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**MANAGING AND SUPERVISING RISKS IN
DEFINED CONTRIBUTION PENSION SYSTEMS**

THE INTERNATIONAL ORGANISATION OF PENSION SUPERVISORS

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ABSTRACT

Managing and Supervising Risks in Defined Contribution Pension Systems

Defined contribution (DC) plans are playing a larger role in pension systems around the world. Pension supervisory authorities are consequently asking if their oversight approaches need to adapt to this development – given that the risks within DC systems are born by the plan members themselves?

This paper highlights the key challenges for DC supervisors, outlining the different mechanisms which can be used to control risks within DC systems, and how the use of these mechanisms informs the supervisory approach. Case studies of IOPS members overseeing DC systems are also provided.

Keywords: defined contribution pensions, supervision, risk-management

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TABLE OF CONTENTS

I. INTRODUCTION.....	4
II. What is different about DC pension systems?	5
III. What mechanisms can be used to control risks in DC pension systems?	8
1. Transparency and Education Mechanisms	11
2. Other Control Mechanisms	14
a) Investment Risk.....	14
b) High Costs	27
c) Operational Risk	32
d) Managing transition from accumulation to decumulation.....	35
IV. Supervisory tools and approaches used in Practice.....	39
Country Case Studies	Error! Bookmark not defined.
1. Australia.....	Error! Bookmark not defined.
2. Chile	Error! Bookmark not defined.
3. Hong Kong China	Error! Bookmark not defined.
4. Italy	Error! Bookmark not defined.
5. Romania	Error! Bookmark not defined.
6. Slovak Republic	Error! Bookmark not defined.
7. Spain	Error! Bookmark not defined.
8. Turkey	Error! Bookmark not defined.
9. UK.....	Error! Bookmark not defined.
REFERENCES	44

MANAGING AND SUPERVISING RISKS IN DC PENSION SYSTEMS

I. Introduction

1. Defined contribution (DC) pensions are plans under which the contributions into the fund are pre-determined but the benefit is not. Contributions are made by individual members and/or by sponsoring employers (in the case of occupational DC funds), and invested to accumulate a balance at the time of retirement which is then withdrawn or used to buy a retirement product (such as an annuity).

2. The term “DC” applies to a wide range of plans worldwide, ranging from ‘pure DC’ where member benefits derive totally from contributions plus investment returns, to schemes where some minimum level of benefit is guaranteed.² There is, in addition, considerable variation in DC systems across the world, depending in particular on whether or not they are intended to be a major source of retirement income (i.e. their interaction with the public pension system), the extent to which participation is mandatory, and the extent of consumer choice and market competition within the system.

3. The supervision of these DC pension plans is increasing in importance for several reasons. First, as longevity has pushed up the costs to governments and employers of providing pensions, public pay-as-you-go (PAYG) pensions and occupational defined benefit (DB) arrangements are being increasingly supplemented or replaced with DC style pensions.³

4. In addition, the issue of how to manage risk and supervise DC pensions has also been given a heightened profile by the 2008/2009 financial crisis, which had a dramatic impact on some DC systems which experienced investment losses as large as 20-30% (the largest declines coming from portfolios with high equity exposures). A collapse in the value of pension savings is of greatest concern for workers close to retirement, as well as those already in the pay-out phase that have not shifted to conservative portfolios or bought life annuities. However, declines of such magnitude had an impact on confidence in DC systems in general.

5. Many DC systems are still fairly new⁴ and in many countries few individuals have retired under predominantly DC arrangements. However, DC supervision becomes more important as these systems develop and mature, and supervisory authorities are consequently asking whether and how their supervisory approach needs to adapt to the introduction of these plans? As pension supervisory authorities are increasingly adopting a risk-based approach to supervision, the question also arises as to how such techniques should apply to DC pensions? Given the risks within DC plans lie with different parties than with DB plans (i.e. risks to employers are replaced by risks to members), supervisors are asking whether different supervisory techniques are required? Furthermore, do different types of DC system require different types of supervisory oversight?

² These plans are covered by defined benefit regulation in some countries.

³ This is even the case in traditional bastions of DB provisions such as the Netherlands, where hybrid plans, such as collective DC, are becoming more common.

⁴ Australia and Chile are two exceptions and therefore particularly interesting case studies to examine.

6. Most pensions literature has historically focused on DB plans, leaving a gap to be filled. This paper therefore attempts to set out some of the different issues that confront pension supervisors overseeing DC-based pension systems. The core of DC pension supervision is that risks within these systems lie with individuals. The paper therefore outlines different mechanisms for protecting individuals and alleviating these risks, as well as discussing how the different control mechanisms used affect the supervisory approach. Finally, detailed case studies of a range of IOPS member authorities overseeing DC pension systems are provided.

7. While the paper refers to IOPS and OECD principles and guidelines where appropriate, it is intended to be descriptive rather than normative, and hence to complement guidance on good practice to be found in other relevant IOPS publications.

II. What is different about DC pension systems?

8. The main difference between DC and other forms of pension arrangement is that individual members generally bear the risks which are inherent in the plan.⁵ These inherent risks include investment risk, operational failures etc. Such risks are also present in DB pension plans, but with DB or insured products, there is another party (such as the plan sponsor or provider) to make up ‘under funding’ caused by investment losses or increased longevity, or to absorb fees and charges or costs from administrative mistakes. With DC plans, these factors all impact the ‘bottom line’ of the accumulated account from which the individual member must fund his or her retirement– which adds up to the fundamental risk in a DC system, which is that individuals retire without an adequate, secure pension income.⁶

9. With DB plans, the focus of the supervisor is on making sure that the plan sponsor funds the plan sufficiently to ensure that the promised benefit will be provided. Investment risk, longevity risk, inflation etc. are all considered within the assessment of the solvency of the fund or plan. The supervisory approach will consequently focus on funding and solvency issues, looking at assumptions and often stress testing to assess whether benefits promises are likely to be met even under adverse circumstances. With DC systems the focus has to be on processes rather than outcomes as benefits are not guaranteed. The role of the supervisor is to ensure that the pension fund is managed in a secure way, as if the members themselves were undertaking the task. The focus of the supervisor should be on risks which impact on the members of the fund themselves and could involve them losing money. As it is the member that bears the risk it is the member outcomes that pension supervisory are seeking to protect and the focus in looking at risks is to reach these optimal member outcomes. These optimal outcomes would include appropriate contribution decisions, effective administration, appropriate investment decisions, security of assets, appropriate decumulation decisions and value for money.

10. Members experience further risk exposure in DC systems where they are obliged to take a range of decisions. These may include:

⁵ It should be noted that, as described above, there are different types of DC plan and it is only in the purest form of DC that all risks are born by the plan members. For example, where an investment guarantee is provided (by the plan provider, an insurance company, or indeed the government) some of the investment risk is shared. Likewise, with occupational DC funds, some of the administrative costs and risk may be borne by the sponsoring employer.

⁶ In the case of DB or insured product, where the sponsor bears these risks, there is the possibility of insolvency that might end up affecting individual members’ rights, where to the extent that DC risks are borne directly by the member there is no solvency risk. There is some solvency risk where the sponsor covers administrative costs or provides a guarantee, but commonly this is much less significant than for DB. The actions taken by supervisors to address this residual solvency risk are similar to those taken in relation to DB solvency risks and are not covered by this paper.

- *how much to contribute;*
- *which plan to join / provider to use;*
- *how to invest their assets;*
- *what product to purchase at retirement.*

11. Numerous studies show that these are not decisions that most member are well equipped or disposed to take – even if the supervisory regime ensures that they are given sufficient information for this purpose.⁷ Impavido et al (2009) argue that the limited capacity of individuals to choose what is best for them stems from “*a combination of lack of financial education, bounded rationality and use of simplistic ‘rules of thumb’ in the decision-making process.*”

DC Governance Problems

Even where decisions are taken not directly by but *on behalf of* members - by sponsoring employers/trustees etc. (as may be the case with occupational DC pension plans) acting in a fiduciary capacity - many of the issues and the supervisory focus are still fundamentally different from DB.

DC systems that are structured so that individuals bear the risk but other parties take the decisions (e.g. plan sponsors choosing providers or investment options), pose particular challenges for pension supervisory authorities.

Where some form of collective fiduciary body does exist (as with most occupational DC pension plans), and makes decisions on behalf of DC members and beneficiaries, the supervisor can focus much more on making sure that those taking the decisions are truly acting on behalf of the members (as discussed below) and that they are suitably knowledgeable to make these decisions (which can be a challenge for ‘lay trustees’ on the board of non-profit pension plans or foundations).

Where no such oversight body exists a ‘governance vacuum’ can arise. Various means have been tried to fill this governance gap (e.g. introducing ‘safe-harbour’ rules to encourage proactive decision making on behalf of members, requiring third-parties such as auditors to act as ‘whistle-blowers’, or introducing representational governance through bodies such as management committees). Supervisors themselves may play a more active role in such circumstance (e.g. monitoring and restricting investments).

This issue is not discussed further in this paper but is examined in detail in (Stewart, Yermo 2008), (Byrne et al 2007).

12. This element of member choice consequently introduces market competition into DC pension systems – the degree of competition varying with the amount of member choice. The significant role which competition plays in some DC systems contrasts with DB systems where the role of the market may be more limited.⁸ There is some potential therefore for DC pension funds (in theory at least) to be disciplined by the market, which should direct participants and assets to better managed pension schemes and arrangements.

⁷ See (OECD 2008a). Further information available via the OECD’s project on financial education www.financial-education.org

⁸ Given, in DB plans, employees have limited freedom of choice, though sponsors and trustees are able to select providers. Competition is also less significant where pension funds or plans are not commercial operations and do not have listed equity or debt (i.e. instruments through which market discipline acts).

13. The problem, as discussed by Impavido et al (2009), is that the limited capacity of individuals to choose what is best for them means that competition and markets rarely work effectively within pension systems – leaving too much power in the hands of pension providers. The problem is only exaggerated where pension providers are commercial financial institutions.⁹ Conflicts of interest can therefore exist between the fiduciary duty to act in the interest of the pension fund members and beneficiaries and making profits for shareholders.

14. This risk can take on (at least) three forms: a commercial manager has other potential motivations than the well-being of members and beneficiaries and hence may take decisions not in their best interests (e.g. cross selling different products to plan members or charging high fees); where commercial or non-profit managers are not managing their own funds and do not bear any risk themselves, they may lack incentives to apply sufficient time, energy and thought to deliver the best outcomes; where a not-for-profit manager (e.g. trustee) may not have the acknowledged expertise to prevent commercially motivated suppliers/ advisors persuading them to act in ways that are not in the members' and beneficiaries' best interests.

15. When left unchecked, this excessive power can result in the following:

- unduly high charges (including from excessive trading);
- biased choice of service providers (e.g. from the same group) or investment products:
 - hidden commissions
 - insider trading
 - (which can all lead to) poor investment performance
- exposure to too much investment risk

16. Given the limitations of the market as a risk control mechanism, the role which competition plays in DC pension systems varies. Systems which require higher levels of protection (i.e. mandatory systems)¹⁰ often employ a type of managed competition with a limited number of players and strictly controlled investment products etc. (see following discussion).

⁹ 'Not-for-profit' funds can also be manipulated by commercial providers/advisers (due to skills gap). DB funds may also use commercial providers, and therefore face conflict issues as well, but any resulting higher costs or poor investment performance would be borne by the plan sponsor. Specific DB conflict issues arising from different objectives of the plan sponsor (i.e. to minimize contributions) and plan members and beneficiaries (i.e. to achieve as well funded a plan as possible) are not addressed in this paper.

¹⁰ A higher level of protection is normally found in mandatory DC systems, which have a mass membership (which constrains individual involvement, and implies lower average levels of financial education etc.), and are designed to deliver substantive rather than top-up pensions. As mandatory private pensions are effectively or explicitly part of social security means that there is a large public policy (and media) impact if something goes wrong, along with an explicit and an implicit fiscal liability for the government. Market discipline may be considered to be insufficient on its own, and strong safeguards with intensive supervision are therefore required, for member and state interests.

III. What mechanisms can be used to control risks in DC pension systems?

17. This paper categorizes the main risks which are particularly important within DC pension systems (given they directly impact on the accumulated pension savings and therefore amount of pension benefit) as follows:¹¹

- Investment risk
- High costs
- Operating risks (including administering individual accounts and out-sourcing)
- Managing transition from accumulation to decumulation

18. Funding risk – the major concern for DB pensions - can be a serious concern in some DC systems which provide guarantees, but is not discussed in detail in this report.

Funding Risks in DC Plans

Funding risk can impact DC plans in three ways:

- where pension schemes provide absolute or relative guarantees of performance, the pension providers need to have sufficient capital to honour these promises regardless of economic circumstances;
- where the pension scheme also provide life annuities, life assurance or medical insurance this part of the fund needs to be insured which may introduce funding risk, especially where the fund insures itself;
- pension providers are also expected to be capitalised sufficiently to meet costs that are not chargeable to the members, for instance arising from operational failures on their part (Commercial providers are unlikely to be able to call on sponsoring employers to bail them out and hence this is particularly relevant to them. Not for profit providers may be able to call on the sponsor, but there is the risk that the sponsor may not be in position to provide funding).

The first concern is regulated using similar approaches to DB schemes and is of not considered further in this paper. Where DB-style regulation is adopted, funding requirements may also cover the full range of risks.

Otherwise, in many countries pension schemes are required to be supported by free capital, which the supervisor checks as part of the licensing procedure (along with the provider's business plan) and thereafter through routine inspections (for instance providers of mandatory pensions in Slovakia must have a capitalisation of at least €10 million – they tend to be subsidiaries of large financial institutions).

19. A range of mechanisms is used by IOPS members to control these risks – as summarized in Table 1 below. These mechanisms will be discussed in detail in the following sections.

¹¹ The amount of contributions paid into DC pension plans is also key, but is not considered in detail in this paper (see (OECD 2010 – forthcoming)).

Table 1: Risks and Control Mechanisms in DC Pension Systems

Individual Risk	Potential Control Mechanisms	Details
Investment Risk	<ul style="list-style-type: none"> • Transparency and Education • Pension funds' Internal Risk-management systems • Quantitative Investment Limits • Product Design (life-cycle funds) • Guarantees • VaR • Replacement Rate Targets 	<p>Disclosure Requirements</p> <ul style="list-style-type: none"> • OECD requirements • Format of documents (Chile, Italy, Mexico and Slovakia) • Standardised between types of plan (Italy) • Covering risk as well as return (Hong Kong) • Measures of volatility (Bulgaria, Israel, Italy and Turkey) • In some cases, require prior supervisory approval (Bulgaria, Hong Kong and Slovakia) <p>Supervisor Provides Information</p> <ul style="list-style-type: none"> • Check disclosure ex post (Ireland, Turkey) • Provide information on their own websites (Chile, Hong Kong) • Require providers to ensure members properly informed about choices (Netherlands) <p>Financial Education</p> <ul style="list-style-type: none"> • Prudent person rule • Investment strategy • Benchmarking returns
Costs	<ul style="list-style-type: none"> • Comparison 	

	<ul style="list-style-type: none"> • Not unreasonable tests etc. • Fee caps • Control mechanisms 	<ul style="list-style-type: none"> • Low cost default allocation • Limiting switching • Centralized collection / administration • Centralized fund management
Operational Risk	<ul style="list-style-type: none"> • Require specific risk management structure (e.g. internal control unit or risk manager) • Thematic reviews / inspections • Publish quality of service comparisons • Register and /or inspect service providers • Litigate for non-payment of contributions 	
Decumulation Risk	<ul style="list-style-type: none"> • Compulsory annuitization • Promote deferred annuities (products linking accumulation and decumulation phases) • Allow flexibility in timing and choice of annuity product • Central quotation systems to compare products and pricing 	

1. Transparency and Education Mechanisms

20. The first way to try to manage risks within DC pension systems is through increasing member understanding. If the main issue behind the problems with DC systems is that individuals lack the knowledge and engagement to manage the risks to which they exposed, then the first way to try and alleviate this risk is through providing them with the necessary information and assistance to manage these risks themselves. This can be done in a number of ways – outlined as follows.

Information Provision

21. One way this can be done is by imposing information disclosure requirements on pension funds, which pension supervisors then check are being delivered appropriately.

22. The OECD *Guidelines for the Protection of Rights of Members and Beneficiaries in Occupational Pension Plans* (OECD 2003) lay out detailed requirements on information disclosure. The guidelines highlight that the following should be provided to members and beneficiaries of DC plans required to monitor their own investments:

- *adequate information upon which each plan member can base educated investment decisions*
- *nature of the financial instruments available, (including investment performance and risk)*
- *standardized, compatible and complete information regarding investment choices (including charges, fees and expenses, portfolio composition, investment performance data)*

23. It is not just what information is provided to members and beneficiaries which is important, but also how it is provided. The International Association of Insurance Supervisors (IAIS) recommends (IAIS 2006) that information should be:

- *Relevant to decisions taken by market participant*
- *Timely so as to be available and up-to-date at the time those decisions are made*
- *Accessible without undue expense or delay by the market participants*
- *Comprehensive and meaningful so as to enable market participants to form a well-rounded view of the insurer*
- *Reliable as a basis on which to make decisions*
- *Comparable between different providers*
- *Consistent over time so as to enable relevant trends to be discerned.*

24. Pension supervisory authorities commonly recognise that they have an important role to play in overseeing the provision of this information – not least in checking its accuracy. Authorities need to consider what emphasis to give to which elements of information provision, and how to supervise information provision so as to meet supervisory goals. It is common for stronger rules to apply to ‘retail’

disclosure and advice than to information provided between financial services institutions and supervisors may have a role in enforcing these rules.¹²

25. Supervisory authorities can oversee how information is provided by pension plans, laying down - sometimes strict - requirements for what and how information is released. This can be done in a wide variety of ways:¹³

- In some countries (e.g. Chile, Italy, Mexico and Slovakia) the supervisory authority prescribes the precise format of documents.
- Supervisory authorities often specify how funds are to report, for instance reporting returns net of charges, the frequency of reporting and the use of user-friendly format. For example, the Nigerian supervisor requires periodic public reporting of rates of return calculated according to a specified formula based on audited figures and alongside comparative figures from the best and worst performing of the other (10) pension schemes.¹⁴ In Italy, a standardised form of disclosure is expected of all schemes regardless of whether employer-sponsored or insurer provided.
- A few supervisory authorities require disclosure to cover risk as well as return. For instance the Hong Kong authority requires disclosure (at least half-yearly) of a standardized measure of risk¹⁵ as well as standardised performance.
- Similarly, supervisory authorities can require disclosure of measures of volatility (e.g. Bulgaria, Israel, Italy and Turkey), or, as in the case of Mexico and Israel, require disclosure of value at risk measure.
- The supervisory authority can, as in Israel, ensure that each scheme's risk manager reports annually on the risks to members and the scheme.
- In some countries, such as Bulgaria, Hong Kong and Slovakia, the supervisory authority approves key documents prior to publication.
- Some supervisory authorities check the compliance of scheme disclosure to members and beneficiaries (after the event). In Turkey this involves some detailed checking of disclosures against underlying records, while the Irish supervisory authority requires a sample of schemes to send in the information they make available to members for checking against legislative requirements

26. Transparency and comparison of costs is also a particular focus of many supervisors, and indeed many of the examples given above also involve disclosure of costs in a standardized format, either separately or through requiring disclosure of net returns (the later section on costs provides more details).

¹² Of particular relevance in the EU are the European Commission's proposals for a harmonised regulatory regime for Packaged Retail Investment Products (PRIPs).

¹³ IOPS Working Paper No. 5, *Information to Members of DC Pension Plans: Conceptual Framework and International Trends* (IOPS 2008e) provides further examples of how such information is provided in practice.

¹⁴ This incidentally means that all schemes must have the same year-end.

¹⁵ 3 year standard deviation calculation.

27. In addition, supervisory authorities can act as information sources themselves, providing standardized, comparative data on individual providers and the market as a whole (as is done, for example in Chile and Hong Kong). This can avoid the problems that can arise where each pension scheme emphasizes the information that puts it in the best light (for instance by judicious choice of measures every scheme can appear to be the best: one discloses that it is the best this month, another the best this year, and another the best for the last 3 months etc). However, supervisory authorities have to be aware that prescribing what comparative information is to be disclosed can influence the nature of competition between providers, as this may well become oriented to the criteria they have set. In such cases, if supervisory authorities choose inappropriate performance measures (particularly if these are excessively short term) individuals may end up selecting their pension provider on inappropriate criteria, for instance short term performance numbers.

28. Alternatively, supervisory authorities may take a role in helping to ensure that individuals understand the information which is provided to them. For example, the Dutch conduct of business supervisor¹⁶ takes a possibly unique approach in enforcing legislation that requires DC providers to demonstrate that they have ensured, so far as possible, that each member's choices (where the default fund is not selected) are informed by their personal and financial circumstances and risk appetite. The Dutch provider (usually an insurer) must advise the employee, taking into account his financial goal, financial position, risk appetite, knowledge of and experience with investments.¹⁷

29. During the financial and economic crisis of 2008/2009, many pension supervisory authorities stepped up their communications role (see IOPS (2009b). Awareness campaigns stressed the long-term nature of pension savings and the dangers of reacting to short-term volatility via switching of funds – towards conservative funds– or withdrawals in voluntary schemes (including potential charges).

30. More generally, supervisory authorities may seek to raise the general level of financial education in the community, often in partnership with other agencies, on the assumption that better general understanding should result in better informed pension plan members and choices (see OECD 2008).¹⁸ Such efforts may be combined with a desire to increase participation in pension saving where this is not mandatory. For example:

- The Hong Kong supervisory authority publishes clearly written information for members on its website to help them understand their retirement needs, make fund choices and access and understand other information directly related to their mandatory provident fund investment.
- The Chilean supervisory authority has received a specific budget for financial education activities. It has already re-named the different funds in the multi-fund model to give a clear indication as to whether they are growth, balanced or conservative, in an attempt to help members understand their options.

¹⁶ Netherlands Authority for the Financial Markets - AFM

¹⁷ Ideally the provider agrees to arrange the investments under the life cycle so that the employee is likely to receive a stated preferred amount of income. In other words, the provider should base its advice on the amount of income the employee wishes to receive or the extent to which he is willing to accept a reduced likelihood of the preferred income being achieved in order to be able to take more risks for an even higher return. The interaction between the provider and the employee should therefore not focus on the investments or allocation of premiums over asset classes but much more of the preferred level of pension income and the preferred certainty of that income being achieved. Only if the provider has done all this can it avoid fiduciary responsibility for under-performance of non-default funds.

¹⁸ Further information on the OECD's financial education work can be found on www.financial-education.org

- The Irish supervisory authority (Pension Board) has undertaken road-shows and advertising campaigns to help the public understand their pension choices and hence increase pension saving.¹⁹

31. It should be noted that using transparency and education to alleviate the problem of a lack of understanding on the part of individual DC plan members is not a ‘quick fix’ but needs to be treated as a long-term policy on the part of supervisory authorities.

2. Other Control Mechanisms

32. However, these tools of transparency and education alone are rarely enough – even when used over the long-term - to ensure a well functioning pension market. Given individuals’ lack of knowledge and understanding (including a great deal of apathy when it comes to making pension related choices), the complexity of pension products and market failure issues (such as asymmetry of information), competition within pension markets does not always operate successfully. Therefore supervisors overseeing DC pensions will normally combine them with the other control mechanisms.

33. This section of the paper will now examine the different control mechanisms which IOPS members use to control the main risks outlined above (paragraph 17).

a. Investment Risk

34. The most important risk borne by individual members of DC funds is investment risk - especially if no form of guarantee is given by the pension provider - and hence this risk is a major focus for most supervisory authorities. The rate of return is the primary determinant of the balance which their fund will accumulate, and which individuals will subsequently use to fund their retirement. If this return is too low (or indeed negative) individuals may end up retiring with too small a balance to fund an adequate income.

35. As discussed, this becomes even more of a challenge when individual choice is introduced into DC systems. As Impavido et al (2009) point out: “*There is ample evidence that, even in normal times, individuals generally lack the necessary skills to monitor portfolio management and, therefore tend to make an uneducated selection of portfolios during their lifecycle.*”

36. Low returns may arise from several problems:

- *Excessive risk taking* (so that returns, for a given level of risk, are not maximised);
- *Excessive risk aversion* (particularly where default options offering ‘safe’ or guaranteed returns are chosen by many individuals, despite the fact that these may not deliver an adequate level of retirement income given the amounts of contributions made);
- *Inefficient processes* (i.e. sub-optimal returns for a given level of risk);
- *Insufficient attention to liquidity* (see box);
- *Market falls close to retirement* (a special case of liquidity risk)

¹⁹ Information on the Irish campaign can be found on <http://www.pensionsboard.ie/index.asp?locID=134&docID=-1>
For information on national awareness and education campaigns in other countries see (IOPS 2008f).

Liquidity Risk in DC Plans

Liquidity risk is another aspect of investment risk relevant to some DC pension plans – i.e. the risk that investments could prove insufficiently liquid to meet requirements which the plan has to pay out balances or benefits to members without incurring avoidable losses. This can be a particular issue for DC funds as members commonly take out their benefits in one lump sum, sometimes with considerable flexibility regarding timing.

It should not be a significant issue where funds hold assets which are tradable in deep, liquid markets. Indeed this is a requirement in many countries, which prohibit investment in illiquid instruments or place quantitative restrictions on the percentage of portfolios which can be invested in unlisted, 'alternative' investments (see (OECD 2008b), (Stewart 2007), and (IOPS 2008c)).

Where, however, funds have substantial freedom to invest in illiquid asset classes, or assets that prove to be illiquid during a financial crisis (e.g. commercial property), there is a potential risk that funds may sustain serious losses in meeting their obligations.

Supervisory authorities can therefore look for appropriate risk management processes to address this risk. For example, the Australian authority in particular made this a priority during on-site inspections during the financial crisis of 2008/2009.

37. Yet supervising DC investment risk is not an easy task. With DB pension funds, supervisors primarily focus on investment risk via underfunding levels and mismatches between assets and liabilities. However, within DC funds investment risk is harder to measure as probability distributions need to be considered, not the probability of achieving a specified outcome (unless such an outcome is targeted, which is rarely the case and difficult to measure for DC plans). The process is further complicated where members are offered fund choice. In this case, supervisors need to choose whether to focus just on the default fund, leaving members in other funds to manage their own risks on the basis of well-regulated information, or to focus on all funds by restricting choice or ensuring members are well advised. Indeed in some English speaking countries the existence of member choice of funds is used to justify a hands-off approach even to the default fund, especially if such a fund is not mandatory.

38. With DC plans, while supervisors may be able to enforce outcomes to some extent- if guarantees are offered, or the level of tolerable risk is explicitly specified- the focus is more commonly on how pension funds are managing investment and other risks – i.e. inputs and systems are what matter. Four approaches are evident worldwide:

- Ensuring that market discipline enables informed participant choice and hence effective competition between pension plans and funds, so as to incentivise good investment practice, covered above under member understanding;
- Encouraging plans to follow best practice in their management processes and risk management relating to investment, so that plan fiduciaries or managers take properly informed decisions that optimize risk and return within fund portfolios;
- Controlling the amount of risk in the fund by enforcing quantitative limits set by regulation, supervisory guidelines or fund rules regarding the composition of the fund portfolio; or
- Controlling the members' exposure to risk by mandating and enforcing specified types of product design.

39. These approaches are not mutually exclusive, and most supervisory authorities have some role in relation to each, albeit that they tend to place greater emphasis on some rather than others. Hence, many

countries require pension funds to prepare a formal statement of investment principles and may check that these principles are followed, even where there are minimal regulatory or supervisory restrictions on portfolio composition. Most countries also place some quantitative restrictions on fund portfolios, most notably in relation to investment in the sponsoring entity, but also to secure diversification of risk, even where no restrictions are placed on asset types. Supervisors commonly seek to enable the benefits of effective competition, where this is feasible, even though they may also place emphasis on quantitative limits or good investment or risk management practice.

40. This (investment risk) section of the paper, considers in turn the supervision of:

- risk management systems (including investment strategy)
- quantitative limits
- product design (life-cycle funds)
- risk limits (VaR)
- guarantees
- income target rates

Risk management systems

41. A fundamental way of controlling investment risk is to require certain risk management systems to be in place within pension funds themselves.²⁰ Given the emphasis on processes rather than outcomes, the oversight of the pension funds risk management systems becomes more important when supervising DC pension systems.

42. Such risk-management systems have also become more important as pension legislation in many countries has been deregulated in recent years, with the prudent person rule consequently becoming a fundamental principle underlying the regulation and supervision of pension plan investments. According to this rule, supervisors assess whether the investment approach undertaken by the fund is that of a prudent person (or in some countries a prudent expert) investing the funds on behalf of another person. The *OECD Guidelines on Pension Fund Asset Management* (OECD 2006) highlight that the prudent person standard focuses on behaviour and process rather than on outcomes, “*seeking to assure that those responsible for managing pension fund assets do so in a professional manner with the sole aim of benefiting the pension fund and its members.*” A focus on process can potentially cover investment efficiency as well as the riskiness of asset allocation.

43. Some countries specify requirements for the prudent person rule more closely than other. For example, in Ireland there is a requirement that default fund asset allocations (for PRSAs²¹) should be actuarially certified as prudent, which has effectively mandated life-cycle funds. South Africa requires a

²⁰ For details see IOPS Working Paper No. 11 (IOPS 2009) and related good practices on risk-management (IOPS 2010 - forthcoming).

²¹ Personal Retirement Savings Accounts are tax incentivized, voluntary, personal pension arrangements.

triennial actuarial certification of DC schemes (even where they do not have actuarial liabilities) copied to the regulator to check compliance.²²

44. The OECD guidelines (OECD 2006) highlight that *“because of its procedural focus, the prudent person standard places significant emphasis on the ability of pension fund governing bodies to hire qualified assistance and establish appropriate internal controls and procedures to effectively implement and monitor the investment management process.”* The risk-management systems which pension funds are required to operate can be laid out in detail by pension supervisors, or the authority can provide guidance on what type of risk management system it would expect to see, leaving the details of the implementation to the pension fund itself.²³ As well as being subject to regulatory compliance inspections, compliance is also (in Australia at least) promoted by specifying that trustees only have a safe-harbour against litigation if they have met the investment standards.

45. In addition to general requirements (regarding management oversight, control systems, internal reporting and audit requirements), such risk management systems usually contain specific measures for handling investment risk.²⁴ Central to this is the requirement for a comprehensive investment policy. Indeed, the OECD guidelines (OECD 2006) also stress that *“the establishment and use of a comprehensive investment policy is considered a crucial aspect of satisfying the prudent person standard”*.

46. It is common in many countries for pension funds to be required to prepare a statement of investment principles (e.g. this is a requirement of the European Union’s IORP Directive).²⁵ Compliance with these statements can be checked as part of any on-site inspection regime, but Kenya, at least, requires the statement to be copied to the supervisor every five years, while in Jamaica the supervisor must approve the document.

47. The OECD standards (OECD 2006) provide detailed guidance on what a comprehensive investment strategy should contain, including the following elements:

- Investment objectives
- Asset allocation
- Diversification
- Liquidity need

²² Where South African DC schemes have actuarial liabilities, for instance because they pay a pension from the accumulated balances, the requirement is for actuarial valuation. In practice, where a DC smooths investment returns it has in any case to prepare a triennial valuation. The actuarial certification is expected to cover whether in the actuary’s opinion: the assets and liabilities are adequately matched – which is effectively a requirement for some form of life-cycling; the assets are suitable considering the liabilities of the fund; if the rate of investment return credited to member’s individual account is smoothed, he is satisfied that the rate does not endanger the financial soundness of the fund and that the rate is reasonable in relation to the gross investment return earned by the fund.

²³ Details of such guidance notes can be found in (IOPS 2009).

²⁴ The guidance issued by the Australian regulator, APRA, provides a good example (see APRA 2006). The Superannuation Circular No. II.D.1 “Managing Investments and Investment Choice” runs to 21 pages and is a mix of operating standards that must be followed and good practice guidance, breaches of which would be raised during regulatory inspections.

²⁵ European Directive 2003/41/EC (IORP Directive) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0041:EN:HTML>

- Valuation methodology
- Use and monitoring of derivatives
- Asset Liability Matching targets (where appropriate)
- Performance measurement, monitoring and benchmarking
- Control procedures, including risk tolerances / risk monitoring procedures
- Reporting format and frequency

48. The guidelines stress that the investment strategy should be consistent with legal provisions (prudent person and quantitative limits) and the objectives of the fund (i.e. with the characteristics of the liabilities, maturity of obligations, liquidity needs, risk tolerance etc.), at a minimum identifying strategic asset allocations (i.e. the long-term asset mix over the main investment categories), the performance objectives (and how these will be monitored and modified), any broad decisions regarding tactical asset allocation, security selection and trade execution. The guidelines state that the use of internal or external investment managers should also be addressed (with an investment management agreement required for the latter), and the costs of such services monitored. In particular the guidelines note that the investment policy for pension programmes in which members make investment choices should ensure that an appropriate array of investment options, including a default option, are provided for members and that members have access to the information necessary to make investment decisions, and the investment policy should classify the investment options according to the investment risk that members bear.

49. While regulatory checking of compliance with risk management and investment guidelines, tend to be process-oriented, the extensive information that some supervisors gather on investment allocations and returns may also be used. Supervisory oversight could also be informed by benchmarking of funds against each other to provide indications as to which are outliers or appear to be under-performing- though there is limited evidence of this in practice. For example:

- The supervisory authority in Poland goes one step further in this regard. The supervisor awards the best performing scheme each year (net of fees) with the custom from all new members to the (mandatory) system who have not made a choice.²⁶ A similar performance based allocation has been applied in Mexico since 2008 (default allocation to the pension manager which gives the highest 36-month net return).
- In Chile, the regulator expects net investment returns to fall within a specified band around the average return for the five plans.²⁷
- In Australia, the supervisor refers to plan investment allocations when checking for effective management of liquidity risk.

²⁶ This would appear to reward a focus on reward more than risk avoidance, and interestingly Poland is nearly the only Eastern European country where investment in riskier asset classes is as high as the quantified limits allow.

²⁷ This discourages risk-taking substantially greater than average. In reality (and probably inevitably) 'herding' behaviours have become evident.

- In Israel the supervisor has developed (with relevant academics) indices of the riskiness of DC investments. These indices, which the supervisor publishes on its website, are also intended to act as an evaluatory device for plan risk managers and as a tool for the supervisor to help assess investment governance during its inspections.

*Quantitative investment limits*²⁸

50. Despite the general global move towards deregulation and the use of the prudent person rule, quantitative investment limits of one type or another are still applied to pension funds in many jurisdictions. Indeed, the OECD guidelines (OECD 2006) outline how such limits should be used and can be combined with the prudent person rule as the two are not mutually exclusive.²⁹ Investment limits by themselves do not ensure that an investment is ‘prudent’. Therefore in most countries quantitative limits and the prudent person rule are combined and indeed should not be seen as incompatible – an either/ or choice. Supervisors overseeing DC funds still have to consider whether the investment approach is appropriate, even where more quantitative restrictions are put in place.

51. In most countries there are limits on investment in the sponsoring employer and restrictions on the use that can be made of illiquid asset classes such as derivatives.³⁰ Limits on the allocation to specified asset classes (which are near universal in Eastern Europe and Latin America, but also found in Nigeria and Kenya)³¹ are set out in primary legislation or binding rules issued by the regulator. They can cover the holdings of different asset classes (e.g. equities) of assets not traded in liquid financial markets or issued abroad, along with limits on holdings placed with a single issuer to ensure diversification.

52. Many supervisory authorities consequently have an important role in enforcing a quantitative approach to controlling investment risk within DC pension plans, by checking that asset allocations do not breach quantified limits on various asset classes or restrictions on the proportion of assets that may be held with a single issuer (to avoid risk concentration).

53. It is relatively easy to supervise compliance with quantified limits by monitoring regular reports from the plans, which in most of these countries are few in number (e.g. five in Chile) and to obtain rectification by an enforcement procedure. In reality most plans in these countries allocate assets well within most of the quantified limits. It is more difficult in countries overseeing hundreds, if not thousands, or funds, and in these countries reliance on the prudent person is more common.

²⁸ For details of quantitative regulation see (OECD 2010)

²⁹ The guidelines state that “*portfolio limits can serve to establish important boundaries that prevent or inhibit inappropriate or extreme investment management decisions, but they alone cannot effectively regulate the manner in which pension fund asset management decisions are made within those boundaries, and, in fact, are silent with respect to activity that is "within bounds."* Therefore, jurisdictions that rely solely on a series of quantitative portfolio limits to regulate pension fund asset management should consider establishing a prudent person standard to work in tandem with portfolio limits. In this regard, countries that rely primarily on portfolio limits should, at a minimum, also set forth prudent person standards for pension fund governing bodies.”

³⁰ For instance, there is a 5% limit within the EU on investment in the sponsoring employer, and in the UK and Ireland a prohibition on using derivatives for purposes other than risk management. Investment in non-cash instruments that are not traded on public markets is prohibited for PRSA default funds in Ireland. In Hong Kong, MPF funds may, within limits, engage in hedging through certain financial derivatives.

³¹ The Kenyan limit on equities of 70% is much higher than in countries with mandatory pension systems, but they limit alternative asset classes to 5%.

Product design

54. Quantitative investment limits can be better targeted by specifying design features of the funds between which individual plan members can choose. One approach is to mandate that where plans offer fund choice they must offer, say, five funds with specified asset allocations or risk criteria, ranging from high equity content to highly conservative. This is the multi-fund model found in Latin America (e.g. Chile) and Eastern Europe (e.g. Hungary and Slovakia). Members can choose between funds, but are not allowed to belong to the riskier funds beyond specified ages (the younger the member the riskier the permitted allocation). This approach effectively results in a form of life-cycle investment. In addition, Israel and some Eastern European countries are planning to make life-cycling a legislative requirement (for the default fund at least).³²

55. In practice, life-cycle funds can take very different forms in different countries –levels of high vs. low risk assets differing widely and switches in portfolio composition taking place at different points within individuals’ careers. For example, high risk funds in Chile can invest up to 80% in equities, where as in Mexico the limit is only 30%.³³

Table 2: Equity investment limits by type of fund option in selected countries¹

	Option 1	Option 2	Option 3	Option 4	Option 5
Chile ²	40%-80%	25%-60%	15%-40%	5%-20%	0-5%
Mexico	30%	25%	20%	15%	0%
Hungary	100%	40%	10%		
Slovak republic	80%	50%	0%		
Estonia	50%	25%	0%		

Source: OECD

Notes: (1) Selected countries have mandatory ‘pure’ DC systems (2) In Chile, equity investments in each fund option are subject to both a floor and a ceiling.

56. The USA has developed an approach to product design intended to limit member exposure to investment risk based on fiduciary fear of litigation. Legislation³⁴ provides that employers who default members into a default fund, only have ‘safe-harbour’ from subsequent litigation for breach of fiduciary duty should the investments under-perform if they use one of three types of fund, invested in a diversified portfolio of assets that are liquid or traded on regulated markets, target retirement date,³⁵ target balanced asset allocation or a managed fund.³⁶

57. The approach of exploiting fiduciary desire for safe-harbour contrasts with the Dutch approach of explicitly stating that DC providers cannot avoid fiduciary liability for default funds at all. They are required to design these funds so as to implement the Dutch interpretation of the prudent person principle

³² Such funds are also offered on a non-mandatory basis in other countries, for example in the USA where they are often the default choice within occupational pension plans.

³³ The OECD has done further work modelling the impact of different life-cycle funds – see (OECD 2010 forthcoming).

³⁴ Pension Protection Act 2006

³⁵ In a US style target retirement date fund each retirement date (e.g. members retiring in 2015) has its own fund which can be managed to re-balance the portfolio to assets matching the pay-out at retirement.

³⁶ It should be noted that in some circumstances a scheme can use auto-enrolment only where the default fund complies with the legislation.

which requires funds to protect members from risk throughout the life-cycle, with a move to liquid investments near retirement, along (probably) with an ALM-study to find out the (un)certainty/ likelihood of the targeted capital actually being achieved. The approach is unlikely to work without explicit direction from the supervisor as to the meaning of prudence, which ALM has also given. It is notable that the Australian supervisor has also stated that fiduciary responsibility cannot be avoided, but in the absence of a specific definition of prudence, life-cycle funds are rare and there is a heavy weighting towards equities.³⁷

Value at Risk

58. Rather than controlling investment risk via restrictions on the type of instruments a fund can invest in, some supervisory authorities are trying to control risk exposure – notably the Mexican supervisor CONSAR with their use of Value at Risk (VaR). VaR is defined as the maximum loss in a portfolio with a given probability or confidence interval (typically 5%) and over a given planning horizon. VaR can provide the fund manager and the supervisor with a summary measure of market risk to which each pension portfolio is exposed. This single number summarizes the portfolio's exposure to market risk as well as the probability of an adverse move. The pension regulator (CONSAR) then checks whether the fund is in line with these regulatory limits. If the answer is no, the process that led to the computation of VaR can be used to decide where to trim risk. For instance, the riskiest securities can be sold, or derivatives such as futures and options can be added to hedge the undesirable risk. VaR also allows users to measure *incremental risk*, which measures the contribution of each security to total portfolio risk.

59. The main attractions of the VaR approach are that it provides a common measure of risk across different positions and risk factors and introduces an aspect of probability. However, it does not consider losses or gains when the bad state does not occur nor does it say anything about the expected loss when the bad state occurs. Hence, as Dowd and Blake (2006) point out, ignoring tail losses can lead to some perverse incentives (whereby high return, high risk investments may be favoured if they do not affect the VaR – regardless of the sizes of the higher expected return and possible higher losses).³⁸ VaR has several other drawbacks as a risk measure, including:³⁹

- when measuring pension risk there are at least two important factors to consider: the investment horizon and the risk of annuitization. VaR models with a time horizon of one day, one month or even one year are not best suited to measure pension risk;
- critical events: it is not straightforward to predict critical episodes, and when they happen, it might be the case that following a VaR approach can be a potential source of significant instability in the market;⁴⁰
- VaR does not reflect downturns and involves inertia which leads to an over-representation of past volatility.

³⁷ Australian plans, however, seek to determine which investment option is most appropriate for members who have not made a choice by using information the members provide on their circumstances.

³⁸ Dowd and Blake (2006) also discuss other problems, such as subadditivity, which undermines VaR as a risk measure.

³⁹ See (Berstein and Chumacero 2008)

⁴⁰ Hence current regulation in Mexico considers waivers for the funds which risk excess is due to systemic risk. These waivers are granted to prevent unnecessary sales (consequence of the market downturns) which will turn into losses and create instability in the market as well.

60. CONSAR in Mexico have adapted their model to alleviate another key problem with the VaR system which is its pro-cyclicality. During the volatile markets of 2008/2009, pension funds in Mexico (all at the same time) found themselves forced to sell risky assets (i.e. equities) into falling markets in order to bring their portfolios back in line with VaR limits. A waiver to this rule did exist and was applied by CONSAR, and has since been formalized to reduce the pro-cyclicality during volatile markets in future. Benchmark portfolios have been set up and when volatile markets cause these portfolios to hit their maximum loss limits, the confidence intervals applied to the VaR model will be raised (though the absolute loss limits remain the same)⁴¹ so that the number of adverse scenarios allowed will be increased in increments of 5 as necessary (i.e. from 26 under the 95% confidence interval, to 31, 35). Once market volatility returns to normal, the 95% confidence interval will be automatically restored.

61. *Given the limitations of standard VaR, variations on the approach which are more sensitive to the shape of the loss distribution and the tail of the distribution are being explored. Also known as Expected Shortfall,⁴² Conditional Tail Expectation (CTE) is a statistical risk measure that provides enhanced information about the tail of a distribution above that provided by the traditional use of percentiles. Instead of only identifying a value at a particular percentile and thus ignoring the possibility of extremely large values in the tail, CTE recognizes a portion of the tail by providing the average over all values in the tail beyond the CTE percentile. Therefore, for distributions with “fat tails” from low probability, high impact events the use of CTE will provide a more revealing measure than use of a single percentile requirement.⁴³ However, the accuracy of all such measures needs to be treated with caution as they were designed for solvency assessments of banks – institutions with short-term horizons and exposed to potential liquidity scares. Whether they are appropriate for pension funds – which are long-term investment vehicles – needs to be considered. Guarantees*

62. An alternative way of controlling investment risk within a DC pension (i.e. preventing adverse return outcomes and consequently a low accumulated pension balance) is to require a guaranteed return on the fund. Only a few countries with mandatory DC systems require pension funds to meet minimum investment returns. In a few cases there are absolute guarantees of the capital invested - such as mandatory funds in Romania. A similar guarantee was introduced for conservative funds in Slovakia from 2009.⁴⁴ Switzerland provides a rare example of a mandated absolute rate of return guarantee,⁴⁵ although some Danish and Belgian plans provide such a guarantee in practice.

⁴¹ Ranging from 0.6% for the most conservative portfolio to 2% for the most risky.

⁴² Terminology in this area is non-consistent with such measures also referred to as Expected Tail Loss, Tail Conditional Expectation, Conditional VaR, Tail Conditional VaR and Worst Conditional Expectation (Dowd and Blake 2006).

⁴³ See American Academy of Actuaries http://actuary.org/pdf/life/varwg_march07.pdf and (Dowd and Blake 2006).

⁴⁴ At the end of the monitoring period (6 months), conservative pension funds are required to have at least the same level of actual pension unit as at its beginning. Potential losses are covered with money in a guarantee account, and, if this is not enough, by the company's own capital. Growth and balanced funds, at the end of the monitoring period, compare only the composition of assets in the funds with composition of reference values stated in the funds' statutes.

Along with management fee and account maintenance fee, the company can now charge a fee for out-performance of the respective fund. Exact calculation method is enacted.

⁴⁵ Pension funds must meet a minimum investment return of 2.75% in nominal terms. The guarantee must be applied both when an employee changes job and at retirement. Pension funds strive to pay returns above the minimum, but they do not have to and they usually only credit individuals' accounts with the guaranteed return, saving the rest as a reserve. Adverse market conditions led the government to reduce the guaranteed rate in recent years, and this may happen again in 2009.

63. In most cases, these minimum returns are “relative” as they are set in relation to the pension fund industry’s average rate of return, or the return on government bonds, over a certain period, usually a few months. The guarantees usually apply to the accumulation period, but may apply to pension payments. For example, in Chile if the pension generated by the individual account is too low, a government subsidy is provided to make up a basic pension level (for the 60% of the population with lower incomes).

64. In Poland the mandatory minimum rate of return for open pension funds is equal to either 50% of the weighted average rate of return of all open pension funds or that weighted average rate of return minus 4%, whichever is lower. The weighted average rate of return must be calculated for a 36-month period twice a year (i.e. March and September) according to the methodology established by the supervisory authority. The calculation takes into account the return and the market share of each pension fund.

65. Minimum absolute return requirements are relatively rare in voluntary DC systems. For example, Belgium allows different levels of guarantee, whilst Italy requires a guarantee in the default fund. Many schemes in Denmark have a de facto requirement for a guarantee due to union involvement.⁴⁶

66. Guaranteed minimum returns impact substantially on the nature of the supervision of the system, as the solvency of the provider becomes a major issue and some form of solvency supervision, as found in DB systems, is required.⁴⁷

Target-based Risk-measures

67. New measurements of risk within DC pension funds are trying to move away from short-term investment returns as it is argued that these are not appropriate measures for a pension fund – the goal of which is to provide a stable retirement income over a long-term time horizon.⁴⁸ Indeed, Impavido et al (2009) state that investment risk is amplified by the lack of long-term targets for pension fund managers, compounded by the lack of connection between the accumulation and decumulation phases, exposing individuals to annuitization risk (see later discussion). The authors argue that again this problem stems from members poor understanding, allowing pension fund managers too much market power.

68. The academic research therefore suggests that government policy set long-term investment targets, such as replacement rates.⁴⁹ Once these have been set, optimal portfolios for achieving this target would be derived (using stochastic modelling techniques). The performance of the actual portfolio of a pension fund could then be assessed vs. this optimal portfolio which would be used as a benchmark.

69. It should be noted that this is a new area of research, as yet untested, and is consequently controversial. The challenge is devising the appropriate benchmark portfolios, which could be done by an expert commission consisting of regulators and supervisors, academics, industry representatives etc. Several defaults, based on a model set of life-cycle pension funds, would have to be derived - reflecting not only age but also so called ‘human capital’ issues, such as income levels and job stability etc. The World Bank publication (Hinz et al 2010) notes that these benchmarks should consider the following factors:

- The presence of other sources of retirement income, including the income from public pensions;

⁴⁶ Belgium allows different levels of guarantee, whilst Italy requires a guarantee in the default fund. Many schemes in Denmark have a de facto requirement for a guarantee due to union involvement.

⁴⁷ For a discussion on the costs of guarantees within DC systems see (Antolin 2009), (Munnell et al 2009).

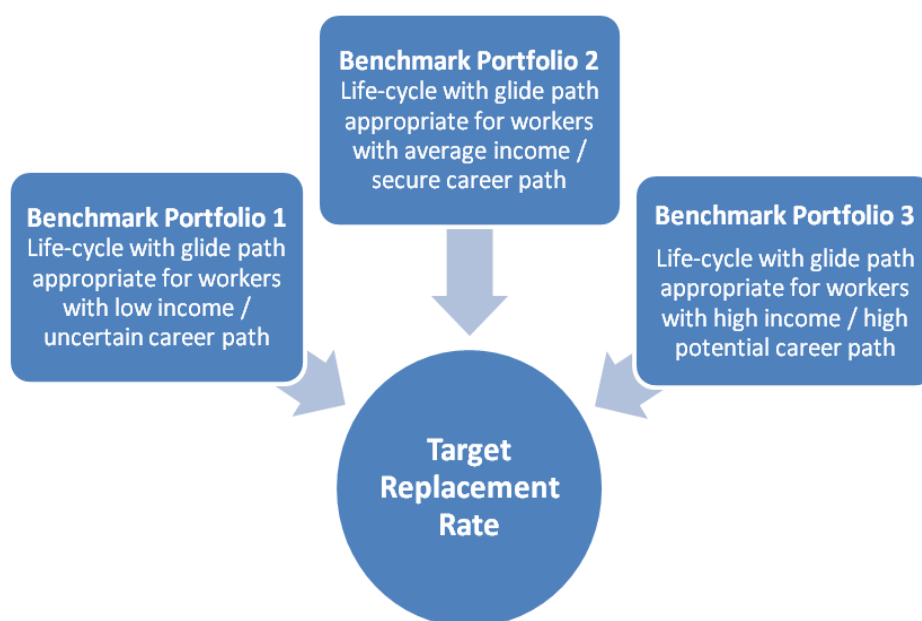
⁴⁸ For details see (Hinz et al 2010)

⁴⁹ The replacement rate is the ratio of pension income to pre-retirement earnings. Impavido et al (2009) argue that a cash balance target with specific investment rules aimed at smoothing the interest risk associated with the transformation of cash balances into annuities could probably be a valid alternative.

- The age of individuals;
- The rate of contributions;
- The target replacement rate and its downside tolerance;
- A matrix of correlations between labour income and equity returns;
- The expected density of contributions for different categories of workers;
- The type of retirement income in the payout phase, in particular the risk tolerance of pensioners in the payout phase (e.g. real fixed annuities, variable annuities, and phase withdrawal);
- A parameter that reflects the risk aversion of policy makers.

70. The regulator would define the number and structure of life-cycle funds to be offered, with their asset allocations and ‘glide paths’ (i.e. how rapidly risky assets are reduced) reflecting the objectives of the pension system (the larger the role of these DC funds in the overall pension system the more conservative they would need to be). These benchmarks would indicate different (more or less risky) routes to achieving the target replacement rate. Pension fund managers would offer funds in the same category as these benchmark funds, with their returns being measured accordingly.

Figure 1: Target-based Risk-Measures for DC Funds



Source: authors

71. The passive implementation of the benchmark (based on objective stock and fixed income indexes) would provide managers with a minimum performance that they might try to improve upon. In the World Bank publication (Hinz et al 2010), Viceira notes that regulators could limit the level of ‘active bets’ that managers could take by defining (measuring and verifying) maximum tracking errors, just as institutional investors do with the active managers they hire. This would enable the pension system to remain within the overall risk level that is deemed appropriate.

72. Alternatively, Viceira outlines that the benchmark could be made up of a portfolio of riskless assets which would generate the targeted replacement rate at the relevant investment horizon (i.e. a

portfolio of inflation-indexed bonds with a duration that properly reflects the investment horizon of the population of plan participants). The performance of the fund would be measured against the performance of such a benchmark – the problem being that in practice there is a lack of such long-dated, indexed bonds, not only in developing but also some developed economies.

73. Supervisors could then work this analysis into their overall risk assessment via a ‘traffic light’ system. For example a green light would indicate a pension fund with a portfolio structure aligned with the benchmark and a good risk management system.⁵⁰

74. Blake (Blake et al 2008) discusses a similar idea, again arguing that DC pensions should be structured ‘from back to front’, i.e. from desired outcomes to required inputs (via ‘dynamic programming’), with the goal of delivering an adequate, targeted, pension with a high degree of probability. DC funds should in effect be made more like DB – but with a targeted rather than a guaranteed benefit (as guarantees over the long-term are expensive), and the accumulation and decumulation phases of DC pensions should be linked via targeted annuities. Currently fund managers have no ‘target fund’ to accumulate. The risk which fund managers take should be controlled not by quantitative investment rules, but rather through targeted annuitization funds which they need to replicate (designed via some form of life styling investment strategy during the accumulation phase). The role of regulators would be to set these target annuitization funds as default options.

Target Annuitization Funds

As described by Impavido et al (2009), target annuitization funds are DC products with a target maturity (e.g., the retirement date) and where the construction of the investment portfolio is driven by a long-term financial target. A retirement benefit is targeted within a confidence interval.

The optimal (strategic) asset allocation of these funds is not deterministic (i.e., it is not based on static rules), but derived from stochastic programming techniques that take into account the main risks faced by contributors during the accumulation phase, including labor income or human capital.

The authors also point out that by having a long-term financial target, policymakers or regulators can better track the performance of pension fund managers throughout the entire accumulation phase of participants. However, this also implies that contributions may become “endogenous”. That is, additional individual contribution rates may need to be made if it appears that the target will not be achieved.

The authors argue that a well functioning system of target annuitization funds implies:

(i) periodic estimations of the individuals’ funded positions;

(ii) a process for communicating to individuals the impact of market events on the probability of reaching their investment target;

(iii) a process for communicating to individuals the impact of market events on the level of contributions that is expected to reach their investment target; and

(iv) a close integration of the system of voluntary individual accounts, that many countries have also introduced, with the system of mandatory individual accounts.”

⁵⁰ The World Bank publication (Hinz et al 2010) notes that such a performance measurement approach is broadly consistent with the manner in which the control of investments is exercised in a hybrid DB system, such as in the Netherlands, in which asset allocations are regulated in consideration of the targeted, although not guaranteed, benefit stream

Table 3: Mechanisms used for Controlling Investment Risk in Selected Countries

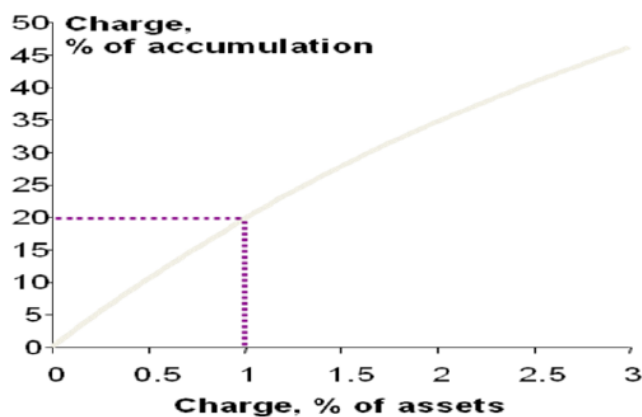
Country	Information Provision/ Transparency	Promote Good Practice	Quantitative Limits	Product Design	Guaranteed Returns	Control risk levels
Mandatory						
<i>Chile</i>	✓	✓	✓	✓	* ⁵¹	
<i>Mexico</i>	✓	✓	✓	✓	✓	✓
<i>E. Europe</i>	✓		✓	Common		
<i>Switzerland</i>			✓		✓	
<i>Australia</i>	✓	✓				
<i>Nigeria</i>	✓	✓	✓			
Voluntary						
<i>USA</i>		✓		✓		
<i>Denmark</i>			✓			✓
<i>Ireland</i>	✓		PRSA			
<i>Israel</i>			✓			
<i>Kenya</i>		✓	✓			
<i>South Africa</i>		✓	✓			
<i>Italy</i>	✓	✓	✓	✓	✓	
<i>UK</i>	✓	✓				

⁵¹ Although there are no absolute return guarantees in Chile, fund returns must not fall more than a prescribed amount below the average for all funds.

b. High Costs⁵²

75. Costs and fees are particularly important for DC plans, as they reduce returns, the size of the accumulated balance and therefore the amount of retirement income which can be generated. With DB pensions, costs are – usually - ultimately born by the plan sponsor (given that costs reduce assets and if these are not sufficient to meet liabilities the plan sponsor must make higher contributions), and hence form an element within solvency risk. However, with DC plans costs are often born by the individual members (though in some occupational arrangements employers bear management costs). Given that an annual management charge of 1% of funds under management can reduce accumulated assets by as much as 20%, (over a 40 year period) the impact can be substantial. Seeking to ensure that costs are not excessive and are fully and transparently disclosed is therefore an important aspect of DC supervision.

Figure 2: Impact of Charges on Accumulated Asset Balance



Source: Whitehouse, E.R. (2001), "Administrative charges for funded pensions: comparison and assessment of 13 countries", in OECD, Private Pension Systems: Administrative Costs and Reforms, Private Pensions Series, Paris

76. Costs are particularly an issue when pension providers are commercial institutions (not-for-profit providers have no incentive to levy excessive fees). As discussed, even if these providers have a fiduciary duty towards members of the pension plan, they face an inherent conflict of interest between their commercial incentives and their fiduciary duty. Competition should, theoretically, drive down costs in such systems, but individuals' lack of financial education and engagement with pension issues means that market mechanisms do not always work and costs often remain stubbornly high.⁵³ Hence this is a particular challenge for DC supervisory authorities.

Improving Transparency

77. One approach is to improve the transparency of the fees charged to members and potential members, which can otherwise be opaque, confusing or hard to compare (see IOPS 2008b). For example, some regulators in Latin America now require that a single fee structure is charged and disclosed (e.g. charging a fee on assets in Mexico vs. a fee on contributions in Chile, El Salvador etc), unlike in Eastern Europe where a mix of fees can make comparisons and understanding more difficult. COVIP in Italy monitors the structure of costs in the licensing process, with only simple structures receiving approval, in order to avoid hidden costs. In the case of Mexico, specific regulation exists guaranteeing the clarity and transparency of the comparisons (especially costs and net returns comparisons). Australia, New Zealand

⁵² A discussion of the pros and cons of various cost control measures can be found in (Impavido et al 2009).

⁵³ As discussed in (Impavido et al 2009)

and Chile (at least) also require schemes to include administrative (but not investment) charges in the annual statements to members in a standardised format. Supervisors can also require disclosure of costs in a standardized format alongside data returns (as outlined above).

78. Many supervisors, including Australia's conduct of business supervisor (ASIC), and the Hong Kong pension supervisor (MPFA), provide web-based systems for members to undertake comparisons. Other countries doing so include Hungary, Israel, Italy (where the use of a synthetic cost indicator is required), Spain and Mexico.

79. The Hong Kong supervisor has tried moral persuasion, based on the evidence it has gathered on high levels of fees, to persuade schemes to reduce fees. It also hoped that financial education, coupled with transparency of reporting and expanded member control would be effective in the medium term. Its current focus is on improved transparency coupled with member choice of pension scheme provider, which is soon to be introduced.

80. In any event – as discussed previously - there is only limited evidence of increased transparency being effective in reducing charges. Transparency and comparison have not resulted in the switch from active to (cheaper) passive investment of funds in Australia and Hong Kong that would have been expected were competition effective.⁵⁴ On the other hand, while the absence of transparency in the USA makes comparisons difficult, anecdotal evidence suggest that US charges may be higher than Australia's.

Not unreasonable tests etc.

81. The New Zealand supervisor has a particular focus on fees charged by specified service providers to mandatory Kiwisaver schemes (including the trustees and administrators) and hence the fees charged to members.⁵⁵ In this way the supervisor enforces a legislative requirement that fees not be 'unreasonable, leaving the final interpretation of this concept to the courts, having regard to any guidance published by the supervisor. The supervisor therefore checks annual accounts for reasonableness. Regulations specify that the supervisor may benchmark schemes against each other, taking account of specified factors that may affect the comparison.⁵⁶ As fees have to be allocated to five specified headings, this can enable benchmarking of the components of the overall fee. Schemes must also notify the supervisor about any increases in fees, although this can be done along with the annual report.

82. A less direct way of keeping charges low is to focus on minimising the costs that schemes incur. This is notable in the USA where there is considerable emphasis in the regulator's interpretation of the ERISA legislation⁵⁷ on schemes incurring expenditure only where necessary for running the scheme.

⁵⁴ The academic literature is fairly united in concluding that the additional returns are less than the costs. David Blake and associates has produced evidence to this effect (see Blake and Timmerman 2003), as has Keith Ambachsteer (papers available via ICPM <http://www.rotman.utoronto.ca/ICPM/details.aspx?ContentID=79>, including (Bauer et al 2007), and APRA (APRA 2008).

⁵⁵ Supervisory guidance indicates that miscellaneous fees not arising from charges from service providers (and presumably including any marketing cost) would not normally be deemed unreasonable if they totalled no more than 0.2% of the assets under management, in the first year of the scheme and lower amounts later on, although the figure can be higher where, as appears usual, the overall fee is below 1%.

⁵⁶ Kiwisaver Regulations 11 and 12

⁵⁷ The Employee Retirement Income Security Act 1974 (ERISA) is the corner-stone of the US regulatory approach. The Act establishes minimum standards for pension plans in private industry and provides for extensive rules on the federal income tax effects of transactions associated with employee benefit plans. ERISA was enacted to protect the interests of employee benefit plan participants and their beneficiaries by requiring the

Schemes with high costs could in principle be challenged when their regulatory returns are reviewed or during sample inspections. In practice, there is little evidence that these requirements have been any significant downward impact on charges.

Fee Caps

83. Where competition, transparency, unreasonable tests fail, some countries have felt it necessary to introduce a cap on fees. A simple response, found in Eastern Europe Israel and Spain, as well as UK stakeholder funds, is to cap the fees. This tends to be unpopular with the industry or ineffective, as it is hard to strike a balance between the cap being low enough to have a real effect and high enough to avoid throttling the market. For instance the caps in Spain of 2% for the fund manager and 0.5% for the custodian, compare with actual fees averaging 1.53% and 0.17% respectively, while actual fees charged for UK stakeholder funds sold through employers of around 0.8% are well below the cap of around 1.25%.

84. The caps in any case tend not to cover investment (hidden) dealing and transaction costs, which can tempt providers (such as insurers) who undertake their own investment management to increase income by over-trading. This risk can be addressed only by the supervisory authority or member monitoring of net returns, as part of the regulation of investment risk.⁵⁸

Control Mechanisms

85. Another way to keep costs low is assigning members who do not choose a fund or investment option for themselves to the lowest cost provider or option. In the case of Chile new members will be assigned to the lowest cost provider for 24 months. This provider will be the one that wins in a bidding process.⁵⁹

86. Other restrictions designed to reduce costs include limiting when or the number of times individuals can switch between providers – as is the case, for example, in Columbia, where individuals can switch AFP every six months, or in Bulgaria, Estonia or Mexico (with some exceptions), where members can switch annually.

87. Some authorities have deliberately set up a low cost system through licensing, whereby only a limited number of pension providers are allowed to operate, and the licenses are handed out to the lowest cost bidders (e.g. Bolivia, Macedonia). This is one way of lowering costs through economies of scale.

88. Other countries have structured their pension system in order to take advantage of economies of scale through collective and centralized services. Examples of centralized management systems include the PPM in Sweden, Denmark's ATP, Bolivian APFs, the Kosovo Pension Trust.⁶⁰ Hybrid systems where only some services are centralized include contribution collection in Colombia, Poland, Bulgaria, Hungary, Mexico, New Zealand, and account switching in Chile and Mexico.

disclosure to them of financial and other information concerning the plan; by establishing standards of conduct for plan fiduciaries; and by providing for appropriate remedies and access to the federal courts.

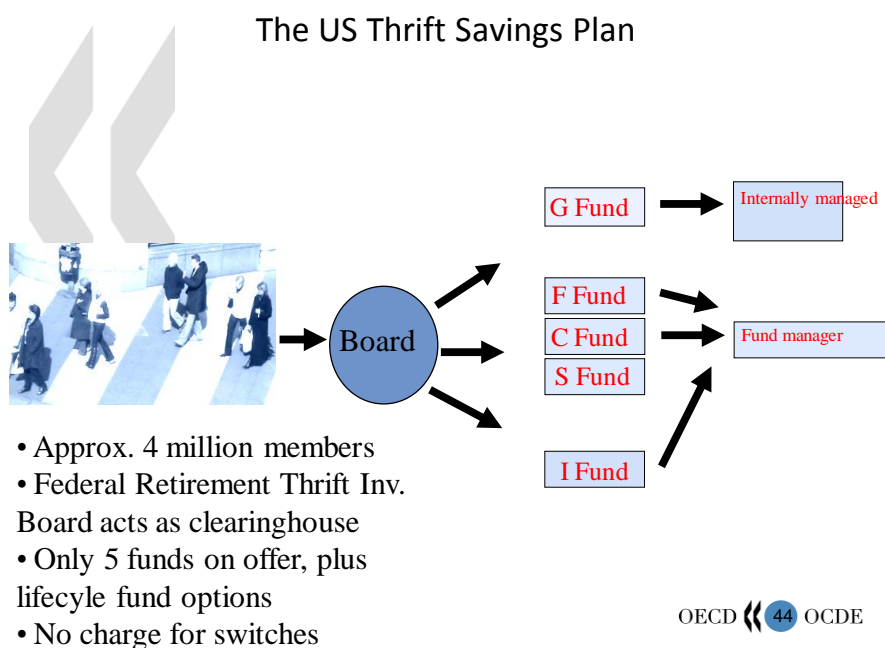
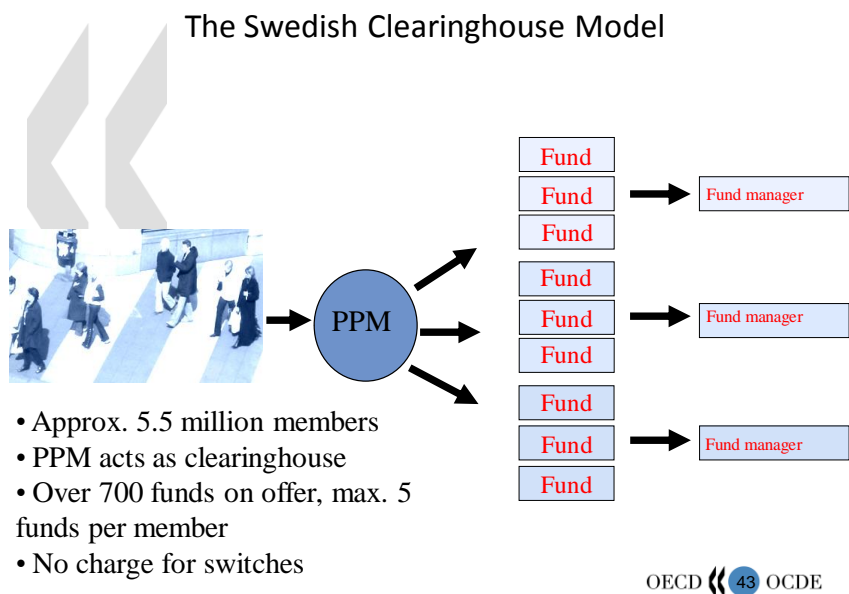
⁵⁸ For a discussion of the most efficient types of cost caps see (Impavido et al 2009).

⁵⁹ This was previously the system used in Mexico, but since since 2008 the assignation process for those who have not elected a pension manager is based on net returns.

⁶⁰ From 2012 (to be confirmed) the UK's new individual account system will also have a centralized collection and allocation system.

89. In terms of centralized systems with investment choice, the Swedish PPM provides an example of a system where a central manager negotiates fees, but free choice of investment is offered to individuals (with a publicly managed default fund). One way to reduce costs even further would be by limiting the number of investment choices. By way of contrast, the US Thrift Savings Plan carries out open tender for a handful of balanced investment choices, some of which may be managed internally.

Figures 3 & 4: Centralized Investment Management Systems



Source: OECD

Table 4: Cost Control Mechanisms Applied in Different Countries

Transparent Fee Structure	Comparison	Not unreasonable tests	Fee Caps	Default allocation to low cost provider	Limit switching	Licensing	Centralized systems	Centralized fund management
Chile	Australia	New Zealand	Lat Am	Chile	Columbia	Bolivia	Sweden	Sweden
El Salvador	Hong Kong	USA	CEE		Bulgaria	Macedonia	Denmark	
Italy	Hungary		Israel		Estonia		Bolivia	
Mexico	Israel		Spain		Mexico		Kosovo	
Australia	Italy		UK				Colombia	
New Zealand	Spain						Poland	
	Mexico						Bulgaria	
							Hungary	
							Mexico	
							New Zealand	
							Chile	

c. Operational Risk

90. Operational risks include:

- risks associated with the security and accuracy of management information systems (including but not restricted to IT systems);
- business disruption due to such events as IT failure, power failure, flood, fire, terror attack or pandemic;
- risks relating to the management of beneficiary records, interests and entitlements;
- financial and resource management risks;
- out-sourcing risks ;
- failure to enforce timely employer contributions.

91. The efficient and effective operation of DC pension funds can pose greater challenges than that of DB pensions, as under most DC arrangements the fund holds individual accounts for each member and hence there is complexity involved in making sure that contributions are received and are allocated to the correct account and that returns are allocated correctly. Other aspects of operational risk may differ less from DB but it is more likely that the member will have to pick up the cost of operational failings, such as IT failures and poor out-sourcing practices. Operational risk therefore receives significant focus from pension supervisors overseeing DC systems – although this aspect of DC supervision tends to receive less academic attention.⁶¹

92. While most (if not all) DC supervisory authorities have some focus on operational risk, the emphasis varies. Examples receiving particular attention include:

- Some countries have been concerned about the commercial advantage that may be derived from delaying transfers between funds or schemes. The Israeli supervisor has recently undertaken a thematic review of the manner of transfers of capital and information between pension schemes when a customer moves to a different scheme after it issued new rules on the subject arising from risks it identified.
- The UK supervisor has placed particular attention on record keeping and has established advisory guidelines on the procedures plan administrators should adopt to maintain, and report on, the integrity of member records.
- Supervisory inspections often place particular attention on the integrity of IT systems (e.g. in Nigeria).
- The Australian supervisor has become particularly concerned about data integrity issues, given the potential that may arise for these to be fraudulently exploited and the impact of the high number of accounts that are lost to their owners due to inability to match to the correct member.

⁶¹ For guidance on the supervisory oversight of pension funds' risk management systems see (IOPS 2009) and forthcoming good practices (IOPS 2010 – forthcoming).

- Supervisors in several countries, for instance Chile and Estonia, have become concerned about the potential impact of conflicts of interest on decisions about choice of investment funds or insider trading by fund managers.
- Another pre-occupation, especially for supervisors in developing countries, is with independent and secure custodianship arrangements.⁶²

93. As a first line of defence against operating risks, supervisory authorities in many countries require pension funds to have risk-management systems in place (including management responsibilities and strategy, control systems – such as IT systems, checking systems and internal audits – and information and reporting requirements).⁶³ The risk-management systems which pension funds are required to operate can be laid out in detail by pension supervisors - as is the case in Mexico where the pension supervisory authority CONSAR requires a certain risk management structure including boards, a central risk management unit, compliance officer etc. to be in place. Likewise in Israel each scheme must appoint a risk manager whose role is to ensure that all risks are properly managed. In other countries (e.g. Hungary, Poland) the scheme must engage an internal control unit for similar purposes. Alternatively, the pension supervisory authority can provide guidance on what type of risk management system it would expect to see, leaving the details of the implementation to the pension fund itself (as is the case in the UK or Australia, for example).⁶⁴

94. The assessment of these risk-management systems form an important part of both licensing and on-going supervision. Those authorities that undertake detailed supervision of pension schemes would expect to pick up serious operational issues as part of their routine on-site and off-site inspection functions. Inspections often place particular attention on the integrity of IT systems (e.g. Nigeria), but may also, as in Australia, take a risk management perspective. Inspections may place a particular focus on ensuring that risk management or internal control functions are working effectively. Other supervisory authorities might pick up operational issues through their complaints handling role where, as is often the case, this is a regulatory responsibility, (for instance Israel, New Zealand and the USA) or undertake thematic reviews focusing on an aspect of operational risk, examples of which are given above.

95. While operational risks are not readily susceptible to competitive pressures, being largely hidden, member decisions could, in principle, be influenced by adding quality of service measures to the other measures that pension funds publish. Hence, the Chilean supervisory authority publishes on its webpage an index that measures the quality of consumer services provided by AFPs and rank them accordingly (see country section).

Outsourcing Risk

96. Where pension schemes out-source administrative functions, the potential risk can increase as schemes may pay insufficient attention to quality of service or the providers' risk management

⁶² Where custodians are responsible for pricing pension fund assets, and are independent from the investment fund managers, this can also provide an alternative control over investment by helping to ensure that the fund and the supervisor have an independent view of the performance of the investment manager.

⁶³ See (IOPS 2009) for further details.

⁶⁴ The Australian and UK guidance notes can be found via the following links. Examples of guidance provided by other IOPS members is available in (IOPS 2009).

<http://www.apra.gov.au/Superannuation/upload/SGN-120-1-Risk-Management.pdf>

<http://www.thepensionsregulator.co.uk/pdf/codeInternalFinal.pdf>

<http://www.thepensionsregulator.co.uk/pdf/InternalControlsGuidance.pdf>

arrangements when selecting and monitoring providers. This may be a particular issue for DC plans which are more likely to undertake outsourcing than generally larger DB funds. In addition, the oversight of outsourcing arrangements may be weaker at DC funds because of their inherently weaker governance structures (as discussed in Box 1 on page 6). The oversight of external service providers should therefore be more rigorous.

97. Supervisory influence is variable over the contractor's processes to mitigate operational risk. The remit of some pension supervisory authorities extends to service providers. Supervisory authorities, for instance in Kenya and Ireland, separately register scheme administrators, regardless of whether they are in-house or out-sourced, which enables them to check on their fitness and propriety and require that they have appropriate processes. In registering with the Irish supervisor, administrators have to certify that they are responsible for and capable of preparing the scheme annual report and annual benefit statements (DB and DC), and that these functions are completed within the statutory timescales. The authority has powers to inspect administrators to check on the self-certification and plans inspections of administrators thought to be problematic. Jamaica and South Africa go further, as the supervisor licenses the administrators. Other supervisory authorities have to work with their counterparts covering other financial sectors to ensure suitable oversight.

98. Alternatively, pension supervisory authorities often require outsourcing arrangements and contracts to include a clause which allows the pension supervisory authority to obtain information or even visit the premises of the service provider. For example the supervisory authority in Thailand (SEC) requires the governing body of a pension fund to include in its contract with the service providers certain clauses which would enable the SEC to carry out inspections to the service providers as and when necessary. In Australia, the supervisory authority has developed a programme of on-site review of entities in the two major categories of service providers – i.e. administrators and custodians. In the absence of explicit powers, the supervisory authority has undertaken inspections of out-sourced administrators by agreement with the trustees and administrators themselves – it expects trustees to provide the supervisor with access through prescribed conditions of contract. The review showed that the governance of the providers needed to be improved, as did the trustees' risk management of the contracts, and has enabled the authority to focus its ongoing work at raising standards.

99. Another approach is to hold the pension scheme managers/ fiduciaries accountable for out-sourced operations and to focus supervisory effort on checking or even authorising the contractual relationships.⁶⁵ For example in Thailand the governing body of a pension fund is required to appoint proper professionals to carry out delegated functions. The governing body is expected to carefully select the parties suitable for the tasks to be delegated by conducting due diligence on them, including their internal control systems. The governing body also has to ensure that the service providers should maintain proper internal control system on an on-going basis. COVIP in Italy emphasise the attitude of fund directors and structures to monitor the quality of outsourced services as part of both off-site and on-site inspections.

100. Supervisory authorities often provide guidance to pension funds as to how to handle their outsourcing arrangements. The Australian supervisor, as with supervisors elsewhere places considerable emphasis on the quality of pension scheme out-sourcing arrangements, with detailed guidance on good practice provided.⁶⁶

⁶⁵ See IOPS Working Paper No. 8 (IOPS 2008c)

⁶⁶ See (APRA 2004)

101. In its comprehensive review of outsourcing practices by Institutions for Occupational Retirement Provision (IORPs) in European Member states,⁶⁷ the CEIOPS found (amongst other conclusions – see report for further details) that in all countries IORPs retain final responsibility for any outsourced functions, and therefore IORPs are required to manage all possible problems arising from their outsourced functions and provide all the requested information to the supervisory authorities overseeing them. Most pension supervisory authorities have the power to carry out on-site inspections of third-party service providers and to obtain all necessary reports from them. Almost all countries require outsourcing to be subject to a written agreement (though the contents of this vary between states). Approximately half the states make the validity of this outsourcing agreement subject to prior approval of or notification to the supervisory authority overseeing the IORP.

Contribution Collection

102. Another aspect of operational risk receiving special attention in some countries is the timely collection of contributions. Late or defaulted sponsor contributions, where funds are responsible for ensuring the timely payment of contributions, can impact more immediately on member benefits in DC plans. It should be noted that most DC supervisory authorities have to address the non/late payment of contributions to plans.⁶⁸ Several supervisory authorities - notably in Hong Kong, Italy and the USA - see this as one of the biggest challenges they face. This is very important in a DC plan given that the incentives for the provider to make their best efforts are not as strong as in the case of a DB system. For the former, members do not pay sufficient attention because they do not understand or do not give sufficient importance to their accounts until they retire, and at that point it might be too late to take any action. In the case of the latter, there is a direct impact on the provider if they do not collect contributions. For this reason, in Chile providers are legally responsible for collecting contributions and have to sue employers if they do not pay. If providers do not take action, they are responsible for the unpaid contributions (see country section).

103. This is also a serious issue in the USA, where problems with the management of contributions can result in the fund being subject to a supervisory visit, and in Ireland which regularly takes errant employers to court. This necessitates extensive follow up action supported by a system of administrative surcharges on employers where cases are upheld. The UK supervisor has sought to overcome a similar problem of extensive reporting of late contributions by placing the onus squarely on pension funds to secure compliance, stepping in itself only in the most egregious cases. In Italy, where COVIP does not have any formal supervisory competence over employers, emphasis is placed on the capacity of funds to monitor employers' regular fulfilment of their obligations as an element of the sound and prudent management of the funds.

d. Managing transition from accumulation to decumulation⁶⁹

104. Members of DC pension plans not only bear risks during the phase when their assets are being accumulated, but also are exposed to risks when in transition to and sometimes within the decumulation phase when they are drawing down their accumulated pension assets as retirement income. Whilst DB funds provide a guaranteed (usually inflation protected) income throughout an individual's retirement,

⁶⁷ See (CEIOPS 2008)

⁶⁸ Few supervisors have any responsibility for employer compliance with legislation covering mandatory participation – this usually falls to the tax authority. This is the case in New Zealand, although the supervisor must register employers who are exempt from participation in the mandatory Kiwi-saver scheme because they are part of an alternative qualifying scheme.

⁶⁹ IOPS Working Paper No. 7 (IOPS 2008a), from which much of this section is drawn, provides further information on the subject.

members of DC funds - just as with investment and other risks during the accumulation phase – bear risks such as longevity and inflation themselves during their retirement.

105. One way of protecting against such risks is to require individual DC fund members to purchase certain types of retirement product – index linked, life annuities providing the ultimate level of protection.⁷⁰

106. However, making an annuity purchase compulsory still leaves individuals open to timing risk – i.e. if individuals have to purchase an annuity at a particular point (i.e. their retirement date), they risk being forced to buy into a low annuity rate and thereby being locked into a low level of retirement income (meaning that two individuals with the same accumulation balance could potentially face the prospects of living on very different retirement incomes simply through having to annuitize at slightly different times).⁷¹ Authorities in some countries therefore allow flexibility in the timing of the annuity purchase. For example, in the UK balances have to be annuitized by the age of 75, in Chile where participants may opt for a programmed withdrawal and choose to annuitize at a later time, whilst in Ireland a two year window was allowed during the volatile period of the financial and economic crisis.

107. Another mechanism for alleviating the risk of transitioning between the accumulation and decumulation phases is to link the two via the use of deferred annuities – as discussed in the previous section on target replacement rates.

108. Yet in many countries (see Table 4), individual members of DC schemes are able to choose their retirement product (whether a programmed withdrawal or an annuity or in some cases whether to withdraw their retirement savings as a lump sum). As with the decumulation phase, where choice is involved extra risks and challenges are born by individual DC fund members – given they frequently do not have sufficient knowledge or engagement to ensure that they make optimal choices between what can be complex products. Pension supervisory authorities can therefore play a role by providing comparative product information and advice on the suitability of products.⁷²

⁷⁰ For a full discussion of the different types of retirement product and the risks which they cover, see (Antolin, Pugh, Stewart 2008), (Antolin 2008).

⁷¹ Timing risk also occurs when individuals are forced to buy an annuity when their account balance has been hit by a market downturn (as occurred at the end of 2008, for example). This is commonly mitigated through life-styling or a move to a more conservative multi-fund account, described under investment risk above.

⁷² For example via the TPAS system which has been introduced in the UK – see IOPS Working Paper No. 7 (IOPS 2008a).

Table 5: Choice of Retirement Product⁷³

Lump sum only	Lump sum or PW	Lump sum or PW, or annuity	Lump sum or annuity	Partial lump sum or annuity	PW or annuity	Annuity only
Hong Kong (Mandatory Provident Fund)	Indonesia	Australia	Luxembourg	Ireland	Argentina	Austria
India (Mandatory Provident Fund)	China	Brazil (closed funds – if the plan rules so provide)	Spain	Italy	Canada	Belgium (mandatory funds)
Luxembourg (SEPCAV)	Malaysia	Denmark	Greece	Portugal	Chile	Colombia
Philippines (Mandatory Provident Fund)		Japan	Belgium	South Africa	Costa Rica	Croatia
			Czech Republic	UK	Mexico	Hungary (mandatory funds – or lump sum if retire before 2013)
			Hungary (voluntary funds)		Norway	Netherlands
			Switzerland (voluntary funds)		Peru	Poland
			USA (NB lump sum dominates)			Russia (mandatory)
						Sweden
						Switzerland (mandatory BVG/LPP pension)
						Uruguay

⁷³ Source OECD (Antolin, Pugh, Stewart 2008)

109. In systems where annuitizing the accumulated pension balance is encouraged or mandatory, an important challenge is how to ensure that individuals obtain the best price for annuity products where these are purchased individually.

110. The complicated nature of pension and annuity products means that their purchase is highly dependent on the information provided by the sellers of these products and the advice received. The problem in many countries is that the annuity provider is already involved in the pre-retirement accumulation phase, which can leave individuals open to abuse if 'locked' in and not able to 'shop around' to find a better annuity rate from an alternative provider so that they risk choosing a payout produce that represents poor value for money (and differences can be as large as 20%). However, making such comparisons is difficult and time consuming. The annuity purchase decision, which is the most common mechanism consumers use to convert a DC fund into an income stream in retirement, therefore needs to be handled carefully. This risk has not attracted that much regulatory attention as the majority of DC systems are sufficiently new that there have as yet been few retirements from the system.⁷⁴

111. Pension supervisory authorities have a role to play in supervising the transition between these phases and how pension income is received. As with the accumulation phase, pension supervisory authorities have to oversee how information is provided and how competition is working during this transition. Supervisory authorities in some countries have consequently been working on providing a centralized system to help individuals chose between retirement products and to compare annuity prices. Consumer understanding of annuities is very low and people do not fully comprehend the risks of the decisions they are taking. Such a centralized system can help to increase knowledge and understanding, particularly when coupled with some product explanation or advice, in addition to comparative quotations between standardized products. Furthermore, such systems may deliver cost savings and efficiencies (via potentially lower marketing and distribution costs for providers) which may be reflected in more competitive annuity pricing. Providing competitive quotations may also assist with the timing of an annuity purchases. The centralized quotation systems in Chile and the UK are considered in IOPS Working Paper No. 7 (IOPS 2008a), and are outlined in the country sections below.

⁷⁴ This is especially the case as the countries that over the last decade or so have set up mandatory workplace pension systems have placed an upper age bound (45 or 50) on membership to minimise the number of eligible employees who would be better off not joining.

IV. Supervisory tools and approaches used in Practice

Nature of pension system determines choice of control mechanism

112. Which of the control mechanisms for managing the different risks outlined above are used in practice depends on the nature of the DC system in place. As discussed in Section II, the role which competition plays in DC pension systems varies. Mandatory systems which require higher levels of protection often employ a type of ‘managed competition’ with a limited number of players and strictly controlled investment products etc. By way of contrast, voluntary systems in more developed market economies rely more on transparency and disclosure, as well as the risk management of the pension funds themselves. Product design, such as portfolio choice and default options tend to be less regulated in these voluntary DC systems.⁷⁵

113. Where levels of financial understanding and knowledge are considered to be particularly low, or capital markets are under-developed, supervisory authorities may restrict the types of investment or level of investment choice which individuals are allowed or apply tighter quantitative investment rules. The key choice is whether supervisors seek to improve member understanding (through enhanced transparency) or whether choices are imposed on members (paternalism). The choice is as much about culture and ideology as it is about evidence-based supervision. The move towards mandation suggests that politicians, at least, may be relying less on member understanding. For instance, in Israel a form of mandatory life-cycling is being introduced because of concerns that the market is not providing such protection by itself. On the other hand, in societies which are more comfortable with the idea that investment in pension plans involves risks and investing in equities, participants can tolerate greater volatility in retirement income outcomes.

114. The nature of the pension promise can also affect which control mechanisms are used. Framing a DC pension plan as “providing security in old age” instead of as a “source of extra money to complement State-provided retirement income” influences the severity of the consequences of failure and hence the regulatory regime. For countries where participation is voluntary and people can effectively choose between spending now or saving for retirement, there may be little use in providing a low risk environment if the potential for upward gains in retirement income are not attractive relative to the time preference of money. Hence, more investment choice and less quantitative rules tend to be used.

Control mechanisms used determine supervisory approach

115. The extent to which the supervisor uses or expects market mechanisms to control risks will in turn dictate the nature of the supervisory oversight. This is becoming more transparent as supervisory authorities adopt a risk-based approach to supervision - which involves directing their limited resources to where they see the greatest risks to their objectives, rather than allocating their resources equally between supervised entities up front and then dealing with problems as they occur.⁷⁶ The key for any risk-based supervisor is to identify the main risks to the DC pension system which they are overseeing and to check that the mechanisms in place to manage these risks are working properly.

⁷⁵ English speaking countries tend to have a much less *dirigiste* approach to investment risks placing reliance on the fiduciary responsibilities of those running the scheme, the expertise of advisers and the choices made by members. The main exceptions to this rule are the near universal restrictions on investment in the employer sponsor (except in the USA) and requirements for life-styling of default funds found in the UK. Other exceptions include restrictions on assets not traded on a regulated market - for instance the Kenyan regulator requires a scheme to obtain prior approval for this type of investment. Otherwise, regulatory intervention tends to focus on guidance for fiduciaries or exploiting the fear that fiduciaries may be sued for poor investment performance.

⁷⁶ Risk-based supervision is examined in detail in the IOPS Toolkit (www.iopstoolkit.org)

116. The degree of competition within DC pension systems - and whether it is seen to be working effectively - will shape the risk focus of the supervisory authority (and hence its approach to risk-based supervision). Where competition is strictly controlled (though structured investment choices, caps on fees etc.) checking for compliance with the regulations imposed will be a major supervisory task. However, if the market is operating more openly, transparency issues, conflict of interest, misselling problems, information provision and cost control will be major issues on the supervisor's radar.⁷⁷

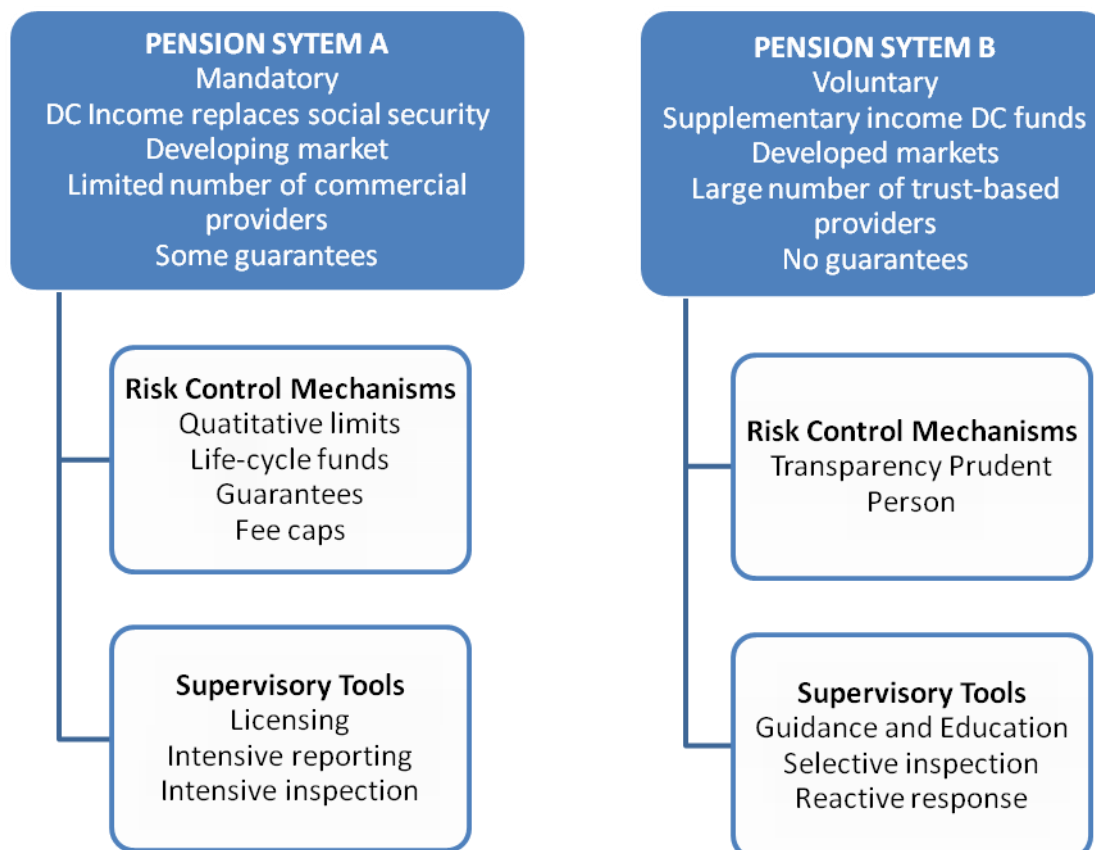
117. The number of providers also shapes the supervisory focus. For example, the goal of APRA's risk-based supervision is to identify risky institutions amongst the thousands of entities which it oversees, whilst the pension supervisor in Chile focuses on finding problem areas within the limited number of pension funds which operate within their systems. In Ireland where there is a large number of pension funds, the supervisor has switched its focus on operational risk to the much smaller number of pension fund administrators.

118. The approach taken to investment risk provides a good generic case study. Supervision of investment risk relying on the prudent person rule necessitates a different approach from enforcing quantified limits – with a focus on investment processes and risk management rather than checking for breaches of the limits. Where quantitative investment limits are applied, compliance with these regulations can be built into the overall risk analysis - as is the case, for example, in Kenya. Meanwhile in Australia, where APRA mainly rely on the risk-management systems of the pension funds themselves, the supervisory focus is on checking that these systems are robust and being operated effectively, and on providing guidance to ensure that this is the case. By way of comparison, in Mexico, where quantitative VaR limits are used by the supervisory authority, CONSAR, to control investment risk, the results of these stress tests are the backbone of the risk-based approach.

119. Although the tools used by different supervisory authorities are the same (from guidance and education, to licensing, on and off-site inspections, prudential requirement and enforcement actions), the weighting and focus of which tools are used will differ (according to the nature of the DC system, the risk control mechanisms in place and the subsequent supervisory approach). Two varying systems and therefore approaches are contrasted in Figure 5 below. These descriptions outline two types of system at either end of the spectrum:

⁷⁷ It should be noted that some countries, such as Australia, operate a 'twin peaks' model of supervision, with prudential regulation and market conduct issues being handled by different supervisory agencies.

Figure 5: Use of Supervisory Tools



120. The different supervisory tools and which are used in range of IOPS member countries are outlined below and in Table 6:

- **Licensing:** enables supervisors to check that the basic structure of member protection and risk management is in place before pension funds start, or with re-licensing continue, to take contributions. Furthermore, regulators or supervisors can use licensing to restrict the plan designs (or default funds) that pension funds can offer, hence reducing investment risk. It also can enable the supervisor to raise the standards required of licensed entities by imposing or modifying licence conditions, without having to seek new legislation. In principle, this approach can address all of the risks covered in this paper.
- **Issuing guidance on good governance and risk management:** this is conceptually an alternative to licensing although in several jurisdictions it supplements licensing. Supervisory guidance, which in some countries has legal status, recommends the types of practices that the supervisory authority considers should reduce risks to members or ensure that they are managed effectively. This approach may be used as a substitute for more intense supervision, leaving pension fund fiduciaries responsible for checking that risks are mitigated, or as a reinforcement to an inspection regime, and is most likely to be found where there are large numbers of funds.
- **Detailed off-site inspection:** enables supervisors to check transactions in detail to ensure that rules (most commonly on investment limits) are being complied with and payments from and to members are properly handled. This is targeted at investment and operational risks and is

associated with very frequent (even daily) transaction reporting and, hence, systems with a relatively small number of pension funds.

- **Targeted checking of annual returns:** this is a common approach to handling data that supervisory authorities receive from pension funds where there are too many for detailed checking to be practicable or the supervisor is focusing on specific risks, for instance checking the external auditor's opinion or any statements made on risk management or internal control.
- **Routine on-site inspection:** this enables supervisors to verify information received off-site as well as check for compliance with regulations or check on the quality of governance. It could potentially cover any DC risk, although supervisors tend to focus on a sub-set of risks.
- **Reactive response:** adopted as a major supervisory approach mostly by authorities supervising large numbers of pension funds where routine inspection can only cover a small part of the market. Pension fund fiduciaries or their advisers and suppliers may be required to report breaches of legislation, and supervision can also be driven by member complaints. By definition, these reports only relate to visible failings or legislative breaches and hence do not cover all risks.
- **Thematic reviews:** these enable supervisors to focus on a specific risk of particular importance or concern, and can involve information collection, inspection and action to oblige or encourage pension funds to correct the types of problems found. The paper, above, gives some examples of such reviews, e.g. of the transfer process.
- **Solvency Reviews:** required where pension funds give guarantees or provide insured benefits.
- **Promoting transparency/understanding:** this involves mandating pension fund disclosures directly to current or potential members or indirectly through the supervisory authority's website, and checking that information disclosed is accurate and not miss-leading. It is generally aimed at investment and charging risk, although several jurisdictions use it for the transition to the retirement phase or quality of service.

Table 6: Supervisory Tools used in Different Countries

	Licensing	Guidance on governance/ risk management	Detailed off-site inspection	Targeted checking of annual returns	Routine on-site inspection	Reactive Response	Thematic reviews	Solvency Reviews	Promoting transparency/ understanding
Australia	✓	✓			100%		✓		✓
Chile	✓		✓		100%			✓	✓
Denmark	✓		✓		100%			✓	
E. Europe	✓		✓		100%				
Hong Kong	✓	✓	✓	✓	100%		✓		✓
Ireland		✓		✓		✓			✓
Israel							✓		✓
Italy	✓		✓					✓	✓
Kenya		✓		✓	sample	✓			
Mexico	✓		✓		100%			✓	✓
Netherlands		✓							✓
NZ	✓			✓	100%	✓			✓
Nigeria	✓		✓		✓			✓	
S.Africa		✓		✓	sample	✓			
UK		✓				✓	✓		✓ (retirement options)
USA		✓		✓		✓			✓

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