

Survey on fully funded, technical provisions and security mechanisms in the European occupational pension sector

Executive summary

The European market for occupational pensions faces major challenges. These are driven by four economic and institutional developments. First, the European Pensions (IORP) Directive¹, providing a basis for regulatory and supervisory framework for IORPs, has widened the scope for cross-border pension services, representing the first step towards an internal market for occupational pensions. Second, companies, employees and pension funds are becoming increasingly mobile across the EEA. This is illustrated by the recent launch of some pan-European pension schemes, although the vast majority of technical provisions remain in purely domestic schemes. Third, demographic pressures are increasing the need for fully funded pension systems, while pay-as-you-go systems become difficult to sustain. Fourth, harmonised and advanced risk-oriented prudential frameworks are being introduced in other parts of the financial sector, in particular the global Basle II accord for credit institutions and the European Solvency II regime for insurance companies. These supervisory frameworks, incorporating the latest developments in finance, actuarial science and risk management, intend to promote a level playing field across countries.

The current European framework for Institutions for Occupational Retirement Provisions or IORPs, is not risk-oriented. While the Directive sets out the minimum requirements for IORPs, its provisions have been exceeded in some Member States. The Directive acknowledges and fully respects members' prerogatives regarding social protection and the responsibility for the organisation of their pension systems in accordance with the principle of subsidiarity. In this respect, the Directive has natural limits with respect to convergence in the solvency requirements related to IORPs in the EEA. At the same time, however, comparable member protection for IORPs where appropriate is needed to ensure a level playing field between countries. In a cross-border perspective, substantive variations in regulatory requirements may spur regulatory arbitrage by IORPs and supervisory competition between Member States. In fact, indications of this have recently emerged. This may ultimately not be in the interest of pension beneficiaries. While an integral

¹ Directive on the activities and supervision of Institutions for Occupational Retirement Provisions (IORPs); Directive 2003/41/EC, published in the Official Journal on 23 September 2003. A review of specifically listed elements of the Directive has been scheduled for 2008.

application of Solvency II requirements to pension institutions could resolve this issue, the material differences between pension funds and insurance companies in many countries suggest this is not an appropriate course to pursue. Such action could lead to excessive costs and thus bears the risk of threatening the continued provision of defined benefit schemes.

The existing prudential frameworks in the EEA are very diverse. Differences relate to complex technical aspects and in part reflect provisions in **national Social and Labour Law**. Indeed, national Social and Labour Law may determine the content of the pension promise, or may set minimum requirements, such as inflation protection, maximum discount rates, mortality assumptions, increase in premiums, reduction in accrued rights, return guarantees, sponsor commitment and insolvency protection. These requirements influence the level of the technical provisions to be held by the IORP and the functioning of security mechanisms.

Notwithstanding the marked differences there are also important similarities. As a common point of departure, EEA Member States consider the safeguarding of pension beneficiaries' claims at reasonable cost as the **general objective** of their pension fund regulatory and supervisory regimes. Adequate funding requirements and sound risk management practices are considered essential to safeguarding beneficiaries' interests. However, the concern is also felt that heavy funding requirements may impose inappropriate large up-front payments that are not needed because of other security mechanisms in place, thereby discouraging defined benefit pension provision. Funding standards thus need to balance beneficiaries' security and the associated costs. This balance is currently struck at a different security level in each country, mainly reflecting the varying importance attached to second pillar pensions and to pension security more broadly. Subject to the general objective being met, pension fund regulation and supervision also take into account the need to foster employer sustainability, financial stability and fair and stable markets.

Member States have identified four common **overarching principles** that should underpin a pension supervisory framework. First, countries stress the importance of a forward-looking *risk-based* approach to pension supervision. Such an approach weighs the potential risks faced by an IORP, as well as risk mitigants, and tailors the scope and intensity of supervision to this appraisal. Second, Member States underscore the principle of *market-consistency* in the valuation of an IORP's assets and liabilities for supervisory purposes. Supervision based on market-consistent valuation emphasises the actual financial position and allows for realistic solvency monitoring. A third common principle is *transparency*. This implies that an IORP is open on how its financial position is determined and that reserves (or shortages), as well as prudence embedded in technical provisions and adjustment instruments, are made explicit to the supervisor. Together, these three principles foster well-balanced pension policy decisions and enable supervisors to monitor an IORP's true financial position, including its built-in prudence. Finally, Member States highlight the principle of *proportionality*, implying that supervisory requirements are applied in a manner proportionate to the nature, complexity and scale of the IORP's inherent risks. While these common principles are viewed as key by all Member States, they have not yet been incorporated in all aspects of supervisory practices in all countries.

Member States currently use different **valuation methods** and different **security mechanisms** to protect pension benefits. The differences have historical and cultural roots, and at times reflect national Social and Labour Law. This variance in valuation measures and security instruments does not necessarily imply substantially different security levels between Member States: in practice, the variances are linked and often cancel each other out. As the interaction between security mechanisms and technical provisions takes differing forms, analysis of any one element in isolation does not accurately reflect the security provided to members. Put differently, partial analyses of security levels based on individual valuation elements or adjustment instruments are misleading and conclusions can only be drawn from a comprehensive analysis of all different elements. By implication, as different methods can be used to secure pension benefits, national pension supervision frameworks do not have to be identical. But to ensure a level playing field for cross-border IORPs within Europe, comparable pension schemes need to be treated comparably across Member States.

In general terms, two **archetypes** of pension frameworks can be distinguished in Europe. In the first archetype, the IORP is an independent legal entity, at some distance from the employer, with full recourse to own funds. The IORP has up-front provisions on its balance sheet to bear biometric risks or to guarantee a certain investment performance or level of benefits. This separate buffer implies that an adverse shock can be readily absorbed if appropriate funds are in place and that the ensuing economic and cyclical impact will be limited. However, the need for buffers increases the up-front cost to employers and ties up employer capital in beneficiaries' interests potentially above the level of security promised implying idle funds. This could therefore interfere in the balance between cost and pension provision where employer sponsorship is on an entirely voluntary basis and push employers to lower pension benefits or transfer more risk to members via defined contribution schemes. This is more pertinent to IORPs that are backed by a single employer than to multiple or industry-wide IORPs.

In the second archetype, the sponsor and the IORP are closely related and the IORP may have been set up by the sponsor. The sponsor provides the ultimate pension security to its employees and stands ready to supply financing in the event of an adverse shock to the IORP. This set-up means the well-being of the IORP is linked to that of the employer. As the financial development of the IORP and the sponsor are likely to be correlated anyway—both will generally suffer during an economic downturn and vice versa—this harbours the possibility of unfavourable financial and procyclical implications. Even though employers' cycles differ, this implies that beneficiaries' income and pension risks are concentrated at the same source. These unfavourable implications can, however be avoided by ensuring the existence of additional assets on which a claim may be made by the IORP. Such adverse developments can also be mitigated by allowing a longer recovery period that spreads out the effects of adjustment measures over the cycle. Moreover, in countries where recourse to the pension plan sponsor is important for pension security, a well-designed pension guarantee fund can limit beneficiaries' risks. In the absence of a guarantee fund, beneficiaries will be left with a significant risk that will need to be offset by other reserves or mechanisms. The same holds for the

implications of ageing: compensatory measures, such as conservative mortality assumptions, will be needed to avoid financing shortages being shifted to periods when labour participation is lower.

In practice, Member States use different methods and assumptions to determine their **technical provisions**. This results in significant variations in the size of technical provisions across countries for comparable defined benefit commitments. Most countries establish their assumptions using best estimates as a starting basis. However, some countries include extra safety margins in the underlying assumptions and incorporate prudence in different components of the technical provisions. Specifically, most countries calculate technical provisions on the basis of a **discount rate** that follows market developments. Some countries use current risk free market rates to determine their discount rates. Other countries embed prudence in the technical provisions by setting the discount rate (substantially) below the risk free market rate. Some countries make use of officially fixed maximum rates. Using a fixed rate has the disadvantage that when the market rate changes, the impact on the financial position of the IORP will be less visible. A few countries permit schemes to make a prudent allowance for the expected returns of the assets held by the IORP when setting the discount rate. Unless greater emphasis is then placed on other security mechanisms, the security provided to beneficiaries is lower.

Compared to the discount rate, IORPs are given more freedom to choose their **mortality table**. In almost all countries the mortality table is determined by the industry (IORP, actuary, etc.), providing scope for IORP-specific solutions. The general philosophy is to use a mortality table that accurately reflects scheme members' mortality and survival probabilities. About half of the Member States apply current mortality rates in their tables, while the other half incorporates an element of prudence. Moreover, the majority of Member States also include a trend in the mortality tables to reflect the improvement in life expectancy in Europe. Tables which do not include a mortality trend typically underestimate biometric risks.

Inflation can represent a significant risk to the ongoing purchasing power of a beneficiary's pension. Indexation of pension rights to take account of inflation serves to protect pension beneficiaries by maintaining the real value of future benefits. In practice, countries differ markedly in their approaches to **inflation protection**. Fewer than half of the EEA countries apply unconditional inflation (or wage) indexation, thereby securing members' purchasing power. This mandatory or guaranteed protection needs to be taken into account in the calculation of technical provisions and thereby increases beneficiaries' security. Where the guarantee is not capped, some risk is left with the IORP as actual inflation or wage growth may exceed the assumption underlying the technical provision. On the other hand, where the guarantee is maximised some inflation risk is left with the member. This underscores the need to set realistic inflation assumptions. Other countries provide only conditional inflation indexation or none at all, in which case respectively some or all inflation risk is borne by the beneficiary which can lead to lower real pensions. In these countries inflation protection and/or salary indexation is commonly financed by IORP surpluses when available. In each case, there should be consistency between the provisioning and the commitments made.

The IORP Directive requires the **calculation** of the technical provisions to take place yearly, or every three years as long as information on adjustments for the intervening years is provided to members and supervisors. The latter rule is applied in six countries.

In sum, all Member States respect the IORP Directive requirement of fully funded pension liabilities, but the way this is done varies substantially between countries. Member States also use different **security mechanisms** to underpin the requirement of fully funded technical provisions. An IORP that provides the guarantees for the pension promise and bears the risk of under funding is required to hold a buffer in the form of **regulatory own funds** (Article 17). While the Directive links this to biometric risks borne or guarantees provided, several countries apply additional criteria and requirements to regulatory own funds. In some countries, this buffer constitutes the principal source of security to beneficiaries. In other countries buffers are not required as IORPs do not bear biometric risks and do not provide guarantees. Besides this, some countries have legislation that allows **subordinated loans** to some extent as regulatory own funds. The subordination feature offers unlimited loss absorption in case of an insolvency situation as all payments on the loan are subordinated to all pension liabilities. Subordinated loans are to some extent recognized as own funds in solvency calculations. The liability of such a loan may be written to another party than the sponsoring company. The overall picture points to a limited use of subordinated loans as a proportion of own funds and of the number of schemes, except in one country.

The role of the **pension plan sponsor** and the level of support and guarantee placed on the benefits that it provides varies considerably across Member States. In some countries, under funded IORPs have full recourse in law to the sponsor, theoretically to the full extent of the technical provisions and to the full buy-out level if the sponsor wants to break the link with the IORP, whereas in other countries sponsor support is limited according to the pension plan rules/contract or other contingencies. In a third group of countries, IORPs have no or limited automatic means to call on *additional* sponsor financing in case of under funding. The requirement for IORPs to be fully funded is usually supplemented by the continuous involvement of the sponsor in pension decisions. Some countries have also developed systems that provide IORPs flexibility to take account of this support and the financial strength of the employer in setting their technical provisions.

In some countries it is a requirement that the payment of (future) **contributions** is adjusted to eliminate under funding. In others the scope and limits for adjustments in contributions is spelt out in the contract with the sponsor. In many countries the contribution is negotiated by the parties involved (e.g. IORP, sponsor, trade union), sometimes in the context of a more general recovery plan. Some countries view this ability to increase contributions as an important security mechanism to cover shortfalls in funding. The use of an explicit **recovery plan** is also recognised as essential to recover deficits. The time span of such plans varies across Member States from the immediate elimination of a deficit to leaving individual IORP's and

their sponsors free to decide on the most appropriate time period for the recovery plan, often subject to supervisory approval.

Guarantee funds also provide additional security to beneficiaries. They are designed for use where the beneficiaries cannot be paid full benefits because the sponsor or the IORP has become insolvent. They can therefore mitigate the concentration and procyclicality risks linked with sponsor support. Specifically, three Member States have a guarantee fund that provides assurance of a minimum level of benefits in case the IORP's assets prove insufficient or the sponsor is insolvent. The security afforded by a guarantee fund can potentially form a significant part of the overall security to beneficiaries. However, a guarantee fund needs to be well-designed so as to minimise any risk of moral hazard.

Finally, seven countries recognize circumstances in which a **reduction of accrued pension rights** is allowed if an IORP is under funded, enabling the IORP to continue its regular business after the reduction. These circumstances generally relate to a situation where there is no or limited further recourse to a sponsor for additional payments. The potential reduction is not restricted, although recourse to it might be subject to contractual or legal restrictions. This adjustment mechanism is not comparable to other security mechanisms, as accrued rights are not secured, but reduced. Thus, such a reduction points to a fundamental failure of risk management and supervision, and generally constitutes a mechanism of last resort.

Under the Directive, when IORPs operate **cross-border**, the host country's Social and Labour Law must be applied to host country beneficiaries. This means that the prudential framework of the home country should consider the requirements mentioned in national Social and Labour Law. Therefore they will also impact the level of technical provisions and the security mechanisms to be applied to the IORP, even if such requirements are not part of its home prudential framework. This can lead to differences between local IORPs and cross-border IORPs. On top of this, with the aim of strengthening the solvency position of cross-border IORPs and of adhering to the Directive's cross border 'full funding at all times' requirement, some countries require shorter recovery periods or do not allow a recovery period in case of under funding.

With respect to the scope of this report, there is a varying reliance on occupational pensions across the EEA, with various financing systems and vehicles in place. More than one system may exist in individual EEA Member States. This report focuses on IORPs providing defined benefit schemes, whether exclusively or in combination with defined contribution schemes, as covered by the IORP Directive. Member States where no IORPs exist² and States where at this stage all the IORPs only provide pure defined contribution schemes³ are excluded from its scope. Countries also differ in the legal requirements for the provision and membership of pension schemes. This leads to differences in mandatory arrangements and reliance on voluntary pension provision from sponsors. Besides this, some countries have chosen to apply Article 4 of the IORP Directive⁴. This implies that for the calculation

² Czech Republic, Estonia, Hungary and Lithuania.

³ Bulgaria, Latvia, Poland, Romania, Slovenia and Slovakia.

⁴ France, Liechtenstein and Sweden. According to Article 4 of the IORP Directive, home member states may choose to apply part of this Directive (Art. 9 to 16 and 18 to 20) to the occupational-retirement-

of solvency requirements their life insurance companies and pension funds have to comply with the provisions of the Third Life Directive⁵ for all their activities including occupational retirement provision. In the light of the future Solvency II framework for insurers, this may raise the issue of cross sectoral consistency between insurance companies and pension funds for these countries, as it could be difficult for the same firm to operate under Solvency I for its pension products and under Solvency II for its insurance products.

As a final note, there is an apparent **interaction** between the different elements that make up the pension frameworks across Member States. For example, emphasis on prudent valuation principles, which results in extra reserves, reduces the need for additional security mechanisms. Overall security or solvency can not be understood without a full appreciation of all the elements involved. A comprehensive analysis of the overall security level provided to beneficiaries requires a common language to encompass all individual elements. Such a common denominator assesses the differences in valuation methods and adjustment mechanisms, as well as their interaction, and thereby estimates the security they ultimately provide.

provision business of insurance undertakings which are covered by the Third Life Directive (2002/83/EC).

⁵ Directive 2002/83/EC concerning life insurance (recast version), Article 17.

1. Introduction

CEIOPS installed a Solvency Sub-Committee in mid-2007 to investigate the present solvency regimes applicable to pension funds. A first stage in this solvency work constitutes accurately mapping out both static (valuation assumptions) and dynamic (security mechanisms) aspects of pension supervision frameworks across Europe. This fact-finding has been based on a survey conducted among the 30 EEA Member States. The findings of this survey (with the exclusion of the Member States where no IORPs exist and the States where all the IORPs only provide pure defined contribution schemes) are reflected in this report. The Commission have expressed the possibility of this report serving as a basis for a broad consultation exercise (possibly with a public hearing) among all interested and affected parties with the aim to gain a better insight into what stakeholders consider a suitable solvency regime for pensions.

The report is structured as follows. At the outset, section 2 presents common overarching principles that Member States envisage for a future pension supervisory framework. This is followed in section 3 by an overview of the occupational pension markets in the EEA. Section 4 discusses the influence of national Social and Labour Law on the prudential framework. Section 5 investigates the different principles and assumptions countries apply to determine technical provisions and section 6 explores the security mechanisms they have as their disposal. Section 7 explains differences in supervisory requirements between national and cross-border schemes.

2. Principles underlying the supervisory framework for pensions

Member States have identified four common overarching principles that should underpin the pension supervisory framework. First, countries have identified a *risk-based* philosophy for pension supervision.⁶ Such an approach endeavours to take account of the potential risks faced by IORPs enhancing the insight in the IORPs true financial position. It weighs up potential risks faced by an IORP, as well as risk mitigants, and tailors the scope and intensity of supervision to this appraisal.

Moreover, Member States stress the valuation of assets and liabilities in a *market-consistent* fashion for supervisory purposes. This means that valuation is consistent with the assessments of value and risk made by market participants. This means that market prices are used where available (mark-to-market); otherwise values may be determined by a modelling approach (mark-to-model). The latter may apply to pensions and insurance liabilities since there are no (deep liquid, secondary) markets available. A system based on sound market oriented valuation principles will reveal the true financial position of the IORP including a full understanding of all security mechanisms.

⁶ Risk based supervision as defined by IOPS in the paper "Experiences and Challenges with the Introduction of Risk-Based Supervision for Pension Funds", August 2007.

Transparency has been established as a third important common principle by the Member States. This implies that an IORP is open on how its financial position is determined and that reserves (or shortages), as well as prudence embedded in technical provisions or in any other instruments, are made explicit to the supervisor.

Finally Member States emphasize that supervisory requirements should be applied in a manner which is proportionate to the nature, complexity and scale of the risks inherent in the business of the IORP. Importance is therefore attached to the principle of *proportionality*. Particular care to ensure that supervisory requirements are not too burdensome for small and medium-sized IORPs is felt to be important.

Member States have identified broadly three approaches to implement these principles in to the funding and protection of pension benefits⁷:

1. a *stochastic approach* (DK, NL, PL and SE)⁸ employs randomly generated scenarios and delivers outcomes of a resulting probability distribution of one or more target variables. Stochastic models are suitable to incorporate policy rules and the corresponding control and adjustment mechanisms. This approach requires advanced modelling expertise and makes use of parameter estimations based on historical observations.

2. a *deterministic approach* employs predetermined, fixed scenarios (AT, DE, DK, FR, NO, PL and SE). These often include an expected (*best-estimate*) scenario and a downturn scenario that may vary the degree of severity. A typical stress test would assess the resilience or vulnerability of the system to an 'extreme, but plausible' event. The scenarios can be based on historical events, but may also be hypothetical in nature. A deterministic approach is usually easier to implement than a stochastic approach.

3. a *tailor-made approach* takes into account the specific circumstances and risks of individual pension schemes (BE, ES, HU, IE, IT, LU, PT and UK). This approach is flexible and offers scope for tailor-made solutions that take into account the specific risk profile of the IORP. According to the specific situation it may encompass a stochastic approach, a deterministic approach or a combination of both.

3. Overview of occupational pensions in the EEA

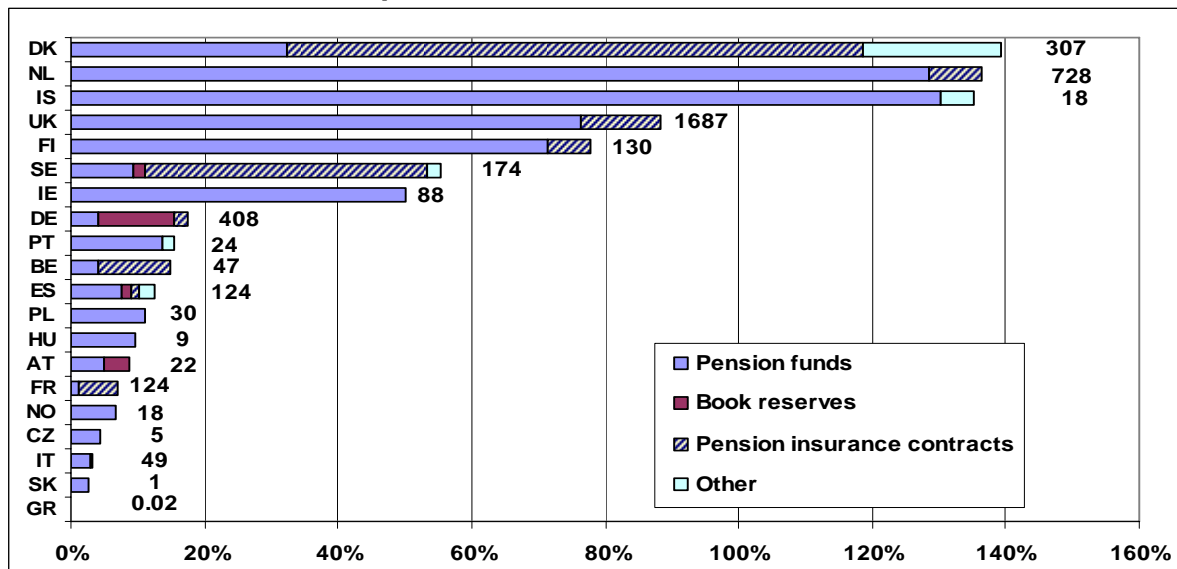
Across the EEA there is a varying reliance on occupational pensions, with various financing systems and vehicles in place. For IORPs, advanced funding takes place whereby money is set aside separate from any sponsor for payment of the future benefits arising under the scheme. It is to these arrangements that the IORP Directive applies. The IORP Directive does not apply to a book reserve system where a reserve is set up in the account of the sponsor and a portion of the company's assets are deemed to be set aside for the provision of benefits.

⁷ See Annex 2 for the country abbreviations. For Luxembourg, CAA and CSSF will be mentioned separately if the two authorities have differing approaches.

⁸ In DK, PL and SE, the system has elements of both the stochastic and the deterministic approach.

Moreover, the Directive does not apply to pay-as-you-go systems in which current benefits are paid with current contributions with no advanced funding as a rule. It does neither apply to institutions where employees of the sponsoring undertakings have no legal rights to benefits and where the sponsoring undertaking can redeem the assets at any time and not necessarily meet its obligations for payment of retirement benefits. For a direct insurance arrangement premiums will be paid to the insurer and benefits are paid by the insurer to the beneficiaries as they are defined in the insurance contract. To such arrangements the Third Life Directive is applicable. More than one of these systems may exist in individual EEA Member States and there is a diverse mix of the usage employers make of them for the provision of occupational pensions in these countries. Graph 1 shows the usage of the different financing vehicles across OECD countries.

Graph 1 Financing vehicles used in funded pension arrangements across OECD countries in Europe (2006) – Total investments in % of GDP and in € bn



Source: OECD, Pension Market in Focus 2007, Issue 4

This report focuses on IORPs providing defined benefit schemes, whether exclusively or in combination with defined contribution schemes. Therefore, Member States where no IORPs exist (CZ, EE, HU and LT) and states where at this stage all the IORPs in practice provide pure defined contribution schemes only (BG, LV, PL, RO, SI and SK) are excluded from its scope⁹. It is however recognised that some national occupational pension systems comprise several different components of noteworthy significance (for example book reserves schemes as operating in AT, DE, ES, LU and SE) that are outside the scope of the IORP Directive. Overall, it is apparent that the occupational pension systems vary widely across the EEA countries.

⁹ In Italy, DB schemes play a marginal role, as they are closed to new members and all new funds are DC.

What is meant by the terms 'defined benefit' (DB) and 'defined contribution' (DC) varies greatly from country to country. For the purposes of this report a DC scheme is defined as an occupational pension scheme where the only obligation of the scheme sponsor is to pay a specified contribution to the scheme on behalf of the employee. No further promises or 'guarantees' are made. The IORP Directive requirement for technical provisions to be estimated and held therefore does not apply to DC schemes and as such DC schemes are left outside the scope of this report. A DB scheme is an occupational pension scheme other than a defined contribution scheme¹⁰. Furthermore, in some countries DB schemes with DC elements are offered and vice versa.

Sponsoring undertakings play an important role in the provision of benefits and the funding of the IORP and their roles as such differ across countries. IORPs can take either the form of single employer or multiple employer IORPs, where the latter in some cases takes the form of industry-wide IORPs. A multiple employer IORP has more possibilities to diversify the various risks related to the characteristics of the different populations of individual employers combined in a multiple or an industry wide IORP. For single employer IORPs there may be an issue of continuity as the duration of an IORP's obligations might be longer than the average lifetime of an individual company. Some countries have predominantly single employer IORPs (DK, ES¹¹, FR, IE, IT, LU-CSSF, PT and UK), while in other countries multiple or industry-wide IORPs are more common (AT, BE, DE, NL and SE).

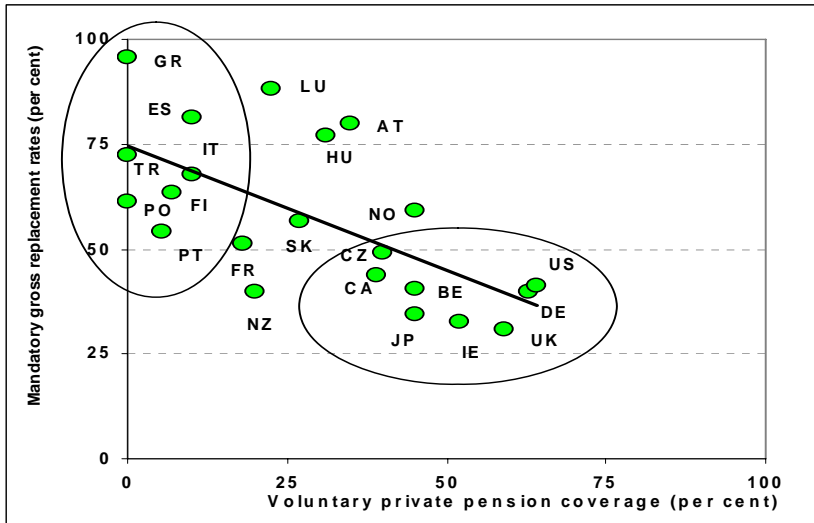
Across countries there are also differences in the legal requirements on employers to offer or provide employees with access to IORPs and the form that these take. Provision may be on a purely voluntary basis which is common with single employer IORPs whereas the national legislation of some countries may compel the participation of certain employers in an industry- wide IORP. In countries where the overall coverage and level of benefits provided via mandatory arrangements is lower, there is generally a heavier reliance on voluntary arrangements. Affordability is therefore seen as more important in these countries as significant upfront costs could interfere with the balance between cost and the provision of benefits. Graph 2 below shows the correlation between the replacement rates from mandatory pensions and the coverage of voluntary pensions.

¹⁰ This distinction is drawn from the perspective of the sponsoring employer. See the glossary in Annex 3 for precise definitions.

¹¹ The Spanish system is predominantly single-employer, with a high number of multiple-employer plans' sponsors.

Graph 2 Reliance of mandatory and voluntary provision

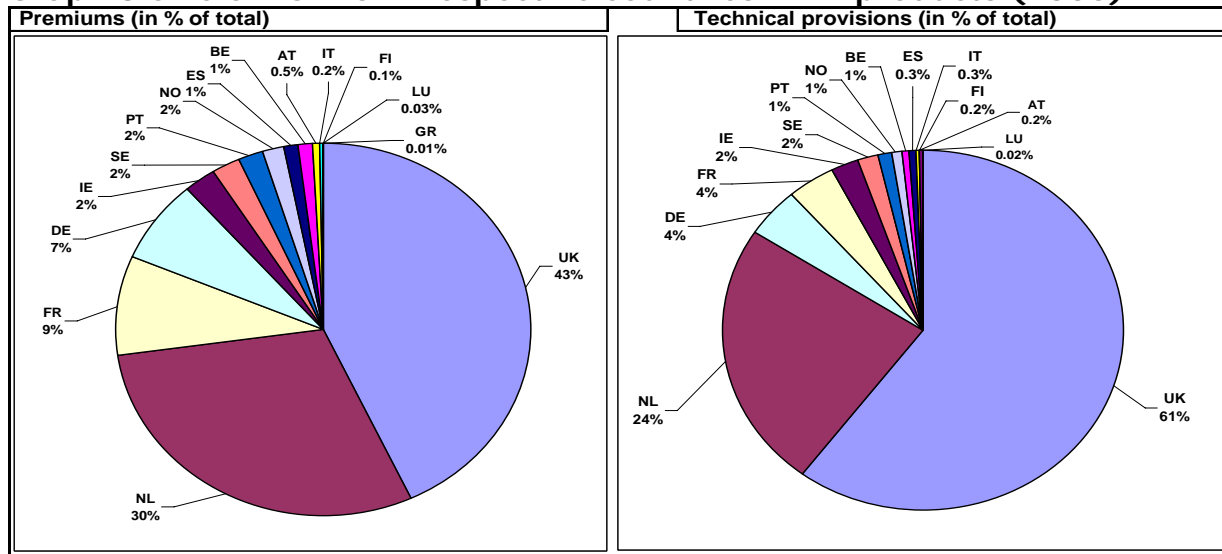
Average projected mandatory pension and coverage of voluntary private pensions



Source: OECD, Pensions at a Glance, 2007.

The size of the national pensions markets for DB products provided by IORPs varies significantly across Europe as is evident from Graph 3 below. Approximately in 2006, total technical provisions for DB products of IORPs in the EEA countries amounted to about € 2,100 billion whereas total premium income of DB products amounts to about € 80 billion.

Graph 3 Size of IORPs in respective countries – DB products (2006)



Source: CEIOPS

Note: DK: Data not available.

4. Interaction with Social and Labour Law

Summary and Conclusion

In many countries the existing national Social and Labour Law (SLL) has an impact on the prudential framework, both on the level of the calculation of technical provisions and on that of the security mechanisms that may apply. In seven countries (BE, DE, FI, IE, NL, NO and UK) some form of interaction exists between the two. National SLL may determine the content of the pension promise, or may set minimum requirements, such as inflation protection, maximum discount rates, mortality assumptions, increase in premiums, reduction in accrued rights, return guarantees, sponsor commitment and insolvency protection.

Technical provisions

Valuation or actuarial assumptions are to some extent part of SLL (or other non-prudential domestic law) in nine EEA countries. In Finland, the Employees Pensions Act, which regulates the activity of IORPs is part of Finnish SLL, implying that certain arrangements with respect to the valuation of technical provisions can be traced back to the SLL. In the Netherlands, although SLL contains no explicit elements of technical provisions, a number of general principles may have an impact on the calculation of the technical provisions, for instance the principle that a pension must be lifelong, precluding lump-sum payments, and the principle that the accrual of DB pension rights must be at least proportionate over time.

Inflation protection is mentioned to be part of SLL in DE, FI, IE (revaluation of deferred benefits), NO (indexation by using the surplus), PT (inflation indexation to benefits once in payment, under some specific collective bargaining agreements) and UK (revaluation of deferred benefits and inflation to benefits in payment). In Belgium, SLL sets a maximum discount rate (of 6%) to calculate the vested reserves. Norway sets the discount rate at a maximum of 60% of the long term interest rate. Early retirement provisions are part of SLL in DE, FI (indirectly through the Employees Pensions Act being part of SLL), and IT. Provisions regarding the use of mortality assumptions are part of SLL in BE and FI.

Security mechanisms

Four countries have included some aspects of the security mechanisms in their SLL. In Belgium the sponsors' obligation to cover a shortfall at retirement, or at the time of a transfer out of the pension plan has been laid down in the SLL. In the case of DC plans, Belgian SLL limits increases in premiums and sets a minimum guaranteed return on employer and employee contributions¹². In addition, Belgian SLL does not allow a reduction of accrued pension benefits. In Germany, the guarantee fund, which in the German case protects the insolvent sponsor and not the IORP, is part of the SLL. Norwegian SLL contains limits on the amount of subordinated loans for an IORP. In Finland, the act which regulates sponsor commitments is part of SLL.

5. Technical Provisions

Under the IORP Directive all IORPs, wherever they are established, have to hold sufficient assets to cover technical provisions – i.e. a minimum funding ratio of 100%, although periods of under funding are allowed so long as the IORP has a

¹² Employee contributions in a DB plan are also protected with a minimum guaranteed return.

concrete and realistic plan to ensure funding is restored. These requirements derive from Articles 15 and 16 of the Directive. For schemes operating cross-border the Directive requires full funding *at all times*¹³.

IORPs recognise as a liability in the balance sheet the present value of current and future pension rights of all their members. These technical provisions are an indication of the minimum amount of assets that IORPs should have to be able to pay pension benefits as and when they fall due. Elements necessary to calculate the technical provisions are the discount rate to determine the present value of future pension payments, assumptions with respect to future inflation and salary increases in case an IORP factors in future inflation or salary trends, and biometric assumptions.

It should be noted that the current IORP Directive, while setting out some principles for calculation of technical provisions (recognised actuarial methods, prudence, reference points for rates of interest and biometric tables), does not mention specific rules or parameter values to be used. For that reason, currently technical provisions tend to be defined differently across Member States using different underlying principles and assumptions resulting in divergent sizes of technical provisions. While countries have adopted the principles set out in the Directive, differences exist as regards the method by which technical provisions are calculated.

Relevant aspects in analysing the actual components of technical provisions are whether countries chose current or best estimates for the underlying assumptions (inflation/salary indexations, mortality assumptions, discount rates, etc.) and how prudence is incorporated in the calculation of technical provisions. Technical provision calculations that provide an actual and realistic picture of the financial position of the IORP will form the most accurate basis for decisions on future pension policies, investment decisions, and risk management decisions.

This section of the report examines in some detail the technical provisions, both in terms of the components that influence the level of technical provisions and in terms of certain other aspects related to the calculation of the technical provisions¹⁴. Table 1 provides a summary overview of the components of the technical provisions as applied in the different Member States. The table shows that some countries apply the risk free rate for the discount rate to incorporate prudence in their calculations. Some countries include additional prudence by mandating a discount rate below the risk-free rate. Others consider that a higher discount rate can be used, applying prudence relative to the expected return on investments, considering that the pension benefits are not risk free. There is an element of correlation in some countries between the extent of support expected from the employer and the discount rate chosen. About half of the countries make use of extra safety margins

¹³ Article 16 (3) – *“In the event of cross-border activity as referred to in Article 20, the technical provisions shall at all times be fully funded”*.

¹⁴ The text describes the common practice in each member state. In some countries, more practices may exist along side each other.

in the mortality tables, incorporating prudence to the technical provisions. Around half of the countries allow for salary indexation and/or inflation protection in the reserving method which results in larger technical provisions and therefore security of the benefits promised. Some countries also apply inflation protection for deferred members and/or in the post retirement period which increases the level of benefits payable to beneficiaries. This is mandatory in some countries and provided as common practice in some others, often driven by the surplus of the IORP.

There is an apparent **interaction** between the different elements that make up the pension frameworks across Member States. For example, major emphasis on prudent valuation principles, which would result in extra reserves, potentially reduces the necessity of additional security mechanisms¹⁵. However such measures leave a degree of uncertainty as to how large the reserves may be. Some countries see the requirement for immediate payments to cover funding shortfalls as reducing the need for other security mechanisms. It is clear therefore that an analysis of any element in isolation would not give an accurate reflection of the security afforded to members.

Table 1 Summary overview - Components of technical provisions

		AT	BE	DE (pk)	DE (pf)	DK	ES	FI	FR	GR	IE	IT	LI	LU	MT	NL	NO	PT	SE	UK	Total
Discount rate	Fixed max. discount rates	Y					Y	Y						Y CAA							4
	Current risk free market rates				Y	Y										Y		Y	Y		5
	Expected return on assets		Y							Y	Y	Y	Y	Y CSSF	Y					Y	8
	Based on life directive			Y					Y									Y			3
Mortality Tables	Current mort. rates		Y		Y	Y		Y		Y	Y						Y		Y	Y	9
	Trend included	Y	Y	Y	Y		Y		Y		Y		Y	Y		Y	Y		Y	Y	13
	Prudence added	Y		Y			Y		Y				Y	Y	Y		Y			Y	9
Reserving method	No infl./sal. indexation			Y	Y			Y	Y				Y		Y	Y	Y		Y		9
	Inflation protection										Y									Y	2
	Infl. protec. and sal. index.	Y					Y			Y				Y				Y			5
	Other		Y			Y						Y									3
Indexation to deferred benefits	Obligation of the IORP										Y									Y	2
	Common practice Yes	Y		Y		Y		Y				Y		Y		Y	Y		Y		9
	Common practice No				Y														Y		2
Indexation to pension in payment	Obligation of the IORP																	Y		Y	2
	Common practice Yes	Y		Y		Y	Y	Y			Y	Y		Y CAA		Y	Y		Y		11
	Common practice No				Y				Y												2
Expenses	Covered by TP	Y	Y	Y	Y	Y		Y	Y							Y	Y		Y	Y	11
	Not covered by TP						Y			Y	Y	Y		Y	Y			Y			7

¹⁵ In Germany, for example, additional prudence is also incorporated by using book values of assets to create additional buffers.

5.1 Inflation protection, salary indexation and reserving methods

Inflation is an important threat to successful pension provision because it erodes the real value of promised future benefits if those benefits are defined in fixed currency terms. In order to prevent this, Member States have adopted various approaches that offer some degree of inflation protection to individuals, i.e. current and future pensioners. Inflation protection means that the pension maintains its real value and purchasing power (because each year the value of the pension is compensated for the effect of inflation) and thus the beneficiaries' pension is not eroded by inflation (or the erosion is limited). It is also possible to apply salary indexation, when reserving for active members, to take account of possible future increases in salary for those still in employment. Where inflation protection or salary indexation (in the reserving method) is mandatory in law or guaranteed through a promise by the IORP, it adds significantly to the size of technical provisions.

There is a wide variety in the approaches concerning inflation protection and salary indexation across countries. Some Member States demand security in real terms (maintaining the purchasing power). This unconditional or guaranteed protection needs to be incorporated in the calculation of the technical provisions and thereby increases the beneficiaries' security. The higher the assumed rate of inflation or wage growth, the higher the technical provisions will be. Where the level of benefits payable is linked to inflation, the actual benefits will depend on the true rate of inflation (sometimes with a cap) over the period in question. Therefore, inflation assumptions are crucial. Some risk is left with the IORP if actual inflation or wage growth exceeds the assumption underlying the technical provisions. On the other hand, in case the guarantee is capped, however, some inflation risk is left with the member. This illustrates the need to set realistic inflation assumptions.

Other countries apply conditional inflation indexation or even none at all, in which cases inflation risk, or the risk that retirees' purchasing power will fall behind from retirement age, is left with the beneficiaries. Conditional indexation generally depends on the IORPs' financial situation, meaning that inflation protection is (partially) granted provided that the IORP is judged to have sufficient surpluses in excess of the technical provisions. For IORPs that have guaranteed this protection, this has the direct result of increasing technical provisions to ensure these benefits, since provisioning needs to be consistent with the promises made. In the case of conditional indexation, the ambition level may still be linked to an external benchmark, e.g. the Consumer Price Index. This requires long-term consistency between the ambition, the financing and the realisation of indexations.

Countries have adopted different approaches to inflation protection for the pre-retirement and the post-retirement period. Table 2 shows in which countries an allowance for inflation or salary increases must be made in the reserving method. This increases the technical provisions but does not affect the level of benefits that will be payable. Some countries (BE, DK and IT) provide for inflation protection or salary indexation in the technical provisions if such indexation is part of the pension promise, thus depending on the plan rules. In other countries, in general no

allowance is made in the technical provisions for inflation or salary increases (Table 2, first column).

Table 2 Allowing for inflation and salary increases in the reserving method – Active members			
Inflation protection ✘ Salary indexation ✘	Inflation protection ✔ Salary indexation ✘	Inflation protection ✘ Salary indexation ✔	Inflation protection? Salary indexation? <i>(if required by scheme rules)</i>
Finland France Germany Liechtenstein Malta The Netherlands Norway Sweden	Ireland UK	Austria Greece Luxembourg Portugal Spain	Belgium Denmark Italy

Tables 3 and 4 show in which countries IORPs are obliged to provide inflation protection on *deferred benefits* and *benefits in payment* (through Social and Labour Law - see section 6) or provide this as common practice. This has the effect of increasing the benefits payable. In Ireland and the UK, IORPs are obliged to provide inflation protection to *deferred benefits*¹⁶, whereas in the UK and for some collective bargaining agreements in Portugal¹⁷ it is mandatory to apply inflation protection in the *post-retirement* period. For some other countries, it is common practice to provide inflation protection, which means that it is either promised by the individual IORPs' plan rules, in which case upfront reservation is needed, or it is provided conditional upon the IORP having sufficient surplus (see Tables 3 and 4). Where inflation protection is part of the pension promise, in all countries this must be accounted for by reserving in the technical provisions.

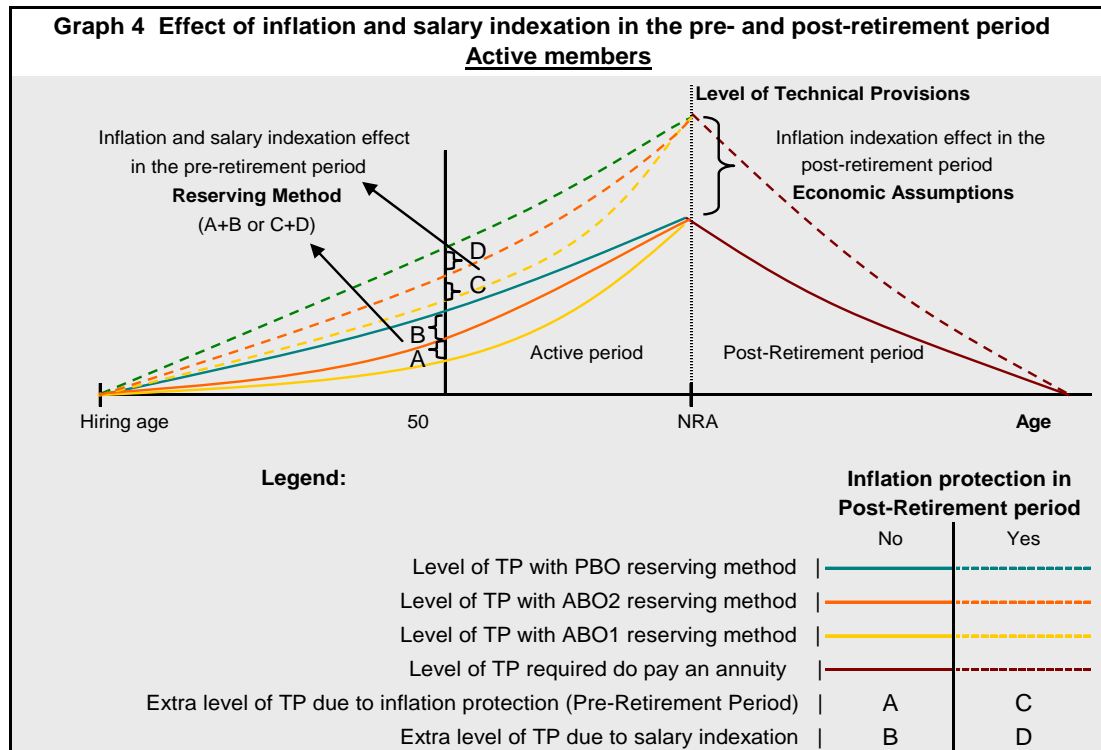
Table 3 Inflation and/or salary indexation protection to deferred population	
Mandatory	Common Practice
Ireland United Kingdom	Austria Denmark Finland Italy Luxembourg Norway DE - IORP surplus driven NL – IORP surplus driven SE – IORP surplus driven

Table 4 Inflation and/or salary indexation protection in post-retirement period	
Mandatory	Common Practice
Portugal (SLL for some collective bargaining agreements) United Kingdom	Austria Denmark Finland Ireland Italy Luxembourg-CAA Portugal Spain DE - IORP surplus driven NL - IORP surplus driven NO - IORP surplus driven SE – IORP surplus driven

¹⁶ The deferred population are those who are entitled to a pension but are no longer in the employment of the sponsor.

¹⁷ In other cases in Portugal it is common practice to provide inflation protection.

The following graphs present how, all other variables being kept the same, different approaches to pre- and post-retirement inflation protection and salary indexation result in different levels of technical provision as upfront savings. For *active* members if funding/reserving goes according to plan, each approach will provide the same level of benefit in the end for those active until normal retirement age (NRA) (Graph 4). The different inflation protection mechanisms however give different levels of security before retirement. Specifically for the *deferred members*, the existence of inflation protection means a higher pension benefit at NRA, since the accrued pension maintains its real value (Graph 5).

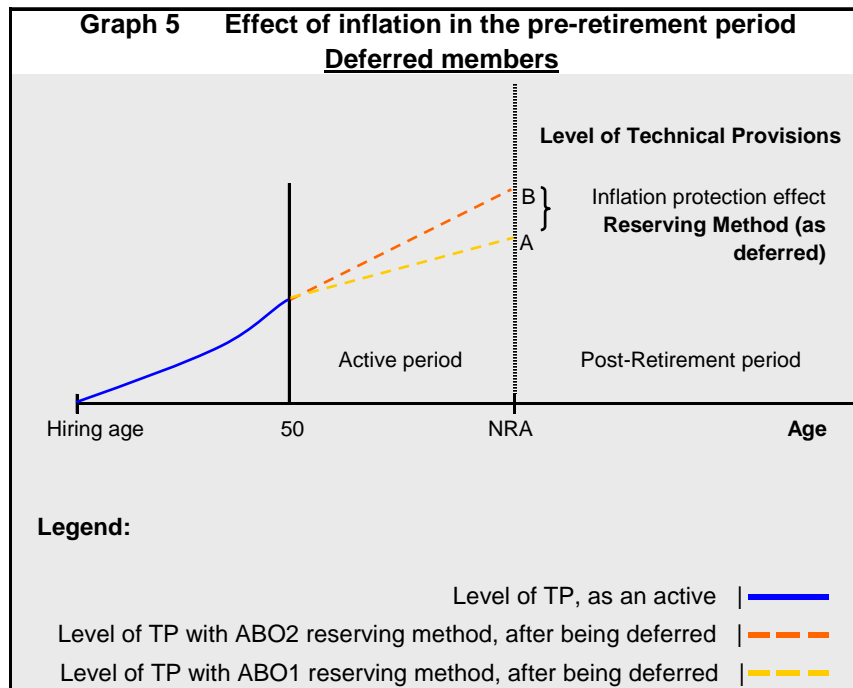


Explanation

Pre-retirement period: Graph 4 shows how the technical provision amount varies over time for an individual active until normal retirement age (NRA). The ABO1 line shows the technical provisions where no pre-retirement inflation protection is included. The ABO2 line has pre-retirement inflation protection to the level of expected price increases. The PBO line allows for future salary escalation until retirement, at an assumed rate. (ABO = accrued benefit obligation, PBO = projected benefit obligation).

Two sets of lines are included in the pre-retirement period, one to show the different reserving methods to benefits that **include** inflation protection in the post retirement period (the dashed lines) and the other regarding no inflation protection in the post-retirement period (the continuous lines).

Post-retirement period: Graph 4 shows how protection against inflation during the post-retirement period affects the level of technical provisions required, at normal retirement age, to fulfil the pension obligation. This level of technical provisions can be measured by making an allowance for pension increases during the post-retirement payment phase. The post-retirement inflation protection effect on the technical provision does not depend on the reserving method (note that for each assumption there are three possible reserving methods) but rather by the economic assumptions made for the post-retirement period.



Explanation

Graph 5 shows how technical provisioning varies through time for an individual until they leave the company (sponsor undertaking) at age 50. The ABO1 line shows the evolution of the technical provision where no pre-retirement inflation protection is included. The ABO2 line has pre-retirement inflation protection to the level of expected price increases.

In this case one can see that the final level of benefits at NRA will be different depending on the existence of inflation protection during the pre-retirement period. Benefits at NRA will be higher if inflation protection is provided.

5.2 Interest rate used to discount the technical provisions

One of the most important assumptions in calculating technical provisions is the discount rate. From a market oriented perspective, the applied discount rate should correspond to the security promised to the beneficiary. The reason for this is that the mark-to-market value of a pension liability equals the market price of the investment portfolio that generates congruent cash flows. Therefore, guaranteed pension liabilities should be discounted at a risk-free rate although for pension liabilities with a less than full guarantee, for example where the sponsor provides separate further security, a higher rate could be appropriate. In practice, most of the countries determine the discount rate under the rules of Article 15 of the IORP Directive. This means the discount rate is chosen prudently and takes into account the yield of the corresponding assets held by the institution and the future investment returns and/or the market yields of high quality or government bonds. Some countries use fixed maximum discount rates set by the government or the supervisor (AT, ES¹⁸, FI and LU-CAA)¹⁹. Another group of countries determine their discount rate on the basis of current risk free market interest rates, sometimes by means of a government bond curve, sometimes by means of a swap curve (DK, NL, PT and SE)²⁰. Other countries determine their discount rate by permitting schemes to make some allowance for the expected returns on the assets held by the IORP, although in these cases the risks related to the assets need to be compensated by other security mechanisms (BE, GR, IE, IT²¹, LI, LU-CSSF, MT and UK²²).

¹⁸In Spain the maximum discount rate is fixed every year by the supervisor according to the Spanish public debt. In some cases, higher discount rates are allowed depending on the real profitability obtained by the plan.

¹⁹ In general using fixed discount rates makes the technical provisions independent of interest rate changes, i.e. the duration is zero. Under mark-to-market valuation the duration of pension liabilities is substantial; often in the range of 15 to 20 years.

²⁰ In DK, NL and SE an interest rate curve is used which means that different interest rates are used depending on the time to maturity of the liability.

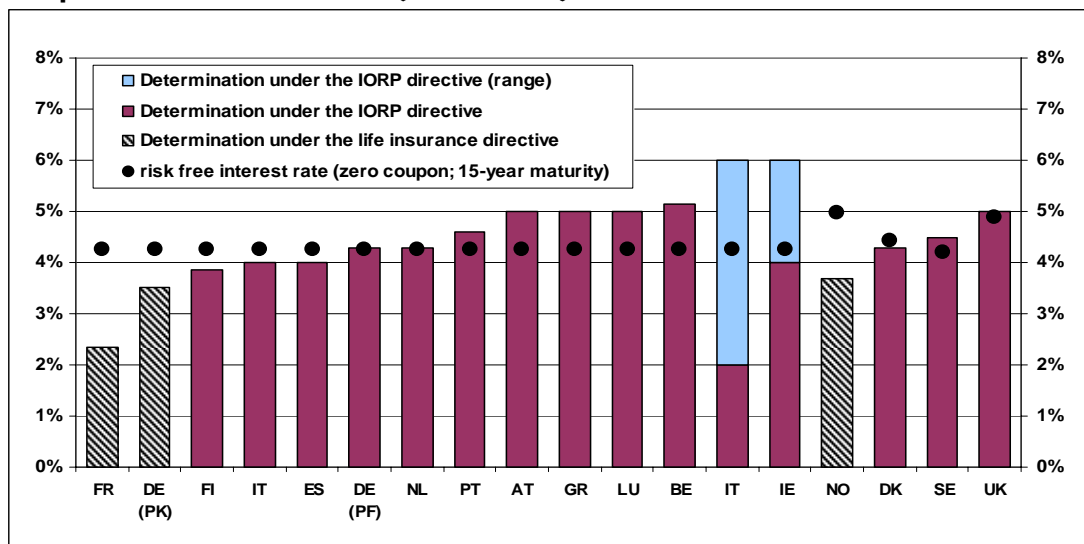
²¹ In Italy the discount rate is set within a broad range taking into account the composition of assets and in the context of the other assumptions used for the calculation of technical provisions.

²² UK schemes are allowed to choose their own discount rates on the basis of prudent assumptions, including in particular the strength of the sponsoring employer and hence its potential ability to make good investment under-performance. Schemes have to bear in mind that the supervisor is more likely to challenge the overall calculation of technical provisions if (among other things) the discount rate chosen exceeds the rate equivalent to the return on high grade corporate bonds.

A smaller group of countries determines the discount rate under the rules of Article 20 of the Third Life Directive (DE, FR and NO). This means the discount rate is chosen prudently and does not exceed 60% of the rate on bond issues by the State in whose currency the contract is denominated. In these cases, some prudence is implicitly factored into the technical provisions. In these countries the maximum discount rate is set by the supervisor. In general, the discount rate for *new* plans is lower (NO (2.75%), FR (2.25%), DE (2.25%)), which means that the average rate will decrease in the future. However, there are still old plans open for new contributions (NO) or even open for new contracts (FR and DE) with the higher discount rate that was in force when the plan was initiated.

Graph 6 shows the average discount rates as applied at the end of 2006 as well as the 15 year risk free interest rates in each country²³.

Graph 6 Discount rates (end 2006)



Note: DE (PK) represents German Pensionskassen and DE (PF) German Pensionsfonds.

5.3 Mortality assumptions

Technical provisions typically factor in the life expectancy of scheme members, as set out in mortality or life expectancy tables. EEA Member States use different mortality tables, as these tend to be specific to the labour force and population of the relevant country and may also incorporate an allowance for future increases in mortality or an additional degree of prudence.

Compared to the discount rate situation there is more freedom for IORPs to choose their mortality table. In almost all countries the mortality table is determined more on the side of the industry (IORP, actuary, etc.) than on the side of the supervisor

²³ 15 year zero coupon rate (end 2006) for the euro area countries, DK, SE and UK (Source Datastream); 10 year zero coupon rate for NO (see also the QIS3 Report for Solvency II).

or legislator, which means that there is ample room for IORP specific solutions. Two supervisory authorities (LU-CAA and PT) provide a minimum table.

Across Member States, different approaches have been adopted to take mortality into account. It is important that the mortality table adequately describes the mortality and survival probabilities of scheme members. Some countries use tables based on current mortality rates while in others an element of prudence is added to prevent adverse biometric behaviour. Another important aspect mortality tables have to deal with is the steady improvement of life expectancies in Europe. Many countries include a mortality trend to cover this improvement to reflect a realistic development of mortality. Tables which do not include a mortality trend typically underestimate the future biometric risk and result in weaker technical provisions. IORPs that use tables without trends are more likely to update their biometric table in the future.

Table 5 Mortality assumptions

Country	AT	BE	DE (pk)	DE (pf)	DK	ES	FI	FR	GR	IE	LI	LU	MT	NL	NO	PT	SE	UK
Current mort. rates		Y		Y	Y		Y		Y	Y				Y		Y	Y	
Trend included	Y	Y	Y	Y		Y		Y		Y	Y	Y		Y	Y		Y	Y
Prudence added	Y		Y			Y		Y			Y	Y	Y		Y			Y

Table 5 shows that half of the Member States apply current mortality rates in their mortality tables. However, in the other half of the countries additional prudence is also incorporated with respect to mortality assumptions²⁴. Moreover, also about half of the Member States include a trend in the mortality tables to take care of the improvement of life expectancy in Europe.

5.4 Expenses

In many Member States calculations of technical provisions make allowance for some element of future expenses of the IORP (e.g. costs related to the administration, asset management and disbursement of pension rights)²⁵. The amount of future expenses that is incorporated in the technical provisions varies from very small (0.18%) to 5% of the size of technical provisions. In other countries (GR, LU, MT, PT and ES) although the IORP bears the expenses no allowances are made in the technical provisions because these expenses are deducted from the expected returns on assets. This should have some effect on the determination of the discount rate but overall, the issue of expenses is not of great materiality as it is not a major source of difference in the current levels of technical provision.

²⁴ In Italy demographic assumptions used are set in relation to the specificity of the fund and in the context of the other assumptions used in calculating technical provisions. Therefore it is difficult to say whether prudence is used in all cases and to point out a common practice.

²⁵ This is the case in AT, BE, DE, DK, FI, FR, NL, NO, RO, SE, and UK.

5.5 Other aspects of technical provisions calculation

Early retirement

Early retirement is allowed in many Member States (see table 6). The pension benefits granted before the assumed normal retirement age are taken into account in the calculation of the technical provisions. Member States indicated that the reserve required is consistent with the reserving required for normal retirement. In two countries, the technical provisions are not increased to allow for early retirement benefits, because the early retirement benefits are reduced by an agreed factor so that the funding level of the scheme is not compromised (DE, UK). Some countries do not allow pension payments before normal retirement age.

Table 6 Early retirement	
Possible	Not possible
Austria	Finland
Belgium	Malta
Denmark	Norway
Germany	Sweden
Greece	
Ireland	
Italy	
Luxembourg	
The Netherlands	
Portugal	
Spain	
UK	

No information: FR and LI

Frequency of calculation of technical provision

The IORP Directive stipulates that the calculation of technical provisions takes place every year (Article 15.3). However, the home member state may allow calculation once every three years if the institution provides members and/or the competent authorities with a certification or a report of adjustments for the intervening years. Five countries allow the calculation of technical provisions once in every three years, one permits biannual calculations. In these cases, certain conditions must be met: only possible for small insurance associations (DE), no occurrence of under funding according to minimum funding requirements (MT), no major event may have occurred (UK). All respondents apply the same rules to both domestic and cross-border pension schemes, except the UK, which demands annual calculation for cross-border schemes instead of every three years.

Table 7 Frequency of calculation of technical provision			
Quarterly	Yearly	Biannual permitted	Triennial permitted

Table 7 Frequency of calculation of technical provision			
Quarterly	Yearly	Biannual permitted	Triennial permitted
Denmark	Austria Belgium France Greece Liechtenstein Luxembourg The Netherlands Norway Portugal Spain Sweden	Finland	Germany Ireland Italy Malta UK

5.6 Assessment of the components of technical provisions

As mentioned, technical provisions are defined differently across EEA Member States. Applying different assumptions on discount rates, mortality and indexation the size of the technical provisions varies across countries. Graph 7 combines these different elements, and shows the impact on the level of technical provisions for a most typical pension promise in a country.

Base level

The starting point of the example worked out is a 50-year old employee who will retire in 15 years' time and who will receive an annual pension benefit of €10,000 from the first year of his retirement onwards until death. The base level of technical provisions has been calculated using current mortality rates and the relevant risk free euro market rate end 2006 for the euro countries. For non-euro countries DK, SE and UK relevant home country market rates have been used. One set of mortality rates has been used for all countries to reflect that best-estimate mortality calculations resemble each other for identical populations, like in the current example.

Deviations of the discount from the risk free market rate

Some countries have incorporated prudence in the technical provisions by choosing a discount rate significantly *below* the current risk-free rate. In a couple of countries, a fixed maximum discount rate is set by the supervisor. This deviation from the risk-free rate is presented in the graph by a positive contribution to the technical provision. In some countries the discount rate is *above* the current risk-free rate. These are displayed as negative contributions to the technical provisions since less money is reserved for in comparison to the base level at risk-free rates.

Mortality trend

Some countries take into account the effect of the observed trend in improving survival rates, rather than applying current mortality rates. In the figure one trend has been used for these countries, to reflect that the 'population' in the current

example is identical. The mortality trend proves to have a considerable effect on technical provisions.

Mortality prudence

Some countries apply prudence in the mortality rates they use by lowering them slightly. For these countries the effect of mortality prudence has been estimated by lowering all mortality rates by 5%. It proved difficult for countries to give estimations of the prudence they apply to mortality rates. Therefore, the estimate of one particular country which could give numbers was used across all countries. The effect of mortality prudence proves small, though.

Reserving for indexation

The graph shows the impact of *mandatory* indexation for inflation of deferred benefits and benefits in payments, which is only the case in Ireland, Portugal and the UK, and the impact of *common* indexation. The graph also covers future salary increases in case countries have explicitly reserved for it (AT, ES, GR, LU and PT). The graph does *not* include provisioning for inflation or wage increases for those countries where such promise is *not* common practice. The point is, that where indexation to inflation is promised, it should actually be reserved for, as such improves the certainty for a beneficiary.

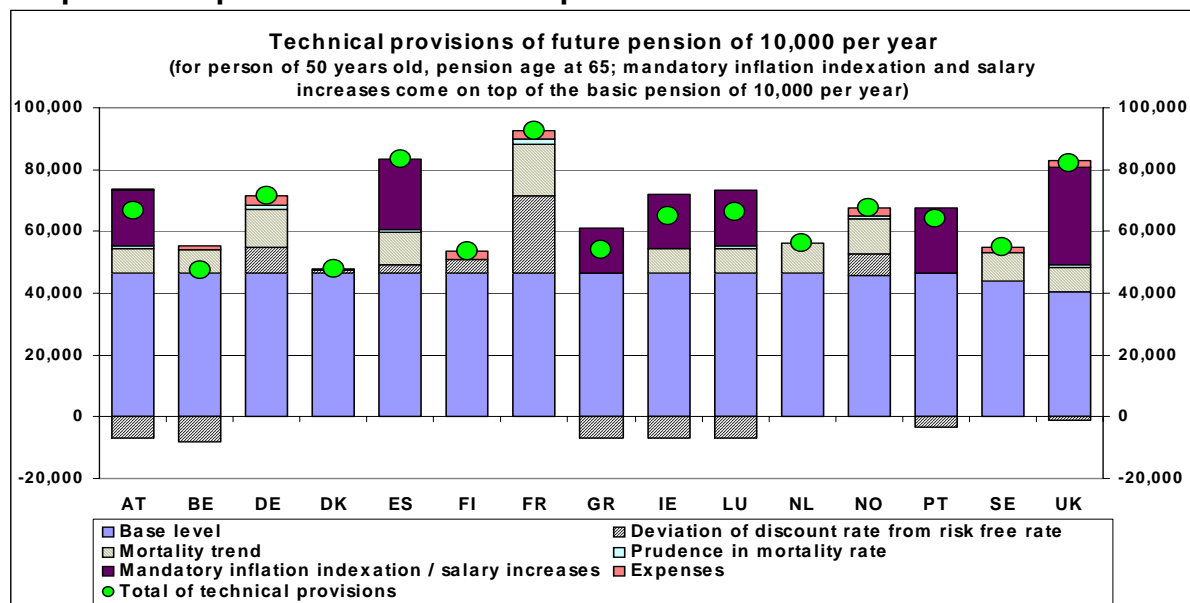
Expenses

Reservation for future expenses increases the size of the technical provisions. Many countries make a reservation for future expenses. For countries which have specified the % level of expenses the reported figure has been used (calculated as % of the base level of technical provisions); for the others an average level of 3% has been assumed.

Assessment

Most prominently the graph shows the wide variety of approaches across Europe. It also stresses the need to look at the combination of all individual elements of technical provisions, rather than focusing only at an individual element like the discount rate or the mortality rate. The picture is, however, *a first approximation* to the calculation of the technical provisions and should be judged and interpreted only as such. The graph shows that prudent assumptions in mortality rates and/or the discount rate, the mortality trend and expenses generally increase the size of the technical provisions. Mandatory indexation of inflation to active members and to current pensioners in particular increases the technical provisions, thereby also enlarging the level of security for current and future pensioners.

Graph 7 Components of technical provisions*



Explanation: based on actual discount rates end 2006.

* On April 28, Graph 7 was updated to reflect the same data source for the risk free rate for the UK.

It is possible to employ other methods than the ones used to identify the components of technical provisions, which might result in other outcomes. E.g. different levels of security in the mortality rates and different mortality trends have not been taken into consideration. Therefore the results displayed in graph 7 should be regarded as a rough and qualitative indication for the composition of technical provisions rather than as an exact quantification of the different components. In fact, the graph compares the calculation of technical provisions for each country's typical pension promise, which can include or exclude indexation. It does not give a comparison of the prudential treatment of an identical pension promise.

6. Security mechanisms

Member states apply various **additional security mechanisms** that provide further protection to the full funding requirement regarding technical provisions. The IORP Directive requires that where the IORP underwrites the liability it should hold additional funds that act as a buffer against the mismatch risk between the assets and the liabilities. The following overview establishes what other mechanisms countries have in place and what frameworks they provide to ensure sufficient funding of IORPs. The underlying principles and rationale for the different approaches and solutions adopted at a national level are examined in order to provide a picture of the protection framework whilst recognising the differences in the nature of pension provision across Member States. The mechanisms include:

6.1 Regulatory own funds and additional solvency buffers

6.2 Subordinated loans

6.3 Sponsor commitment and increases to contractual premiums/sponsor contributions

6.4 Guarantee funds

6.5 Mechanisms to reduce accrued pension rights

6.6 Reduction of future conditional inflation

Some of these mechanisms, such as solvency buffers, escrow accounts²⁶, contingent assets, subordinated loans or a guarantee fund, are capitalised, which means that security is arranged up front. Mechanisms that call upon the sponsor, such as contributions and other forms of sponsor support, share the characteristic of providing ex post security. There are arguments for and against capitalising security mechanisms that cover against risk beyond those included in prudent technical provisions. Capitalised instruments, offering upfront security, do not have an important economic or cyclical impact once an adverse adjustment needs to be compensated for. They do, however, increase the upfront cost to employers and hence may interfere in the balance between cost and pension provision where employer sponsorship is entirely voluntary. Also, they may tie up employer capital in an economically inefficient manner except to the extent that they are used for providing members with conditional indexation. This drawback is more pertinent to IORPs backed by a single employer than to industry-wide IORPs.

Instruments providing ex post security on the other hand may have a less favourable economic and cyclical impact as shortfall correction is usually needed in times of economic downturn and this financial obligation may further deteriorate the economic health of the sponsor. On the one hand, ex post funding causes a degree of risk concentration as employers are more likely to become insolvent when investment markets are weak and hence deficits most likely. However, this impact can be mitigated by the existence of additional funds or assets as collateral on which a claim may be made by the IORP and also by allowing a longer recovery period that spreads out the effects of adjustment measures over the cycle. The dependence on a sponsor poses some credit risk to the individual member. Apart from their job employees also stand to lose part of their future pension benefits if the IORP is found to be under funded and the sponsor fails. A well-designed guarantee fund however can further mitigate the risks associated with this approach. Funding difficulties are more disadvantageous in an ageing society: in the absence of offsetting measures, such as conservative mortality assumptions, financing shortages will be shifted to periods when labour participation is lower.

Table 8 provides a summary overview of the various security mechanisms that exist in the different Member States. The table shows that countries apply different combinations of supplementary security mechanisms. In particular, there is a distinction between countries that impose significant requirements on the sponsor and those that do not – whether or not back-up is also provided for in the form of a guarantee fund. This distinction has become apparent and shows two different approaches to providing a suitable level of protection to members and beneficiaries.

²⁶ An account into which the sponsor places money that is released to the pension fund under defined events such as a shortfall in the pension or a corporate insolvency. The money does not go into the pension fund as current rules may mean that it is then effectively impossible to retrieve the money if the assets are then greater than needed to fund the pensions.

The Directive recognises the security that a sponsor provides and the requirement for regulatory own funds applies where the IORP itself is providing the guarantees. IORPs that do not have the support of a sponsor are required to hold additional funds to mitigate the extra risk. There is some **interaction** between the different security mechanisms while the presence of a sponsor commitment plays a key role in other areas of the funding framework.

Section 6.7 presents an evaluation of the various applied security mechanisms.

Table 8 Summary overview of security mechanisms

Security mechanisms	AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LI	LU	MT	NL	NO	PT	SE	UK	Total
Regulatory Own Funds	Y	Y	Y	Y	Y		Y						Y	Y	Y		Y		10
Subordinated loans			Y	Y			Y							Y	Y		Y		6
S s p o n s o r t	Unlimited	Y			Y	Y						Y CAA	Y					Y	6
	Limited		Y		Y						Y	Y CSSF				Y	Y		6
	Not automatic			Y			Y	Y	Y	Y				Y	Y				7
Guarantee fund			Y				Y											Y	3
Reduction of accrued rights	Y	Y	Y						Y	Y				Y		Y			7
Reduction in future conditional indexation				Y										Y			Y		3
Other security mechanism									Y									Y	2

6.1 Regulatory own funds and additional solvency buffers

Summary and conclusions

A solvency buffer, in the form of additional assets, will function as a security mechanism as it provides a cushion in case the IORP becomes under funded. The buffer ensures that the pension provision can be maintained as usual in case of financial distress. The IORP Directive stipulates that an institution which itself, rather than the sponsoring company, bears biometric risks or guarantees a given investment performance or level of benefits, should hold additional assets above the technical provisions (Article 17)²⁷. These additional assets or 'regulatory own funds' should be free of any foreseeable liabilities and serve as a buffer. The Directive refers to specific articles in the Third Life Directive to calculate the minimum amount of additional assets²⁸.

In most EEA countries, IORPs are required to create regulatory own funds. While the so-called 'Article 4' countries (FR, LI and SE) do not apply Article 17 of the IORP Directive, they use the same method for calculating the minimum amount of additional assets, based on the Third Life Directive. There are no differences as to

²⁷ Member states may, however, postpone the implementation of these requirements for locally operating institutions until 23 September 2010 (see Article 22-3). IE and IT have done so.

²⁸ 2002/83/EC, Articles 27 and 28 (Solvency I requirements).

the treatment of cross-border schemes. Some countries have *additional* criteria to decide if regulatory own funds apply to IORPs and *additional* requirements with respect to the minimum size of the regulatory own funds. None of the countries, however, has rules for capital add-ons to account for specific additional risks.

In countries where the IORP does not itself bear biometric risks but where the IORP has full recourse to the sponsor, buffers are not required.

Criteria

In general, countries use the criteria in the Directive for applying regulatory own funds, i.e. the IORP bears biometric risks or provides guarantees. Some countries use *additional* criteria to decide if regulatory own funds apply to IORPs:

- Austria does not require IORPs to set aside the minimum yield reserve if the sponsor has an unlimited obligation to make up deficits.
- Belgium also has solvency rules for IORPs that have not written obligations, but are entrusted to manage funds in the most efficient way (obligation of means). These buffers are meant as a protection against catastrophic events.
- In Portugal IORPs do not have legal capacity and are managed by external governing bodies. Regulatory own funds are therefore required for Pension Fund Management Companies, not by the IORPs themselves.
- In Spain regulatory own funds do not apply to fully reinsured pension plans.
- In the Netherlands fully reinsured IORPs may abstain, subject to agreement by the supervisor, from holding the minimum amount of additional assets. They are required, however, to hold additional capital against the credit risk of the reinsurer.

Proportion of IORPs

Table 9 displays the proportion of IORPs to which regulatory own funds apply in the individual Member States. The 'Article 4' countries falling under the insurance regulation are included in this table, although the numbers then refer to pension insurers, not to pension funds.

Table 9 Regulatory own funds

<i>Regulatory own funds apply</i>	<i>In % of IORPs</i>	<i>In % of technical provisions</i>	<i>Comment</i>
Austria	90	96.4	
Belgium	28	60	
Malta, Spain	NA	NA	
Denmark, Germany, Norway	100	100	
The Netherlands	76.4	98.2	
LU-CSSF, Portugal, UK	0	0	
France, Sweden	100	100	Article 4
Ireland, Italy	-	-	Article 17 postponed

Additional requirements

Some countries have *additional* requirements regarding the minimum size of IORPs regulatory own funds. These are applied on top of the minimum amount of additional assets mentioned in the Directive (they can increase, but not decrease the minimum amount).

- In Austria an IORP is required to hold own funds to at least 1% of technical provisions. Also applicable are absolute minimum amounts of € 5 million and € 70,000 for multiple and single employer pension institutions respectively.
- Belgium also has solvency rules for IORPs that do not *themselves* bear biometric risks or provide guarantees (i.e. obligation of means), but to protect against catastrophic events of these biometric risks. The solvency buffers to be held can be reduced completely or partly with reinsurance, in which case the IORP should take into account the credit risk of the reinsurer in determining its overall solvency needs.
- Denmark uses stress tests to determine how different economic developments affect an IORP's assets. Extra buffers are required according to a 'traffic light' system.
- Norway requires an extra 8% of risk-weighted assets (RWA) as under in Basel I.
- Spain requires a minimum of 2% of technical provisions, with an absolute minimum of € 225,000.
- Sweden requires extra buffers according to a 'traffic-light' approach (similar to SCR under Solvency II) and undertakes stress tests of assets and liabilities at a 99.5 % confidence level. This approach is only used as a supervisory tool.
- In the Netherlands regulatory own funds serve as a minimum requirement in the Financial Assessment Framework (FTK). FTK sets the capital requirement at a 97.5% confidence level with a 1-year horizon.

None of the countries has rules requiring capital add-ons for specific additional risks. In the Netherlands, however, an IORP whose required solvency capital under FTK does not adequately reflect its risk profile, is asked to contact the supervisor to discuss measures, such as permission to determine the solvency requirement on the strength of an internal model, or the creation of a capital add-on (on top of the solvency capital requirement under the standard approach).

Level of protection

As far as the level of protection is concerned, some members argue regulatory own funds intend to ensure that the IORP is able to fulfil all its liabilities, possibly under adverse developments, or to provide the same level of protection Solvency I does for insurers. Other countries do not apply a level of protection. Only a small group of countries apply additional risk-based requirements. Sweden and Denmark use the Solvency I rules as a basic measure and a 'traffic light' system for stressing asset value reductions and a drop in market interest rates. The Netherlands has a capital requirement that specifically targets a 97.5% confidence level with a 1-year horizon.

6.2 Subordinated loans

Summary and conclusions

Subordinated loans can serve as a security mechanism. The subordination feature requires that all payments on the loan are subordinated to the pension liabilities and offers unlimited loss absorption. Six countries have legislation in place that allows for the use of subordinated loans²⁹. The remaining countries do not permit the use of subordinated loans. Subordinated loans typically serve as regulatory own funds, for example when buffers are too low to prevent a shortfall position (DE, NO). An additional motivation is that the capital derived from subordinated loans is tied up in the IORP (DK). The IORP therefore does not run the (counterparty credit) risk that the sponsor will not be able to supply capital when needed. In this sense, subordinated loans are comparable to a sponsor commitment. The liability of a subordinated loan may be written to another party than the sponsoring company. The general picture points to a fairly limited use of subordinated loans, both in terms of number of schemes and as a proportion of regulatory own funds, except the substantial use in one country.

Counterparty

In all the countries the claim linked to a subordinated loan may be from another party than the sponsoring company. This does not alter the function of subordinated loans as a security mechanism in any respect. In Sweden, however, these loans are in practice only written by insurance companies. The Netherlands add strict criteria which make it unlikely that another company than the sponsoring company would be willing to act as a creditor to an IORP for a subordinated loan.

Limits and criteria

For those countries that permit their use, subordinated loans are to a limited extent recognized as own funds in solvency calculations. This recognition is based on specific criteria for subordination to ensure the subordinated (loan) capital has loss-absorbing properties and mirrors properties of own funds in a shortfall position³⁰.

Usage

Table 10 lists the actual use of subordinated loans. The general picture points to a fairly limited use of subordinated loans both in terms of number of schemes and as a proportion of own funds.

²⁹ DE, DK, NL and NO and some 'Article 4' countries FR and SE. Subordinated loans are permitted under Solvency I rules for insurance companies.

³⁰ These criteria are based on Solvency I rules.

Table 10 Use of subordinated loans

	<i>Proportion of schemes</i>	<i>Proportion of own funds</i>
Denmark	10%	1% regulatory own funds / 0.2% liabilities
Germany	10 Pensionskassen (out of 152), no Pensionsfonds	4.7% regulatory own funds of Pensionskassen (<0.2% of liabilities)
The Netherlands	Substantial	Substantial
Norway	Approx. 20%	3% of regulatory own funds
Sweden (Art. 4)	Small	<0.5% of technical provisions
France (Art. 4)	No information	No information

6.3 Sponsor commitment and increases to contractual premiums/sponsor contributions

Summary and conclusion

An IORP is defined in the Directive as an institution that operates separately from any sponsoring undertaking for the purpose of providing retirement benefits in the context of an occupational activity. The sponsoring undertaking is the driving force behind the provision of benefits for the employees and therefore plays a key role in the funding of the IORP. The role played by the sponsor in relation to the pension commitment will depend largely on the nature of that promise in the context of the national legislation in place and varies in its form across the different countries. For funded schemes like IORPs the ability to demand extra funds from a sponsor and any limits that may apply to the level of support required may depend on the presence of other security mechanisms such as additional or contingent assets.

The ability to adjust contractual premiums or contributions in some manner exists in the vast majority of countries but the extent varies as to the roles of the sponsor and the supervisor. The amount required to be paid in with an IORP to finance a certain level of funding and the degree of support the sponsor must fulfil are not defined in the Directive. In addition to support or contributions by the sponsor, member-paid premiums determined in a contractual agreement may be distinguished as a security mechanism.

Sponsor support varies considerably across Member States. In some countries IORPs have full or limited recourse to the sponsor for the outstanding debt at times of under funding. In other countries IORPs have no automatic ability to call on additional funds, but have other means for securing additional sponsor contributions, for example through contract specifications or negotiations between social partners. In the latter countries, sponsor commitment is limited depending on what is defined in the contractual agreement between the IORP and the sponsor, or on what is required by legislation.

Type of sponsor support commitments

Determining the legal nature of sponsor support is not an easy task as interpretations can vary between countries. Some view legal obligations as a full

and automatic recourse to the sponsor support – **unlimited** support – while in other cases the legal obligation is subject to certain contingencies – **limited** support. In a third group of countries, IORPs have very limited or **no automatic recourse** to sponsor financing in case of under funding. Therefore a distinction must be made by the type of legal obligations. Here it will be made on the basis of sponsor support as security mechanism in the sense that the IORP / beneficiaries / supervisory authority can force the sponsor to make up any shortfall or deficit through legal action.

Table 11 Sponsor support

<i>Automatic recourse to sponsor support</i>		<i>No automatic recourse to sponsor support</i>
<i>Unlimited defined by law</i>	<i>Limited defined by contract</i>	
Austria Finland Luxembourg-CAA Malta Spain UK	Belgium Denmark Liechtenstein Luxembourg-CSSF Portugal Sweden	France Germany Greece Ireland Italy The Netherlands Norway

As shown in Table 11, many countries impose some obligation on the sponsoring undertaking to provide financial support in case an IORP is not fully funded. In all these cases the definition of the sponsor with the requirement is the employer and is generally defined in the rules of the plan. In some countries the requirements are embedded in law. In the other cases, the exact nature of the support forms part of the contract between the IORP and the sponsor. Where a country uses recourse to a legally binding debt on the sponsoring employer as part of the security mechanism, the supervisor needs to assess and monitor the financial strength of the employer. The supervisor also needs powers to intervene against employers to prevent the moral hazard of an employer avoiding the debt. The UK regulator has such powers to issue a financial support directive or a contribution notice on an employer. In Portugal, sponsor support is contingent on whether or not the sponsor wishes to maintain the pension obligations because setting up a pension fund is voluntary. In other words, if the sponsor wants to close the plan, the IORP or the beneficiaries can not legally demand support from the sponsor and the IORP is wound-up. In Spain it is a legal obligation to specify how a shortfall will be funded but the obligation on the sponsor is contractual. In Belgium the contract must by law contain certain minimum elements. Sweden indicated that the requirements in place are yet to be put to the test.

In a third group of countries, IORPs have very limited or no automatic means to call on *additional* sponsor financing in case of under funding. In these countries the process for securing potential increases in contributions varies. It is usually either detailed in the contract or effected through negotiation with the (social) parties involved, as in the context of establishing a concrete and realisable recovery plan. Although not as explicitly as sponsor commitments, increases in contributions are

seen by some countries as an important and flexible mechanism to ensure that shortfalls in funding are rectified. An example is the Dutch legislation that requires a so-called self-funding premium. The decision to change contribution levels, i.e. in the range above the self-funding premium, is one that is taken by and negotiated between the social partners and the IORP. Flexible contributions have proved an important and effective security mechanism there. The size of the shortfall determines the length of the recovery period and therefore the size of the additional contributions.

In the UK the trustees of pension schemes can acquire a hold on assets of the employer for use by the scheme. These assets may be in the form of funds, possibly held in an escrow account or can be a call on other assets of the sponsor. They represent solid unimpeachable upfront assets already identified to provide the pension scheme with collateral if needed. This is not the same and is supplementary to, an agreement for employer support in the future. Contingent assets are not available to the scheme until the contingent event occurs and do not form part of the scheme assets for the purpose of assessing whether the scheme meets its statutory funding objective. I.e. they are in addition to the assets required to cover technical provisions. They offer the pension fund security of the type a bank would accept as collateral for a loan.

Circumstances of sponsor support

Sponsor support takes two main forms, one on an ongoing basis, where the sponsor and scheme are continuing or on a discontinuance basis where either the scheme or the sponsor is to be wound up.

- Ongoing support

In the event of an IORP not being fully funded some countries (AT, BE, ES, FI, LU, MT, PT and UK) oblige the sponsor to pay increased contributions to cover some or all of the shortfall. The nature of this increase is paid for either through an immediate injection of funds or in the context of a recovery plan, which also takes other security mechanisms into account. In some countries (BE, LU-CSSF, MT, PT and UK) the recovery plan must be communicated to the supervisor. Belgium, Luxembourg-CSSF and Malta require approval of the plan while the UK supervisor has the power to set the technical provisions and contribution schedule if necessary. Other countries, for example Ireland, have a strongly embedded history of sponsor support for pension schemes. The current practice in the event of under funding is for the employer and trustees to agree on a suitable recovery plan which must be submitted by the trustees to the regulator.

- Discontinuance

A further type of sponsor support can take the form of a claim on the sponsor in the event of the scheme being discontinued or if the employer changes its legal form. Seven countries (AT, BE, ES, FI, LU, MT, and UK) have a requirement for sponsors to recover deficits in the IORP, which requirement continues if changes to the sponsor take place, as a way to prevent abandonment of the scheme by the sponsors. If a new sponsor is present, five countries (AT, ES, FI, LU-CAA, and UK) require a new sponsor to take on the obligations of the IORP and to fund the IORP.

Three countries (BE, MT and UK) impose requirements on the old sponsor to fulfil its obligations. In countries where sponsor support is obligatory, the IORP is likely to take part in any negotiations or decisions regarding corporate transactions. In the UK, the supervisor has powers to ensure schemes are sufficiently funded to reflect any changes to the sponsor and takes an active role in this process. In Malta, legal proceedings against the sponsor are possible to recover due debt.

In the event of insolvency the sponsor is no longer able to fund the IORP and so in all cases the obligation ceases. In Austria the scheme may then be converted into a DC plan. In Belgium the vested capital of pensions in payment must be paid out to pensioners while other benefits are transferred into individual accounts. If the assets are not sufficient to cover the liabilities, UK protects the benefits of affected members via a guarantee fund.

Conditions and limits to increases in contributions

In Denmark, France and Liechtenstein, increases depend on the contractual agreement with the sponsor. To overcome an insolvency situation, Germany requires the agreement of the supervisor to all arrangements, even to an increase of contributions. Norway allows increases if the mortality or disability tables proved inaccurate or if the guaranteed interest rate is reduced. The decision is up to the IORP in Greece. Italy and Sweden require the agreement of all parties involved. In the Netherlands contribution increases are negotiated between the social partners and the IORP.

Recovery plans

Pension promises are long-term promises where benefits may not be due for a long time, possibly 40 years or more in the future. Therefore if an IORP is under funded it often has a sufficient period to rectify this before possible insolvency could occur. The use of recovery plans is seen as an essential part in recovering deficits. The length of such plans varies from mandatory immediate elimination of a deficit to the freedom in some countries for individual IORPs and their sponsors to decide on the most appropriate time span for recovery to take place. A common theme however is that this period should not be to the detriment of the members and should be as short as possible.

Periods of under funding are permitted under the Directive as long as there is a concrete and realistic recovery plan in place, except for schemes operating cross-border which must be 'fully funded at all times' (see section 7). The purpose of such a plan is to specify the shortfall of the assets against the required level of funding and to schedule future funding to rectify this. The maximum time frame of recovery plans varies with some Member States setting fixed periods (AT, DE, DK, ES, FI, GR, IE, LU-CAA, MT, NL, NO and SE) within which full funding must be restored while other countries do not limit recovery periods (BE, IT, LI, LU-CSSF, PT and UK). The actual length of the recovery period for all countries depends on the IORP's individual circumstances and risk profile.

Table 12 Recovery period - maximum duration

Immediate	Germany (<i>Pensionskassen</i>) Luxembourg-CAA
Within 1 year	Sweden Denmark (although 'fully funded at all times' strictly required)
Within 3 years	Greece Ireland (extendable up to 10 years by the supervisor) The Netherlands (schemes failing to meet minimum funding level; 15 years to recover the solvency capital requirement) Norway
Up to 5 years	Spain (extendable to up to 10 years by supervisor)
Up to 10 years or more	Austria Finland Germany (<i>Pensionsfonds</i> ; max 10% of technical provisions) Malta (up to 10 years or average working lifetime of contributing individual)

Table 12 shows that some countries distinguish several situations. In countries that require solvency buffers, the recovery period for the buffers differs from that for technical provisions. The Netherlands allows fifteen years for recovery of the solvency capital requirement, but only three years for the minimum capital requirement. Germany distinguishes between different institutions. Only *Pensionsfonds* are permitted to be temporarily under funded. The conditions apply not only to the period allowed for restoring the funding position but also to the deficit, which may not exceed 10 per cent of technical provisions. Ireland, Malta, Portugal and the UK have explicitly stated the objective of preventing undue pressure on sponsors and protecting schemes from being wound up. That is, there is a need to balance the ongoing viability of the employer against the long-term interests of the members and continued DB pension provision. The UK supervisor has as one of its triggers for additional supervisory scrutiny the length of the recovery plan. Currently plans with duration above 10 years will trigger closer supervisory inspection.

6.4 Guarantee funds

Summary and conclusion

Guarantee funds form part of the funding regulations of some countries and as such play an important role in the overall level of security afforded to IORP members. The guarantee fund is an entity designed to provide members with an assured level of benefits if there is no further recourse to a sponsor or the assets of the IORP are insufficient to pay out the benefits due. The security afforded by a guarantee fund can potentially form a significant part of the overall security provided to members of IORPs, depending on the extent of the coverage. Where there is a guarantee fund, it is therefore reasonable to expect a reduced need for other security mechanisms. However, an arrangement such as a guarantee fund carries the risk of moral

hazard, meaning that the IORP may be tempted to engage in activities that are overly risky because if it comes to worst, it can always fall back on the resort of the guarantee fund.

Establishment

Three countries have guarantee funds (DE, FR and UK). The French guarantee fund is not a protection against insolvency of the sponsor but it is the guarantee fund of all life insurance companies because French IORPs are life insurance companies. In Germany the guarantee funds does not protect Pensionskassen but Pensionsfonds and other vehicles to finance occupational pensions (support funds (Unterstützungskassen) and book reserve schemes). In the UK the sponsor has a legal responsibility for the funding of the IORP whereas in Germany there is no such responsibility. In Germany, the sponsor has the legal obligation to pay the pensions if the IORP is not able to do this. The guarantee funds in both countries are designed to provide an assurance for members of a level of benefits if there is no further recourse to a sponsor and the IORP is not sufficiently funded to pay the benefits. In Germany the assets and liabilities are absorbed into the guarantee fund if insolvency of the sponsor occurs. In the UK the assets of the IORP must be insufficient to pay out the benefits due. In France and the UK, the guarantee fund is financed by the eligible IORPs; in Germany the IORP's sponsor is responsible for levy payments (Table 13).

Table 13 – Guarantee funds: Size and funding

	<i>Size of the fund</i>	<i>Annual premium and formula for premium payments</i>
Germany	€ 1.3 billion (end 2006)	<i>Pensionsfonds:</i> 20% of the present value of all vested rights of the pension promises of all solvent employers that finance their occupational pension via a Pensionsfonds
France	0.05% of the amount of all life insurance TP	Proportion equal to the quotient of the IORPs' TP on the global amount of TP (minimal € 15,000)
UK	31 March 2007 - £ 835 million	Premiums for the year 2006/07 approx £ 271million

Coverage of the guarantee

The level of security afforded by guarantee funds varies. Germany claims 100% protection to members, with a ceiling of € 7,350 a month (2007; indexed benefits). France limits benefits to a lump sum payment of € 70,000 per policyholder (2007). Those who have reached the scheme retirement age in the UK and those who have retired due to ill health will receive full benefits including inflation protection. Others will receive 90% of their real terms benefits³¹ with mandatory indexation for service after April 1997. If the German guarantee fund takes over the payments, the

³¹ Subject to caps of 2.5% on pensions in payment and 5% of benefits accrued for deferred members.

beneficiaries lose their inflation protection rights since inflation protection is an obligation of the employer, which has become insolvent.

6.5 Mechanisms to reduce accrued pension rights

Summary and conclusion

The reduction of accrued pension rights could potentially assist an IORP to restore a situation of under funding. Although this mechanism is ranked under 'security mechanisms' it needs to be emphasised that it is of a different nature than the other security mechanisms since accrued rights are not secured, but reduced in order to 'resolve' a situation of insolvency and save the IORP. This event rather points to failing risk management on the part of the IORP or to failing supervision. It is generally the last mechanism to turn to when all the others have failed.

Seven countries³² recognise circumstances in which accrued pension rights, including guaranteed indexation, can be reduced where an IORP is not fully funded and where the IORP can continue to exist. In other countries a reduction of accrued rights is only possible, and might be inevitable, when the IORP is wound up and no further sponsor support is available. Circumstances in which accrued pension rights³³ can be reduced generally relate to a situation of *insolvency*. No restrictions seem to exist as to the maximum reduction level. The process that must be followed to allow reductions varies markedly across Europe as regards the parties involved (members, sponsor, unions, supervisor), the consent required, notification procedures and timelines.

Circumstances

The circumstances in which benefits can be cut generally relate to a situation of *insolvency*. However, they differ across countries.

In Austria accrued rights can only be reduced where the sponsor cannot cover a shortfall of the IORP. In Belgium the pension scheme rules, recovery plan (to be approved by the supervisor) and applicable Social and Labour Law are determining factors. If Belgium is the host member state, vested reserves³⁴ cannot be reduced. In Germany Pensionskassen by their statutes and with the permission of the supervisor can increase contributions or reduce benefits. In Ireland the supervisor (Pensions Board) may direct the trustees to take such measures (for members in employment) if no adequate Actuarial Financial Certificate can be presented. In Spain benefits can only be reduced if the plan specifies agreed *maximum* sponsor contributions and the contributions needed to cover the benefit exceed legal limits, but in these cases all obligations remain and the excess of contributions have to be integrated in an insurance contract to guarantee the financing of the compromise. The Netherlands have strict criteria for reduction of benefits implemented in

³² AT, BE, DE, IE, IT, NL and PT.

³³ Accrued rights cover guaranteed future indexation.

³⁴ Vested reserves are defined as the *present* value of the *vested rights* (or also called *accrued rights*) at a particular moment. The vested rights equal the amount to be received at retirement age calculated on the basis of the pension formula, taking into account the salary and the number of years of service at the moment of calculation.

legislation; basically, reduction can only happen if all instruments to recover from under funding have been exhausted.

Approval process

The process that must be followed to allow reductions varies markedly across Europe as regards the parties involved (members, sponsor, unions, supervisor), the consent required and notification procedures and timelines.

In Austria no approval is required. In Germany the members decide but supervisory permission is necessary. This decision to reduce benefits proves easier than a decision to increase contributions. In Ireland the Board must give a direction after consideration and notify the members. An Actuarial Financial Certificate must be submitted to the Pensions Board certifying that funding requirements are met after reduction of the benefits. In Portugal regulatory approval is necessary. In Spain however such a decision needs approval by the sponsor and members in a collective negotiation, but does not need supervisory approval. In the Netherlands, the IORP can take the decision after the strict criteria in the Pension Law have been met. All members, beneficiaries and the sponsor need to be informed.

Restrictions

No restrictions seem to exist as to the maximum level of the reduction. In practice the actual level of reduction is governed by the extent of the shortfall. In Ireland and Portugal only benefits of active members can be reduced.

6.6 Reduction of non-mandatory increases

Summary and conclusion

In countries where future indexation is conditional and therefore not explicitly reserved for, indexation may be granted on a year-by-year basis depending on the IORPs' current financial position and prospects hereof. Reduction of these non-mandatory increases can in some countries serve as a security mechanism.

Practice

Although the decision to grant indexation is taken yearly, in practice indexing to the level of price or wage inflation may have become accepted custom. Where it has, pension payments may not differ dramatically from systems where indexation was actually reserved for, especially if the yearly indexation is pre-financed, meaning that the surplus funds can only be used for indexation, not to bear biometric risks. Such financing may take place in a number of ways, e.g. by surplus funds, through contributions or by forming technical provisions or other types of reserves. In deteriorating financial circumstances, the possibility to reduce future, non-guaranteed (conditional) indexation can serve as a separate security mechanism if the expected indexation was concretely pre-financed. This is the case for the Netherlands, Sweden and to some extent for Denmark. If a Danish IORP has not taken any precautions there is a possibility that the indexation may be interpreted as a real promise after some time, reducing the possibility to cut indexation. A crucial point here is that indexation is not guaranteed or promised but is purely

conditional and will be provided only if available means allow it. This can result in a reduction of the purchasing power of benefits due to inflation.

Unlike the reduction of accrued pension benefits, the reduction of conditional indexation in times of distress does provide extra security to the beneficiary. There is an important difference since even though indexation may have become common practice and is actually expected, it has not been promised. By not, or not fully, granting indexation, the IORP reduces the chance of insolvency as a result of those pension promises that were made. The money is then used not for indexation, but to strengthen the funding ratio. One advantage of this system is its flexibility: in better times the IORP may catch up on the indexation that was previously reduced. This feature of catching up on previously lost indexation is important, since although no promises were given, members have become used to receiving indexation. Reduction of indexation is often part of a broad recovery plan, which focuses on the salvation of the IORP.

6.7 Evaluation of the security mechanisms

The previous sections discussed the individual security mechanisms used to protect the adequacy of technical provisions. In this section an attempt is made to evaluate the aggregate effect of those security mechanisms in combination. In what order are security mechanisms being invoked and has this arrangement proved effective or not? An overview of the 'portfolio' of security mechanisms in place emphasises the diversity of pension systems across Europe. Most countries turn out to approach the issue of effectiveness from an intuitive point of view, based on historical observation, while others are somewhat more specific. The main conclusion, however, is that a framework for the assessment of the combined effectiveness of all individual mechanisms is currently lacking. In particular, no detailed information is available on how, when and to what extent the security mechanisms would interact and operate as a single security mechanism *in practice*. It would therefore be difficult, if not impossible, to attach a level of overall security to the individual pension systems in a way that made sense.

Effectiveness

Most countries intuitively report that in their experience IORPs have overcome the troubles that emerged in the beginning of this century and that security mechanisms therefore have proved effective. These findings are not substantiated further. Some countries comment that there is so far limited experience of the use of security mechanisms. Other countries also mention that IORPs in trouble may renegotiate plan rules and possibly convert DB plans into DC plans. These findings lead to the conclusion that a framework or benchmark for the effectiveness of current security mechanisms is lacking.

In Belgium past cases of insolvency were usually resolved by means of additional sponsor contributions. In Germany, a combination of available capital, increased contributions and benefit reduction was used to tackle the problems arising from the financial crisis in the beginning of this century. In The Netherlands a combination of high solvency buffers, increased contributions, reduction of indexation and the use

of subordinated loans successfully absorbed these problems. Flexible contributions have proved especially effective in recent years. The UK is in the early days of a new regime and is starting to see the positive results of improved funding among schemes. Members' benefits are fully protected while there is a solvent sponsor. In addition, the guarantee fund (Pension Protection Fund; PPF), has proved effective in securing the benefits for pension scheme members transferred into the PPF as a result of sponsor insolvency. A recent independent audit from the National Audit Office³⁵ in the UK also concluded that good progress was being made towards a risk-based approach to regulation.

Ranking

In order to prevent insolvency or to recover from actual insolvency, security mechanisms may operate simultaneously or sequentially. In the latter case, one security mechanism takes over when the previous one is exhausted. Table 14 lists per country the order in which the available security mechanisms are usually applied. In general terms, the table provides a first glance at the ranking of the security mechanisms and at the high-level differences between countries. It basically takes the discussion one step beyond the level of individual mechanisms. It does not give detailed information on how, when and to what extent the security mechanisms would interact and operate as a single security mechanism *in practice*. A few countries have additional security mechanisms in place that were not covered above (see Table 15).

Table 14 Ranking of security mechanisms

	Ranking	Trigger / comment
Austria	1. volatility reserve, 2. sponsor, 3. compensation under minimum yield by pension company	3. if volatility reserve (1.) is empty
Belgium	1. regulatory own funds, 2. proactive recovery measures (increase contributions, reduce future benefits), 3. reactive recovery measures (financial injection, additional sponsor contributions)	2. when risk of underfunding, 3. when actual underfunding
Denmark	1. traffic lights model, 2. Solvency I buffer, 3. recovery plan	
France	1. 3-pillar solvency framework, 2. guarantee fund	
Germany	1. own funds, 2. subordinated loans, 3. increase of contributions/decrease of benefits	Guarantee fund offers protection of insolvent sponsor, not IORP
Ireland	1. increase of contributions (recovery plan), 2. reduction of benefits	Assets fall below Minimum Funding Standard level
Italy	Renegotiation and transformation from DB to DC	

³⁵ Responsible for scrutinising public spending on behalf of Parliament but independent from the Government.

The Netherlands	1. regulatory own funds (97.5% confidence level), 2. increase in contributions / subordinated loans / reduction discretionary benefits, 3. reduction of benefits	1. all IORPs, 2. relative use and strength varies between IORPs (ex post, after breaching solvency requirement)
Norway	1. regulatory own funds, 2. increase in contributions, 3. solvency capital	
Portugal	1. sponsor, 2. increase in contributions, 3. reduce benefits	No legal obligation applies to 1. and 2.
Spain	1. regulatory own funds, 2. sponsor, 3. change internal rules	2./3. in case of shortfall, 3. > 10% deviation of technical provisions & own funds
Malta	Recovery plan	Underlying security mechanism unknown
Sweden	1. traffic lights model, 2. regulatory own funds, 3. recovery plan	
UK	1. increase of contributions (recovery plans), 2. contingent assets and legally enforced employer debt, 3. guarantee fund	

Table 15 Additional Country-specific security mechanisms

Ireland	The Protection of Employees (Employers' Insolvency) Act 1984 requires that contributions deducted from employee wages during the twelve months prior to insolvency are paid to the scheme.
UK	The Fraud Compensation Fund was established under the Pensions Act 2004 to provide compensation to occupational pension schemes that suffer a loss that can be attributable to dishonesty.

7. Approach to cross-border pension schemes

Summary and Conclusion

Under the Directive, where IORPs operate cross-border, the host country's SLL must be applied to host country members. This means that the prudential framework of the home country should consider (in conformity with the prudent principles of the Directive) the requirements mentioned in national SLL. Therefore they will also impact the level of technical provisions and the security mechanisms to be applied to the IORP, even if such requirements are not part of its home prudential framework (simply because those requirements are not common practice in the home country). This leads to differences between local IORPs and cross-border IORPs. On top of this, with the aim of strengthening the solvency position of cross-border IORPs, some countries require shorter recovery periods or do not allow a

recovery period in case of under funding in adherence to the Directive's '*full funding at all times*' requirement³⁶.

Home country requirements for IORPs operating cross-border

For cross-border schemes, the home country sets the requirements for scheme funding but must allow for adherence to the SLL of the host country. Some countries have incorporated requirements in their SLL related to the calculation of technical provisions or the use of security mechanisms for schemes operating into their country.

In some countries distinctions are made between local IORPs, i.e. those that only operate domestic schemes, and those that operate cross-border. These distinctions are mainly aimed at strengthening the solvency position of schemes operating cross-border, in keeping with the Directive's requirements of full funding *at all times*. Germany however, does not afford the protection of the guarantee fund to the cross-border element of such scheme but affords the protection of German occupational pensions financed via a foreign scheme.

- Austria – no 10 year accumulation period of the minimum yield reserve allowed for cross-border schemes
- Germany – the guarantee fund does not cover cross-border activities from Germany to another country and no recovery period for Pensionsfonds is allowed
- The Netherlands – one year rather than 3 years for cross-border schemes to restore the funding ratio of ~105%
- UK – recovery plan restricted to two years and technical provisions must be calculated yearly

In the Netherlands, requirements for the cross-border element of IORPs relating to own funds and additional buffers may not be needed. They would apply if the pension fund, while unable to meet the requirements, could meet intended objectives via other mechanisms. This possibility would take into account the security mechanisms and SLL of the host country. The security mechanisms in the Netherlands for cross-border schemes may therefore be modified if the required goals are still met by host country requirements.

Host country requirements for IORPs operating in their country

Besides the host country's SLL requirements, specifically those regarding the level of technical provisions or the applicable security mechanism that IORPs operating in the host country must apply, some countries like Italy, as a consequence of their pension system, only allow the management of DC schemes irrespective of the localisation of the IORP (locally or cross-border). This in itself influences directly the funding requirements of the IORP.

³⁶ Article 16 (3) – "*In the event of cross-border activity as referred to in Article 20, the technical provisions shall at all times be fully funded*".

Annex 1 Members and Observers of CEIOPS OPC Solvency Sub-committee

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Erich Eggenhofer	European Commission
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Annex 2 Country abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

Annex 3 Glossary of Terms

Unless otherwise specified all references to the Directive are to the IORP Directive (2003/41/EC)

An institution for occupational retirement provision (IORP) means an institution, irrespective of its legal form operating on a funded basis established separately from any sponsoring undertaking or trade for the purpose of providing retirement benefits in the context of occupational activity on the basis of an agreement or contract agreed.

Defined contribution (DC): an occupational pension scheme where the only obligation of the scheme sponsor is to pay a specified contribution (normally expressed as a percentage of the employee's salary) to the scheme on the employee behalf. There are no further promises or 'guarantees' made by the sponsor. Any scheme where the sponsoring employer promises/guarantees more than that would fall into the DB category.

Defined benefit (DB): an occupational pension schemes other than defined contribution scheme. Examples include:

A scheme where benefits are linked through a formula to the member's wages or salaries (whether average or final), length of employment, or other factors.

- A scheme which may operate like a DC scheme but which targets a specified level of benefits at retirement.
- A scheme which may operate like a DC scheme but which guarantees a minimum rate of investment return on contributions paid.
- A scheme which may operate like a DC scheme but which guarantees a certain annuity purchase price (annuity conversion factor).
- A DC scheme which guarantees that at least the sum of contributions paid is returned.
- A scheme which has two separate DB and DC components but which are treated as part of the same scheme (sometimes called a hybrid scheme).

Technical provisions (TP) are as specified in Article 15 of the Directive.

A retrospective valuation method gives the present value of the premiums received and benefits paid in the past. In contrast, a prospective valuation method gives the present value of the premiums that will be received and benefits that will be paid in the future.

Security mechanisms are defined as the available means (as described in the law of the member state in which they apply) which institutions are able to make use of to increase the security of the accrued and future expected benefits and reduce (chances of) any shortfall in the funding level.

Regulatory own funds are additional assets held above the technical provisions on a permanent basis as a buffer by an IORP which itself, and not the sponsor

undertaking, underwrites the liability to cover against biometric risks, or guarantees a given investment performance or level of benefits.

Solvency buffers are assets additional to those required to cover technical provisions, which IORPs may hold (voluntarily, by law or under regulatory practice) on a permanent basis to serve as a buffer for the purposes of funding technical provisions. Regulatory own funds are one type of a solvency buffer.

A subordinated loan is a loan that is ranked behind the rights of members and beneficiaries and, in most cases, also ranked behind other creditors. In other words: a subordinated loan will only be repaid after the rights of members and beneficiaries are secured and (most) other creditors are repaid.

A sponsoring undertaking is the entity which acts, or at some time in the past acted, as an employer or in a self-employed capacity or any combination thereof and which pays or which still has the responsibility to pay contributions into the IORP to fund the pension's liabilities.

Sponsor's support is the ability and willingness of the sponsoring employer to support the scheme, i.e. to continue to pay sufficient contributions to ensure that benefits are paid as they fall due and to provide a means of restoring the scheme's funding position if assets fall below technical provisions. The level and circumstance of this support may vary.
