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PLAC Network Best Practices Series

Pension Supervision

Inter-American Development Bank

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**NETWORK FOR PENSIONS IN
LATIN AMERICA AND THE CARIBBEAN**

Best Practices Series

PENSION SUPERVISION

1

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Foreword

The Labor Markets and Social Security Division of the Inter-American Development Bank (IDB) supports countries in Latin America and the Caribbean to build stronger pension systems by seeking to increase their coverage (support in old age to the vast majority of the population), sufficiency (the pension amount allows for a dignified life in old age) and sustainability (pension benefits financed in the present and in the future). To advance these objectives, the IDB created in 2015 the Network for Pensions in Latin America and the Caribbean (PLAC Network). The PLAC Network is a regional public good that serves as a platform for dialogue and learning among pension institutions and experts. It is one of the mechanisms through which the IDB supports the efforts of countries in the region to improve the institutional and technical capacity of their pension entities.

In this context, we are delighted to launch the first in a series of **PLAC Network Best Practices Documents**. These best practices documents address main topics of interest and concern to pension policymakers in the region, chosen through consultation among all the PLAC Network members. The work is led by an expert and guided by the PLAC Network team and is subject to several rounds of comments and contributions of all PLAC members.

This first document is entitled **Pension Supervision**. The document systematizes the best practices in pension supervision and risk-based supervision across the region; updates and adapts the guidelines for supervisors created by the International Organization of Pension Supervisors (IOPS) in 2008 to the specific context and needs of Latin America and the Caribbean countries; and incorporates modern topics in pension supervision such as the opportunities and risks resulting from emerging technologies. It also carefully distinguishes recommendations for various levels of regulatory and supervisory institutional development, as well as pension design heterogeneity among PLAC member countries. Such an approach was devised to ensure relevance across the board for all PLAC members.

This specific publication is the result of a successful collaborative effort between the PLAC Network team and all its member countries. The international expert John Ashcroft crafted the document under the guidance of Waldo Tapia, Mariano Bosch, Manuel Garcia-Huitron and Carolina Felix from IDB, followed by several rounds of technical exchanges with the member institutions. Additionally, the draft was presented and discussed during the 5th AIOS-IDB supervisors' workshop, *The Use of Technology to Promote Voluntary Savings and Digital Supervision*, which took place in Mexico City on October 4th to 5th, 2018. This publication would not have been possible without the time commitment and insightful suggestions from the PLAC Network members. It is a publication for and co-created by the PLAC members.

Future topics in this series include best practices in non-contributory pension design, contributory pension design, decumulation stage design, social sustainability and communication of pension reforms to the general public.

PLAC Network Team

Table of contents

Introduction

Funded employment-based pension systems are of fundamental or increasing importance across the PLAC Network, both as a source of retirement income for the citizens of these countries and due to their influence on financial markets. In particular:

- Societies across the world are rapidly ageing as mortality and fertility rates fall in tandem, and this is especially the case in the PLAC region. Globally, 22% of the population (2 billion people) is expected to be aged 60 or old by 2050, compared with 8% around 1950. In several countries in the region, average life expectancy at birth has already reached 80, and the overall shortfall in mortality in North America has fallen by 20 years (for women) since the mid-1950s. The fall in fertility rates has been even more spectacular[1].

- In this context, governments will be increasingly challenged to provide their elderly populations with adequate retirement income, as the dependency ratio between working age and others rapidly decreases. This is especially true that the common expectation of employees is that their retirement income should not fall too far from their employed income. Meeting such aspirations from general taxation or borrowing is liable to result in fiscal unsustainability. Not meeting the expectations could result in political crisis.

- Pension savings by employers and employees in autonomously managed pension funds can pre-empt such a funding or poverty crisis, by supplementing governments' basic provisions (which will increasingly only be able to meet basic needs) in a fiscally sustainable manner. Ideally, it should play a key role in a diversified (multi-pillar) pension savings model, alongside basic state provision, voluntary saving and other sources of retirement wealth. Pension savings also makes money available for investment that can generate the growth needed to finance retirement provisions.

- The general response in countries of the PLAC Network has been to mandate or incentivise employment-related pension saving, resulting in rapidly increasing assets and membership in employment-related pension funds. Such funds in these countries now hold and invest some $US 790 billion of assets on behalf of more than 114 million affiliates. As none of the pension systems is yet fully mature, these figures will substantially increase for some years to come.

- This in turn means that pension funds are becoming economically and politically significant – in Chile (with proportionately the largest system in the region), assets comprise 70% of GDP on behalf of around 60% of the population. Other pension systems are also becoming significant relative to GDP[2].

- To date, nearly all the pension provisions relate to the formal economy. The informal economy, however, is substantial across the region; indeed, informal workers comprise more than 50% of the working

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1. Figures taken from *"The demographics of population ageing in Latin America, the Caribbean and the Iberian Peninsula 1950-2050"* by Leeson, G.W. (2011) Oxford Institute of Population Ageing.
2. Other countries where pension assets exceed 20% of GDP include Colombia, El Salvador and Jamaica, with Costa Roca, Mexico and Peru in the 15–20% range.

population in many PLAC Network jurisdictions. There is an increasing focus on initiatives to enable and encourage workers in the informal economy to save so as to reduce the societal risk of serious poverty in old age. Such initiatives commonly apply advanced technology and change significantly the way that pension funds interact with affiliates (members and beneficiaries), and indeed the way supervisors interact with pension funds.

As funded pension systems become increasingly important in the region, so will the effective and agile supervision of pension funds. At its simplest, pension supervision can be defined as ensuring that regulation is enforced and, where necessary, substituting for regulation in areas where it is absent or weak. A more modern (risk-based) perspective is to see pension supervision as ensuring that the pension system achieves its objectives, or at least those within a supervisor's influence, taking account of the risks to those objectives, with a view towards sustaining or building trust and confidence in the system. In seeking to achieve these objectives, the supervisor needs to recognise impacts from the pension system on other financial markets, and vice versa.

Pension fund supervision is considered to be distinct from regulation, or the activity of establishing legally binding laws and regulations. That said, the border is often blurred, and some of the supervisors in the region are also regulators. Some activities relating to pension supervision that are covered in these Guidelines, notably the provision of clarity regarding the supervisor's expectations of supervised entities, may more naturally fall under the pension regulator in some jurisdictions, in which case the supervisor will need to work with regulatory colleagues. Regulators and supervisors share a responsibility to ensure that the system runs smoothly, like the regulator on a steam engine, and that problems are quickly addressed and eliminated.

The objectives of pension supervision include protecting the interests of pension fund affiliates, safeguarding the stability of the pension industry and contributing to the stability of the financial system as a whole. To achieve these objectives, supervisory authorities should establish supervision methods that include the ability to adequately assess pension funds and management companies, both through regular monitoring and analysis and through more in-depth investigations, which are often undertaken 'on-site'.

The purpose of these Guidelines is to provide pension supervisors with general supervisory approaches for the conduct of supervisory assessment. To this end, they draw on the Guidelines of the International Organisation of Pensions Supervisors (IOPS) on pension supervision[3] issued in 2008, which in turn reference the IOPS 'Principles of Private Pension Supervision', the OECD's 'Core Principles of Occupational Pension Regulation' (in particular, Core Principle 6 on Supervision) and other OECD pension-related guidelines, Core Principle 12 'Reporting to supervisors and off-site monitoring', and Core Principle 13 'On-site inspection' both of the International Association of Insurance Supervisors, as well as other IOPS projects.

There are three reasons why it is felt appropriate to modify and enhance the IOPS Guidelines for use in the Latin American and Caribbean (LAC) region, which is why new guidelines have been prepared.

- The specific circumstances and experiences of the pension systems in the region, which have led to some distinct supervisory practices and can be drawn upon to give examples of particular relevance to other supervisors in the region.

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3. IOPS Guidelines for the Supervisory Assessment of Pension Funds issued by IOPS in December 2008.

- The need to incorporate the concepts and practices of risk-based pension supervision, mandated for IOPS members[4] since the IOPS Guidelines were drafted, which can be more precisely re-stated to reflect the types of fund seen (and not seen) in the region[5].

- The importance of reflecting technological advances since 2008 that have already had a major effect on some supervisory regimes and that are likely to have a greater effect in future.

Furthermore, these Guidelines enable sharing of the practices and experiences of supervision by members of the PLAC Network. Many of these practices and experiences are drawn from responses to a questionnaire and contributions made at an IDB/PLAC-hosted seminar in Mexico City in October 2018. An appendix summarising the responsibilities, data sources and approaches of the pension supervisors belonging to the Network accompanies the Guidelines.

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4. By means of a revision in November 2010 to Principle 5 of the IOPS Principles of Private Pension Supervisors.

5. Regarding exclusions, there is, for instance, no need to cover defined benefit funds provided as insurance arrangements, various types of hybrid fund and mandatory funds provided by trust corporations, which can be found outside the region.

Scope and coverage

This document takes the form of a discursive preamble followed by 18 high-level Guidelines that are grouped under the following four headings:

- Strategic approach

- Data collection, monitoring and analysis

- In-depth evaluation of risk mitigation

- Resources and organisation

More detailed guidance on the good practices that are, and can be, applied is set out under each of the Guidelines. The guidance recognises that pension systems and supervisors are at varying stages of development. Hence, the fundamental good practices applicable to all supervisors are explained using 'should' statements. Then, further text is included (using 'can' or 'may' statements) describing additional approaches, methodologies and techniques adopted by supervisors in larger and more mature markets. Case examples are included where appropriate, to inspire other supervisors regarding potential future developments. These good practices inevitably include references to how technological developments can impact supervised entities and the techniques that supervisors can apply.

The focus of these Guidelines, like the IOPS Guidelines before them, is on supervisory assessment (and the use of such assessments). The Guidelines are not intended to cover pension supervisors' full activities. In particular, licensing and other forms of approval and enforcement are both substantial topics that would merit their own guidelines but are not included here.

These Guidelines are intended to be relevant to pension supervisors who supervise occupational pension funds or pension-management companies that administer individualised accounts or occupational pension funds, along with their associated service providers. Various permutations of these arrangements are found in the region. Individualised accounts can be mandatory (for formal sector workers), voluntary or a mix of both, although by definition they are defined contribution (DC). Occupational funds can be DC, defined benefit (DB) or a hybrid of the two.

The Guidelines refer to 'supervised entities', which comprise the various types of entity that administer relevant pension funds in the region. These include:

- Commercially sponsored pension-management companies that administer individualised accounts (mandatory or voluntary) in 10 of the PLAC jurisdictions. Indeed, as of early 2018, these are predominant, with 69% of the assets and more than 90% of the affiliates.

- Centralised record keeping agencies that work on behalf of pension-management companies in several jurisdictions.

- Commercially sponsored pension foundations that administer occupational pension funds on behalf of a range of employers (in Brazil at least).

- Employer-sponsored foundations or trusts that run occupational pension funds for the employees of the sponsors (in Brazil and Jamaica at least).

- State-sponsored entities that administer occupational pension funds for specified classes of (or all) employees of the government (in Colombia, Costa Rica and Haiti, at least).

Some of these entities are permitted or required to outsource key functions such as fund management and custodianship to specialised financial institutions that are commonly not directly supervised by pension supervisors but can be supervised indirectly through their relationships with supervised entities or co-ordination with other supervisors.

Most of the membership and assets in occupational funds is held in funds established for public sector or parastatal company employees. This means that some supervisors in the region supervise funds are established by statute and with governmentally appointed boards. Nonetheless, the approach to supervision can be fundamentally the same as for other types of employment-based pension funds.

Funds administered by a government to provide retirement benefits to employees across the (formal) economy are not fully covered as there are significant differences regarding the leverage that supervisors can apply and the principles governing their funding levels. Even so, much of the content of these Guidelines will still be relevant.

Personal pensions sold to individuals outside an employment relationship are not covered, as they commonly do not fall within the remit of the pension supervisor. The exception is voluntary pension provision offered by pension funds or management companies that are otherwise supervised by pension supervisors.

Finally, while the participants in pension funds are variously also referred to as members, beneficiaries or participants in different jurisdictions, to avoid confusion, these Guidelines refer to them as 'affiliates' throughout.

Preamble

The regular assessment of the risks to pension system objectives, especially those arising or mitigated at supervised entities, is central to effective risk-based pension supervision. Monitoring and analysis activities enable the supervisors to build a risk profile for the pension system and individual pension funds, which should allow supervisors to focus on the most serious risks and issues and proactively detect issues/trends before they become entrenched. Having identified the most serious risks and issues, the supervisor can develop strategies to mitigate systemic and entity-specific problems.

Monitoring and analysis are inevitably central elements within supervisory strategies. They enable supervisors of DB (and hybrid) funds to assess the pension funds' financial positions and hence their likelihood of meeting their promises to current and future affiliates. For DC funds, it can help supervisors assess how well an entity is discharging its duties of care and good faith as regards the way fund assets are invested. Indeed, the supervisors of mandatory DC systems in the region obtain large quantities of data on the funds they supervise, mostly on a daily basis. This enables extensive analysis, not least of investment risk and performance. Such analysis can be methodologically challenging, and it is an area where some supervisors in the region are leading the world. The analysis also provides evidence regarding the quality of service and risk management, including supervisors' diligence regarding regulatory compliance. In addition, supervisory-reporting requirements can themselves apply some discipline.

It is reasonable for supervisors to expect that supervised entities will be capable of managing many risks them-selves, at least when entity management and affiliates have some aligned interests or incentives. An important role for the supervisor is therefore to promote good governance, risk management and internal control within pension funds themselves. This can be achieved by providing guidance on what constitutes good governance and risk management and by the supervisor evaluating supervised entities in-depth, whether through detailed off-site surveillance, off-site interviews, on-site inspection or some combination of these techniques, and providing subsequent feedback. Off-site analysis should enable defensible risk-based selection of entities for in-depth evaluation, along with the risks or processes that should be examined in-depth.

The in-depth evaluation of pension funds supplements the analysis of other financial, performance and statistical information provided to the supervisor by pension funds. In addition to enabling the assessment of entity governance, it allows supervisors to form more qualitative judgments regarding the pension fund's operations. For example, are systems that look adequate on paper working in practice? Does the management display capability? Does the board pay sufficient attention to environmental, social and governance (ESG) factors in determining the fund's investment policy? Is the fund's organisation efficient? The supervisor's response to any negative findings should itself have regard to the associated level of risk and the contribution the failings make to that level of risk.

In any event, supervisors need to have a comprehensive supervisory approach and should consider using the full range of supervisory tools in order to operate as efficiently and effectively as possible. The balance between monitoring and analysis and in-depth evaluations will depend on the nature of the pension system

and the supervisory approach. For example, supervisors will naturally have to rely more on off-site supervision if they are supervising a large number of entities that are unfeasible to visit regularly. In these circumstances, supervisors should apply a risk-based approach when deciding which entities to visit and the frequency of such on-site inspections. Meanwhile, regular (even annual) on-site inspection is possible if there are few funds to oversee and indeed may be considered essential if the supervisor has direct oversight of commercial institutions administering mandatory savings. In all circumstances, the extent to which the supervisor feels able to rely on the entities' own governance, risk management and control should be influential.

Importantly, the supervisor has a defensible, coherent, well-thought-out policy for deciding on the mix of supervisory tools adopted. These may well change over time; for example, some supervisors may move more towards off-site supervision as the sophistication of the analyses that they can remotely undertake increases, whereas others will utilize more in-depth evaluation as their monitoring and early warning screening improves. The approach should be proportional to the amount of risk posed by the fund to its participants and the pension system as a whole, and it should represent an efficient use of supervisory resources without placing too heavy a burden on the supervised entities. To enable such a proportionate approach, it is important that the supervisor have a wide range of powers, so that the supervisory response can be scaled according to the gravity of the problems found. In particular, the supervisor needs the power to mandate improvement plans where failures in the implementation of risk management are found.

Of rapidly increasing importance to pension supervision is the digital revolution's impact on how pension systems are run and on the tools available to supervisors. Digital transformation that is already evident in the region, or could be foreseen, includes:

- Pension schemes that enable workers in all sectors to regularly or intermittently contribute to their pension accounts by means of telephonic or other digital transfer, such as from convenience stores or as a pre-set percentage of debit card purchases, which can increase voluntary saving and hence adequacy and inclusion. This greatly increases the number and diversity of entities involved in pensions, many of which are not supervised as financial institutions or at all.

- To be cost-effective, such schemes need low-cost digitalized back-office and communications capabilities. Applying such technology can also reduce costs and hence any fees charged by pre-existing pension funds. Such systems may be less susceptible to traditional forms of supervision and necessitate up-front validation by supervisors to ensure that audit trails and other protections are hardwired into the design.

- Smarter IT enables the provision of more targeted, seamless and intuitive user experiences to affiliates that can enable them to make (and nudge them towards) better choices, not least increasing their pension contributions and hence their pension's adequacy. Thus far, supervisors have had to lead in introducing such a portal. Such a communication portal might in due course provide a preferable means of enabling affiliate changes of funds than the current system, driven by sales agents of variable integrity.

- Blockchain technology could be introduced to improve the security and transparency of communications between pension-management companies and other service providers, with the possibility of eliminating some 'middle-men', potentially improving security and efficiency.

- On the other hand, increasing the use of communications technologies and 'the cloud' will increase operational risks and especially system vulnerability to breaches of confidentiality and cybercrime, which will necessitate heightened supervisory attention to these risks.

- Supervisors can now obtain vastly more data than before by using (near) real-time electronic feeds, so that they can subject high-risk activities, such as pension intermediation or benefit calculations, to intense scrutiny, especially when coupled with artificial intelligence and machine learning. These analytical techniques can also enable more sophisticated analysis of risks, which can be disclosed in existing supervisory data.

- More advanced supervisory databases can be used to optimise data capture, collaboration and learning within supervisory authorities, so as to enable better co-ordination and more incisive analyses.

To address the challenges arising from digital transformation and optimize its application, supervisors will need to revise their strategies for achieving their objectives so as to respond to and drive technological change and hence deliver new and enhanced goals. This may include the initiation of regulatory change where existing regulation unduly inhibits digital transformation or adds minimal value.

1▸Strategic approach

1.1▸The supervisor should understand the full range of risks in delivering its objectives by obtaining sufficient and regular information on the risk landscape

Supervisory assessment should be seen within the broader context of how a supervisor plans to achieve its objectives and thereby help secure the pension system's desired outcomes. Pension system outcomes have been allocated across five principal headings[6]:

- **Coverage:** inclusion of as many workers within the pension system as practicable.

- **Adequacy:** increasing the benefits payable at retirement by increasing the value and persistency of contributions.

- **Sustainability:** sustaining political and public trust in the system, along with service quality and its long-term affordability.

- **Efficiency:** improving administrative efficiency and investment returns net of costs and charges.

- **Security:** ensuring that pension assets are not lost, stolen or eroded by bad decisions.

Note that some desirable features of a pension system, such as equity, good governance and well-informed and empowered affiliates, run across several or all of these outcomes. The supervisor's role in helping the delivery of these outcomes varies between systems, with traditionally less attention being paid to coverage and adequacy, but the opportunities provided by digital transformation may well change this. Precise objectives for the supervisors' roles in promoting these goals vary between systems and supervisors but generically could be stated as being:

To sustain and build trust in the pension system and promote its healthy development and stability, in particular by:

- protecting affiliate assets and benefits;

- ensuring that benefits are delivered as promised;

- promoting good administration and governance; and

- ensuring orderly and legally compliant management of the system.

A large proportion of pension provision within the region is managed by pension-management companies that compete amongst themselves for market share, within systems that permit affiliate choice of pension

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6. Price, William; Ashcroft, John; Hafeman, Michael. 2016. *Outcome Based Assessments for Private Pensions: A Handbook.* World Bank, Washington, DC. © World Bank.

portfolio and provider. Furthermore, in these systems, at least, some supervisors have assumed the role of promoting initiatives to improve employee engagement, especially amongst those in the informal sector. Two additional bullets could therefore be added as follows:

- promoting employee and affiliate participation, engagement and informed choice in the pension system; and

- facilitating the expansion of pension inclusion and adequacy across the working population.

All pension supervisors should identify all of the risks to their (or pension system) objectives, identifying who should and can act to improve mitigation and how, whether they be supervised entities or other governmental agencies. This can be done subjectively by considering what can go wrong and has gone wrong in practice, and with what consequences. To keep the process manageable, risks can be grouped into categories. The risks or risk categories can be called 'inherent risk factors' and should cover both system-wide risks, such as low coverage or high fees, and an overview of entity-specific risks, including those listed in paragraph 82 below.

System-wide risk assessment should also account for any changes in market dynamics, such as competitive trends or new entrants, and the use of technology. In the latter regard, supervisors should be alert for new technologically related risks that can arise where data or financial transfers are undertaken using Web-based systems or systems that are otherwise vulnerable to hacking. The supervisor should assume that these processes may increase the inherent probability or impact or risks, at least until they have verified processes to the contrary.

System-wide risk assessment should draw upon whatever data is available that relates to the risks concerned. In defining risks, the supervisor should also define how the necessary data will be obtained to monitor these risks and can establish key indicators for this purpose. The risk definition should be made sufficiently specific to enable such measurement.

Risk may be best identified as a corporate exercise, enabling the supervisor's experience to be taken into account. Attention should be given to exploring the precise and underlying reasons for the risk and its materialisation, so as to identify appropriate responses. Box 1 provides an example of how clarifying the risk definition can affect how a supervisor seeks to mitigate risk.

BOX 1 ▪ **EXAMPLE OF RISK DEFINITION - MARKET RISK**

In essence, for a pension fund 'market risk' is the risk that the investment strategy, objectives and asset duration, and hence the level of market volatility experienced, are inappropriate to the cohorts of affiliates concerned. Excessive volatility may also arise from ineffective implementation of the investment strategy. The definition of 'market risk' can, however, be narrowed in a system of multi-funds that has been designed to mitigate the effect of market downturns on affiliates close to retirement. In such a system, market risk can be redefined as the risk that the multi-fund portfolio's construction (asset duration) does not sufficiently insulate affiliates from market downturns when they are exiting a fund. In that case, the supervisor will look to minimise market volatility exposure in the fund intended for retirees as well as the compliance of the other funds, with limits on or targets for volatility that provide a reasonably even graduation between the funds. The supervisor may also be concerned about affiliates close to retirement being in an inappropriate fund. Market risk is hard to effectively mitigate if multi-funds are not used, without unreasonably constraining investment returns for younger affiliates, which provides a strong rationale for their introduction. If the narrow definition of market risk is adopted, then the broader risk that the investment strategy process is flawed, which may contribute to market risk, can be separately defined as strategic risk.

Other ways of defining these risks can be adopted, but choosing this approach drives a particular focus on the construction of multi-funds that is separate from other aspects of risk and that reflects jurisdiction-specific supervisory concerns.

A more rigorous approach to risk identification is formally mapping the risks to the relevant objectives, using a matrix to assess the impact and probability of each inherent risk or risk category. At its simplest, the output can place risks within four parts of the matrix:

- **High impact and probability:** crises needing urgent mitigation (although these may often not be fully within the control of the supervisor, for instance, inadequacy of contributions);

- **High impact, low probability:** unusual but catastrophic events that require early warning off-site monitoring and rapid response;

- **Low impact, high probability:** endemic problems that need a persuasion campaign, which may include in-depth evaluation, and low risks where communication with supervised entities plus light monitoring may suffice; and

- **Low impact and probability:** minimal response with risks left to be largely managed by supervised entities.

A formal risk-scoring model is likely to have a more graduated output in terms of numerical ratings, although the interpretation of the response may not differ so much from paragraph 33 above. These ratings of inherent risk factors can be used as an input to the risk model used to plan supervision and assess the mitigation

achieved by entity processes and hence the residual risk. Where such weight is placed on the ratings, supervisors need to apply a consistent, logical approach to selecting, rating and weighting risk factors that enable a robust risk-scoring approach. An internal 'peer review' process may be used to ensure such consistency.

System-wide risk can be periodically assessed, perhaps every 1-3 years. Specific new risks should be assessed where they become apparent, focusing in particular on obtaining a clear definition, and hence understanding, of the risks. In this way, the supervisor can respond in an agile manner to a fast-changing world.

1.2 ▶ The supervisor should promote and advance the application of proportionate and effective remedies to systemic problems and risks through a strategic approach and monitor their effectiveness

Having identified the highest-priority risks for supervisory attention, all supervisors should have strategies to address such risks. The options for inclusion in system-wide strategies may include changing legislation or regulation; changing the market structure; new, possibly technologically driven initiatives to improve coverage, adequacy or the competitive process; and intensive supervision or targeted enforcement action or intervention. There may be several options to choose from, and the supervisor may need to balance practicality and effectiveness while 'thinking outside the box' so as to identify solutions that may address the underlying problem. Box 2 provides a case study.

BOX 2 ▪ A STRATEGY TO MITIGATE A SERIOUS SALES-INTERMEDIATION RISK

The Costa Rican mandatory individual account pension system experienced high churn of affiliates when the pension-management companies became embroiled in intense competition to poach each other's affiliates, with heavy use of commission-driven sales intermediaries. Ultimately, the only real beneficiaries were the intermediaries themselves. The supervisor identified this as a risk to the system's efficiency and reputation and, after considering the options, devised a strategy to wind down the competition. This involved regulatory changes so that the company losing an affiliate would be able to make a counteroffer and to make it difficult to trace which intermediary caused which transfer, hence disabling commissions based on the number of transfers sold. This reduced the rate of transfers by around 95%, while reduced intermediation costs also reduced the fees charged to affiliates.

Some key risks for supervisors of systems with competing pension-management companies (or umbrella funds) relate to the fees and costs charged to affiliate accounts, which are commonly higher across the region than in benchmark systems elsewhere, such as Sweden and the UK, where large pension funds levy charges of 0.5% or less of assets under management. One approach to reducing fees has been regulatory fee caps (such as in Costa Rica), whereas other strategies have been devised, such as auctions, improving the transparency of disclosure and supervisory pressure.

In any event, if fees are to be reduced substantially, action may be needed to reduce the cost base of pension-management companies through encouraging greater use of technology and reducing the costs of sales intermediation. Supervisors may wish to develop strategies to promote such worthwhile changes.

Supervisors are also increasingly taking a proactive stance on encouraging greater participation in the pension system, especially among informal workers. Technology has the potential to facilitate such participation both by providing easier means for them to enrol and make contributions and by making it cost effective for pension funds to receive small or intermittent contributions that may better fit with affiliates' financial circumstances. Box 3 provides a case study.

BOX 3 ▪ **STRATEGY TO INCREASE PARTICIPATION IN VOLUNTARY PENSIONS IN MEXICO**

The supervisor in Mexico has encouraged the development of a digital ecosystem whereby affiliates can make contributions using mobile banking, debit card deductions or some 12,500 outlets such as convenience stores, using aggregators where appropriate. These connections also enable information flows, not least real-time acknowledgements of contributions paid, but also messages designed to encourage pension saving. Although the pension-management companies are connected in real time, they were reluctant to make up-front investment, and hence the supervisor itself took on the sponsorship role. This also has the advantage that the supervisor can verify the security and traceability of what has been implemented. The system is made possible by seamless encrypted connections between participants and biometric validation of identity.

If the supervised entities have a fiduciary responsibility to mitigate risks, the supervisor should understand what good practices are in mitigating those risks. Very often, therefore, the mitigation strategy will focus on the supervisory assessment of entities to determine the extent to which the risk is materializing and the existence and effectiveness of the entity's mitigations. These processes should either confirm that key risks are being effectively mitigated or enable the supervisor to drive improvements in risk mitigation. In practice, the strategy may vary according to the inherent probability of the risk materializing, as the two examples that follow show.

- In some jurisdictions, the quality of entity risk management, or the effectiveness of regulatory controllers, is less than the supervisor would wish, in which case a programme of targeted in-depth evaluation may be used to promote higher standards, with sanctions or even intervention being threatened where improvements are not made.

- Reconciling data on participant accounts and the assets underlying those accounts is less commonly a problem, so that although the inherent probability is low, the inherent impact of an unresolved failure in reconciliation could be so serious (including failing to detect a fraud) that regular supervisory checks are still necessary to confirm that the relevant systems of control are functioning effectively.

Supervisors can document their key strategies in a corporate plan or similar document, which can help to ensure a shared understanding within the supervisory authority. It may also be published to help promote change within the industry. For instance, a supervisor may issue a consultation paper on its strategy for improving risk mitigation, which by itself should influence the attitudes of entity boards and senior management. Or,

the supervisor may condition loosened regulatory restrictions on entities achieving a specified standard of governance or risk mitigation, to incentivise desired changes in entity procedures or governance. For instance, the supervisors in Mexico and Peru are willing to waive some restrictions on investment classes, such as derivatives, applying to management companies that have achieved a targeted level of investment governance.

1.3 ▶ The supervisor should understand how supervised entities should mitigate risks and ensure that the management-supervised entities and other stakeholders, including affiliates where relevant, have a shared understanding

As mentioned above, all pension supervisors should understand how significant risks should be mitigated at supervised entities. The mitigation systems, controls and governance processes should be documented for supervisory purposes, possibly as part of a supervision manual, which can also document the key controls or processes that the supervisor may wish to verify.

If supervisors want to rely on entity systems and governance, or if they consider that mitigation processes need to improve, then they should seek to identify where entity management does not understand or agree with good practices in mitigating key risks. The supervisory assessment as to how well supervised entities understand how to mitigate risks can be underpinned by the systematic analysis of data and the results of in-depth evaluation. In that case, the rating of the mitigation quality should be an output from evaluation processes. A periodic systemic review of these ratings can be used to pinpoint issues where more guidance (or regulation) is needed.

Where there does not appear to be a shared understanding, the pension supervisor should issue clarifying regulation or guidance. In practice, regulation may already specify much of what is expected regarding the management of operational risks; hence, for such risks, supervisory guidance may be limited to any clarifications or reminders that appear desirable on the basis of experience. Pre-existing regulation or guidance is less likely to specify what the supervisor expects to see with regard to corporate governance or investment governance. In that case, the supervisor should issue more extensive guidance in these areas. It is desirable that the guidance issued is consistent with the model of good practice used for supervisory assessment purposes.

In any event, it is good practice that regulation or supervisory guidance allow supervised entities some flexibility in implementing good practices so that they can implement the most efficient solutions in their circumstances. For instance, management companies or pension funds owned by multinational financial services corporations may use corporate (multinational) risk-management systems and methodologies that are effective in meeting supervisory expectations. Regulation or guidance should not be so prescriptive as to prevent the use of such systems and methodologies.

Where substantial change is needed to improve supervised entity or affiliate understanding or behaviour, the supervisor can develop a communication strategy to help ensure that good practices in risk mitigation are effectively communicated. For supervised entities, this may involve several concurrent communication media, such as guidelines, circulars, seminars, conferences or face-to-face contact. For instance, the senior staff of the supervisory authority in Mexico hold regular meetings with the boards of pension-management

companies to communicate key messages as well as receive feedback. For affiliates, greater investment and sophistication may be needed, including advanced technology, of which Box 3, above, provides a case study.

All pension supervisors should liaise regularly with other agencies that help to mitigate risk in pensions systems, such as other financial services supervisors or the taxation authority, to verify that the expected mitigation is taking place or encourage additional mitigation. This could involve formal liaison arrangements or memoranda of understanding. Effective communication arrangements should be agreed upon, even where supervisory functions fall within a single integrated financial service supervisor. Examples of such liaisons could include the following.

- The insurance supervisor may be relied upon to supervise annuities sold to retirees or insurance of death and disability benefits outsourced to the insurer. The pension supervisor may also wish to liaise to prevent supervisory arbitrage if insurance companies also sell pension products.

- The securities supervisor may be relied upon to supervise outsourced fund managers or financial instrument valuations.

- The banking supervisor may be relied upon to supervise pension fund custodians, while banking or telecommunications supervisors may have a role in supervising the processes for receiving contributions made using mobile telephony or other nontraditional media.

- The competition authority may have some involvement in competitive markets of relevance to pension funds, not least competition between pension-management companies themselves.

- The tax authority or social security institute may have a key role in ensuring that mandatory contributions are paid over, which may sometimes need reinforcing.

1.4 ▶ The supervisor should share data of material importance with other authorities, the supervised industry and affiliates, subject to maintaining appropriate confidentiality

All pension supervisors should have the legal authority to share information with other relevant agencies, and these agencies should be empowered to share relevant information with the pension supervisor. When a pension supervisor has identified that another agency has a significant risk-mitigation role, it should establish formal arrangements covering data exchange with the other agency to the necessary extent. This may be done through a memorandum of understanding. The arrangements should encompass both routine data exchange and data exchange in a crisis.

As most pension supervisors in the region require supervised entities to submit significant amounts of data, it is only reasonable that, in exchange, the supervisor should publish summaries of at least some of the data, so far as this may assist the supervised industry or its stakeholders. For instance, the supervisor could publish data on numbers of affiliates and portfolio values and compositions. There may also be value in publishing data on costs in a common format. Publishing such data can help entities benchmark their performance or efficiency against others.

Publication of data by the supervisor on its website may also assist participants with choosing between pension funds, where choice is enabled. This may be preferable to reliance on publication by pension-management companies, which are liable (unless regulated otherwise) to publish information in inconsistent formats or methodologies that make it harder to make comparisons. Information should include fees levied on affiliate accounts (brought to a consistent basis where different companies charge in different ways) and longer term investment returns. Supervisors could consider requiring sales intermediaries to use what is published so as to ensure fair play. In that case, they might consider publishing risk-adjusted as well as simple rates of return.

The supervisor can also use Web-enabled communications to nudge affiliates towards increasing contributions by providing forecasts of how much pension an affiliate could expect to receive at retirement and other relevant guidance. Box 4 provides an example.

BOX 4 ▪ **ENHANCING AFFILIATE ENGAGEMENT THROUGH CREATIVE USE OF THE INTERNET (MEXICO)[7]**

Saving voluntarily in a pension fund in Mexico has historically been complex and inefficient. A worker had to go to a banking branch, complete a document, wait in line to deposit and wait up to 6 months to receive information from his/her pension fund administrator regarding that deposit. It was therefore unsurprising that in 2013, 15 years after the system was created, only a very small fraction of people had saved a very small amount of money ($US 800 million).

The supervisor (CONSAR) responded by developing a 'mobility' strategy with three parts:

1. Opening more deposit channels for voluntary savings through synergies with commercial networks in Mexico that could accept small worker contributions (from $US 3) on behalf of the pension fund administrators in an effortless, secure manner.

2. The service website (e-SAR) was revamped so workers could save for their retirement by using their debit card. The saver fixes the amount, frequency and auto-escalation plan, if wanted, of savings.

3. *AforeMóvil*, an app for mobile devices created to complete the 'mobility' strategy, was launched in 2017. It is designed to include and connect Mexican people with their pension fund administrators and to carry out voluntary contributions wherever they may be. *AforeMóvil* also allows children, residents in a foreign country and other workers without an individual account to open one.

These initiatives were accompanied by an aggressive publicity campaign from CONSAR. Some of the results are listed below:

- 450,000 downloads of *AforeMóvil*.
- More than 14,000 accounts of independent workers.
- Voluntary savings have quadrupled in the last 5 years.
- The number of savers who make voluntary savings has grown 350% since 2013.

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7. For more information regarding the strategy followed by CONSAR, please see the document 'The Digitalisation of Mexico's Pension System', part of an IOPS project on the impact of digitalisation on pension supervisors. The IOPS working paper was published around mid-January 2019.

Care should be taken to ensure confidentiality by supervised entities and other authorities, and hence for the security of the supervisory authority's database. In particular, it should not be possible to identify individuals within any published data.

2 ▶Data collection and analysis

The objective of the regular collection and analysis of pension-fund-specific information is to enable pension supervisors to monitor and assess the risk profile of pension funds, respond to urgent issues and plan their supervisory approach.

2.1 ▶ The supervisor should efficiently and effectively obtain the data it needs for monitoring and analysis

All pension supervisors should have sufficient powers to obtain the information they need from supervised entities, covering both routine and ad hoc requirements. This should include obtaining data from outsourced providers, where appropriate.

All supervisors should routinely obtain basic data on all pension funds that they supervise, as a minimum covering:

- participant numbers by type
- assets
- nature of promise
- liabilities (where different from assets)
- contributions
- benefit payments

In addition, it is common practice for supervisors to obtain the annual reports and financial statements of supervised entities. These may provide some or all of the data items specified above but can also provide more detailed information, depending on how their content is specified. Indeed, the supervisor may influence regulation on their content and presentation to facilitate data collection. Given the relatively low risk posed by the finances of pension-management companies, their annual reports and financial statements may suffice for the monitoring and analysis of those entities, although further data on cost structures may be of value to enable the reasonableness of the fees they charge to be assessed.

Supervisors will usually obtain other types of data on a routine basis from all but the smallest entities. In essence, the extent or nature of additional data obtained depends on the nature of the system and the primary

sources of risk. Supervisors of smaller DB funds should routinely obtain data appertaining to the funding status of the funds, providing more detail on assets and liabilities, and probably including triennial valuation reports.

All supervisors of DC funds should obtain data on investment portfolios and performance, net of any fees and charges. Other data may be obtained where particularly intense risks have been identified, such as large contributions to voluntary pension funds that might indicate money laundering or terrorist finance activity, or seriously late contributions where contribution collection is problematic (and a responsibility of the entity concerned).

Supervisors routinely obtain much more data from systemically important entities, such as large DB funds and pension-management companies in mandatory DC systems. It is a common practice within the region for DC fund data to be provided daily and DB fund data at least several times during the year (e.g., quarterly). This can be justified by the scale of the funds concerned, coupled with the potential reputational and financial damage that could be done should errors or bad practices occur. Even so, supervisors should periodically reconsider the extent and frequency of data requirements to check that they remain proportionate to the level of risk. For instance, some supervisors collect data on investment costs less frequently than other investment data, reflecting the limited value that daily data on such costs would add.

These extensive data requirements commonly cover:

- detailed portfolio composition, commonly by type of instrument;

- details of individual trades;

- individual account details;

- details of payments and transfers made out of affiliate accounts; and

- data or detail on complaints made.

All supervisors should, as much as practicable, obtain data electronically. Where data requirements are fairly limited, text or Excel files can be used, but these introduce the potential for transcription errors, which can impair efficiency and corrupt the supervisor's database. Therefore, it is preferable (and essential where data requirements are extensive) for entities to supply data through an automated electronic feed, using a protocol such as XML or SFTP. This, in turn, necessitates close liaison with supervised entities as regards any changes to their, or the supervisor's, IT and communications systems.

To ensure good data quality, where routine requirements are being revised or new requirements are being added, the changes should be carefully explained and justified, and the data sets should be clearly defined. It is good practice to pilot new data-collection arrangements (regardless of their sophistication) in advance to enable any issues to be identified and ironed out. Where changes may necessitate revisions to supervised entity systems, sufficient notice needs to be provided so that changes can be made in an orderly and efficient manner.

Supervisors with less extensive routine data-collection arrangements will commonly need to request information to be supplied by one or more entities for specific purposes, for instance if a particular issue has arisen or to support a thematic review (see paragraph 108 below). All supervisors, however, may sometimes need to initiate a special data-collection exercise, especially in advance of an in-depth evaluation. Supervisors should

of course ascertain that they do not already hold the information. Often such exercises will involve obtaining documentary evidence, in which case it is preferable for the documents to be obtained and filed electronically so that they can be associated with other data held on the entities concerned. If the exercises are extensive, there may be value in them being clearly explained and piloted (see paragraph 60 above).

Examples of information that may not be obtained routinely but is commonly collected when needed include:

- minutes of board or board committee meetings, along with associated papers;
- strategies, plans and policies, and documents relating to their revision or implementation;
- manuals and desk instructions;
- documentation supporting significant investment transactions;
- documentation relating to IT systems, including logs or testing documentation, and to business continuity plans;
- documentation relating to any bonuses paid;
- internal audits or other assurance reports, for instance from the regulatory controller; and
- risk management documentation.

Particular issues arise where pension-management companies use sales agents or brokers. In such cases, supervisors routinely obtain data to enable intermediaries to be registered and to check that they are fit and proper. More detailed information could be obtained on their activities, where these are seen to pose a serious risk to the system's reputation or smooth functioning, although specific action against noncompliant intermediaries may not be the most efficient approach to address such issues. But, at least one supervisor in the region routinely obtain substantial amounts of data to enable their activities to be intensely monitored.

2.2 ▸ The supervisor should pre-empt and address deficiencies in the timeliness and accuracy of the data it receives

The data analyses obtained by supervisors can only be as good as the quality of the data received. It is therefore important that all pension supervisors institute procedures to validate these data. Indeed, monitoring and validating data submission are themselves supervisory tools, as delays and errors can be indicators of underlying process, administrative or governance issues at the entities concerned. Problems encountered should therefore be logged and form an input to the supervisor's risk assessment or model.

Data integrity is best checked using bespoke software to identify inconsistencies or unusual items. Further checks, including of the systems used to generate the data, can be undertaken as part of in-depth evaluation. If supervisory monitoring discloses actual or potential errors or omissions, the supervisor should respond promptly by following up with the entity concerned and require rapid correction to the data and remediation of processes. Supervisors should also follow up on all instances of late data submission to discover the reasons, which may help to identify administrative weaknesses. They may also follow up these problems as part of their in-depth evaluation of the entity concerned.

Supervisors should be empowered to levy sanctions if data is submitted erroneously or late and should consider threatening or applying such sanctions in the event of persistent or serious delay or unreliability in data submission.

All pension supervisors should also require entities to promptly report significant changes to the data they hold that is not subject to frequent routine reporting.

2.3 ▸ The supervisor should analyse data so as to assess risks to its supervisory objectives

All pension supervisors should consider how data obtained off-site should be used to analyse the risk level (including the risk of regulatory noncompliance, where relevant) or indicate potential deficiencies in risk mitigation. Data analysis should be undertaken at two levels: system-wide and entity specific.

The available data should inform the aggregate-level assessment of the system risk landscape, to enable the assessment of inherent risks and prioritisation and devising of supervisory strategies. Key risk indicators should be identified for that purpose. They could include the extent of DB funding deficits, level of fees and charges, investment returns, extent of diversification, quality of service and extent of market conduct issues. The indicators could identify entities with the highest level of risk (possibly taking account of entity size as well). As far as possible, the indicators used should relate to outcomes of the pension system. Hence, for instance, the inherent risk of late or inaccurate benefit payments could be estimated from the measured incidence of actual wrong or late payments or from affiliate surveys about the receipt of such payments, rather than any assessment of the quality of payment processes.

While much of the data used for system-wide risk assessment can be derived by aggregating entity-specific analyses, other sources of aggregate data may also be used. For instance, demographic data may assist with analysing pensions' coverage or adequacy, whilst surveys of the public or affiliates could be used to assess reputational issues or the perception of actual experience. If the supervisor has a research department, it may lead many of the analyses to enable survey tools to be used, other data sources to be tapped and analytical projects to be performed. This may also facilitate the publication of information to help influence the public, politicians or opinion-makers towards desirable societal or legislative changes.

Most data analysis, however, is primarily undertaken to assess risk exposure and mitigation at individual entities. Such analysis can be undertaken to provide early warning of serious risks, identify other failures that can be immediately addressed and inform in-depth evaluation. In deciding which analyses to undertake and to what depth, supervisors should be mindful that analysing and managing risk are the primary responsibilities of pension funds themselves. Hence, the objectives of the analysis may be best achieved by ensuring that management know which analyses they should undertake, coupled with supervisory review of the results, either off-site or as part of in-depth evaluation.

Some analysis may therefore be restricted just to entities that pose the highest risk, either because the supervisor cannot rely on the entity's own risk management or the work of other supervisors or because the entities are systemically important. For instance, the analysis of the best execution of investment transactions

may be a responsibility of the stock exchanges; it may be controlled by the pension-management company's risk-management function, subject to supervisory scrutiny (during in-depth evaluation); or the trades may be specifically monitored and checked by the supervisor, as is common in the region, where there has been experience of badly executed trades.

Depending on the context in which the supervisor is acting and the potential risk exposure of the pension funds being supervised, data analyses could include the following.

- **Compliance analysis:** checking whether the fund complies with legal obligations and its own governance requirements; for instance, compliance with quantitative investment limits or restrictions on asset classes; compliance with regulations for calculating benefit entitlements, payments or transfers for fund participants; compliance with significant requirements regarding reporting to key stakeholders; and compliance with requirements relating to the extent or accuracy of information disclosed to prospective or current participants.

- **Investment analysis:** probably the most significant analyses for the mandatory DC funds, for which very extensive analysis is desirable (see below). For all types of funds, the checks of compliance already referred to can be augmented by comparative analysis of gross and net (of fees) investment performance and risk exposures. These analyses primarily inform in-depth evaluation of the investment-governance process and, for DB funds, the risk exposure of actuarial valuation assumptions.

- **Governance analysis:** checking whether the entity's governance is aligned with regulatory and supervisory expectations regarding good governance processes – for instance, that the governing board is suitably qualified; that relevant transactions are approved at a senior enough level in accordance with the entity's policies; that the entity's risk-management systems are functioning as intended; that external service providers are being appointed, monitored and, if necessary, replaced according to proper and approved policies; and that reports of internal audits and other internal and external assurance functions provide appropriate coverage of risk and are actioned in a timely and appropriate manner.

- **Operational analysis:** checking whether the risks in key operational processes are being managed – for instance, that contributions are being received on time with delayed contributions followed-up effectively; that participant and asset records are being reconciled between the entities/departments involved in relevant functions; that payments and transfers are being made on time; and that complaints are being logged and appropriately followed up.

- **Market conduct analysis:** for all funds, checking that the right information of sufficient quality is being communicated to affiliates (in terms of accuracy and tailoring to the understanding level of affiliates) and that this information reaches all affiliates. If funds operate in a competitive market, the checks extend to communications with prospective affiliates to determine whether communications are misleading and whether there is evidence of other abusive sales practices.

For pension-management companies responsible for mandatory DC accounts, much more extensive investment supervisory analyses are possible and may well be proportionate to the level of financial and reputational risk exposure. Some additional analyses may also be justified for large or systemically important DB funds.

Analysis should be even more extensive if multi-funds are used to limit the risk exposure of retirees. While not all DC systems in the region mandate multi-funds as yet, this will need to change as the systems mature and the number of retirees, and their account balances, become significant. The supervisor of a multi-fund system should analyse not just the performance and risk in each portfolio but also the way the funds align with each other so as to minimize the exposure of affiliates to losses when they change portfolios or exit the system at the default ages for transferring or exiting. To be able to do this, the strategy for every multi-fund (except perhaps the least conservative) should ideally have a target for volatility (risk) exposure in addition to the target portfolio composition.

Supervisors can consider additional investment analyses that can include:

- **Analysis of portfolio composition and performance against benchmark:** including identifying deviations from the strategy of each fund that exceed specified or reasonable tolerances and also considering whether the manner in which the strategy has been implemented adds value. For instance, have tactical variations from the benchmark portfolio that are explicit or implicit in the strategy produced better results net of costs than passively investing in line with the benchmark? If funds are not required to specify a benchmark portfolio, the supervisor should still be able to construct one based on the target strategic asset allocation in the fund's investment policy.

- **Comparative benchmarking:** assessing the suitability of investment strategies by benchmarking performance, between the equivalent funds of the various pension-management companies. The analysis can include risk-adjusted performance and should have a particular focus on longer-term performance, on the assumption that strategies should not change that much that often. The supervisor can also develop its own benchmark for this purpose to further illuminate performance, but this must be sufficiently crude, and used with sufficient discretion, that it avoids becoming the default portfolio for the market.

- **Performance and risk attribution:** the purpose of this type of analysis, which pension-management companies should ideally undertake themselves, is to understand the underlying reasons for variations in performance so as to inform questioning of the investment strategy being followed. This can be combined with analysis of performance against benchmarks.

- **Portfolio market volatility analysis:** checking whether the observed volatility for each fund is consistent with risk-management targets, particularly within a multi-fund structure in which the volatility level is expected to vary markedly between funds. The level of market risk and credit risk exposure and of portfolio diversification can also be checked against benchmarks or risk budgets included in the investment strategy. Various risk-assessment techniques such as value at risk (VAR) can be used.

- **Duration analysis:** comparing the duration to maturity of assets in portfolios with the average length of time that affiliates invested in those funds can be expected to remain in them. This can provide a rough and ready comparative analysis of the suitability of different investment strategies, especially if more sophisticated analyses are not being undertaken.

- **Stress testing and other model-based testing:** testing the exposure of investment performance to risk. At its simplest this might be back-testing (estimating how the current portfolio would have performed in earlier market conditions). More advanced analysis can use deterministic or stochastic (e.g., Monte Carlo)

stress tests. It is preferable that each fund has a tangible longer term performance objective against which performance predictions from testing can be compared. Indeed, with an objective in place it is possible to use asset liability modelling (ALM) analysis for DC funds to compare the resilience of different port-folios. Supervisors of larger DB funds should expect to see ALM being used by the fund or its advisers.

- **Investment trades:** checking whether trades (individual or aggregated) appear consistent with the investment strategy and fund manager's mandate and are executed as authorised and at fair value. Analysis can, where appropriate, be targeted at identifying trading staff or brokers who are deliberately executing transactions for personal gain.

- **Credit risk policy implementation:** checking whether the credit or counter-party risk exposure is being managed according to good practice and the fund's policies. This analysis can be informed by a com-parative analysis of the extent of investment diversification.

- **Liquidity risk management:** checking whether the level of liquid assets in the portfolio is consistent with the fund's liquidity needs and policy.

- **Derivatives:** checking whether derivative transactions are legally compliant, properly authorised, achieve their objectives and do not expose the fund to excessive market or counter-party risk.

- **Valuation:** checking whether instruments have been correctly and consistently valued, especially where they are marked to model (as is common where markets are insufficiently deep or liquid for reliable market-based pricing).

In addition, supervisors of DC funds should analyse the level of fees to consider whether these have been falling consistently with the growth in the assets under management or whether there are reasons to believe that they are excessive. This should involve some analysis of the cost structure of the pension-management companies or fund administrators, although the sophistication may vary according to market circumstances. If a competitive process is relied upon to keep charges and costs under control and this has not been occur-ring in practice, the supervisor needs to consider the reasons for market failure and the full range of remedies available, which may include changes in processes, market structure or regulation.

For DB funds, the level of funding and the robustness of fund valuation. Hence, supervisors should analyse the level of funding and reasonableness of any deficit recovery plans having regard to sponsor strength and commitment. Supervisors should also analyse the assumptions and methodologies used in valuing liabilities (and assets where relevant) in deriving the funding level to the extent that they consider that they may pose a risk. Supervisors may also undertake sensitivity analyses (stress tests) on the resilience of funding levels and may analyse the extent of asset liability matching within investment portfolios.

Pension funds and their regulators and supervisors are increasingly concerned that investment portfolios take into account Environmental, Social and Governance (ESG) factors[8]. This is in part because investments

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8. For instance, in the UK, the regulator, Department of Work and Pensions, in late 2018 updated the Occupational Pension Scheme (Investment) Reg-ulations to require pension schemes to have a policy on how they consider financially material factors such as environmental, social, and governance factors, including climate change. This is intended to remove lingering confusion over trustee's duties to consider ESG factors. Climate change, as an ESG issue, has been deliberately drawn out to focus minds on its 'systemic and cross cutting nature'.

in companies contributing to environmental damage, including climate change, social distress (such as from bad working conditions), or which are badly governed, are seen as being at risk of impaired performance over the longer term. Such investment is also likely to be of concern to an increasing number of affiliates, especially younger ones, who object to their mandatory pension saving being invested in such companies. To help mitigate longer term credit and reputational risk, supervisors may, therefore, wish to issue guidance to pension funds and management companies in reviewing the investments against ESG criteria and appropriate responses where it appears them may not be acceptable to or for affiliates in the longer term[9].

If the supervisor uses a formal risk-scoring methodology, the analysis results should be used as an input to the risk scores for each entity, as indicated under the next Guideline.

2.4 ▸ The supervisor should use available data to regularly assess the risk of supervised entities, proportionate to their scale and importance

All pension supervisors should have a means of identifying which entities pose the highest risk to their objectives, so that they can plan in-depth evaluations and decide upon the appropriate level of supervisory response to problems found (covered in detail under Guideline 3). Creating such a risk profile requires the supervisor to make some assessment of risk at each entity for each (inherent) risk category identified as being critical by supervisors in their strategic analysis. To be able to do this, all supervisors should define key risk indicators for each risk factor at each entity on the basis of the data available from each entity.

It is preferable to use two-dimensional entity risk indicators, using impact and probability dimensions. Impact assessment often tends to be subjective, especially as it should take account of reputational and financial impacts. Risk factors commonly assessed fall within the following categories.

- **Funding-related risks:** risks associated with there being insufficient reserves to cover payments out of DB or hybrid plans as they fall due; relating to solvency, sponsor covenant, valuation, longevity increase and overestimated investment returns.

- **Investment-strategy-related risks (incorporating market risk):** arising from strategies which do not attempt to achieve an optimal balance between risk and return, resulting in strategic asset allocations of a DC fund or multi-funds that are inappropriate to the age profile of affiliates or asset allocations in a DB plan that insufficiently match the profile of liabilities. This category also encompasses failures to ensure that strategies are effectively implemented.

- **Credit and counter-party risks:** these risks relate to excessive exposure to issuers or counter-parties bearing in mind their credit strength or associated insufficiency of diversification, such that the fund may experience permanent or prolonged losses.

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9. Further guidance can be found in the (currently draft) guideline issued by the IOPS on *"the integration of ESG factors in the investment and risk management of pension funds"*.

- **Liquidity risk:** the risk that there may be insufficient liquid assets to prevent forced selling of other assets (and hence losses) when the fund has to make net payments out.

- **Investment-execution risks:** risks associated with tactical investment decisions, trading or settlement being undertaken in a way that does not best serve affiliate interests.

- **Operational risks:** risks of poor service or losses to affiliates arising from the lateness of contributions; the accuracy or timelines of payments and transfers; data theft or corruption; and fraud or financial crime, or failures in IT or business continuity. It can also include risks associated with the viability or collapse of pension-management companies. This is a fairly diverse list and supervisors would often be well advised to subdivide these into several categories.

- **Market-conduct-related risks:** risks associated with poor interaction between pension funds (or management companies) and their affiliates, such as unclear or inadequate communications, slow responses to requests and queries or poor complaint and dispute handling, as well as misleading or abusive sales and marketing practices.

The four investment-related risk categories may be combined into one or two broader categories. Note that the above categories exclude systemic risks relating to coverage, adequacy, system reputation, excessive charges or ineffective or wasteful competition, which are assumed not to be significantly mitigated at the entity level. In some circumstances, the supervisor might wish to include some aspects of these risks at an entity level; for instance, the risk that pension-management companies fail to market their voluntary funds effectively (potentially affecting adequacy and coverage) or are incurring excessive costs where these relate directly to charges levied to affiliates.

The list of categories in paragraph 82 above also does not specifically cover IT risks, on the basis that IT problems only impact affiliates significantly if other failings exist. But, in defining the risks that can be mitigated at entities, supervisors should be very aware of the effects that digital transformation may have. For instance, if new pension initiatives are aimed at the informal sector, the risks associated with the nonremittance of contributions may increase, necessitating a specific risk category of its own. The increasing exposure to cybercrime may, however, justify a risk category of its own.

If there is a relatively large number of relatively small entities, a few key risk indicators should suffice, which might even be combined to produce a single risk rating for each entity. This approach may extend to pension fund intermediaries as well as small pension funds. When risk indicators are combined, care should be taken to ensure that what is measured is what matters most for achieving the supervisor's objectives and that combining them is meaningful. For instance, if a supervisor of DB funds is primarily interested in funding risks, it is perfectly legitimate to combine various indicators relating to funding risks into a single rating. Similarly, if a supervisor of pension-management companies is focusing only on investment-related risks, the indicators relating to investment could be combined.

However, supervisors of systemically important entities are most likely to be concerned about several distinct risk categories. In this case, combining investment risk indicators with those relating to operational or market conduct risks is unlikely to be meaningful – it is quite possible for an entity to perform well against one risk

category and badly against another, in which case combining indicators for those risk categories would produce a fairly meaningless average. Several supervisors in the region have separate teams for financial (investment), operational and market conduct risks, in which case it may be possible for each team to derive a single rating for each entity combining assessments of the related risks for which they are responsible. For a supervisory overview, or where there are not such separate teams, the supervisor needs to use several high level ratings for each supervised entity. These would, for instance, help the supervisor to determine the extent of in-depth evaluation at each entity in the forthcoming year, in relation to each major category of risk. If, however, the supervisory strategy is that there should be an in-depth evaluation of every major risk category at every entity every year, then high-level ratings may have limited value for planning purposes.

From the above considerations it can be seen that risk indicators take one of three forms:

- measures of the seriousness of a risk across the pensions system, which are not entity specific, already covered under Guideline 1, which indicates the weighting to be given to different risks

- off-site (quantified) indicators of the level of risk (or compliance failure) at an entity, and

- the assessment of the quality of risk mitigation at entities obtained through in-depth evaluation.

In general terms these relate to each other through the formula:

residual risk = inherent risk – risk mitigation.

The definition of inherent risk varies according to the adopted methodology. Indeed, problems with applying the concept of inherent risk underlie some methodological challenges experienced by pension supervisors. This is especially so as the definition tends to vary between DB and DC.

- For DB funds, it is self-evident that the risk that the pension promise will not be met is paramount. Inherent risk is assessed at each entity using metrics relating to funding level, and these can be combined with an assessment of the quality of mitigation processes, largely governance related, to produce a residual risk rating. Investment risk is commonly assessed in terms of the extent to which the portfolio exacerbates funding risks. If a DB supervisor is seriously concerned about the extent of operational risk, the assessment methodology may more resemble the methodology for DC funds, or the supervisor may use one or two simple metrics, such as complaints or other issues revealed in off-site data, to generate the inherent risk assessment.

- A similar approach may be followed by the supervisors of smaller DC funds, where a few off-site metrics, such as investment performance, data accuracy or complaints, are used to provide a rough and ready inherent risk indicator for each fund.

- The supervisors of DC pension-management companies are concerned with a wide range of risks, some of which have a much higher inherent risk weighting than others. An immediate complication is that the risk factors which can be assessed off-site may be distinct from the risk-mitigation processes examined as part of in-depth evaluation and may not map 1:1. For instance, credit risk may be mitigated by asset diversification within the investment strategy process, specific credit risk assessment and vetting processes, or the risk-management unit, with each of these processes being evaluated separately.

Similarly, the investment strategy process may help to mitigate several different types of investment risk, as might the risk management function. So, a full assessment of, say, credit risk at an entity would need to combine the results of several different mitigation assessments. In practice, supervisors restrict inherent risk assessment to system-wide analysis of risks and take account of entity-specific analyses in their assessment of residual risk although an alternative approach would be to weight the inherent risk of each risk factor for each entity. For instance, although a data analysis that indicates errors in benefit payments could be used to rate the inherent operational risk at each entity, it is instead commonly input to the evaluation model to inform the assessment of procedural or control deficiencies as part of in-depth evaluation of residual risk.

Common practice, therefore, is for supervisors to derive an assessment of risk at each entity by account for risk mitigation as well as inherent risks. To do this, they need some kind of model, preferably two-dimensional. This can be relatively simple. For instance:

- The supervisor of DB funds could assess the risk that benefits will not be paid when due by plotting the actuarial surplus or deficit (as a proxy for impact) against the strength of valuation assumptions (as a proxy for probability), ideally using an absolute rather than percentage figure for actuarial surplus/deficit so that larger funds are likely to be rated as having higher potential impact.

- If a supervisor supervises DC funds or pension-management companies of a similar size, fund size is not a relevant attribute. Other measures of impact could be used. For the investment risk category, the impact dimension could relate to net real terms investment performance. In that case, the probability dimension could use measures of prospective risk exposure such as the level of diversification, exposure to higher risk instruments, or a measure of the quality of investment governance, if available.

Supervisors of mandatory DC systems, where all the pension-management companies are systemically important, need a more sophisticated model that reflects the large number of disparate risks that are of concern to the supervisor and the need for rigorous analysis to justify their decisions. In particular, the model commonly includes:

- formal 2-dimensional definitions of all the inherent risks;

- measures of inherent risk based on judgment of impact and data on probability – by entity type where there are many, or by entity where a few are systemically important;

- metrics (indicators) to measure key inherent risks;

- methodologies for assessing the quality of risk mitigation by entities, either by risk factor or key process;

- a methodology for combining the assessment of risk mitigation with inherent risk factors so as to derive a rating of residual risk for each risk factor or key process;

- a methodology for assessing governance quality, and possibly other transversal mitigations within the residual risk assessment model; and

- a methodology for using residual risk assessments to help determine a proportionate supervisory response.

Transversal mitigations refer to assessments that relate to the whole entity or substantial parts of the entity, rather than the specific risk-mitigation processes being assessed. Most commonly, they refer to an assessment of an entity's corporate governance. They can also be used for an overall assessment of IT security and system controls, or an assessment, by process category (e.g., investment) of internal audit or the regulatory controller.

The model may often take the form of a matrix with processes running down the y-axis cross-cut with factors relating to inherent risk, specific risk mitigations and transversal mitigations. Figure 1, below, provides a generic example. A formula embedded in the matrix combines these factors to give the residual risk rating for each process. These ratings can then be combined to give an overall rating for the risk category. Here are some items in Figure 1 that merit further explanation.

- Processes are defined as discrete systems or sets of procedures that mitigate risks and that can be assessed as a single unit; for instance, the investment strategy formulation process or the process for paying benefits (or a particular type of benefit).

- The 'inherent risk weighting', as shown, is a composite weighting that reflects an analysis of the seriousness of the inherent risks relevant to each process. Quite commonly, this column is expanded into multiple columns so that there is an intersection between each inherent risk category and each process, taking account of the relevance of the risk to each process — although there would then usually be a final column giving the composite weighting of inherent risk for each process. For instance, inherent credit risk might intercept with processes for assessing and managing credit risk, investment strategy formulation and investment strategy implementation, but maybe the first of these would be assessed as being more relevant than the others (weighted higher).

- The 'transversal risk mitigations' are as explained in paragraph 91 above. In this case, the first one might be governance and the second internal audit or regulatory controller. There might then be a column summarizing the assessments of inherent risk(s) and global component(s) to give an assessment to help the supervisor decide which processes require in-depth evaluation. However, if inherent risk is low and the global components good, then the supervisor might conclude that examining the specific risk component would not add sufficient value to the evidence already obtained to be justifiable.

- The 'specific risk mitigation' relates to the assessment of how well the process is controlling the inherent risks relevant to the process concerned.

- Net risk is a mathematical combination of the components relating to each process.

- The exemplar matrix has been colour coded and scored in a way that demonstrates how assessments might combine to give net risk, but this would in practice depend on the formulae embedded in the matrix. It may be possible, as in this example, for poor transversal assessments to increase residual risks.

- The overall net risk colour/score for the risk category could have been obtained by averaging the inherent risk and risk-mitigation scores, in which case it would have been given yellow/1.75. In this example, however, it is assumed that the worst score is used.

FIGURE 1 ▪ **EXEMPLAR RISK MATRIX**

RISK CATEGORY 1	INHERENT RISK WEIGHTING	RISK MITIGATION: TRANSVERSAL 1	RISK MITIGATION: TRANSVERSAL 2	RISK MITIGATION: SPECIFIC	NET RISK
PROCESS 1	4	0	-0,5	-0,5	3
PROCESS 2	3			-0,5	2
PROCESS 3	2		+0,5	-1,5	1
PROCESS 4	1			0	1,5
OVERALL FOR RISK CATEGORY					3

In practice, these factors can be scored, calibrated and combined in many ways, but how this is being done should be made clear to all staff involved. When the model is being developed, it is important to check the calibration against what is intuitively expected by testing various scenarios and making suitable adjustments. In particular, it is important to avoid the situation where all or nearly all the entities or risks have similar ratings because there is insufficient differentiation between 'good' and 'bad'. This is a particular risk where odd-numbered scoring systems are used where there is a tendency to drift to the middle.

One other important point to note is that evidence on the impact or outcomes of risks materializing should be factored in within the model to retain the two dimensions of impact and probability. Hence, for instance, analysis that shows some particular investment or operational detriment to affiliates should be combined with assessments of the mitigation that should have prevented such events to give a worse rating (unless the data has already been used to modify the entity's inherent risk).

2.5 ▶ The supervisor should appropriately and proportionately respond to the queries, issues and risks identified or indicated by its analysis

Issues and risks identified through analysis can range from minor matters that can be logged for possible consideration during in-depth evaluation through to serious matters demanding immediate attention. All pension supervisors should have a clear, defensible policy for deciding on the appropriate level of response. This could take the form of a 'traffic light' approach with red indicating immediate response, yellow indicating follow up with the supervised entity and green left until in-depth evaluation. Supervisors also need the power to act (e.g., by issuing instructions) on red and yellow risks even if they have not materialized (and hence where the detriment to affiliates is prospective and not actual).

In any case, all supervisors should have a policy and mechanism for responding to serious problems disclosed or suggested by off-site analysis. This necessitates a rapid response capability so that issues can immediately be investigated and if necessary intervention put in place. For instance, if the analysis gives rise to suspicions of fraud or other financial crime, the supervisor should be prepared to require the entity to suspend relevant staff immediately or even insert its own manager to assume control until the risk has been averted.

The supervisor therefore needs to have frequently checked early warning indicators in place that would raise the alarm should a serious risk have materialised or be about to materialise. This is an important justification for obtaining data on a daily basis, but this frequency can only be justified if the appropriate analyses and response mechanisms are in place to enable rapid early warning. Examples of early warning indicators would include:

- reconciliations (or verification on entity reconciliations) of (DC) affiliate records and asset records

- checks that quantitative limits or other regulatory restrictions on asset classes in portfolios have not been actively breached, or

- sudden changes in the level of contributions into, or payments out of, the fund.

The supervisor should have a policy for determining the response to less serious problems indicated by the analyses, identifying which types of issues can be left to be followed up during in-depth evaluation. For instance, an investment transaction that is inconsistent with the pension fund's investment strategy could flag the need to evaluate how controls over investment trading work in practice during the next on-site inspection and/or result in key staff being interviewed about the reasons for the apparent control failure.

3 ▶ In-depth evaluation of risk mitigation

The objective evaluating supervised entities in-depth, which may be carried out at pre-determined intervals or as required, is to enable the supervisor to gain deeper insights into a pension fund's situation and detect problems that may not be obtained or uncovered through off-site monitoring and analysis.

3.1 ▶ In-depth evaluation should focus on assessments that cannot readily be done off-site, such as on the governance of supervised entities, the operation of high-level assurance functions and how control procedures operate in practice

The most common form of in-depth evaluation is an on-site inspection, which all pension supervisors across the region undertake, to a greater or lesser extent. The concept, however, can also include interviews undertaken electronically or at the supervisor's offices and 'surveillance', in which transactions or processes are remotely monitored to a depth otherwise only achieved on-site.

The focus of in-depth evaluation is on the actions that the supervised entity takes to mitigate risks, including the risk of regulatory non-compliance. This may include the supervisor examining specific transactions to help draw conclusions or to provide evidence of significant failures. Traditionally, such evaluations also included reviewing data or documents not available on-site, but most supervisors in the region obtain much of this remotely. Nonetheless, in-depth evaluation may encompass reviewing the processes used to generate data relied upon for off-site analysis.

An assessment of how much reliance, if any, can be placed on the entity's governance is an important element in evaluating in-depth how well supervised entities are managing the risks of concern to the supervisor. Although supervisors commonly treat governance as a means of mitigating other risks, it is important to recognise that it is also a risk in itself. A badly governed fund can place affiliate benefits at serious risk. Indeed, most major failures by financial institutions ultimately arise because of poor governance, sometimes criminally so.

All pension supervisors should therefore seek to assess governance, including high-level assurance processes, and risk management within their in-depth evaluations. At a minimum, this should include evaluating the fitness and propriety of board members and senior staff as well as minutes and relevant policy papers and documents – which can be undertaken off-site in preparation – along with interviews with key figures such as board chairmen and the CEO/general manager. A more extensive review could include other board members (especially any independent members); the heads of high-level assurance functions, such as risk management and internal audit; and the regulatory controller. Chairs and perhaps members of significant board committees

can also be interviewed. Such interviews should concentrate on what these individuals have actually done to properly discharge their responsibilities. In so doing, the supervisor can also obtain evidence to help assess specific risk-management processes, as indicated in the next paragraph.

The assessment of governance can focus, in particular, on the following types of issues.

- **Whether decision making respects the governing board's fiduciary duties.** In particular, have decisions been tainted by conflicting interests, or have these been well and transparently managed? This might be relevant to decisions on implementing investment strategies or funding DB promises.

- **Whether the organisation is well structured** in such a way that board members and managers who have sufficient propriety, experience and knowledge take the right decisions at the right time. This might be relevant for checking that the board and its committees have made effective and informed inputs into investment or funding decisions.

- **Whether the governing board is providing sufficient strategic leadership and monitoring strategy and policy implementation,** including having the right strategies and policies based on the right data, and reviewing and responding to the right performance data and indicators. This is most obviously relevant to investment governance but might apply also to marketing and service quality policies.

- **Whether risk management and internal control have a reliable structure,** with the internal control framework designed to enable identified risks to be managed as well as effective escalation of and response to issues as they arise, led from the top of the organisation. This is obviously relevant to risk management, including operational procedures relating to investments, but could equally apply to operational risk management.

- **Whether there are effective high-level assurance units/personnel,** such as a risk-management unit, auditing, an independent actuary (for DB funds) or a regulatory controller which are sufficiently independent and have license to review and report objectively and at a high level on the quality of risk management and internal control. The governing board also needs to take risk management seriously. Providing such assurance to the governing board can significantly strengthen the reliance that the supervisor can place on entity-risk and control frameworks.

- **Whether there are sufficient and effective transparency and accountability,** of the entity to its affiliates, prospective affiliates, the supervisor and other stakeholders. This may be particularly relevant to the assessment of market-conduct-related risks.

Assessing the entities' high-level assurance functions can be particularly valuable for reducing the amount of work the supervisor must undertake. In particular, many systems within the region require entities to appoint a regulatory controller, who is required to notify the board and the supervisor of any compliance failures found. If this role is diligently executed, then the amount of testing for compliance with regulations can be greatly reduced. The key test is whether the supervisor can find any failure of significance that has not already been drawn to the attention of senior management or the board. If the supervisor does find such failures, it should also log the failure as a governance failure and treat it with particular gravity.

A particular concern across the region is the extent to which supervisors can expect governing boards to focus on their fiduciary duties to affiliates, given that they are only trustees under trust law in Jamaica. Regulatory frameworks in civil law jurisdictions usually establish and specify fiduciary duties for governing boards, although for commercial entities, board members inevitably owe some duty to their shareholders. One way of strengthening the board's recognition of fiduciary duty is for the supervisor to agree upon guidelines with the industry that set out the implications of fiduciary duty in the context of good governance practices. The supervisor has in its favour the fact that governing boards are unlikely to publicly deny that they take their fiduciary duties seriously. Nonetheless, civil law countries need to be more specific about what fiduciary duty entails, either through regulation or guidelines.

In any case, supervised entities should have some incentive to discharge their fiduciary duties, to the extent that their objectives are aligned with the supervisor's. For instance, pension-management companies must remedy failures in systems and data from their own, or their shareholders', resources. This provides a financial incentive to ensure that systems function effectively and reliably and that data is not corrupted. This incentive is strengthened through effective competitive or regulatory discipline restraining the administrative and investment costs that companies can pass on to affiliates in the form of fees. Transparency and publication of investment returns and losses should provide some incentive to achieve good results, although in practice, this incentive has been effective mainly in jurisdictions where there is a financial penalty for relative under-performance (although such penalties can have undesirable side effects). Finally, another means of reinforcing fiduciary responsibility and the alignment of incentives where other financial incentives are deficient or ineffective is to levy fines.

Supervisors can obtain further value from interviews by structuring their assessment of governance around key risks that are mitigated by governance, such as risks associated with the investment strategy or (for defined benefit and hybrid plans) the funding policy. Structured interviews with board members, (other) senior management and the heads of key assurance functions can play an important part in the evaluation. It is good practice for the assessment methodology for governance to be structured in the same way as the guidance provided to the supervised entities is.

Beyond assessing governance, in-depth evaluation also enables supervisors to assess whether control systems are working effectively. To do so efficiently, the supervisor should first map and analyse how each control system is intended to function within each process being assessed, while identifying the key controls on which the entity and the supervisor should be relying. The documentation of processes in this way should be retained in the supervisor's manual or electronic library. The key controls can be tested by interviewing the staff operating them and watching them process several transactions (walk-though test).

In-depth evaluation can also form an integral element within a thematic review. Such reviews involve off-site analysis and in-depth evaluation to explore the risk's nature in detail and identify potential solutions. Guidance or regulation is then developed to change incentives or clarify good practices. After this is issued – or indeed, sometimes during the development phase – further targeted in-depth evaluation is undertaken to obtain evidence of improvements being made and their impact on the underlying risk.

Thematic reviews are commonly undertaken where a supervisor has identified a potential new or heightened risk to its objectives. For instance, some supervisors, such as in Mexico, have increasingly identified deficiencies in the quality of services provided by pension-management companies and have undertaken reviews to ascertain how supervision can induce improvements in standards. Alternatively, a supervisor may wish to check that a significant issue found at one entity is not replicated at others. Box 5 provides a different example of what could be termed a thematic review.

BOX 5 ▪ **THEMATIC REVIEW ON STREAMLINING THE HANDLING OF RETIREMENT CHOICES BY AFFILIATES IN PERU**

The supervisor in Peru identified that the cumbersome processes for enabling affiliates to choose a retirement product, other than cash, at retirement were placing a barrier in the way of such choices and effectively incentivising cashing-out. This was not an outcome that the supervision wished to see, given its potential impact on the adequacy of retirement income. The review started by examining the procedures required by regulation and how they were implemented in practice. Working with the pension-management companies, the supervisor then identified regulatory and procedural changes that would facilitate choice, such as by eliminating options that were rarely chosen in practice. This contributed to revised regulation which provided both for streamlined procedures and ease of supervision of the new procedures. Finally, the effects of the changes were monitored off-site and through targeted on-site inspection.

3.2 ▶ The supervisor should use IT interrogation and surveillance where this enables a more effective or efficient assessment of supervised entity processes to mitigate key risks

The increasing use and sophistication of IT can potentially change how in-depth evaluation is undertaken, in several ways:

- The supervisor may need to review new systems prior to implementation to ensure they provide for effective control and an effective audit trail, and that they function as intended, particularly where there is no longer any 'paper trail'. The supervisor may need to deploy IT expertise for this purpose and may need to review system documentation, testing programs and results.

- If control processes are themselves embedded within the software, it may require the supervisor to develop interrogation software or implement the controlled use of test data to check for less usual circumstances in which the system might not operate as intended, or for invalid data types (such as negative or duplicate affiliate balances).

- The use of IT feeds from pension-management companies can allow the supervisor to apply surveillance to large number of data items, to provide a diagnostic of failures in the assessed processes, with failures

being followed up as appropriate to ascertain whether they indicate a significant failure in control or high-level assurance; see below.

Surveillance is a form of in-depth evaluation that can be undertaken off-site by checking and analysing the data that is continuously communicated to the supervisor and making use of sophisticated data feeds from the entity's own systems. Applications within the region have included:

- Evaluating the accuracy and timeliness of benefit payments by reviewing data submitted on all benefit calculations, where the risks (in terms of both probability and impact) are particularly high. This is because the calculations are particularly complex; for instance, state top-ups may have to be added, and affiliates' retirement income can be directly impacted, causing financial distress and reputational damage. This is obviously an activity in which more sophisticated IT, possibly including machine-learning, can reduce the risk of error and automate the review process.

- Evaluating the conduct of investment executions and settlement processes in which some grounds for concern exist that trades have, in potentially various ways, been deliberately transacted at the wrong price for personal gain. This is a particular risk where transactions are not undertaken in markets that are deep and liquid. Prices can be compared with the original bid and third-party pricing data as well as with other transactions at roughly the same time. Such data-driven surveillance can be supplemented by relevant telephone or email exchange logs to check that transactions were fully at arms' length. Of course, in some jurisdictions, including some in the region, securities supervisors undertake these types of surveillance.

- Monitoring the activities of intermediaries; see Box 6.

BOX 6 ▪ SURVEILLANCE OF PENSION INTERMEDIARIES (MEXICO)

The supervisor has been very concerned about overactive commission-driven pension intermediaries using improper means to persuade affiliates to switch from one pension-management company to another, sometimes enabling some pension accumulation to 'leak' from the system. In response, it has introduced software that enables all transactions to be visible within a few hours, including the details of the intermediary concerned. Irregular and suspicious transactions can therefore be picked up very quickly and remedial action can be set before too much damage has occurred.

Because surveillance is a resource-intensive activity, it should be restricted to the evaluation of the risks in processes which are prone to error or where errors are intolerable (probably for reputational reasons) and where continuous surveillance can identify and remedy problems much faster than waiting for on-site evaluation. Ultimately, the supervisor might hope that changes to regulation or incentives will render such intensive supervision redundant.

The assessments from surveillance activities should be combined, as appropriate, with the results of off-site analysis and (where relevant) in-depth evaluations to enhance the risk assessments used for planning or supervisory response. For instance, if surveillance finds a low level of errors, this may remove the need to examine that risk on-site. Alternatively, a high level of error may be specifically reported to the entity with a request for an action plan.

3.3 ▶ The supervisor should have a defensible methodology for identifying and prioritising which entities and risks should be subject to in-depth evaluation

In-depth evaluations can take several forms. These may be routine on-site visits which take place at a scheduled period (e.g. once every few years) or on a more selective basis. The supervisors of pension-management companies in the region tend to inspect every company on-site every year or in most years. However, the subject matter of these inspections should vary every year, in line with the level of risk in different processes, which will likely mean that the level of resources applied to evaluating companies will vary. In addition, 'emergency' on-site visits may be required to investigate entities in which problems have been detected.

Given that in-depth evaluations can be time consuming and expensive for the supervisor and the supervised entity involved, all supervisors should carefully coordinate their on-going monitoring and on-site inspection procedures to ensure maximum efficiency and avoid duplication. They should have a defensible process for determining which risks at which entities should be subject to in-depth evaluation, on the basis of the extent of risk that they pose, commonly in the form of an annual evaluation or inspection plan. Some means of accommodating emergency visits should exist, either by leaving some slack in the programme for them or by indicating which visits can be deferred, if need be.

In prioritising entities or processes within the annual programme, a wide range of factors should be considered, including:

- assessments of inherent risk relevant to each entity, from off-site analysis;

- previous years' in-depth evaluation results, especially regarding governance and high-level assurance functions, whilst bearing in mind their changing relevance over time;

- follow-up on actions that entities have promised to take to reduce risk;

- any thematic review being undertaken (see paragraph 109 above);

- any work needed to justify a approvals sought by the entity; and

- issues or queries raised during off-site analysis – indeed, the plan should allow for further evaluations to be added if later off-site analysis identifies serious risks or potential failings of mitigation.

In particular, the structured assessment of governance can provide input for planning an in-depth evaluation by highlighting the entities, risks and processes where evaluation can be limited or deferred because the governance processes have been assessed to be reliable, or by highlighting the risks and processes for which such reliance is impossible and for which enhanced evaluation is necessary. Hence, although it is common practice

for governance to be evaluated as part of routine on-site inspections, conducting governance interviews separately may have merit to act as input into planning. If a supervisor has limited knowledge regarding entity governance, boards can be asked to complete self-evaluation questionnaires, as occurs in some jurisdictions in the region – indeed, such questionnaires can be used alongside interviews.

Supervisors can make the selection of entities and risks to evaluate more rigorous by harnessing their formal risk-quantification and assessment model to identify which entities should be evaluated each year and/or the processes to be evaluated at each entity. In particular, the preparation and approval of an annual in-depth evaluation programme can provide the core of a methodology for associating resource-/staff-allocation decisions with risk assessment; see the example in Box 7 below. In essence, an iterative planning process can be used, to either tailor the programme to available resources or make a case for resource re-allocation within the supervisory authority or indeed for an increase in supervisory resources altogether.

BOX 7 ▪ COMBINING ANNUAL EVALUATION PROGRAMMING WITH RESOURCE ALLOCATION (CHILE)

The head of each supervision department enters, into an IT-enabled spreadsheet, the key mitigation processes at each pension-management company, the various risk factors connected with each company arising from previous off-site and on-site analyses, and when the process was last evaluated. These factors enable a provisional decision to be made on which processes at which companies should be evaluated during the forthcoming year. The spreadsheet also includes an estimate of staff-days needed to plan, execute and report on each evaluation. The spreadsheet therefore 'costs' the provisional programme. Further iterations are then carried out to balance the available resources with the final programme. Alternatively, the department may have the justification to bid for more resources.

3.4 ▶ The supervisor should plan, execute and document each in-depth evaluation to efficiently deliver each evaluation's objectives

While on-going monitoring can be systematic and, to a certain extent, standardised (such as analysis of the consistency of financial statements, etc., across all supervised entities), in-depth evaluations should be tailored to the entities' particular characteristics and to the problems detected before and during the evaluation. Thus, it is difficult to determine the precise content of each evaluation very far in advance, although, as indicated under Guideline 3.3, a more sophisticated annual planning methodology can be used to plan the evaluation's basic shape and which entity will be inspected when.

Several weeks before each evaluation, the responsible team or team leader should review whatever is already planned and make any revisions to reflect the results of analyses undertaken since the annual programme was prepared or, if the programme is less advanced, review the previous inspection of the concerned entity. The updated plan should identify team roles, who needs to be interviewed, the lines of questioning to be deployed and what tests of processes and controls need to be undertaken. The plan needs to be shared with

the supervised entity when the evaluation commences, so that management and staff will be prepared to provide the necessary assistance. Some flexibility is needed to accommodate changes that must be made during the evaluation, such as if interviews raise additional concerns, or by providing sufficient assurance to preclude further testing of a particular process or control.

Supervisors who intend to undertake a structured assessment of governance as an input to residual risk assessment and to promote better governance in the future should interview board members and senior managers to assess how they have discharged their responsibilities in practice. The following other types of evaluations may be included within the plan for on-site inspection or IT-enabled surveillance:

- Obtaining evidence on the governance, risk-management and internal control framework, such as:

  — examining the pension fund's governance structure and mechanisms (including the segregation between strategic/oversight responsibilities and day-to-day management), along with other aspects of high-level decision making and strategic leadership;

  — reviewing the meeting minutes of the pension fund's governing body and examining the auditor's and actuary's reports (if not routinely analysed off-site) to identify issues which have required resolution and which can be discussed during interviews so as to verify good governance processes;

  — evaluating the management's capacity to run the fund, their efficiency and their ability to acknowledge and correct mistakes that have been made (especially after management changes);

  — auditing selected internal-control and risk-management procedures to assess the relevance and robustness of these internal controls and the fund's approach to risk management;

  — auditing the IT and data-control functions and environment, particularly compliance with relevant international standards relating to IT and data security, integrity and development – an increasingly important area to test;

  — reviewing the work, reporting and impact of high-level assurance functions, such as the risk-management unit, internal auditing or regulatory controller (plus the independent actuary for DB and hybrid plans); and

  — examining accounting procedures in order to verify whether the financial and statistical information that is periodically sent to the supervisor is reliable and compliant with the regulations.

- Evaluation of the technical conduct of the pension fund, including:

  — detailed evaluation of the plan's investment policy; the analysis justifying it; and the lower-level control documents, mandates or policies used to translate the investment policy into action and enable monitoring of fund managers, whether in-house or out-sourced;

  — evaluating the arrangements for the safeguarding, custody and valuation of assets, including checks of physical existence and reconciliations with affiliate records; and

  — evaluating compliance with the contribution schedules and benefit-calculation rules set out in regulations or the pension plan's governing rules.

Note that supervisors should consider requesting, obtaining and reviewing some of the documentation referred to above during the evaluation's planning phase to improve efficiency and assist with targeting the interviews and process checking. For instance, board and relevant board committee minutes are usually obtained in advance.

Supervisors may wish to structure their verification procedures by using the COSO framework[10]. In doing so, however, it is important that the methodology still enable the extent or frequency of evaluations for different processes or controls to vary according to the risk level. Supervisors should, more generally, avoid methodologies that require all processes and controls be evaluated regularly so as to produce residual risk assessments.

All supervisors should take steps to enable the effective and timely documentation of evaluation findings. Such documentation is essential to effective managerial or peer review of findings, conclusions and recommendations; should facilitate future evaluations; and may be necessary as evidence if legal proceedings are needed or transpire (for instance, if the entity appeals the findings). Unless well organised and planned for, such documentation can be unduly time-consuming and may delay the finalisation of evaluation reports. Supervisors can use IT to expedite documentation processes and ensure the evidential value of what is documented. For instance, pre-formatted and partly completed electronic forms can be used during the evaluation process to document findings in real time, if made accessible on laptops or other access hardware taken on-site. Proprietary software is available that can enable such data capture. Furthermore, a (possibly proprietary) document-management system can be used to authenticate the time and nature of documents that are created or scanned in to support the evaluation, as well as facilitate evaluation documents being filed in an accessible and secure manner.

3.5 ▶ The supervisor should respond proportionately to deficiencies in supervised entity risk mitigation identified through its evaluation with a focus on persuading entity management to make worthwhile improvements

All pension supervisors should provide supervised entities with verbal and written feedback on the evaluations that they carry out (and be empowered to do so). Providing feedback should help to promote improvements in risk mitigation, both directly, as a result of supervisory recommendations, and possibly less directly, by sharing overall risk assessments (at least by risk category). To ensure that the evaluations' findings, conclusions and recommendations are robust, they should be subjected to a review process to ensure consistency and also that more widely applicable lessons are learned. This can be a managerial review, a peer review or both.

Supervised entities are more likely to respond effectively if they have agreed on the evaluation's findings and recommendations (although this may not always be practicable). Hence, during – or at least at the end of – each evaluation, the supervisor should discuss the findings with the pension fund and pay adequate regard

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10. The COSO framework, developed by the Committee for Sponsoring Organizations of the Treadway Commission, provides a holistic model for evaluating internal controls by accounting for the five elements of control environment, risk assessment, control activities, information and communication, and monitoring.

to the fund's reaction. A written report including findings and recommendations from the in-depth evaluation should be produced when appropriate, including the resulting actions if the recommendations are not followed. The report, or at least a high-level summary of it, should be sent to the governing board, bearing in mind that it may be appropriate to communicate less significant conclusions only to management. The pension fund's governing board should be allowed to respond to the written report of the supervisor's findings.

Supervisors should tailor the type of reporting back and supervisory response according to the level of risk. If the supervisor's methodology is built around a formal risk-quantification and assessment model, this model can be used to combine inherent risk and risk-mitigation assessments to produce defensible residual risk ratings. The model can incorporate ratings of governance assessments and maybe other transversal evaluations.

The residual risk ratings derived from the supervisor's model can be used as inputs to decisions at the level of response to failings observed within entities, which will enable the responses to be consistent and defensible. Examples include whether the report is addressed to the governing body, whether it includes threats of sanctions, whether sanctions are applied or whether some form of intervention is needed. How ratings translate into responses can be presented on an 'enforcement pyramid' or 'supervisory ladder'. This can work in two ways. The seriousness of responses to new problems can be calibrated according to the rating of the problems and where they lie on the pyramid/ladder. In addition, the response can move up the pyramid/ladder if entities have failed to remedy the previously raised problems. However, supervisors should account for relevant factors, such as how much they trust the governing board to implement their recommendations.

Supervisors, globally and throughout the region, hold differing views as to how much, if at all, ratings should be shared with supervised entities. On the one hand, sharing ratings can result in prolonged and wasteful contention about how the methodology has been used or its fairness. It may also lead to entities trying to 'game' the system. On the other hand, sharing ratings, especially if compared with the average or a benchmark, may encourage entities to improve their practices and thereby reduce risk in the system. The incentive effect is increased if entities will receive financial or other advantages if their rating is above a specified level. Box 8 provides an example of how this has worked in practice. Other examples are provided in jurisdictions where more sophisticated investments are permitted, if investment governance and control receive sufficiently high ratings.

BOX 8 ▪ **USING COMPLIANCE RATINGS TO DRIVE IMPROVEMENT (COSTA RICA)**

In Costa Rica, the minimum level of capital that pension-management companies must hold partly depends on a rating derived from off-site analyses and in-depth evaluations of the companies. The original ratings, devised by the supervisor, were heavily focused on compliance and effectively operational risks, although with a governance element. The ratings progressively improved as the companies improved their processes and controls, to the point that virtually all the companies reached the highest tier (and therefore required the lowest permitted minimum level of capital). The supervisor then revised the methodology to focus much more on the highest inherent risks and on governance.

All pension supervisors should require supervised entities to make their recommendations for governance or risk-mitigation improvements actionable within specified time scales and should follow up on the implementation of these recommendations. This may involve agreement upon a documented action plan with the entity's board or management. Supervisors should give pension funds flexibility, where appropriate, in how they respond to the supervisory findings and conclusions.

3.6 ▶ The supervisor should use the results of in-depth evaluation to inform the direction of future supervisory effort

All pension supervisors should utilise information, analysis and results from in-depth evaluations in their supervision-planning processes. This necessitates a feedback loop such that the supervision plans for subsequent years are influenced by the evaluation's findings and assessments. If a risk-rating model is used, the residual risk ratings for each entity should be an input to planning the following year's work. More qualitative judgments formed during such in-depth evaluations may also be relevant, such as views regarding the quality of each entity's risk-management capability. Hence, the full findings from each evaluation, including the significant documents obtained during it, should be readily accessible on the supervisor's IT system.

All supervisors should also be prepared to identify and respond to systemic issues arising from their analysis and evaluation. This requires the supervisor to have a process for reviewing supervisory findings to identify any concerning trends or new, emerging developments. These should be considered systemically, and a strategic response should be determined upon these findings.

4 ▶ Resources and organisation (for effective supervision)

4.1 ▶ Supervisory staff should possess and apply sufficient understanding and expertise to enable credible and defensible judgments

Supervised entities are more likely to respond positively to the supervisor's recommendations and guidance if they consider the supervisor and supervisory staff to be credible and authoritative. This requires supervisory staff to demonstrate professionalism and competence in their relations with supervised entities and hence that the supervisor can call upon staff with sufficient knowledge, competence and expertise to:

- understand how the pension system works and how its component parts are interrelated, and assess where the potential and actual risks are within the system;

- undertake the supervisor's data analyses in a way that identifies all of the problems and risk indicators that can be derived from the data;

- understand and appraise explanations provided by the management or staff of supervised entities;

- conduct interviews, on level terms, with board members and senior managers;

- prepare guidance and reports arising from in-depth evaluations that authoritatively and clearly explain the findings, expected good practices, conclusions and recommendations;

- make decisions that are consistent within the supervisory authority and with the available evidence and analysis; and

- effectively utilise the available IT systems.

Supervisors therefore need to identify and articulate the competences, skills and knowledge expected of staff in different positions within the authority. These should underpin the supervisors' approach to staff recruitment, allocation and appraisal. The staff-appraisal process should identify development needs, which should in turn form the basis of a training needs assessment and training programme. A continuous staff training and development programme is needed that is tailored to the training needs assessment.

Several supervisors in the region have put considerable effort into ensuring that pension-management companies have sufficient investment expertise, including staff with CFA (Chartered Financial Analyst) or equivalent qualifications. In such circumstances, the companies themselves can reasonably expect that the supervisory staff responsible for evaluating their investment processes and decisions should have a similar level of professionalism, which is likely to require some extensive input into staff development.

Supervisors may obtain assistance, particularly for in-depth analyses or evaluations, from independent external experts or seconary staff with the appropriate skills to work internally (these staff must be subjected to the same level of accountability as internal staff and bound by suitable confidential clauses, where required). Using these professionals can provide the supervisor with flexibility and augment their available skills and knowledge. This may be particularly relevant to the use of derivatives or to protection from cyber-crime.

It is a good principle that supervisors should not permit supervised entities to undertake activities which the former do not understand (or, of course, which the entities do not understand), such as complex investment products. One risk is that the latest advances in digital transformation might also fall into this category. If supervised entities propose to use advanced investment classes or IT, the supervisor needs to consider whether the benefits are justified by the costs involved in developing sufficient expertise. If the developments are worthwhile, the supervisor should seek to develop or buy-in with the necessary expertise. As regards IT, this may be resolved by assigning the supervisor's own IT experts to supervision teams as appropriate.

4.2 ▶ The supervisor should seek to use IT to undertake supervisory processes securely, efficiently and effectively

The earlier guidelines and the Preamble have already emphasised the importance of supervisors being ready and able to respond to digital transformation, as related to supervised and supervisory processes. In summary, the ways in which supervisors can respond include:

- Encouraging the use of various media to facilitate and promote increased voluntary contributions and participation, through non-traditional intermediaries, biometric identification and direct intermediation using the supervisor's own website. This opens up the possibility that the problematic use of traditional pension intermediaries can eventually be reduced;

- Encouraging greater efficiency in pension fund operations and among their managers and administrators, to reduce costs and fees and make it economic for affiliates in the informal sector to contribute to a pension fund so far as and when they can;

- Being prepared to verify the security, effectiveness and auditability of new paperless, integrated and Web- or telephone-enabled systems before they go live;

- Undertaking in-depth (expert) evaluations of the IT and Internet security risks at supervised entities, not least their mechanisms for protecting affiliate accounts and data from cyber-attack or loss of service continuity;

- Enabling the use of sophisticated risk-analysis and rating methodologies, should doing so be appropriate;

- Undertaking more sophisticated analyses of pension fund data, especially in relation to investment and service quality, to better grasp the level of risk inherent in the system and at supervised entities;

- When justified by the level of risk, undertaking IT-enabled in-depth (off-site) surveillance of key activities relating to pension funds or their intermediaries, possibly by harnessing machine learning;

- Holding data, documents and findings in a way that allows all supervisory staff ready access to the data relating to a risk or entity that concerns them, without compromising security; and

- Improving the efficiency and timeliness of supervisory findings being documented, along with strengthening their evidential value.

While it may be some time before all supervisors in the region develop along the above lines, they should seek – so far as their resources and developmental state permit – to utilise IT in a way that enables the effectiveness and efficiency of operations. All supervisors should certainly ensure that their own systems and data are safeguarded. They may, for instance, need to strengthen access security through the use of biometric identification (or even block-chain).

4.3 ▶ The supervisor should be organised to enable effective communication, co-ordination and consistency within the authority and with other relevant agencies

Within the region, various ways exist to structure the teams involved in supervisory activities, partly depending on whether the pension supervisor is stand-alone or integrated into a wider financial services supervisor. Some of the larger supervisors responsible for mandatory DC systems have separate departments for different risk categories, including for investment, operational, pay-out and market conduct risks. Supervisors responsible for both DB and DC systems tend to have separate departments for each benefit type. Some supervisors have separate departments, or at least teams, for off-site and on-site supervision.

Whatever the structure, if the supervisor is to operate efficiently and effectively, the following issues should be recognised:

- The risks in pension systems, especially DC systems, and their mitigation are distinct from those applying to other financial services, as indeed are the objectives, with 'adequacy' and 'coverage' being fairly unique to pensions. If an integrated supervisor is responsible for supervising a pension fund, separate risk-landscape overview and risk-mitigation strategy is needed for the pensions market.

- While organizing pension-fund supervision according to risk category enables effective and expert focus on the very different characteristics of the risk categories concerned, entity corporate governance cuts across the different categories and necessitates some means of co-ordinating guidance, evaluation and supervisory rating and response. This can be done by establishing a 'virtual' cross-cutting team or committee. Some other risks might also cross-cut. For instance, overactive intermediation (of transfers between funds) can exacerbate liquidity risk and market conduct risks. Another example is that problems with data integrity (operational risk) may cause knock-on problems with pay-out. Furthermore, communication and consistency problems can arise if the different departments use overly diverse methodologies. Ultimately, therefore, there needs be some system overview; see the next paragraph.

- Separating the supervision of DB and DC makes considerable sense, but even here, it is important that there be consistency in evaluating risks common to both systems, which includes many operational

risks and, to some extent, investment governance. Furthermore, it may not be cost-effective to employ sufficient expertise to cover similar risks separately, and some shared functions may be needed.

- The separation of on-site from off-site has sometimes been justified on the basis that the necessary skills are different. In a few jurisdictions, the supervisor's legal framework mandates it. A serious downside, however, is that neither function has an overview of each entity or risk. Close co-operation is needed if judgments are to be consistent and complete and if full use is to be made of all the available information. For instance, the Financial [investment] Vice-Presidency in Mexico holds a cross-team meeting of all relevant staff to obtain an overview of the 10 pension management companies twice a year (20 meetings a year in total). A common and appropriately accessible database is also important.

In any case important, it is that there a unit, team or person has an overview of the risks in the system and the assessments of their mitigation. If risk-based supervision has been implemented, it is also important that a similar function be responsible for co-ordinating the methodology across departments and teams. It makes some sense to combine these functions, perhaps by supporting a high-level risk committee to ensure senior management ownership of the conclusions drawn. Alternatively, a working-level co-ordinating committee can substitute for a co-ordinating team (although it still needs a secretary and a chair). Some supervisors combine the central function with responsibility for policy or research (or both), on the sensible basis that forming supervisory strategies is essentially a policy matter and that research helps to assess inherent risk.

All pension supervisors should have review processes (managerial and, where appropriate, peer processes) designed to ensure consistency of judgment, drawing on legal advice when appropriate. There should be an appeals process for supervised entities which is seen to be objective.

It is increasingly important that decisions on supervisory strategy and the development of risk-based supervision involve the supervisor's IT function as well as policy and research functions. It is also important that effective liaison exist with other governmental bodies with functions that are relevant to pension-fund supervision. Traditionally, this would include the tax authority, finance ministry, labour ministry, insurance supervisor, securities supervisor and competition authority (where pension management companies compete for affiliates). As has already been noted in these guidelines, innovative developments in IT-enabled voluntary pension provisions may extend the list to include other bodies, such as the telecommunications regulator. It is good practice for a senior manager to ensure that liaisons with these stakeholders are effective and to lead the drafting and implementation of memoranda of understanding.

Appendix

IADB/PLAC Network: Guidelines for the supervisory assessment of pension funds

Analysis of questionnaire responses received from PLAC Network members.

In August 2018, the secretariat of the PLAC Network (provided by the IADB) sent out a questionnaire to its members asking for information about the nature of the pension systems they supervise, the data they obtain for supervision purposes and several related questions. This Appendix summarises the responses received from 15 supervisors in 14 countries, which have helped to inform the Guidelines to which this document is appended.

Role of the supervisors

Five of the supervisors are standalone pension supervisors. Pension supervision in the other jurisdictions is undertaken by integrated financial services supervisors, sometimes located within the central bank. Additionally, there are five bodies responsible for supervising different types of pension funds in Panama. There are significant variations as to whether pension supervisors are responsible for central government or provincial pension funds for governmental employees with supervisors in five jurisdictions restricted to the private sector, of which three are defined contribution only.

Nature and scale of pension systems supervised

Figure 1, on the next page, summarises the number of affiliates and the value of assets under management across 13 Network countries. Data have been taken from the OECD or AIOS where questionnaire responses were incomplete, but even so figures for the number of affiliates in defined benefit funds are incomplete. The asset figures have to be seen as approximate, given volatility in exchange rates and different dates for the data.

The extent to which supervised systems are defined benefit (DB) or defined contribution (DC) varies significantly. In four of the countries, the supervisors are responsible only for DC pension funds and in one only DB funds. In the other eight countries there is a mixture of the two systems, with five of them having a majority of affiliates in DC funds. Overall, more than 90% of the affiliates and 72% of the assets relate to DC funds.

Generally, the DB funds are government sponsored, being either for government workers or contributory social security systems run by the jurisdiction's social security institute. The exceptions are Brazil and Haiti where some private sector DB funds still exist, although membership is steadily transferring to DC. Of the 411 entities that the 14 supervisors oversee, 301 are in Brazil and a further 25 in Jamaica, both jurisdictions with a tradition of employer-sponsored pension funds. Fifty-one of the 80 remaining supervised entities, across 10 jurisdictions, are pension management companies (AFPs) managing DC funds, with the balance (34) being governmental DB funds in those jurisdictions.

FIGURE 1 ■ **PENSION FUND ASSETS AND NUMBERS OF AFFILIATES BY COUNTRY ACROSS THE PLAC NETWORK**

	BRAZIL	CHILE	COLOMBIA	COSTA RICA	DOMINICAN REPUBLIC	EL SALVADOR	HAITI	HONDURAS	JAMAICA	MEXICO	PANAMA	PERU	URUGUAY	TOTAL
Participants/000s														
BD	1091		500	1730	200	257	492	840	22		1271			6403
Hybrid	1451										1142			2593
CD	927	10639	14841	2577	3479	3151		180	95	60003	1279	6845	1382	105398
Total	3469	10639	15341	4307	3679	3408	492	1020	117	60003	3692	6845	1382	114394
Assets/ $US millons														
BD	132750		3960	10699	1823	172	763	5327	2516		3041			161150
Hybrid	50500			313										50813
CD	26000	202905	77550	10488	8889	10780		681	1550	167272	536	49739	15634	572024
Total	209250	202905	81510	21500	10712	10952	763	6008	4066	167272	3577	49739	15634	783888

Note: Figures in italics have been 'guesstimated' for completeness in the absence of specific data in the responses.

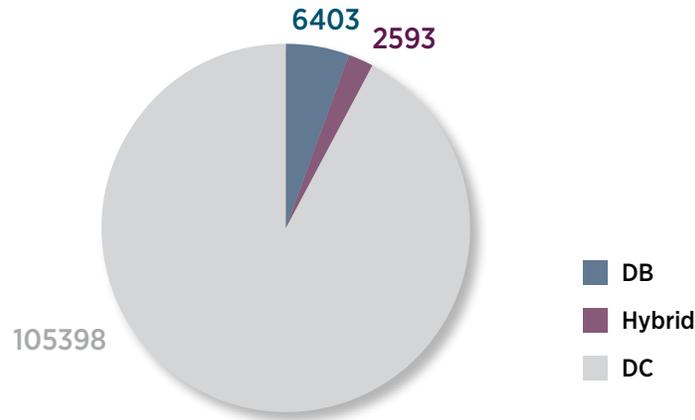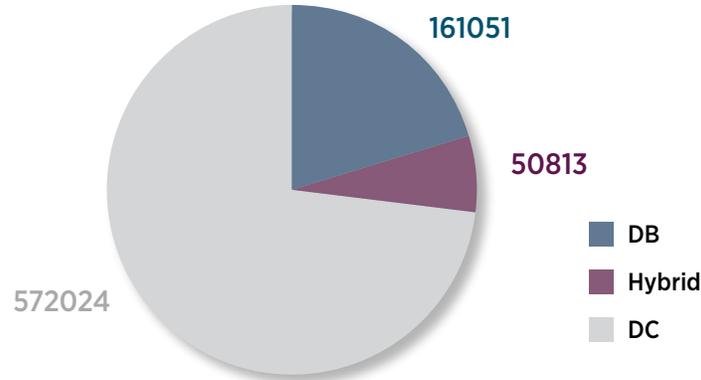FIGURE 2 ▪ **ALLOCATION OF AFFILIATES TO DIFFERENT TYPES OF FUND (THOUSANDS)**

- ■ DB
- ■ Hybrid
- □ DC

FIGURE 3 ▪ **PENSION FUND ASSETS BY TYPE OF FUND ($US MILLIONS)**

- ■ DB
- ■ Hybrid
- □ DC

Pension assets total nearly $US 800 billion, of which some $US 570 billion are in DC funds, mostly individual accounts managed by pension management companies, which hold just over two-thirds of the assets between them. Hence this type of fund is predominant across the Region, especially as they represent nearly 90% of the approximately 114 million affiliates. Of course, DB and hybrid funds tend to have a much larger figure for assets per affiliate than DC funds; incomplete data make the ratio hard to calculate but the ratio would appear to be around 4:1. Indeed, each DC affiliate has only around $US 5,600 in assets on average. Figures 2 and 3 illustrate the split of assets and affiliates between fund types.

The importance of the pension funds covered by this survey relative to the wider economy varies substantially between the countries concerned. OECD data indicate that they are very substantial in several Network

countries, with pension assets being some 70% of GDP in Chile, 34% in El Salvador, 25% in Jamaica, 22% in Colombia, 21% in Peru, 18% in Costa Rica and 16% in Mexico. It should be noted that these assets do not represent the full provision for retirement in many Network countries. For instance, the relatively small size of assets in Uruguay needs to be read in the context of a mixed social security system where the entire population has access to their retirement income, at least partially, through a pay-as-you-go system.

Nonetheless, the significance of pension assets relative to GDP is likely to rise rapidly as the systems are mostly still relatively immature. For instance, in the first six months of 2018 contributions into pension funds were more than three times the level of withdrawals, a net increase in assets of $US 4 billion.

Data obtained by supervisors

The 11 responses that answered the relevant questions provided some useful findings on the nature and frequency of data collection by supervisors in the Network. Most of the data related to mandatory DC systems, where there is very intensive supervision, as befits the importance of the funds to their affiliates' retirement.

The supervision of investment is a high priority in mandatory DC systems, and all nine of them receive the full range of data asked for relating to portfolios, instruments and trades. The data are mostly received daily, which enables extensive analysis of risk and performance in the systems. In several countries it even enables the propriety of individual trades to be verified off-site. Other supervisors check trading propriety during on-site inspections or rely on the Stock Exchange to check. Not surprisingly, such extensive demands for data necessitate dedicated communications software, running of XML or SFTP or unspecified dedicated software. Two of these countries do, however, rely on web TXT or PDF, or Excel and paper, which must be more challenging.

The one partial exception to the extensive checking of investment data by mandatory DC supervisors relates to data on costs, which are either not checked at all or checked less frequently, being monthly, quarterly or biannually in three or four cases. Less frequent checking is understandable given the nature of the risk.

Supervisors of systems other than mandatory DC may receive somewhat less investment data. For instance, SMV in Panama receives extensive data monthly while Jamaica just receives portfolio data quarterly. Less sophisticated communications media are used.

Supervisors of mandatory DC systems also receive a wide range of affiliate data, which enables seven of the supervisors to check data accuracy off-site while another conducts checks on-site. However, in only one jurisdiction is data obtained on contributions receivable, presumably because in the other jurisdictions the supervisor does not supervise mandatory contribution collection agencies. Data on pre-retirement and cash withdrawals at retirement are presumably not collected (in Uruguay) when such withdrawals are not allowed. Quality of service is checked by all the mandatory DC supervisors. Supervisors of other systems generally do not collect much data in these areas.

Finally, supervisors were asked about their data collection regarding sales agents and brokers. In most cases, data relates to registration or licensing processes for the individuals concerned. Chile adds data to assess whether they are 'fit and proper', Colombia adds data on fees and Mexico adds a huge array of data items to enable extensive supervision of their activities.

In summary, supervisors of mandatory DC systems obtain vastly more data, much more often, than most pension supervisors globally, and indeed supervisors of other systems in the PLAC Network. This enables them to assess many aspects of investment, data and service quality off-site or through data surveillance. Ensuring that the value derived from the data is maximised, and that it is kept secure, is likely to be a key challenge. Inevitably, the amount of flowing data necessitates sophisticated communications software in which most of these supervisors have invested heavily.

Supervisory approach

Nine of the supervisors state that they either have adopted risk-based supervision (RBS) or are transitioning to it. In one case the move to RBS is specifically identified as being to improve public trust in the system. Respondents also stated that they undertook compliance checking, in one case specifically as a component within RBS. In at least three cases, RBS implementation has also involved issuing lower level regulation or guidelines on corporate governance, risk management and other topics, including the use of the 'principles plus criteria' model. A particular focus on deficient investment processes is referred to.

All supervision methodologies make use of off-site analysis alongside on-site inspection. References to off-site analysis included the use of digital techniques. In one jurisdiction, on-site inspections are triggered by off-site results, but more often they are seen as a technique to raise standards, notably of governance.

Challenges

The responses identify a wide range of challenges. Several refer to the particular challenge of implementing RBS, including the up-skilling of the staff involved, especially in sophisticated analytical techniques. Additional challenges included establishing a risk coordination committee; rating the risk of individual entities; and implementing the assessment of corporate governance. Other challenges identified include:

- the fragmentation of supervisory arrangements in several jurisdictions or the need to strengthen links with other governmental authorities

- the challenge for pension systems and supervision of recent or forthcoming pension reforms, such as checking the application of revised benefit levels

- low coverage explicitly mentioned just once, but is clearly a challenge across the Region

- cybersecurity and the supervisory responses thereto, which have moved strongly onto the radar of some supervisors

- limited investment opportunities due to underdeveloped domestic financial markets or the low interest rate environment, which can result in pension funds being overconcentrated or moving into higher risk or alternative instruments, maybe with supervisory encouragement; such diversification necessitates enhanced and more sophisticated supervision. These issues are compounded by supervisory concerns about the deficiencies in pension fund investment capability (particularly international) or strategy processes, such as inadequate analyses.

- the supervision of pension intermediaries who are less amenable to persuasion and more open to flagrant abuse than the management of larger entities.

- excessive commissions and charges, although in one case this is because a cap is being implemented

- supervising the quality of service delivered by pension management companies to their affiliates

- corporate governance and data quality, including demographic data in the particular context of public institutions.