, when part of the accumulated balances is likely to be invested in variable annuities, a modest equity allocation may still be desirable.²⁷

The use of lifecycle funds may be combined with the offer of a government undertaking to raise accumulated balances to the level that would reflect a specified minimum lifetime real rate of return (this rate could range between zero and two percent). Workers could be given the option of participating in a government guarantee scheme provided they agree to invest in a lifecycle fund that follows a portfolio benchmark set by the government. Such a limitation would prevent workers from gaming the system by investing in risky assets but falling back on the government guarantee when financial returns collapse.

Financing mechanism

The expected fiscal cost of government guarantees should be subject to detailed estimation and their financing should be carefully considered. Government guarantees may be financed by ex ante or ex post assessments on all providers or from budgetary resources. Risk-based premiums may be applied, although these are often difficult to design. As in the case of deposit insurance, adopting a speedy resolution mechanism that provides for early interventions in companies facing financial difficulties and nearing

²⁷ Viceira (2010) contains an insightful discussion of the advantages of lifecycle funds and the factors that determine their asset allocation over time.

insolvency is essential for containing the costs of the guarantees and minimizing distortions in incentives.

3. Current Plans in Four CEE Countries

This section reviews the current plans for redesigning the payout phase in four CEE countries – Poland, Hungary, Estonia and Lithuania. The review follows the analytical approach developed in the preceding section, but is complicated by the fluidity of redesign plans in three of the four countries. Some repetition and duplication of material is unavoidable but it is hoped that presenting a concise picture of the situation in each country will allow a clearer understanding of the state of progress and challenges faced in each country.

Of the four countries, only Estonia enacted legislation for the payout phase in 2009. In Poland, the first of the two acts that were approved by the Polish Parliament was signed into law by the President. The second act, which dealt with the rights and obligations of annuity providers, was vetoed by the President, forcing the Polish authorities to go back to the drawing board. In Hungary, the Parliament passed a new act on the payout phase in late 2009 but the President referred it to the Constitutional Court to clarify the standing of one of its provisions. In Lithuania a White Paper for the development of the annuity market was completed in 2008, but its discussion was postponed until late 2009 and early 2010 due to other priorities of the government in the financial and pension areas. The review starts with Poland, and continues with Hungary, Estonia and Lithuania. A summary evaluation of the main policy issues in these four countries is provided at the end of this section.

3.1 Developments in Poland

In Poland, after many years of work, two acts were prepared and approved by Parliament. The first of these acts dealt with the rights and obligations of retirees and provided a transitory solution to individuals retiring in the next five years, while the second dealt with the rights and obligations of the providers of retirement products. The first of these acts was signed into law in 2008 but the second was vetoed by the President because of concerns about the protection of retirees from inflation risk. A new law for the second set of issues is now under preparation. It is emphasized that this section discusses elements of the act that has been accepted as well as various elements of the proposal that has been vetoed by the President.

Despite the continuing presence of a first public pillar that is expected to pay a reasonable benefit, the Polish plans require full annuitization of the balances that have been accumulated in individual accounts in the second pillar. The only exceptions are for retiring workers with very low balances and for early retirees.

Retiring workers who are not able to obtain an annuity of more than 50 percent of the amount of the nursing benefit for pensioners (about 20 Euros) will be required to transfer

their balances to the Social Insurance Institution (ZUS). This calculation will be made by ZUS on the same basis as for first pillar benefits. Balances will be added to their NDC balances and will result in a higher public pension.

Annuities will be offered to people aged 65 or older. Since the retirement age for women is 60, women aged between 60 and 65 will receive their benefits in the form of temporary phased withdrawals. Temporary phased withdrawals will be offered by the existing open pension funds and will be calculated by using a unisex mortality table and a zero technical rate of interest. Monthly payments will be indexed annually in the same way as first pillar pensions.²⁸ The remaining balance on a person's account will be used to purchase a life annuity on reaching the normal retirement age.

The decision to mandate full annuitization of available balances reflects the concern of policymakers to ensure that retirees have an adequate level of retirement income and the belief that the combined pension benefits from the first and second pillars are unlikely to result in excessive annuitization. The shortcomings of life annuities in terms of lack of liquidity, flexibility and bequest are fully recognized but the official view is that pensioners can use any balances on voluntary third pillar accounts or other savings to satisfy those needs.

Structure of the Polish System

In the Polish system, the pension from the first pillar for a worker on average earnings with a full contribution history is estimated at between 30 and 35 percent of final earnings.²⁹ This is based on a contribution rate to the first pillar of 12.22 percent. With a contribution rate to the second pillar of 7.3 percent, even assuming a high average annual investment return over 40 years of 5 percent in real terms and an annual growth rate of real earnings of 2 percent, the accumulated balances on the individual account after a full contribution history of 40 years will amount to slightly over 5 times final salary. The pension from the second pillar will also depend on the annuity conversion factor but assuming pensions are indexed to inflation (or adjusted for inflation through the payment of bonuses), then the conversion factor will most likely range between 5 and 6 percent. The pension from the second pillar will thus amount to between 25 and 30 percent of the final salary, giving a combined total pension from pillars 1 and 2 of around 60 percent for men and less than 50 percent for women.

This is an adequate and affordable total replacement rate and does not imply excessive annuitization. Because the first pillar is a notional or nonfinancial defined contribution (NDC) system, the replacement rate is the same for low and high-income workers up to the contributory ceiling of 250 percent average earnings. Workers with earnings above this ceiling will need to use voluntary savings to supplement their retirement income.

²⁸ Thus, the temporary phased withdrawals are defined in exactly the same way as pensions from the first pillar, which is organized as a notional (or nonfinancial) defined contribution (NDC) system.

²⁹ The replacement rate of first pillar pensions is likely to be lower in the future because the NDC interest rate is equal to the growth of the wage bill and the latter is expected to fall unless there is a large influx of migrant workers.

Proposed model³⁰

Not only did the Polish authorities propose to disallow lump sum withdrawals but they also planned to mandate the use of one type of annuity by all annuitizing retirees. This was a fixed nominal annuity but with the possibility of profit sharing in any excess profits on the investment portfolio. Thus, the proposed annuity shared some basic features of the variable ‘guarantee and bonus’ annuity that is widely used in Denmark and Sweden. It is not clear if the proposal envisaged a right to switch provider as in Estonia. The proposal prohibited discrimination on the basis of gender but it is not clear if it also prohibited discrimination on the basis of health status or place of residence as was originally intended in the 1997 pension reform plans.³¹

Fixed nominal annuities without profit sharing were rejected because they offered no protection against inflation risk, while fixed real annuities were deemed as suffering from the limited supply of long-duration inflation-linked bonds. Business corporations and households were deemed unlikely to issue inflation-linked bonds or obtain inflation-linked mortgages and thus, the market for fixed real annuities was likely to rely extensively on government bonds.

Use of joint life annuities was permitted on a voluntary basis, but annuities with guaranteed periods of payment were not allowed. Moreover, the Polish plan did not include a requirement on both working spouses to use joint-life annuities even though these would mitigate the adverse effects from the compulsory use of unisex mortality tables.

In order to overcome the reluctance of many people of impaired health to purchase life annuities, a temporary life insurance benefit was provided. In case of death in the first month after retirement, the full amount of the annuity premium would be refunded to the estate of the deceased. The refund amount would decline each month by 1/36th of the initial amount. No refund would be made if death occurred more than 36 months after retirement.

Market structure

Policymakers decided against centralized provision, even though the social security institution, ZUS, was expected to play a central part in the payment of second pillar pensions as it already does in the collection of contributions. Despite the potential advantages of centralized account administration and longevity insurance with

³⁰ The proposed model reflects the contents of the act approved by the Parliament, but vetoed by the President. The Government is expected to propose a different model once the current round of consultations is completed. At the time of writing this paper, no details are available on the likely shape of the new design.

³¹ Such a prohibition would prevent the offer of impaired life annuities that have been introduced in the UK and other countries.

decentralized asset management, the Polish authorities were reluctant to entrust such a crucial role to a public agency.

According to the proposal, the market would be based on specialized pension companies (different from life insurance companies) that would be required to maintain adequate technical reserves and risk capital. Pension companies would not be subject to the Solvency II regime that would be applied to life insurance companies but they would be required to maintain a minimum solvency requirement of 2 percent of the basic annuity reserve. A regulatory reserve, that was intended to function as an equalization fund, would also be maintained.

Pricing policies and profit sharing rules

Pension companies would be free to determine their own pricing policies, but they would be mandated to use unisex mortality tables in calculating their initial payments. Pension companies would be required to provide quotations through ZUS, which would effectively act as an electronic quotation system. They would also be allowed to charge a commission of up to 3.5 percent on regular payout benefits.

Pension companies were also to be required to observe a profit sharing rule whereby 90 percent of any excess returns on the investment portfolio were to be distributed to policyholders by increasing the annuity reserve, while the remaining 10 percent would be used to increase the regulatory reserve. Pension companies were not allowed to declare negative bonuses and were thus required to absorb all investment losses in years when investment results were negative. However, they were allowed to recoup such losses before determining the level of distributable profits in subsequent years.

Irrespective of the pricing policies pursued by individual pension companies, the annuity reserve was to be calculated by using a common unisex mortality table and a common one percent technical rate of interest. The latter was intended to minimize the probability of negative investment results in any one given year but the effect was likely to be the offer of relatively low initial annuity payments, entailing a relatively low level of initial guaranteed benefits and a greater role for annual bonuses.

There was considerable uncertainty regarding the operation of the scheme in practice and the potential impact of price competition on initial annuity benefits. The imposition of very high technical reserves, implied by the application of a very low technical rate, would entail heavy investments in fixed-income securities and would allow limited scope for diversification into equities and other real assets. The investments of pension companies were to be subject to quantitative limits, including a 5 percent limit on foreign assets.

Pension companies would assume the investment and longevity risks for the guaranteed benefits. The inflation risk was to be assumed by pensioners although annual bonuses were expected to provide some protection against inflation. However, the longevity, investment and inflation risks of annual bonuses were effectively borne by annuitants

since investment profits would be determined after taking into account the net investment performance and longevity experience of each pension company.

These considerations imply that there would be limited room for engaging in price competition. Initial quotations compiled by ZUS would probably show little dispersion. Pension companies would attract retiring workers on the basis of their performance as asset managers and eventually on their success in managing longevity risk.

Compensation mechanism for the use of unisex mortality tables

A compensation mechanism was provided to cope with the adverse effects of the compulsory use of unisex mortality tables. Pension companies would be required to calculate their technical reserves both on gender-specific and on unisex mortality tables. A government agency would compute the factor that is needed to equate the total reserves under each calculation. Pension companies for which the reserves under gender-specific mortality were higher than the reserves calculated with unisex tables multiplied by the specified factor would receive a compensating transfer through the government agency from pension companies with the opposite result.

3.2 Developments in Hungary

The 1997 pension law allowed retiring workers to choose between annuities and lump sum withdrawals during the first 15 years after the reform. Life annuities were mandated after 2013 with retirees allowed to choose from four types of annuities: a single life annuity; a joint life annuity; a fixed term joint annuity, covering the spouse or other beneficiary for a fixed period, combined with a single life annuity for the primary beneficiary; and a single life annuity combined with a fixed term annuity covering the spouse or other beneficiary for a fixed period after the death of the main beneficiary (Impavido and Rocha 2006).

All annuities were to be fixed real annuities, indexed to the average of price and wage inflation (the so-called Swiss indexation formula that was also used for first pillar pensions). Providers were compelled to use unisex mortality tables without any provision for a mechanism to compensate for greater exposure to female pensioners. Providers were to include life insurance companies and pension funds. The latter needed to comply with specific conditions, including a minimum number of members and maintenance of adequate reserves.

Deficiencies of regulatory framework

This regulatory framework suffered from several deficiencies. The main deficiency concerned the compulsory use of the Swiss indexation formula for linking annuity payments to inflation. One problem with this was the lack of instruments allowing providers to hedge this risk. Another was that initial annuity payments would be much smaller with this rule than with products indexed to price inflation.

The rules allowing pension funds to provide annuities were also poorly designed. In particular, pension funds were not required to hold adequate reserves against duration mismatches between assets and liabilities, while provisions for sharing longevity risk with members were likely to generate transfers from newly retired members and even active cohorts to older retirees.

The authorities were fully aware of these shortcomings. Two preliminary plans were prepared by the Ministry of Finance and the Hungarian Financial Services Authority respectively. However, neither plan was adopted and another Working Group was appointed to prepare a new plan. The Working Group delivered a final proposal that was approved by the Parliament in December 2009 but was not signed by the President who referred the act to the Constitutional Court because of its provisions on mutual pension fund societies. The remainder of this section discusses the provisions contained in the proposed bill.

Restrictions on payout options

Despite the presence of relatively generous first pillar benefits that are expected to reach a 40 to 45 percent replacement rate for workers on average earnings, the proposed bill imposes tight restrictions on payout options. Unlimited lump sum withdrawals are not allowed. The contribution rate to the second pillar is eight percent and there does not seem to be much concern about causing excessive annuitization.

Retiring workers with low balances that will not be sufficient to buy an annuity equal to 5 percent of the minimum old age pension will be allowed to receive a lump sum payment. If they select to buy an annuity, this will be paid once a year. In addition, retiring workers with very high balances will be required to receive excess balances in lump sum form. The determination of excess balances will take pension benefits from both pillars into account, but the integrated threshold level is not indicated.

Retiring workers will be given constrained choice between two types of annuities: fixed real (inflation-linked) annuities; and ‘guarantee and bonus’ annuities. Workers will have to choose one or the other; a combination of the two types of products will not be allowed.

The purchase of joint life annuities will be permitted, but it will not be required. The reversion rate, i.e. the benefit for the surviving beneficiary, who must be a close relative, cannot exceed 30 percent of the pension of the main beneficiary. This is a low reversion rate. A rate of 60 to 70 percent would be closer in line with international experience. Annuities with guaranteed periods of payment will not be provided.

Institutional structure

A regulated competitive market is envisaged. Life insurance companies and private pension funds will be allowed to compete in offering both types of products. However, fixed real annuities will also be offered by the state agency, which will also act as the default provider. The reserves backing fixed real annuities will be invested in inflation-protected bonds. Switching of annuity provider will not be allowed.

The private pension funds and life insurance companies will be required to maintain adequate levels of capital reserves, appropriate mathematical reserves, and adjustment reserves. The latter will be used to manage the investment and longevity risks. It will be funded by a 2.5 percent fee on annuity premiums (accumulated account balances). The private pension funds that currently operate as mutual benefit societies will be required to convert into joint-stock companies with adequate levels of capital and reserves. The standing of this provision has been referred for examination by the Constitutional Court.

Calculation of initial payments and profit sharing rule

Strict rules will be applied to the initial calculation of annuity payments. For both inflation-protected and ‘guarantee and bonus’ annuities, this will be based on unisex mortality tables issued by the Central Statistical Office, an operating fee that cannot exceed 5 percent of the annuity premium and a zero percent technical interest rate.

The fixed real annuities will be increased annually by the previous year’s rate of inflation. The ‘guarantee and bonus’ annuities will receive a bonus that will be set once a year and will depend on the investment performance and mortality experience of each provider. Providers will have to distribute 95 percent of annual profits. Negative bonuses will not be allowed since the annuities will provide minimum guaranteed benefits.

Annuity contracts will use a centralized quotation system to be organized by the regulatory authority. Providers will be required to report the annuity factor, their gross and net investment returns, their asset management and administrative fees and the size of the annual bonus promised to annuitants.

Prudential regulations and government guarantees

Annuity providers will be required to build technical reserves by using gender-based mortality tables and market rates of interest.³² Mortality results will be shared among providers to offset the impact of the compulsory use of unisex mortality tables in pricing

³² Although redesign plans in Poland and Hungary broadly pointed in the same direction, a significant difference in pricing and reserving policies should be underscored. In Poland, pension companies would be free to set their own pricing policies but would be required to use a very low rate of interest for reserving purposes. In contrast, in Hungary, annuity providers would be compelled to use a prescribed very low interest rate for calculating initial annuity payments and for the calculation of reserves. The implications of this difference are briefly discussed in section 3.5 below.

annuities. A compensating mechanism similar to that proposed in Poland will probably be adopted for this purpose.

Benefits will be covered by the mathematical and adjustment reserves. If these are inadequate, the capital reserves of the provider will be used. A government guarantee will protect annuitants from the insolvency of a private pension fund or life insurance company.

The government will also provide a minimum rate-of-return guarantee during the accumulation phase. This will guarantee the real value of accumulated balances on a lifetime basis. Workers will be required to transfer their balances in less risky funds during the last five years before retirement (lifecycle investing).

3.3 Developments in Estonia

Estonia recently enacted a law that created a payout phase based on fixed or escalating nominal annuities but with a profit sharing component and a right to switch provider. Thus, as in the cases of Poland and Hungary, the proposed annuity had many of the features of the variable ‘guarantee and bonus’ annuity. The act also granted annuitants the right to switch provider.

Annuities will be offered by life insurance companies in a competitive decentralized market. Following European Union directives, insurance companies will be required to use unisex mortality tables in calculating initial annuity payments and annual bonuses. The law does not include provisions for a mechanism to compensate companies with a higher proportion of female annuitants.

Restrictions on payout options

The law imposes extensive restrictions on the menu of retirement products. Unlimited lump sum withdrawals are not permitted except for retiring workers with very low balances on their retirement saving accounts (those with less than 10 times the national monthly basic pension). Retiring workers with intermediate balances (between 10 and 50 times the national basic pension) will be allowed to use phased withdrawals. Those with balances between 50 and 700 times the national basic pension will be compelled to purchase a life annuity.

If the accumulated sum is higher than 700 times the national basic pension, the excess balance can be used either to purchase an additional annuity or to use phased withdrawals (the minimum period of out-payments is shorter than in the case of phased withdrawals between 10 and 50 RPM). However, if the remaining sum is not higher than 10 RPM, a lump sum payment is allowed.³³

³³ The national basic pension (RPM) amounted in April 2009 to EEK 2008.8 per month, equivalent to EUR 128 or USD 170.

All types of life annuities, especially single and joint annuities with guaranteed periods as well as escalating annuities, will be included in the menu of permitted products. Although joint life annuities with guaranteed periods of payment will mitigate the adverse effects of unisex mortality tables, their voluntary use by married couples may decrease their effectiveness.

Pricing, profit sharing and switching rules

Life insurance companies will be free to use their own mortality rates and calculate the initial payments according to their own pricing and marketing policies. They will be free to set their own guaranteed benefits and entry or exit fees, subject to adequate disclosure. However, the authorities will stipulate the interest rate yield curve that will be used for the calculation of technical provisions. This will be based on the highest-rated (AAA) euro area central government bonds spot rate yield curve, published on the European Central Bank's website. The stipulated interest rates will be conservative and will require the maintenance of a high level of reserves relative to the level of guaranteed benefits.

Insurance companies will be required to observe a minimum profit sharing rate of 50 percent. This is much lower than the proposals in Poland and Hungary. Competition will presumably force companies to operate with high profit participation rates but companies will seek to maintain some stability in their profit sharing policies and absorb the impact of years with negative results. However, the profit participation rate will not be allowed to be lower than 50 percent of profits in any one year.

Annuitants will be allowed to switch providers every three years, subject to an exit fee. Switching is an unusual feature of annuity markets that can cause many complications (see the brief discussion in section 3.5 and Box 2 below). Switching possibilities are expected to intensify the moral hazard effect and the search for groups of young retirees with impaired health.

Available evidence from the accumulation phase in most countries around the world has shown that switching is often driven by the interests of agents and brokers and is not based on sound financial criteria, such as low operating costs, high profit-sharing rates and consistent and sound investment policies. Switching in response to recent investment performance is often misguided. It remains to be seen whether the greater competition associated with the switching option will result in net benefits for annuitants.

The right to switch annuity providers is a useful consumer protection feature in the case of variable annuities when companies make drastic changes in their marketing policies or are involved in mergers with other companies with very different risk profiles. In these circumstances, exit fees should be suspended in order to allow undeterred switching. In addition, rules should be adopted to ensure that exit fees are not excessive and that portable balances are not subject to improper valuations.

Life insurance companies will be free to use their own interest rates for pricing purposes. If they decide to offer lower guaranteed benefits, they will be required to hold lower

levels of technical reserves, which will allow them greater scope to invest in equities and other real assets and declare higher bonuses over time. It is not, however, clear whether market competition will lead insurance companies to offer low guaranteed benefits with the prospect of high future bonuses or, at the other end of the spectrum, high guaranteed benefits, similar to those offered by fixed nominal annuities, and the prospect of very small annual bonuses.

Moreover, the possibility of switching may create significant complications, especially if young pensioners with impaired health are encouraged to switch by competing companies. The calculation of portable balances will have to reflect the impact of switching on the longevity risk of the pool of remaining annuitants. This could result in very low portable balances, which will effectively imply the imposition of a very high exit fee that will prevent switching from taking place.

The probability that switching will cause such adverse marketing effects will be lowered by the legal requirement on annuity providers to use the same guaranteed interest rates, mortality tables and operating fees for all the annuities they provide on the same day. Annuity providers will not be allowed to discriminate among annuitants on the basis of health status. The Financial Supervision Authority will be responsible for ensuring compliance with these rules. However, it remains to be seen whether insurance companies will find ways to engage in ‘cherry picking’, in which case the provisions against health-based discrimination will penalize the companies that do not engage in such activities.

Except for the switching rule, the structure of the Estonian market is close to the approach followed in Denmark and Sweden for private pension plans. There is, however, a significant difference. The Danish and Swedish private markets are based on broad collective labor agreements, whereas in Estonia the market covers non-employer-based individual accounts.

Prudential and guarantee rules

Life insurance companies will be subject to the Solvency II regime when the latter is adopted. They will assume the investment and longevity risks for their guaranteed benefits but annuitants will effectively assume these risks for the non-guaranteed components of future benefits since the level of profits will be determined after taking into account the impact of investment performance and longevity experience. No compensation mechanism for the compulsory use of unisex mortality tables is envisaged.

Annuity payments up to the national basic pension will be fully covered by the guarantee scheme. Amounts above this level will be covered by a 90 percent guarantee without an upper limit. The guarantee scheme will finance the transfer of annuity liabilities to other companies in cases of insurer insolvencies. It will not make direct payments to annuitants. The guarantee scheme will be financed by post-assessments levied on participating life insurance companies.

3.4 Developments in Lithuania

Under the 2003 act that created the second pillar, the use of life annuities is mandated for retiring workers who have accumulated sufficient balances to receive an annuity equal to between 50 percent and 300 percent of the basic pension.³⁴ Lump sum payments are provided for workers with balances below the lower limit as well as for the excess balances of workers above the higher limit. The law does not specify which type of life annuity should be used other than requiring that payments should not be declining. Otherwise, all types of annuities are allowed, including fixed and escalating annuities as well as deferred annuities and annuities with guaranteed periods of payment.

The determination of whether retiring workers have sufficient balances to purchase an annuity is made by the pension fund management company on the basis of a methodology and data provided by the Insurance Commission. The calculation is based on interest rate and mortality data provided by the Commission for the standard fixed nominal single immediate life annuities. The use of joint life annuities, annuities with guaranteed periods of payment or escalating annuities, all of which have the effect of lowering initial payments, is not taken into account. However, insurance companies are free to price their products in accordance with their own parameters.

White Paper recommendations

A Working Group with representatives from the government, the supervisory institutions and the private sector was created in 2007 to recommend changes to streamline the design of the payout phase. It published a White Paper in December 2008. This reaffirms the broad outline of the current approach but proposes the designation of four instead of three groups of retiring workers: the first group of workers, those with accumulated balances of less than 20 times the national basic pension, will receive a lump sum; the second group, those with balances exceeding 20 times the basic pension but not sufficient to purchase an actuarial annuity of at least half the basic pension, will receive temporary phased withdrawals equal to 35 percent of the basic pension until their account balances are exhausted; the third group comprises those workers with sufficient balances to purchase an actuarial annuity of between half and 3 times the basic pension; and the fourth group covers workers with higher balances, who will be free to withdraw their excess balances as lump sums.

The White Paper reaffirms the offer of a choice to retiring workers from the third and fourth groups between fixed nominal annuities, escalating annuities (rising at a 2 percent annual rate), and annuities with guaranteed periods of payment. To improve the marketing of annuities it recommends the implementation of an electronic quotation system (similar to Chile's SCOMP) to be managed by the Lithuanian Social Insurance Agency (SODRA). The lack of protection against inflation risk is one of the main weaknesses of the Lithuanian proposal.

³⁴ In April 2008 the basic pension amounted to LTL 360 per month, equivalent to EUR 104 or USD 139.

The White Paper is silent on the use of joint life annuities but highlights the problems that will be caused by the compulsory use of unisex mortality tables, which Lithuania will have to adopt after the expiration of the current exemption. However, there is no mention of a compensation mechanism similar to the one proposed in Poland.

Finally, the White Paper proposes the offer of government guarantees against insurer insolvency. It recommends covering 100 percent of amounts below 50 percent of the basic pension and 75 percent of amounts between 50 and 300 percent of the basic pension.

Due to various changes in the second pillar in 2009, including a temporary reduction in the contribution rate, the authorities initially postponed discussion of the White Paper. However, the White Paper was presented to the Social Affairs and Labor Committee of Parliament in October 2009. The Committee suggested the Ministry of Finance and the Ministry of Social Affairs and Labor assess the White Paper's proposals, prepare the necessary draft legislation and submit it to the Committee by March 2010.

3.5 Summary Evaluation of Main Policy Issues

This section provides a summary evaluation of the main policy issues in the four countries. The analysis is hampered by the fluidity of current plans since one of the four countries is in the process of preparing a new modified plan, while another country has delayed consideration of its plan until the spring of 2010. Only Estonia has enacted legislation to redesign the payout phase.

The evaluation follows the analytical approach of section 2. It starts with a discussion of restrictions on payout options and continues with a review of the menu of retirement products, the institutional structure of the market, the regulation of pricing and marketing policies, the prudential regulation of providers, and the offer of government guarantees.

Restrictions on payout options

Despite the retention of first public pillars that promise pension benefits ranging between 25 and 40 percent of pre-retirement earnings, which could allow them to adopt a more liberal approach to the regulation of payout options, the four countries appear inclined to disallow lump sum distributions and mandate full annuitization of accumulated balances, except in the case of low balances or balances that exceed specified levels. Small balances may be transferred to the public pillar for a commensurate increase in the public pension, may be withdrawn as lump sums, or may be taken out as temporary phased withdrawals over a limited period. Excess balances may be withdrawn in a lump sum.

This approach reflects the expectation that accumulated balances in the second pillar will produce annuity payments of 30 percent or less of pre-retirement earnings. Combined with first pillar pensions, the total replacement rate is unlikely to exceed 60 percent. The risk of excessive annuitization is therefore deemed to be low. Policymakers argue that

balances in the voluntary third pillar and other savings can be used to meet liquidity and flexibility needs and satisfy the bequest motive.

This general approach seems justified. However, consideration could be given to the policy of adopting an integrated replacement rate discussed in section 2.1 above. This would avoid the simple rejection of lump sum distributions or the setting of arbitrary limits.

Menu of Retirement Products

The general disallowance of lump sum withdrawals is combined with the offer of a restricted menu of retirement products. In three of the four countries (Poland, Hungary and Estonia) this includes fixed and escalating nominal annuities but with the possibility of sharing in any excess profits on the investment portfolio. The resulting annuities share many of the features of the variable ‘guarantee and bonus’ annuities that are widely used in Denmark and Sweden. Estonia also includes a right to switch providers. Lithuania’s proposal mandates the use of life annuities in the form of fixed or escalating nominal annuities with or without guaranteed periods of payment but without a profit sharing rule or a right to switch provider. Hungary is the only one of the four countries that includes the offer of inflation-protected annuities in the menu of retirement products.

Fixed nominal annuities with no profit sharing have been rejected in three of the four countries because they do not provide protection against inflation risk, while fixed real annuities are seen as suffering from the very limited supply of long-duration inflation-linked bonds in CEE countries. In Hungary, providers of fixed real annuities are required to invest the corresponding reserves in inflation-protected bonds.

Unless there is a basic change in official policy to promote the use of inflation-linked instruments for long-term debt purposes by both the public and private sectors, it is unlikely that business corporations and households will be willing to issue inflation-linked bonds or obtain inflation-linked mortgages.³⁵ Thus, the market for fixed real annuities will have to rely solely on government bonds, which will imply lower real returns to annuitants and an extensive reliance of the second pillar on government finances.

Allowing retiring workers constrained choice from a number of retirement products, including fixed nominal and real annuities, variable annuities and phased withdrawals, would be more optimal since individual workers would then be able to select the combination of products that would be most suited to their circumstances. Offering a constrained choice would also allow retiring workers to use different products at different stages of their retirement.

³⁵ In Chile, because of the long experience with high inflation, all long-term debt instruments, including corporate bonds and residential mortgages, have been denominated in an inflation index that was introduced in 1967. In recent years, medium-term bonds and loans have started to be denominated in nominal pesos.

Three main arguments are advanced in favor of mandating one type of product: the need to avoid a fragmentation of a market that is initially at least expected to be small; concern that offering even a constrained choice will allow retiring workers to engage in self-selection; and the benefits of simplicity for the majority of retiring workers who may lack the financial savvy to assess the merits and drawbacks of alternative products.

The first argument has validity, especially in small low-income countries. Market fragmentation will increase operating costs and reduce the base of risk pooling for any type of annuity.³⁶ However, over time as the market becomes better established, the case for offering wider choice will become stronger.

The second argument is more debatable. Prevention of self-selection implies that low-risk retiring workers (those with short life expectancy because of impaired health or low socioeconomic status) are forced to subsidize high-risk pensioners (those with long life expectancy). Risk-based insurance premiums are extensively used in all lines of insurance, covering motor, home and life insurance. It is not clear why longevity insurance should be treated differently. Creating a separate class for people with impaired health is one option for handling this issue. This is already practiced in the UK, the US and other advanced countries. Allowing the use of phased withdrawals for people with critical illnesses is another. The latter has the advantage of permitting bequests in cases of early death.³⁷

The third argument on the simplicity of mandating the use of a single product has even greater validity because of the limited financial savvy of the majority of retiring workers and the high complexity of retirement products. Nevertheless, it seems unfair to impose a suboptimal product to workers who believe that they are able to make a rational decision that would better reflect their preferences and financial circumstances. A preferred approach would be to allow constrained choice but at the same time specify a default option, covering both a product and a provider, which could be used for workers who are unable or unwilling to make a timely decision. Hungary has specified the centralized public agency to act as the default provider and fixed real annuities as the default product for workers who do not make a timely decision.

Use of joint life annuities with guaranteed periods of payment

Current plans in the four countries allow the use of joint life annuities but two of them (Poland and Hungary) did not propose to allow use of guaranteed periods of payment. Given the compulsory use of unisex mortality tables, mandating the purchase of joint life annuities by both working spouses would simplify the operation of the proposed compensation mechanism to protect individual providers from the adverse effect of using unisex mortality tables and to discourage them from excessively focusing their marketing campaigns on acquiring low-risk male business. Joint life annuities with guaranteed

³⁶ This argument supports centralized provision. This is discussed in section 2.4.

³⁷ Creating more than one risk pool on the basis of health status is exposed to the risk of political pressure to expand the number of pools. Caution is required to avoid a proliferation of risk pools.

periods of payment are very popular when they are allowed and they provide a stronger protection than the temporary life insurance policies that were included in the Polish plan.

The choice between centralized and decentralized provision

Probably because of the bad experience with state-owned institutions during the communist era, policymakers in three of the four CEE countries have rejected the centralized solution. However, this legacy should not obscure the advantages of centralized structures for handling the various pension payment risks.

Centralized public agencies, such as ZUS in Poland and SODRA in Lithuania, are responsible for the management of the public pillars and also play a central role in the collection of contributions and the payment of benefits in the second pillar. However, policymakers are reluctant to entrust them with a major management role in either the accumulation or the payout phase.

The creation of decentralized competitive markets is confronted with a major challenge to develop a robust and effective system of regulation and supervision. This challenge is likely to be magnified by the decision to mandate the use of fixed nominal annuities with a profit sharing rule. These products are very similar to variable ‘guarantee and bonus’ annuities that require a high level of transparency and integrity by annuity providers, especially with regard to their pricing and marketing policies. Granting annuitants the right to switch provider, which is allowed in Estonia, is bound to complicate the regulatory and supervisory challenge. However, the regulatory and supervisory framework in transitioning economies may not be prepared yet for these challenges.

The regulation of pricing policies

The four CEE countries differ in their regulatory approach to pricing policy issues. Lithuania will require the use of quotations through SODRA, the centralized public agency that handles first pillar pensions. The fixed or escalating nominal annuities with or without guaranteed periods of payment that it proposes to mandate raise fewer regulatory challenges and do not require an ample supply of inflation-linked bonds from the public and private sectors. However, they expose pensioners to inflation risk.

Calculation of initial payments in variable annuities

There are also regulatory differences in the plans of the three countries that favor the use of fixed nominal annuities with the possibility of profit sharing. In Poland, the plan was to allow pension companies to determine their own pricing policies but to require them to create technical reserves by using common specified unisex mortality tables and a uniform one percent rate of interest. This was likely to result in low initial payments and in an investment portfolio that would be heavily concentrated in fixed-income securities. Annual bonuses were likely to result from the difference between market rates on long-term bonds and the artificially low technical rate. But with little room for investments in

equities and other real assets, the total payments from annuities were unlikely to exceed those that could be obtained from traditional fixed nominal annuities.

The stalled bill in Hungary followed a similar approach. It required the use of unisex mortality tables and a zero rate of interest for the calculation of initial payments and technical reserves. This approach would require the maintenance of large technical reserves and would thus imply a relatively high investment in fixed-income securities, leaving limited room for bonuses over the life of an annuity.

In Estonia the act does not impose restrictions on the calculation of initial payments. Annuity providers will be free to use their own discount rates and mortality tables although, in line with all EU countries, they will be required to use unisex mortality tables and thus to quote the same prices to both men and women of the same age. The technical interest rate for the purpose of building technical reserves will be provided by the Ministry of Finance and will be based on market quotations of AAA-rated sovereign bonds from Euro countries.

Profit-sharing policies

The three countries also vary in their approach to the regulation of profit-sharing policies. In Poland the profit participation rate was to be set at 90 percent of annual profits. If profits were negative, no allocation would be made and annuity providers would initially absorb the whole loss. However, in subsequent years when profits were realized, the losses of annuity providers from previous years would be covered first and any remaining balance would be distributed between annuitants and shareholders on a 90/10 basis.

In Hungary, the annuity providers were required to distribute 95 percent of net annual profits, after deducting their operating costs and any transfers to reserves required to cover increasing longevity.

Estonia will follow a more liberal approach. It will require a minimum profit participation rate of 50 percent. If annuity providers absorb any losses or are unable to credit shareholders with returns commensurate to the risks that are assumed by them they will be able to recoup these amounts in following years before determining the level of profits that are available for distribution.

The Estonian plan is closer to the approach followed in Denmark and Sweden for private pension plans, although it differs from them in a very important aspect. The Danish and Swedish private markets are based on broad collective labor agreements, whereas in Estonia and other transitioning countries the markets cover non-employer-based individual accounts.

The reliance on broad collective labor agreements implies that representatives of workers and employers monitor the performance of providers and protect the interests of pensioners. This may explain why neither Denmark nor Sweden has created a central register compiling performance data of different providers on a systematic basis. In a

system of non-employer-based individual accounts, a central register of performance data is indispensable.

Switching rules and exit fees

Switching of annuity contracts is an option that is not traditionally offered to annuitants (see Box 2). Granting a switching right to annuitants creates two complex pricing issues. The first concerns the right of annuity providers to levy an explicit exit fee. The second concerns the valuation of portable balances, which may itself entail an implicit exit fee. The regulatory authorities would need to set clear rules on the imposition of explicit exit fees. They would also need to develop a methodology for the valuation of portable balances. The latter would not present major difficulties in the case of variable annuities without any minimum guaranteed benefits. But for fixed annuities and for the minimum guaranteed benefits of variable annuities, the rules would have to allow for the potentially adverse impact of switching on the longevity risk of the remaining pool of annuitants.

Box 2. Switching of Annuity Providers: Feasibility and Fairness

In traditional life annuities, switching annuity provider is not permitted. Life annuities are irrevocable and nonportable contracts. The irreversibility of annuity contracts is justified by the pricing of annuities, which is based on the projected life expectancy of the pool of annuitants at the time the contracts are issued. A loss of a contract because of switching or outright cancellation will upset the actuarial calculations of insurance companies. If the annuitants who wish to cancel a contract or switch provider are those who are diagnosed with serious illness after purchasing their contract, the average life expectancy of the remaining pool of annuitants will be longer, potentially causing large losses for insurers.

If contract switching or cancellation is allowed, annuity providers have three options for avoiding these losses. First, in calculating the value of the refund or of the portable balances they can deduct a fair estimate of the potential marginal losses from the switching or cancellation of the particular contract. This will presumably be based on the life expectancy of the pool of annuitants before and after the loss of this contract. Second, annuity providers can use statistical models to estimate the probability of serious illness among their clients and adjust their prices accordingly before issuing their annuity contracts. And, third, they can retain the right to renegotiate all existing annuity contracts.

The complexity of these calculations probably explains the traditional irreversibility of annuity contracts. However, this system is unfair on people who are diagnosed with a serious illness a few years after purchasing an annuity. Allowing switching or cancellation of annuity contracts will remove this unfairness but will also run the risk of opening the annuity market to expensive marketing campaigns that target annuitants suffering from serious illnesses.

One potentially effective way to address this issue is to centralize account administration and longevity insurance but retain decentralized asset management. The centralization of longevity insurance will allow the creation of two distinct pools of annuitants: one pool will cover those who have been diagnosed with serious illness; and the other for all the rest. Joining the first pool can be permitted both at the time of retirement and at a later time, say within the first ten years after retirement, if a person is subsequently diagnosed with serious illness. This system will work better in the case of variable annuities, where annuitants share in the longevity risk of annual bonuses, but it can also work in the case of fixed annuities, provided the latter can be adjusted for the impact of subsequent switching of annuitants with seriously impaired health.

When switching is allowed, annuitants who are diagnosed with some serious illness will have an incentive to seek better terms from competing providers. However, in decentralized competitive markets, the right to switch may involve a high level of marketing costs, including payments to selling agents. Combined with the lower valuation of portable balances because of the adverse actuarial effect of switching, granting to annuitants the right to switch may well result in a lower overall level of annuity benefits. The centralization of longevity insurance, as discussed in Box 2, may overcome these problems but it implies a different approach to the organization of the annuity market.

The issue of unisex mortality tables

An important aspect of pricing regulation is the legal requirement to use unisex mortality tables. This has potentially adverse effects on different providers and may distort marketing policies. In Poland, a compensation mechanism is provided to cope with the adverse effects of the compulsory use of unisex mortality tables. Annuity providers will be required to calculate their technical reserves both on gender-specific and on unisex mortality tables. A government agency will compute the factor that is needed to equate the total reserves under each calculation. Providers for which the reserves under gender-specific mortality tables are higher than the reserves calculated with unisex tables multiplied by the specified factor will receive a compensating transfer through the government agency from providers with the opposite result. Similar compensation mechanisms are likely to be used in Hungary and other CEE countries.

The regulation of marketing policies

In principle, CEE countries require annuity providers to comply with acceptable conduct rules. In their different ways, all four countries propose the use of electronic quotations, either through public agencies, such as ZUS in Poland, or through annuity exchanges.

The benefits from using centralized quotation systems will depend on the types of annuities that will be offered. The benefits are likely to be greater in the case of annuities with relatively high initial payments that will resemble traditional fixed nominal annuities. If annuities with low initial payments are used, the benefits will be smaller since price dispersion will be more limited and annual bonuses will play a greater role in the purchasing decision of retiring workers. In this case, the creation of a central register with comprehensive and reliable data on long-term performance, profit sharing rules and levels of operating costs will be of much greater use.

The regulation of marketing policies will need to protect annuitants from the potential perverse marketing campaigns of annuity providers, which will be more likely in the case of annuities with low initial payments and a greater reliance on annual bonuses. When mergers or other drastic changes in marketing policies alter the risk profile of the business of different providers (see section 2. 6 above), annuitants should be allowed to switch providers within reasonable time limits and without incurring any explicit or implicit exit fees.

The prudential regulation of providers

CEE countries will follow the evolving Solvency II approach for life insurance companies, which will specify the rules applicable to the valuation of assets and liabilities, and the solvency requirements.³⁸ However, contrary to the Solvency II approach, current proposals in these countries suggest that the technical rates for calculating the amount of technical reserves will be specified by the authorities.

Government guarantees

CEE countries will follow emerging practice on government guarantees in EU countries in the context of developing and adopting the Solvency II regime. Hungary and Poland propose a 100 percent guarantee without limit, Estonia provides 100 percent guarantees up to a basic level of benefits and 90 percent for amounts above these levels. Lithuania proposes 100 percent guarantees up to a basic level and 75 percent for amounts above these levels with a cap.

4. Concluding Remarks

The design of the payout phase of the second pillar faces many challenges. The preceding section of this paper offers a detailed summary of the current plans in Poland, Hungary, Estonia and Lithuania and thus to avoid unnecessary repetition, this concluding section focuses on some additional options and considerations. The current plans of the four CEE countries represent considerable progress in redesigning the payout phase of their second pillars. However, the advantages of some of the following options merit further consideration.

First, adopting an integrated threshold replacement rate from the compulsory public and private pillars would introduce flexibility in the system without causing a significant reduction in the level of desired annuitization. Under an integrated replacement rate, any excess balances above the threshold level would be permitted to be withdrawn.

Second, allowing constrained choice from a number of retirement products, including fixed nominal and real annuities, escalating annuities, variable annuities, and phased withdrawals, would permit retiring workers to select the combination of products that would be most suited to their risk preferences and economic circumstances.

Third, an attractive way of organizing the market for variable annuities (or fixed annuities with a profit sharing rule) would be to have centralized account administration and longevity insurance combined with decentralized asset management. This model combines low operating costs and transparent risk-sharing arrangements with competitive

³⁸ However, it is not clear that the Solvency II regime will be applied to annuity providers in Poland since annuities will be managed by pension companies and not by life insurance companies.

asset management. The single provider would not have to be a public agency; it could well be a regulated public utility, jointly owned by participating asset managers.

Fourth, promoting the market for fixed real annuities would address the needs of people with long life expectancy and low levels of risk tolerance. Offering this option would permit retiring workers to reveal their preferences. If the demand for fixed real annuities is relatively weak it could be easily satisfied by the limited supply of inflation-linked bonds issued by the public sector. If the demand for such annuities is revealed to be strong then policy measures would need to be taken to promote the issuance of inflation-linked debt instruments by both the public and private sectors.

Fifth, the offer of fixed nominal annuities that is envisaged in Lithuania does not provide protection against inflation. The authorities should consider the case for promoting more aggressively the use of escalating annuities that are included in the current plan, until the market is able to offer more sophisticated products.

Sixth, the offer of government guarantees to cover the guaranteed benefits provided by fixed or variable annuities is highly advisable and this is envisaged in the four transitioning countries. However, these government guarantees may need to be supplemented with special measures to address annuitization risk. The provision of a government guarantee covering a specified lifetime minimum real rate of return during the accumulation phase would also be advisable.

Seventh, the marketing and pricing policies of annuity providers in decentralized competitive markets would need to be closely regulated and monitored. Every effort should be made to provide effective protection to pensioners by deterring deceptive practices, preventing excessive fees, promoting sound valuations of portable balances and ensuring a fair distribution of profits. Centralized agencies require a high level of transparency and public accountability.

Eighth, for fixed nominal and real annuities an electronic quotation system should be created to lower search costs and minimize the influence of brokers. For variable annuities, a central register needs to be maintained compiling comparative data on a consistent and informative basis on the performance and bonus policies of different providers and enhancing the transparency of the system. The register should focus on profit-sharing policies, levels of operating costs, levels of entry and exit fees, valuation of portable balances and consistency and soundness of investment policies. A very important challenge is to find ways to standardize this information and make it comprehensible by retiring workers.

Ninth, the market fragmentation that would be caused by the offer of a wider but still constrained choice of products could be addressed by adopting a clear division of responsibilities: the use of a centralized agency to offer variable annuities along the lines suggested above; and by channeling through a decentralized competitive market the supply of fixed real and nominal annuities.

Tenth, if they decide to offer a wider choice to retiring workers, the authorities would need to specify which type of product and which provider would act as the default option. Countries that favor variable 'guarantee and bonus' annuities would probably opt to name them as the default option but other countries may prefer to use as default options either escalating nominal annuities or even fixed real annuities. The identity of the provider in the default option would be either a centralized provider, if one exists, or a provider selected through a specified auction mechanism. However, naming a default option would be essential because not all retiring workers would be able and willing to make a timely decision. This would suggest that the default option should not entail, at least for a short transitory period, an irrevocable decision.

Eleventh, granting annuitants the right to switch providers raises many complex issues and may result in lower overall benefits for retirees. It is an issue that merits considerable further study.

Annex A - The Variation and Dispersion of Annuity Prices³⁹

This annex discusses the variation and dispersion of annuity prices. It focuses on annuity quotations that were obtained from the website of the UK Financial Services Authority (UK FSA). The website has been created in order to increase transparency in the annuity market and strengthen competition. It is part of the so-called Open Market Option (OMO) that aims to improve the marketing and selling of annuities, lower the dispersion of annuity prices and protect retiring workers from the potentially distorting and harmful influence of brokers.

It is noteworthy that despite the creation of the website and the promotion of the Open Market Option, considerable dispersion continues to be observed among annuity quotations. No information is available on the dispersion of prices in actual annuity contracts. Using quotations rather than contracts increases the extent of reported dispersion.

The following 3 tables report data on internet quotations obtained on July 22, 2009. They relate to immediate annuities payable monthly in advance for a capital premium of GBP 100,000.⁴⁰ The first set covers a single life annuity for a non-smoker male aged 65 with no guaranteed period of payment (GPP). The second set allows for a 10 year GPP. And the third set covers a joint life annuity with a 10-year GPP and a 67 percent annuity for a surviving spouse aged 60. Only 8 companies offered quotations for such annuities in the Open Market Option and of these only 5 offered quotations for inflation-linked annuities. The majority of life insurance companies operating in the UK offer only annuities to workers who have maintained accumulation accounts with them.

The data show that even under the OMO there is significant dispersion in annuity prices. This ranges between 21 and 25 percent for fixed nominal annuities. It is higher at between 25 and 30 percent for 3 percent escalating annuities but narrows to 14-15 percent for fixed real annuities. The latter is the result of one company quoting higher fixed real annuities than 3% escalating ones, implying that this company expects inflation over the period of the annuity to be below 3 percent. For the same reason, the coefficients of variation at close to 6 percent are smaller for fixed real annuities than for nominal annuities. They reach 11 percent for escalating joint-life annuities.

³⁹ Extracted from Rocha and Vitas (2009).

⁴⁰ This short annex has not examined the dispersion of annuity quotations for other, smaller or larger, amounts of capital premiums.

Table A1: UK: Single Immediate Life Annuities, Male 65

Company	Fixed Nom	3% Esc	RPI	Esc/FN	RPI/FN
Aegon/Scottish Equitable	597	436		73%	
Canada Life	588	427	368	73%	63%
Legal & General	567	410	349	72%	62%
Standard Life	553	393	359	71%	65%
B & C E Insurance	540				
Scottish Widows	519	361	316	70%	61%
Friends Provident	516	364		71%	
AXA	478	336	347	70%	73%
Average	545	390	348	72%	64%
Standard Deviation	40	37	20		
Coefficient of Variation	7.3%	9.6%	5.7%		
Range	119	100	52		
Range/Average	22%	26%	15%		

Source: UK FSA website – quotations July 22, 2009

Table A2: UK: Single Immediate Life Annuities, Male 65, 10Y GPP

Company	Fixed Nom	3% Esc	RPI	Esc/FN	RPI/FN
Aegon/Scottish Equitable	586	429		73%	
Canada Life	577	420	362	73%	63%
Legal & General	559	404	345	72%	62%
Standard Life	538	384	351	71%	65%
Scottish Widows	508	354	311	70%	61%
Friends Provident	508	359		71%	
AXA	471	332	342	70%	73%
Average	535	383	342	72%	64%
Standard Deviation	42	36	19		
Coefficient of Variation	7.8%	9.5%	5.6%		
Range	115	97	51		
Range/Average	21%	25%	15%		

Source: UK FSA website – quotations July 22, 2009

Table A3: UK: Joint Immediate Life Annuities, M65, F60, F67%, 10Y GPP

Company	Fixed Nom	3% Esc	RPI	Esc/FN	Real/FN
Aegon/Scottish Equitable	511	350		68%	
Canada Life	503	342	285	68%	57%
Legal & General	495	335	275	68%	56%
Standard Life	469	315	284	67%	61%
Scottish Widows	440	287	247	65%	56%
Friends Provident	440	291		66%	
AXA	397	257	268	65%	68%
Average	465	311	272	67%	58%
Standard Deviation	42	34	16		
Coefficient of Variation	8.9%	11.0%	5.7%		
Range	114	93	38		
Range/Average	25%	30%	14%		

Source: UK FSA website – quotations July 22, 2009

Initial payments for real fixed annuities are on average 36 percent lower than for fixed nominal annuities in the case of single life annuities with or without the 10-year guaranteed period of payment. For joint life annuities, the difference is even greater at 42 percent. Similarly, initial payments for annuities escalating at 3 percent start 28 and 33 percent respectively below those of fixed nominal annuities.

Table A4 presents data on annuity conversion factors and the difference between various types of annuities. The annuity conversion factors (ACF) are based on the quotations shown in Tables A1 to A3. The ACF show the amount of annual income for every 100 dollars or pounds in capital premiums. Thus, the ACF for a fixed nominal single life annuity for a non-smoker male aged 65 amounts to 6.54 percent. For the same annuity contract but with a 10-year guaranteed payment, the ACF suffers a very small decline to 6.42 percent or just 2 percent. Issuing a joint life annuity with the spouse aged 60 and a 67 percent reversion rate causes a larger fall to an ACF of 5.58 percent or a further decline of 13 percent. Buying a fixed real joint life annuity results in an ACF of only 3.26 percent. This is half the level of the fixed nominal single annuity. Buying inflation protection causes a marginal fall of 35 percent.

Table A4: Annuity Conversion Factors

		ACF	% of A	Difference
A.	Single M65 Fixed Nominal	6.54%		
B.	Single M65 10YGPP Fixed Nominal	6.42%	98%	2%
C.	Joint M65, F60, 10YGPP Fixed Nominal	5.58%	85%	13%
D.	Joint M65, F60 10YGPP Fixed Real	3.26%	50%	35%

Source: Calculated on the basis of the UK FSA annuity quotations of Tables A1 to A3

This large decline explains the reluctance of retiring workers to opt for fixed real annuities. However, unless retiring workers suffer from a serious illness, they would be unwise to choose fixed nominal annuities, especially in countries with a long history of high inflation. Table A5 shows the impact of inflation on the real value of annuity payments with the passage of time.

Table A5: Impact of Inflation on Real Value of Annuity Payments

Rate\Years	10	20	30
0.5%	-5%	-9%	-14%
1%	-9%	-18%	-26%
3%	-26%	-45%	-59%
5%	-39%	-62%	-77%
10%	-61%	-85%	-94%

Even at a low inflation rate of 1 percent, the real value of annuity payments falls by 18 percent after 20 years. With a moderate inflation of 3 percent, annuity payments decline by 45 percent in real terms 20 years after retirement and the falls are much more serious with higher rates of inflation.

The problem of fixed nominal annuities is underscored by two observations. Inflation in the US averaged slightly over 3 percent since the early 1980s. With current estimates of life expectancy at retirement, between one third and one half of retirees would still be alive 20 years after retirement. Thus, inflation will impact a large number of retirees.

The relatively high inflation rate in the US suggests that even annuities denominated in a reserve currency will not protect against inflation. A reserve currency annuity provides protection against runaway domestic inflation and domestic currency depreciation but not against global inflation.

Annex B – The 2008 Transformation of the Chilean Pension System⁴¹

In 2008, the Chilean system was significantly reformed. This annex provides a brief summary of the changes that are germane to the issues addressed in this paper.

First, a new public benefit, the PBS (Pension Basica Solidaria), was introduced. The PBS is paid to all aged people who fall in the lowest 3 quintiles (60 percent) of the income distribution and have no pension of their own. It will replace the former PASIS, which was a means-tested benefit.

After a brief four-year transition period, the PBS will amount to 75,000 pesos, equivalent to USD 150 and equal to 19 percent of the average wage. It is significantly higher than the PASIS, which amounted to 12 percent of the average wage. However, it is at the low end of the range of flat benefits paid in various high-income countries, such as Australia, Canada, Denmark and New Zealand.

Second, the Minimum Pension Guarantee (MPG), which covered all workers with a minimum of 20 years of contributions and amounted to between 23 and 27 percent of the average wage, was replaced by the Pension Solidarity Supplement (APS or Aporte Previsional Solidario). This is paid to all individuals in the lowest 3 quintiles of the income distribution with a private pension and irrespective of their contributory record.

The APS is equal to the PBS subject to a clawback provision of 29.4 percent of the private pension (not the total income) of eligible pensioners. This means that the supplement is eliminated when the private pension reaches 65 percent of the average wage. The latter is known as PMAS (Pension Maximal con Aporte Solidario).

Third, the rules for early retirement have been modified and tightened slightly. Prior to 2008 and following the 2004 changes, early retirement was allowed if individual workers could obtain a fixed real annuity that was equal to 70 percent of their own average real earnings over the 10 years preceding retirement (excluding months of inactivity) and 150 percent of the MPG. The first requirement continues to apply but the second was replaced with a requirement to obtain an annuity equal to 80 percent of the PMAS or 52 percent of the average wage. (This is more stringent than the previous rule since 150 percent of the MPG amounted to between 34.5 and 40.5 percent of the average wage. However, the 70-percent-of-own-past-earnings rule usually determines eligibility for early retirement.)

Fourth, payment of the APS will start at the normal retirement age of 65 for men and 60 for women. Moreover, the APS will be based on the imputed private pension that workers could obtain if they continued to work until the normal retirement age.

⁴¹ This annex is extensively based on a similar annex in Rocha and Vittas (2010).

Fifth, prior to the 2008 changes, the monthly benefit from phased withdrawals could not fall below the MPG level. When the account balance was exhausted, the government assumed the payment responsibility. Thus, longevity risk was covered at the level of the MPG. After 2008, the monthly payments from phased withdrawals cannot fall below the PBS. Thus, the government continues to provide longevity risk to pensioners who opt for phased withdrawals but this is now paid at the somewhat lower level of the PBS and covers only individuals who fall in the 3 lowest quintiles of the income distribution.

Sixth, the calculation of the monthly benefit of phased withdrawals has been tightened. Instead of using the average remaining life expectancy, the calculation will be based on a higher life expectancy. This will engender the creation of a significant reserve that will limit to 5 percent the probability of workers outliving their balances. This approach lowers the exposure of the government to long-lived individuals. As before, remaining balances on the accounts of deceased individuals will be included in their estate.

The new rules on the calculation of phased withdrawals is expected to deter retiring workers with balances that are higher but close to the threshold for the compulsory use of phased withdrawals. Under the previous rules such workers had an incentive to use phased withdrawals. They would benefit from high financial returns on their balances but would be protected by the government guarantee if financial returns were adverse and their balances suffered a heavy fall. This group of workers will now receive a higher benefit by purchasing a life annuity.

Several other changes were introduced in 2008 but the above summarize those that are relevant to the issues discussed in this paper. An important policy issue concerns the determination of the level of the PBS in the future.

Annex C – Glossary of Selected References

Annuity risk – The risk that at the time of ‘locking in’ a fixed annuity payment contract, the level of initial financial assets used to purchase the annuity at that particular time has suffered a value decline or loss (due to market, credit or other risks) and thus the ensuing annuity payment will be lower than if the asset value had remained stable.

Annuity – A financial contract that provides a regular income stream in exchange for a financial asset provided to fund such annuity.

Centralized provider – An institutional arrangement whereby a single provider (government agency or other) provides annuity payments to the retired population at large, under a mandatory pension system. A centralized provider thus assumes the longevity/mortality risks to provide beneficiaries with lifetime annuities. Market risks can be assumed by the centralized provider, or can be managed by separate decentralized investment companies.

Decentralized provider – An institutional/market arrangement whereby various players/firms offer annuity products to retirees with each firm/institution typically taking on the risks of market fluctuations and longevity risk uncertainty. A decentralized system usually counts on market competition to offer products of value and each firm manages a specific investment and actuarial portfolio based on its customer profile.

Deferred annuity – An annuity that begins paying only after a predefined period (e.g.: a number of years after retirement) defined at the point of issue of the contract and paid out provided that the annuitant or annuitants are alive at the time that the payments are scheduled.

Escalating Annuity – An annuity that includes a pre-determined formula for increasing its value at a pre-set rate (e.g.: by 2% each year or other agreed metric, amount or growth rate).

Fixed Annuity – An annuity of equal value payments for each period. Fixed annuities protect beneficiaries against longevity and investment risks. While real fixed annuities protect against inflation risk, nominal fixed annuities do not protect against inflation.

Guarantee & bonus annuity – An annuity that is variable but guarantees a minimum “floor” payment or return, but can otherwise fluctuate and provide different periodic income streams including a windfall (bonus) payment depending on the investment/income performance of the assets managed. An unresolved issue in bonus annuities is whether periods of negative profits should allow reversibility of prior period bonuses in line with the return/profit sharing principle.

Investment risk – Is the market risk affecting the financial assets used to convert invested funds into an annuity. The investment risk (e.g.: stock volatility, interest rate changes, capital losses/gains, etc.) can affect the underlying financial asset value which in the case of a fixed annuity stream, can affect the long term level of returns to the provider. In the case of variable annuities, market risk directly affects the periodic returns to the beneficiary.

Joint life annuity – An annuity designed for couples, which pays until the death of both spouses. A joint life annuity is based on the longevity estimates for both spouses and assumes a reduction in payments to the surviving spouse by a pre-determined amount.

Longevity risk – The risk of outliving the mortality table projection. In the case of a beneficiary, it implies outliving his/her retirement funds and being left without income in old age. In the case of an annuity provider it is the risk of projecting longevity shorter than the actual life span of the beneficiaries.

Nominal Fixed Annuity – Usually refers to an annuity the value of which is not adjusted for inflation (typically pertains to a fixed annuity but without any inflation adjustment).

Phased Withdrawal – A periodic series of payments taken from an account balance based on a predetermined formula or methodology. Phased withdrawal mechanisms typically do not guarantee the beneficiary a life time stream of payments, that is the beneficiary assumes longevity risk.

Real Fixed Annuity – An annuity the contract of which includes a provision to increase its value by an inflation based factor, thus protecting the beneficiary from the risk of price increases that would otherwise require additional income to consume the same basket of goods.

Self annuitization – A process whereby the beneficiary calculates income streams from invested assets to be used for his/her retirement payments. Longevity risk, market risk, and inflation risks are assumed by the beneficiary.

Term annuity – A stream of income payments for a pre-defined and finite period (e.g.: 20 years, but not for life).

Unit linked annuity – An annuity the periodic payment of which is linked to the market value or index of a pool of investments (e.g.: as linked to a mutual fund or a closed end exchange traded fund).

Unisex mortality table – A uniform mortality table/estimate for annuity calculations that applies to both men and women retiring in the same period. Since women have on average longer life spans than men, the application under a strict interpretation would imply a subsidy from males to females.

Variable Annuity – An annuity the value of which can vary in each period of payment, including guarantee and bonuses annuities and unit linked annuities. Variable annuities are usually associated with investment income generated by underlying assets with varying market returns.

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