



IOPS RISK-BASED SUPERVISION TOOLKIT

MODULE 3

IDENTIFYING RISKS

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Introductory note

The **IOPS Risk-based supervision toolkit** provides a 5-module framework for pensions supervisors looking to apply or enhance a system of risk-based supervision. A web-based format allows: a flexible approach to providing updates and additions; users to download each module separately as required; and a portal offering users more detailed resources, case studies and guidance. The website is accessible at [https://one-communities.oecd.org/community/iops/SitePages/RBS-Toolkit\(1\).aspx](https://one-communities.oecd.org/community/iops/SitePages/RBS-Toolkit(1).aspx)

This document contains the guidance for **Module 3: Identifying Risks**

TABLE OF CONTENTS

I. INTRODUCTION	4
A. Purposes	4
B. Principles and Guidelines	6
SECTION 1: RISK FOCUS	7
A. Supervisory Objectives	7
B. Nature of Pension System	10
C. Risk Appetite.....	14
SECTION 2: INDIVIDUAL ENTITY RISK FACTORS	16
A. Risk Factors	16
B. Risk Indicators	21
SECTION 3: SYSTEMIC RISK	25
When is systemic risk important?	26
How can systemic risk be identified?	28
How can systemic analysis be incorporated into overall risk assessments?	28
BIBLIOGRAPHY	32

I. INTRODUCTION

Figure 1: RBS Cycle



Source: IOPS Secretariat

Risk-based supervision (RBS) is a structured approach which focuses on the early identification of potential risks faced by pension plans or funds¹ and the assessment of the financial and operational factors in place to minimise and mitigate those risks.

This process then allows the supervisory authority² to direct its resources towards the issues and institutions which pose the greatest threat, thereby supporting timely action and escalation where determined necessary.

A. Purposes

This Module 3 of the IOPS RBS Toolkit is designed to help supervisory authorities **identify** the appropriate risks either when first moving towards risk-based supervision or when reviewing and revising an existing risk-based supervisory approach. It provides suggestions of risks which may be considered and factors to consider when determining which risks to focus on.

A pension supervisory authority needs to develop a method for organising and analysing the information it gathers in order to establish which risks pose the greatest threat to the supervisory authority meeting its objectives. In order to do this, the pension supervisory authority first needs to decide which areas to focus on – based on its objectives and resources - and then identify the main risks in those areas, as well as

¹ According to the OECD's taxonomy, OECD (2005), a pension fund is a legally separated pool of assets forming an independent legal entity that is bought with the contributions to a pension plan for the exclusive purpose of financing pension plan benefits. The plan/fund members have a legal or beneficial right or some other contractual claim against the assets of the pension fund. Pension funds take the form of either a special purpose entity with legal capacity (such as a trust, foundation, or corporate entity) or a legally separated fund without legal capacity managed by a dedicated provider (pension fund management company) or other financial institution on behalf of the plan/fund members.

A pension plan is a legally binding contract having an explicit retirement objective (or – in order to satisfy tax-related conditions or contract provisions – the benefits cannot be paid at all or without a significant penalty unless the beneficiary is older than a legally defined retirement age). This contract may be part of a broader employment contract, it may be set forth in the plan rules or documents, or it may be required by law. In addition to having an explicit retirement objective, pension plans may offer additional benefits, such as disability, sickness, and survivors' benefits. In EU countries, this module may not apply to those pension funds and pension plans that fall outside the scope of the [EU Directive 2016/2341/EC of the European Parliament and of the Council of 14 December 2016 on the activities and supervision of institutions for occupational retirement provision \(IORPs\)](#), e.g. pensions funded via book reserves (c.f. art. 2 of the Directive).

² Pension supervisory authorities referred to in the IOPS Toolkit for Risk-based Supervision are defined as any entity responsible in whole or in part for the supervision of pension funds, plans, schemes or arrangements in a country, or the subdivision of a country, whether invested with its own personality or not.

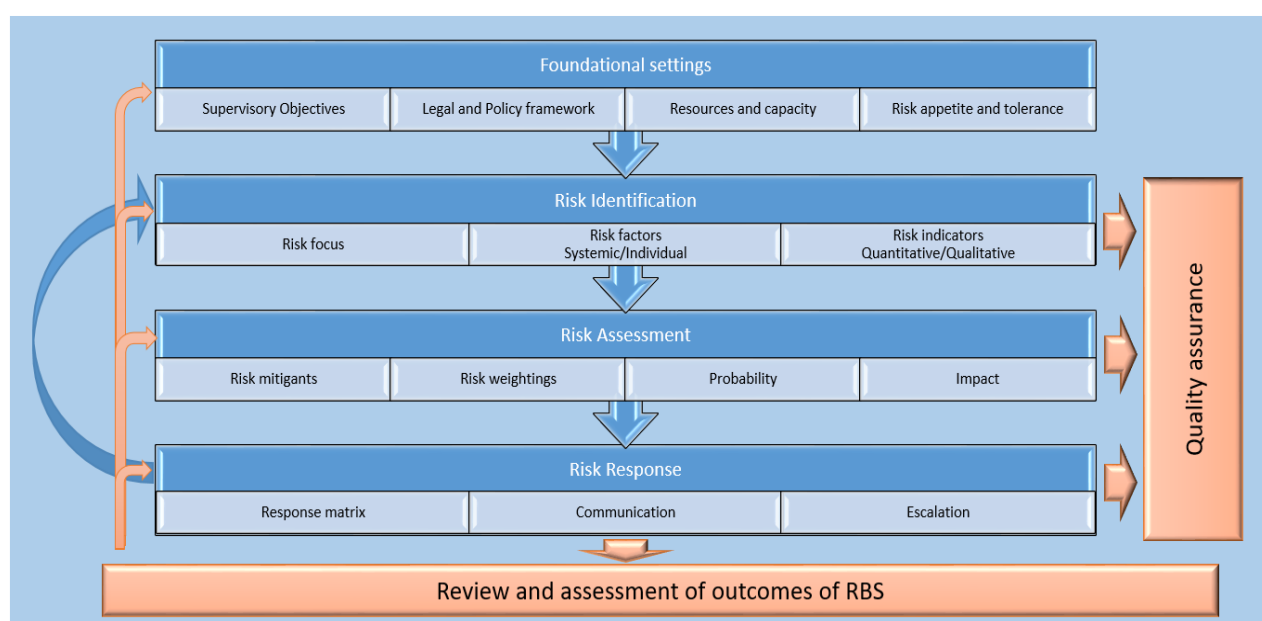
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indicators which can help detect if the risk will materialise. Risks can be considered on an individual entity, peer group, industry and/or systemic basis.

A risk based supervisory approach is not a set and forget type approach and, accordingly there will be times when it is necessary for the supervisory authority to review and revise its approach including the risks on which it focuses.

The following chart provides a schematic summary of how a supervisory authority's objectives and risk focus might fit together with the overall risk based supervisory process. Details of these steps will be provided in this module, including examples from IOPS members who are already employing a risk-based approach.

Figure 2: Risk-based Supervision Process



Source: IOPS Secretariat

B. Principles and Guidelines

This Module 3 of the IOPS Toolkit builds on the *IOPS Principles of Private Pension Supervision*:³

Principle 5: Risk-based Supervision

Pension supervisors should adopt a risk-based approach

5.1 In order to use their resources efficiently, pension supervisory authorities should adopt a risk-based approach, and a suitable risk-assessment methodology should be established.

5.9 Risk-scoring models should reflect the risk-focus of the pension supervisory authority (which is driven by its objectives and resources), and the net risk of relevant individual entity and systemic risk factors. These factors should be suitably weighted according to the nature of the pension system, and a risk-score derived from the probability and impact of their occurrence.

³ IOPS (2010a), [IOPS Principles of Private Pension Supervision](#).

SECTION 1: RISK FOCUS

The first step when designing a risk-based supervisory process is establishing what risks the pension supervisory authority will focus on. Pension supervisory authorities are naturally driven by the level of resources which are available to them. Given the limited budgets under which all authorities have to operate, pension supervisors have to act pragmatically and decide where they will focus their attention. Indeed, it is these very budget limitations which have motivated some pension supervisory authorities to make the move towards risk-based supervision in an attempt to use the resources at their disposal as efficiently as possible. The supervisory authority must establish its main areas of focus before risks can be identified and managed. To do this, the supervisory authority must consider its supervisory objectives, the nature of the pension system it is supervising and its own risk appetite.

A. Supervisory Objectives

The authority's risk focus should be driven by the pension supervisory authority's objectives. As discussed in Module 1 of the IOPS Toolkit, supervisory objectives should ideally be clearly laid out in legislation and phrased in terms of outcomes⁴. However, where the law is vague, the pension supervisory authority itself should clarify its goals and objectives.

In addition to having a clear supervisory objective, being explicit about the outcomes that are sought from the supervisory effort is also necessary to ensure that supervision focuses on the 'right risks'⁵. Supervisory objectives with clear, measurable outcomes are also encouraged and will assist also in assessing the performance of the RBS approach (see Module 1 for more details)⁶.

In some countries, where the pension supervisory authority is strictly a prudential supervisor,⁷ the task of defining risk priorities can be greatly simplified by the existence of a single statutory objective, namely, preventing fund failure. In most countries, however, the establishment of the authority's risk focus is complicated by the existence of multiple statutory objectives, including prudential soundness, preventing market misconduct, preventing financial crime, and so on, while the main objective is the protection of members and beneficiaries which must be fulfilled at all times.

Sometimes multiple objectives can raise potential conflicts. For example, in emerging market economies, supervisors are often charged with industry development as well as supervision of its prudential soundness and conduct. Such potential conflicts need to be handled very carefully in defining the supervisory authority's risk focus.

⁴ See also IOPS (2010a), [IOPS Principles of Private Pension Supervision](#).

⁵ Price et al (2016, page 13).

⁶ See [APRA's objectives | APRA](#) as an example of pension authorities clarifying their supervisory objectives.

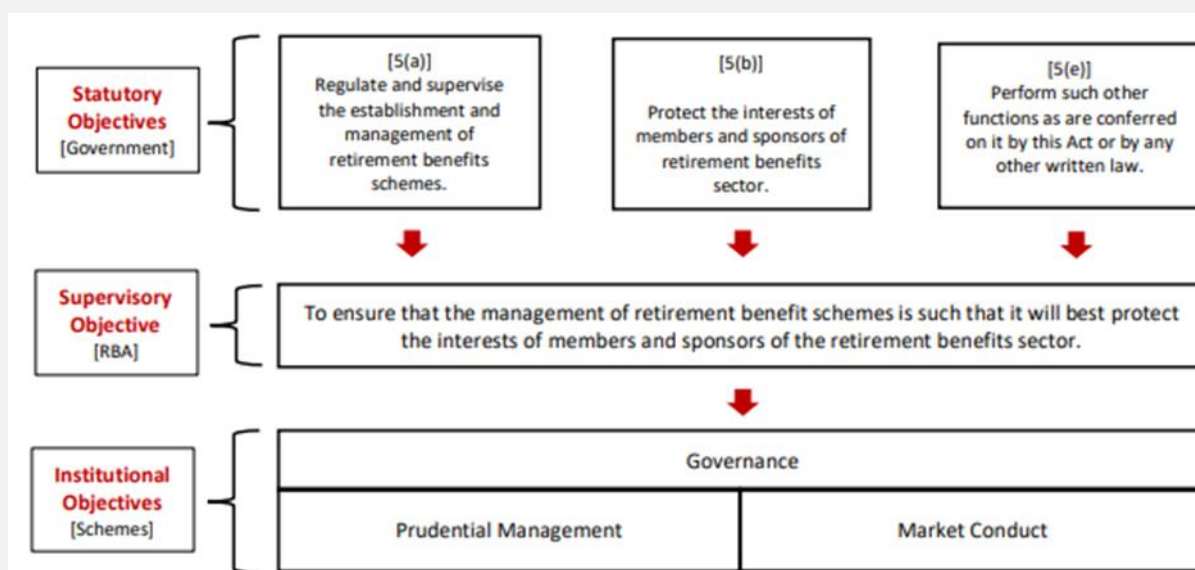
⁷ Supervision can be broken down into two broad categories: prudential supervision – which has the goal of maintaining the overall stability of the sector which is being overseen; and conduct of business supervision – which is mainly concerned with consumer protection. Some authorities deal with both, whilst other countries (e.g. Australia) operate a 'twin peaks' model, separating these roles between different authorities.

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Example: Kenya



The Retirement Benefits Authority (RBA) was established under Section 3 of the Retirement Benefits Act (No. 3 of 1997) as an independent authority charged with the regulation and supervision of the retirement benefits sector in Kenya. Insofar as it relates to ongoing supervision of the retirement benefits sector, the objectives and functions set out in legislation was rephrased to provide a clear supervisory objective for the Authority aligning it with the adopted risk-based supervision as depicted in the diagram below



Source: Retirement Benefits Authority, Kenya

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Example: Hungary



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Pursuant to the MNB Act, the Magyar Nemzeti Bank (MNB) exercises continuous supervision over the entities and persons covered by laws of the financial sector. Within this framework, it monitors the activities of financial and capital market institutions, pension funds, insurance companies and institutions of the financial infrastructure both on-site and off-site, using the tools of prudential supervision (i.e. supervision investigating the business soundness), as well as market surveillance and consumer protection tools, and, if necessary, it takes measures.

The purpose of the supervision is to ensure timely recognition and appropriate management of risks in order to maintain the stability of the system and the confidence of the financial intermediary therein. The information obtained during the continuous supervision is integrated by the MNB in the risk assessment.

The data of the risk and institutional assessment determine the method and the intensity of the supervisory treatment of a particular financial institution, as well as the scheduling of further investigations and the focus points thereof.

The objectives of the MNB's supervisory activity are set out in European Union and domestic regulation and in the supervisory strategy developed by the MNB including – among others - the following:

- Market participants with sound capital position
- Adequate preparedness for risks due to environmental anomalies
- Protect the financial sector, with a particular focus on the prevention of money laundering and terrorist financing
- Creating and maintaining a healthy balance sheet structure and portfolio quality
- Supporting sustainable economic growth
- Requiring transparency with a strong focus on pricing
- Strengthening competitiveness and innovation in all sectors

Example: The Netherlands



The De Nederlandsche Bank (DNB) explains that through their recently revised supervisory approach (ATM)⁸ they aim to gain insight into the risks related to the activities undertaken by the financial institutions which they supervise, and the extent to which such risks pose a threat to the achievement of their supervisory objectives.

Legislation assigns a number of objectives to the DNB - including protecting creditors, policy-holder and the integrity of the financial system - which they believe can be fulfilled in practice by focusing their RBS risk-based supervision on the following. There are five risk areas from which a data driven assessment will be made. They are.

- Business model and strategy
- Governance, behaviour, culture, risk management
- Integrity
- Prudential risks
- Capital.

B. Nature of Pension System

A supervisory authority's risk focus will be shaped by other factors, including the nature of the pension system.

For defined benefit (DB) systems, the main risks have historically related to funding and solvency, as well as the ability of trustees or fiduciaries to oversee DB plans. Therefore, the main focus of the supervisory authority has generally been on funding issues with the risk-based supervisory approach likely to include quantitative stress test measures of how funding levels are likely to hold up in adverse circumstances. The Netherlands, however, has noted that while funding is a main focus, there are other risk areas that look beyond funding and into areas of prudential and integrity risk. Therefore, the Netherlands consider that the focus for defined benefits is similar to defined contribution (DC) systems but with an additional focus on funding issues.

For defined contribution systems, the focus has historically been on the processes as benefits are not guaranteed. The role of the supervisor has been to ensure that the pension fund is managed in a secure way, as if the members themselves were undertaking the task. In the past, it may have been viewed that the risks in DC systems generally rest with individuals (despite their frequent lack of knowledge and engagement on financial issues). Supervisors have, however, been observed to place too much focus on processes rather

⁸ <https://www.dnb.nl/en/sector-information/open-book-supervision/brochure-atm/>

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than outcomes achieved by the pension scheme. Accordingly, supervisors are encouraged to focus on outcomes, objectives and minimising pension risk^{9,10}.

The RBS Learnings project (2021-2022)¹¹ observed that, for supervisors of DC systems, investment risks remained a strong focus along with operational risks. In addition, supervisors of DC systems (and, indeed in many instances for supervisors of DB systems) were observed to also have a greater focus on risks relating to market conduct, governance and member outcomes. In some jurisdictions where the pension systems are more mature, supervisors are also more focused on risks related to the transition to the decumulation or pay-out phase (or at least coordinating with other supervisory authorities that have this responsibility).

The degree of competition or sustainability of funds within DC pension systems (and whether the system is seen to be working efficiently and effectively) will likely impact on the risk focus of the supervisory authority. Where there are limits on the way funds compete (e.g. by limiting the number of investment choices, caps on fees, entry restrictions etc.) the authority would work compliance with such limits into its overall risk assessment. However, where the market has fewer restrictions on competition, the authority is more likely to focus on misselling problems¹² and disclosure¹³.

The number of providers also shapes the risk focus and the extent to which the focus may be on individual entities or risks across entities. For example, the goal of the Australian Prudential Regulation Authority's (APRA) risk-based supervision is to identify and prioritise risky institutions amongst the 100+ pension entities it supervises, whilst the pension supervisor in Chile focuses on finding problem areas within the limited number of pension funds which operate within their system.

⁹ Randle and Rudolph (2014, page 11)

¹⁰ See also IOPS (2015), [The Concept of Target Retirement Income: Supervisory Challenges](#), IOPS Working Paper No. 25.

¹¹ IOPS (2022), [Report on learnings from the design, implementation, use and review of risk-based supervision by pension supervisory authorities](#), IOPS Working Paper No. 38

¹² It should be noted that misselling problems and other issues stemming from 'conflicts of interest' can also occur in systems where a limited number of competitors operate.

¹³ Some countries, such as Australia, operate a 'twin peaks' model of supervision, with prudential regulation and market conduct issues being handled by different supervisory agencies.

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Example: Chile



The pension supervisory authority in Chile oversees a mandatory, individual account style DC system managed by a limited number of commercial providers. Member choice is allowed in the system and information is provided through detailed statements (including projections) and performance and cost comparisons are provided by the supervisory authority. Investment risk is controlled via life-cycle funds following quantitative investment limits, whilst a competitive electronic process for selecting pension pay-out products operates for the decumulation stage. Non-payment of contributions is the most important operational risk which the supervisor faces, which is tackled via transparency (the supervisor publishes providers quality of service indicators) and litigation if necessary.¹

Previously the supervisory authority allocated its resources evenly amongst the (limited number of) pension providers in the system. Its focus and work planning were then largely driven by the following complaints. This approach changed gradually to incorporate an RBS approach beginning in 2011, and currently a recently updated risk-based methodology is applied. This new RBS approach explicitly introduced ESG and climate change risk as relevant financial factors to the investment policy and investment risk management of pension funds.

The focus on the supervisory authority's risk-based approach is protecting individuals' funds. Given there are no guarantees within the individual account system, the supervisor focuses on processes rather than outcomes, and asks whether funds are being managed as carefully as if the individual member themselves were in charge. Given the limited number of providers, the supervisor's focus is on identifying risk areas within funds rather than spotting high risk providers or institutions.

Based on the type of DC system it oversees, the supervisory authority's risk-based assessment focuses on the following 6 main areas of risk, and breaks these down further into the following industry risk factors set out in the table below:

Risk Area	Risk Factors
Strategic and Reputation Risk	<ul style="list-style-type: none"> • Fit and Proper Directors • Risk Management Policy • Board Committees • Strategic Definition • Reputational Risk Management • Information Disclosure and Transparency Policy • Management Composition and Structure • Planning, management and disclosure/ transparency process • Management Information Systems
Legal and regulatory Risk	<ul style="list-style-type: none"> • Lack of members access to services and benefits provision due to non-compliance with laws, regulations or rules by providers.
Market Conduct Risk	<ul style="list-style-type: none"> • Information provided to members • Member decisions misaligned with their interests due to partial, erroneous or biased information. • Poor business practices providing information and advise • Transparency in the delivery of information on savings and pension products.
Risk Management and Fiduciary Risk	<ul style="list-style-type: none"> • Risk culture and internal control • Internal and external audit • Compliance Risk Management • Fiduciary Risk Management

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Operational and Technological Risk	<ul style="list-style-type: none"> • Affiliates Relationship Management Risk • Accounts Management Risk • Benefits Management Risk • Technology Risk • Business Continuity and Disasters Recovery Plan • Outsourcing Risk
Financial Risk (Credit, Market and Liquidity)	<ul style="list-style-type: none"> • Market Risk • Credit or Counterparty Risk • Liquidity Risk • Entity Solvency Risk • Investment Process Management Risk

Example: Australia



Pensions in Australia are overseen by an integrated financial supervisory authority, the Australian Prudential Regulation Authority (APRA). The Australian Securities and Investments Commission (ASIC) oversees market conduct issues. Employers are required to contribute 11% (incrementally increasing by 0.5% each year until 12% is reached in 2025) to a superannuation fund for all workers. These can be company or industry type plans or personal retail funds, which are managed on trust basis. Most funds are now DC in nature.

APRA's mandate is to protect the Australian community by establishing and enforcing prudential standards and practices designed to ensure that, under all reasonable circumstances, financial promises made by entities it supervises are met within a stable, efficient and competitive financial system. Through its supervision function, APRA seeks to protect the community by identifying and responding to significant risks in financial institutions and the financial system in a timely and effective manner.

As a risk-based supervisor responsible for the oversight of a very diverse range of entities across a number of industries, APRA applies a structured framework to identify, assess and effectively target its limited resources to areas and entities of greatest risk. Central to this process is its risk rating model, which is used to assess the level and nature of risk within each APRA-regulated entity. Based on the nature of the pension system it oversees and its prudential approach and supervisory objectives, APRA's risk model has identified the following areas as its main risk focus for DC funds¹⁴:

- **Gross Risk:** How an entity's external environment, business risk and customer/member outcomes could affect its risk profile. It includes consideration of external factors, business risk and member outcomes;
- **Governance and Risk Management:** The strength of an entity's governance and risk management and includes an assessment of business and central functions (strategic planning, business operations, IT/Cyber risk and investment risk); and
- **Financial Resilience:** The strength of an entity's financial resilience, including its capital and liquidity resources and the entity's ability to recover from stress. For defined contribution pension entities, the focus is on the adequacy of reserves, the ability to deal with extreme liquidity events and the adequacy of financial resources or trustee insurance to deal with unexpected losses.

¹⁴ See [Supervision Risk and Intensity \(SRI\) Model | APRA](#) for further details.

C. Risk Appetite

One of the advantages of a risk-based approach is that it forces the authority to be explicit (and preferably public) about what areas it intends to focus on and the trade-offs it is forced to make. The top management of the pension supervisory authority are explicitly saying to their staff “spend x% of your time on large funds / or this set of funds / or these particular risks.” Consequently, staff need to feel comfortable about spending less time on other areas, i.e. that ‘doing less’ will be acceptable to those higher up.

For example, a pension supervisory authority may decide that completely preventing fraud is impossible given available resources. In this case, resources may be better devoted to designing early warning flags of possible fraud and developing rapid response procedures to those signals. This decision, however, would be at the cost of knowing that some fraud will happen. In this case, “some” fraud would be classified as an acceptable risk. In contrast, leaving the pension supervisory authority open to the criticism of “acting slowly where there is evidence of fraud” would be classified as unacceptable. Similarly, failure of a small fund in a manner that has minimal impact across the broader industry and financial system may be regarded as an acceptable risk, while failure of a large, more impactful, fund may be classified as unacceptable.

Indeed, it is important that supervisory authorities make such public statements to ensure that their risk-based approach is understood and accepted. A clearly articulated risk appetite can be beneficial in setting expectations both internally and externally. Internally, it can support staff applying judgement to supervisory matters. Externally, it can help set stakeholder and community expectations.

Some supervisory authorities explicitly state that they cannot prevent all problems and failures. For example, the Office of the Superintendent of Financial Institutions (OSFI), the federal financial regulator in Canada, mentions in its mandate that “OSFI acts to protect the rights and interests of depositors, policyholders, financial institution creditors and pension plan beneficiaries while having due regard for the need to allow financial institutions to compete effectively and take reasonable risks. OSFI recognises that management, boards of directors and plan administrators are ultimately responsible for risk decisions and that financial institutions can fail and pension plans can experience financial difficulties resulting in the loss of benefits.”¹⁵

That said, in exceptional circumstances decisions regarding where to focus and the relative importance of certain issues and areas may be taken out of the authority’s hands and be largely driven by politicians and the public. Indeed, following the financial and economic crisis of 2008-2009, a ‘zero risk tolerance’ basis appeared to be in operation, with the failure of even relatively small institutions deemed unacceptable.¹⁶

¹⁵ <https://www.osfi-bsif.gc.ca/Eng/osfi-bsif/Pages/mnd.aspx>

¹⁶ Some jurisdictions have guarantee funds which will top up pension benefits in the event of insolvency of the sponsor or even in cases where the sponsor is having financial difficulties short of insolvency. This alters the risk appetite of the pension supervisory authority, since their mandate, implicitly or explicitly, includes protecting the finances of the guaranty organisation. In some cases, there will be a separate organisation for the guaranty fund. In such case it is not inconceivable that there is conflict between the pension supervisory authority and the guaranty organisation, but in any event the risk appetite of the pension supervisory authority will change as a result of the guaranty fund.

Example: The Netherlands



The DNB in the Netherlands includes a clear statement regarding its risk appetite and tolerance within its overview of its redesigned supervision approach¹⁷.

Risk Tolerance in Supervision Statement:

Through our supervision, we contribute to the public interest by ensuring a stable and reliable financial system, in which sound financial institutions provide their services in an ethical manner. We do so by conducting fit and proper assessments of senior executives, issuing licenses and monitoring that financial institutions prevent involvement in financial crime. We also assess whether institutions are financially sound and whether they can meet their obligations, even when faced with economic downturns. Crucially, we aim to be transparent about the choices we make whenever possible. We aim to be open about our risk tolerance and our approach as a supervisory authority.

A stable and reliable financial system benefits from public trust in financial institutions meeting their obligations and acting with integrity. We deploy our available resources in those areas in which we identify the biggest prudential and integration risks. Our supervision will be more intense as these risks have a bigger impact on trust. This effect is determined by the scale of a financial institution's operations, the extent to which risks spread throughout the financial system, and the institution's function in society. The latter aspect applies even more to financial institutions whose services provide income security, with commitments that must be honoured in the more distant future.

We acknowledge that institutions can fail. But as a supervisory authority, we do not tolerate insufficient management of prudential and integrity risks by financial institutions. As gatekeepers, financial institutions have an obligation towards society to prevent involvement in financial crime. Non-compliance with this statutory task can have consequences under criminal law. However, adequately managing prudential and integrity risks will not guarantee that an institution's failure can be prevented in every single case. Accordingly, we stress that the aim of our supervision is to reduce the likelihood and impact of an institution's failure rather than to prevent such failure at all times. We are well aware that the failure of a financial institution could jeopardise the stability of the financial system as a whole, which in turn could spark concerns over the reliability of the financial system. This is why our risk tolerance of a financial institution failing decreases as its impact on the financial system and society increases. As a resolution authority, we work alongside European peers where needed to prepare resolution plans for financial institutions

¹⁷ [IA ATM engels \(dnb.nl\)](https://www.dnb.nl/en/ia-atm-engels)

SECTION 2: INDIVIDUAL ENTITY RISK FACTORS

A. Risk Factors

The next step in designing a risk-based supervisory framework is identifying the industry and individual institutional risks that could lead to failure to meet the supervisory authority's objectives. For example, if the primary overall objective is the protection of members and beneficiaries, and the main risk focus is to prevent fund failure, then the pension supervisory authority must identify the range of risks that could lead to a fund failure. These risk factors are usually classified in terms of the conventional risks that pension funds face: market risk, credit risk, actuarial risk, operational risk, compliance risk, governance risk, financial crime risk, outsourcing risk, and so on. While the exact classification of these risks varies from country to country, there is a reasonably high level of commonality among supervisory authorities in their identification of key institutional risks.

One challenge which supervisory authorities can face is that the risks they analyse may be somewhat limited by the data which they have available to them. Supervisory oversight will naturally focus on the risks which can be identified and monitored. Supervisory authorities should be aware of this issue as analysing an incomplete set of risks enhances 'model risk'. However – as discussed in Module 1 of the IOPS Toolkit – supervisors should not over-react to this problem by trying to collect reams of information on every risk they ideally would like to include in their risk analysis models. Demanding too much information from supervised entities may place too much of a burden on both these entities and the authority itself (which could end up with more data than can be reasonably managed). Supervisors should also look at ways that they can better use the data that they do collect as this can often be as much of a challenge as having the data needed.¹⁸

The following list of possible risk factors to include in a risk assessment is designed as a check to help supervisors when devising their models. The list should not be seen as comprehensive or exclusive and indeed it is important to note that each supervisory authority will need to adapt the inputs to their model according to their unique system, supervisory objectives and resulting risk focus.

Risk categorisation is not an exact science and, it is acknowledged that actual risks may belong to several risk factor categories. Within their risk models, authorities may combine or split risk factor categories and, in doing so, emphasise the focus for their RBS approach on a particular risk or bring together related risks as a means of avoiding duplications in assessment. For example, mismatch risk is considered by some supervisory authorities as part of investment or market risk. Also, IT risk (including cyber risk) is considered by some jurisdictions as part of operational risk. Accordingly, it is important to remember that this list of risk factors is provided to prompt supervisory authorities to consider whether the risks are relevant for them. It is not expected, nor intended, that every risk factor category will be relevant for every jurisdiction nor grouped or articulated in the same manner.

While there is commonality observed in identification of key institutional risks across many jurisdictions, it is also noted that the risks can evolve over time or that the focus within risks can evolve. For example, cyber risk has become a key area for supervisory focus¹⁹. Risk models do not necessarily separate the assessment of cyber risk and may incorporate the assessment of existing risk factors categories such as IT risk or operational risk. Consideration of environmental, social and governance (ESG) factors and climate

¹⁸ Black (2010).

¹⁹ IOPS (2022), [Report on learnings from the design, implementation, use and review of risk based supervision by pension supervisory authorities](#), IOPS Working Paper No. 38

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and environmental risks has been incorporated into the risk models in some jurisdictions but, again, within existing risk categories rather than a specific category for ESG factors.

Risk Factors

Investment or market risk: risk of losses due to adverse movements in interest rates and other market prices - leading to underfunding in DB plans and low balances in DC accounts. The problem may materialise due to 'concentration risk' (i.e. the risk that the investment portfolio is not sufficiently diversified and/or is too concentrated on one asset, issuer, industry or geographic region). The risk may also arise due to investment in unregulated/ unlisted products. In developing economies, the range of investments available to pension funds may be highly limited (due to under-developed capital markets and/or restrictions on overseas investments). In such cases the investment portfolio as a whole would be far from ideal and the supervisory authority should consider investment risk for all supervised entities within the high-risk category. Investment risk can also be systemic in nature when all pension plans are affected by financial meltdowns or other economic catastrophes (as was the case in 2008/9)²⁰. 'ESG factors'²¹ can also give rise to investment and market risk and should be considered and integrated within investment and risk management of pension funds.

Counterparty default risk / credit risk: risk of loss from the failures of a counterparty to meet its obligations (this might arise if derivative instruments are being used for "liability driven investment"). Credit risk arises from an obligor's failure to meet the terms of any contract with the institution or otherwise fail to perform as agreed, including the possibility of restrictions on or impediments to the transfer of payments from abroad.

Funding and solvency risk: the risk that a pension fund does not have sufficient assets to meet its liabilities.

Liquidity Risk: the risk that an institution will not be able to meet its payment obligations as they fall due without excessive cost or the total inability to recover funds or only with significant delay.

Mismatch risks: risks arising from differences between the financial terms of the fund's assets and liabilities. Mismatch risks can arise due to mismatches in currency, maturity and interest rates mismatch. For example, adverse movements in interest rates, bond prices, stock and commodity prices, or exchange rates having a differential effect on assets and liabilities (for example a drop in interest rates which increases the value of liabilities by more than the increase in the value of assets – naively, an increase in asset value would otherwise be considered a positive development, but not if liabilities increase even more).

Actuarial risk: including inappropriate actuarial valuation methods and assumptions (e.g. mortality, longevity, disability, inflation, liquidity) as well as insurance type risks within the pension plan. This can have a considerable impact on actuarial liabilities. If not assessed accurately there is a danger of overestimating, or more problematically, underestimating the value of the liabilities. Likewise, inappropriate methods (departing from market value) that consistently over-estimate the values ascribed to assets could lead to actuarial risk. Again, inconsistent or inaccurate assumptions may be a systemic problem within developing economies and this risk may need to be placed in the highest category for all entities which pension supervisory authorities in such jurisdictions oversee. Insurance underwriting risk is the risk that insurance cover will not be available as expected when needed. This situation might occur if there are significant life insurance or disability benefits in the pension plan that should be reinsured, but for which no market might exist in the country. Finally, under this heading could be categorized various guarantees, such as relative or absolute rates of return for defined contribution plans.

Market Conduct risks: these could otherwise be described as 'competition risk', 'competition failure' or 'member outcomes'. Issue includes excessive fees, conflicts of interest, fraud misappropriation and misallocation failure to promote the financial interests of members, poor quality or inadequate disclosure to members and beneficiaries, and inadequate complaint handling. Market conduct risks can arise from simple ignorance of law and best practices, unwillingness to adopt best practices, or through wilful negligence and corrupt practices. One significant risk in both defined benefit and defined contribution plans is that of non-payment of contributions.

²⁰ This risk can be measured quantitatively (as described in Module 2) – with stress tests etc. showing the level of risk undertaken by the fund (the worse the results the higher the inherent risk generated by market/ investment factors).

²¹ IOPS (2019), [IOPS Supervisory Guidelines on the Integration of ESG Factors in the Investment and Risk Management of Pension Funds](#)

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Operational Risk: the risk of losses resulting from inadequate internal processes, people and systems – whether these are internal to the regulated entity or in a service provider. Operational risk arises from failures in transactions with counterparties, ineffective decision making, and inadequate or insufficient human and technical resources. Examples include transaction processing (correct, complete and in time), outsourcing and cooperation (assessment of mandates), expenses (levy in premium), staff (quality and quantity) information management, product development (innovation) material: (pre-) acceptance (transfer of pension rights), payment & settlement. More serious risks may also be involved, such as the risk of fraud and general natural disaster risks (e.g. damage to buildings due to fire or natural disasters, burglary or theft of fund property). Causes include internal fraud, external fraud, employment practices, clients, products and business practices, damage to physical assets, business disruption and system failure or process management.

IT Risk: IT risk is the risk arising from inadequate information technology and processing in terms of manageability, exclusivity, information security (including cyber risks), integrity, infrastructure, controllability and continuity IT risk also arises from an inadequate IT strategy and policy and from inadequate use of the information technology.

External and strategic risk: these are the inherent risks with regard to the sensitivity of the fund to external factors. These risks arise from adverse strategic decisions, improper implementation of decisions or lack of responsiveness to changes in surrounding environment. These include risks related to demographics, competition, technology, reinsurance, conjuncture, interested parties, infection, and political stability. Strategic risks include the continued viability of an entity as a result of change in the operating environment, including internally driven change such as merger, or the coverage of a new group of participants in the pension plan (such as part-time employees – who might have significantly different characteristics and challenges from existing members). External and strategic risk also includes those risks stemming from changes in policy, law, markets technology, investor sentiment and prices due to a transition towards a low-carbon economy²². Some of these risks (such as reputational risks) would not be applicable to the pension fund itself, but might be applicable to the plan sponsor and its ability to provide capital support (pension accumulation funds are more similar to commercial enterprises, so might be subject to these kinds of risk directly).

Legal and Regulatory Risk: the likelihood of adverse consequences arising from the failure to comply with all relevant laws and regulations. Risks concerning changes in legislation in future may also be considered. Risks of complying with inappropriate or unclear regulation should also be put in this category.

Contagion and related party/integrity risk: risks to an entity's business as a result of close association with another entity – the risks may be direct through financial exposure or indirect through reputation damage. Integrity risk is the risk arising from ethical standards. For example, injury of third parties liability, an ambiguous relationship of the fund with other financial institutions in the same group; insider trading, tax evasion, money laundering, fraud.

Governance risk: the risk that inadequate management, oversight, and controls may adversely impact the effective administration of the plan. It encompasses:

- the governance structures and processes designed to inform prudent decisions and actions;
- the behaviours, skills, knowledge and motivation of staff and trustees;
- the culture within the institutions that are charged with administrating and managing all or part of the pension funds and schemes; and
- the risk management framework of those institutions.

Public version

Example: Kenya



The supervisory framework needs to ensure the effective and efficient governance, prudential management and market conduct of retirement benefit schemes. The supervisory activities should therefore be focused on the risks associated with these activities, namely governance risk, prudential risk and market conduct risk – collectively called risk categories. Each risk category is made up of specific components that in total capture the risks associated with each category – these are called risk components and are described further in the table below.

Risk category	Risk component	Description
Governance Risk	Trustees, service providers and professionals	The risk associated with the quality, probity and competence of the persons charged and/or delegated with the overall management of or providing services to a retirement benefit scheme
	Corporate governance	The risk associated with the effectiveness of the system of policies, practices and processes by which the retirement benefits scheme is directed and controlled
	Risk management and controls	The effectiveness of the identification, assessment and control of risks that pose a threat to proper management, operations and general functioning of the retirement benefits scheme
Prudential Risk	Funding risk	The risk that a defined benefit scheme does not have sufficient assets to meet its liabilities, including the risks associated with actuarial methods and assumption used to determine the funding level. For a defined contribution scheme, this includes that assessment of the proportion of the funds that is allocated to members. It also looks at the remittance of contributions due to the schemes by employers. In both cases, the expenses of a scheme are assessed
	Underwriting (Insurance) risk	The risk related to providing benefits other than retirement benefits (i.e. death, disability, other)
	Investment risk	The appropriateness of the investment policy, effectiveness of its implementation and all risks associated with the investment activities of a retirement benefits scheme.
	Credit risk	Assessment of the risk arising from the inability or unwillingness of counterparties to fully meet their contractual obligations, including remittance of contributions
	Liquidity risk	The risk that a scheme will not be able to meet its payment obligations as they fall due without excessive cost or the total inability to recover funds or only with significant delay – due to the illiquidity of assets
Market Conduct Risk	Competition risk	Assessment of risks associated with the product development, marketing practices and other activities of a retirement benefits scheme (umbrella and individual) operating in a competitive environment. This also includes the risks that the sales practice and other interactions of an intermediary with members (current or potential) fall short of being fair and transparent
	Disclosure and communication	The quality, relevance and timeliness of the information disclosed by the retirement benefits scheme to its members and/or beneficiaries
	Complaints	The frequency, typology and severity of the complaints related to a retirement benefits scheme.

Example: Netherlands



De Nederlandsche Bank (DNB) in its ATM risk model breaks down its risk analysis into the following categories.



B. Risk Indicators

Having identified the main supervisory focus and the risks to meeting its goals, the pension supervisory authority has to determine what the risk indicators should be. Risk indicators can be defined as those activities or events that are likely to result in the risk materialising.

Example: Canada



The Office of the Superintendent of Financial Institutions (OSFI) in Canada use a series of indicators which are classified into 3 tiers based on the significance of the risks that the tests capture:

- **Tier 1:** indicators detect issues that require immediate attention and may have a significant impact on both the current state and future risk within the plan. Examples include non-remittance of contributions, contribution holidays in excess of surplus, or a plan employer facing serious financial issues. Any plan where a Tier 1 test is triggered receives immediate attention and an in-depth risk assessment.
- **Tier 2:** indicators identify potential risks with the plan that may lead to more serious issues. These include indicators such as investment returns that do not meet benchmarks, large changes in membership, and the proportion of liabilities pertaining to retired members. These are less significant than Tier 1 issues, but if a number of the Tier 2 risks arise simultaneously, an in-depth risk assessment is likely to be conducted.
- **Tier 3:** indicators capture situations that may require greater diligence or controls on the part of the administrator, but may not have a significant impact on risk within the plan if properly managed. Examples include whether the plan provisions contain certain ancillary benefits, or if there has been a history of late filings for the plan.

Some authorities use external consultants to help identify these indicators. Likewise, some IOPS members who have been moving towards a risk-based approach to supervision consulted other international authorities which have made such a move. However, all authorities also drew upon (what was perceived to be) more valuable internal knowledge of supervisors with experience in their specific sector.

Indicators can be quantitative and qualitative in nature. Indeed, the results of quantitative tools for measuring risk (discussed in Module 2 of the IOPS Toolkit) form key indicators in the overall risk assessment of some IOPS members. For example, the results of the VaR tests undertaken by Comisión Nacional del Sistema de Ahorro para el Retiro (CONSAR) in Mexico for the most conservative portfolios that contain the savings of the workers closest to retirement or the stress tests required by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) in Germany are key indicators of investment risk.

Whether to apply quantitative indicators - and which ones to apply - depends on the nature of the risk. Some risks can obviously be more easily quantified than others – particularly those which are the focus of defined benefit systems (i.e. funding and solvency and ALM tests). How to measure risk in DC systems is not an easy task (as there is no benefit guaranteed and it is generally risks to members rather than providers which is key). Quantitative tests for DC plans have been consequently more limited – with VaR assessments proving controversial, and alternatives (based on replacement rate shortfalls) still being developed. However,

the evolution in risk focus and risk factors, has seen some additional quantitative tests developed for DC plans.

Quantitative tests are more appropriate where some form of minimum pension or guarantee is involved.²³ However, there are some recent initiatives, as described in module 2 aimed at providing a quantitative assessment of member outcomes in DC funds. For example, Australia has also developed a heatmap that assesses performance and seeks to identify underperforming products and areas for improvement.

Example: Australia



The Australian Prudential Regulation Authority (APRA) in Australia has developed heatmaps that provide assessments of the performance of every MySuper product and for selected choice investment options. The Heatmaps provide stakeholders with transparency on the outcomes being delivered by all trustees offering MySuper products and for those trustees that offer selected choice investment options. It is designed to lift industry practices and enhance member outcomes by publicly identifying which MySuper products are underperforming and the areas they need to improve.

The [APRA's Superannuation Heatmaps](#) comprise three elements that are assessed separately

- Net Investment returns - utilising a Strategic Asset Allocation (SAA) benchmark, a simple reference portfolio benchmark (using a colour overlay)
- Fees and expenses – utilising representative member balances²⁴ adopting a colour overlay reflecting position relevant to a set benchmark
- Sustainability – utilising financial and beneficiary ratios

As pointed out in Module 2 of the IOPS RBS Toolkit, while such factors are very difficult to judge and equally difficult to score numerically, they are of great utility to the pension supervisory authority, as they tend to be “leading” indicators, as compared to the numerical factors, which tend to be “lagging” (although not always, stress testing is a leading indicator). Risk scores will inevitably be somewhat subjective, so it is important that a system be in place to ensure a reasonable degree of consistency between analysts (see Module 4 of the IOPS Toolkit).

However, it is important to recognise that not all relevant risks lend themselves easily to quantitative assessment and qualitative judgements may be required. Indeed, there can be a danger in focusing too much on quantitative factors. Some authorities have found that making their model too quantitative - though appealing in terms of making the model objective - risks leaving too little room for the important, subjective assessment of individual entities. The Retirement Benefits Authority (RBA) in Kenya has continued to strive for the right mix between the quantitative tools and qualitative judgements by allowing for two levels of assessment – automatic and manual. The first risk assessment is fully automated based on a quantitative

²³ Module 2 of the IOPS Toolkit discusses the types of quantitative indicators which can be applied to both DB and DC funds in greater detail (see Section 3 ‘Integrating Quantitative Tools into Risk Assessments’).

²⁴ Representative member balances include \$AUD10,000, 25,000, 50,000, 100,000 and 250,000.

model within the supervisory system. The manual assessment, which is conducted by a supervisory officer is voluntary, and is meant to capture the qualitative aspect that depends on the judgement of an individual.

Noted in Table1 below is a map of risks and risk indicators. While not an exhaustive list, and not necessarily applicable for every jurisdiction, it provides examples of indicators that might be relevant for specific risk focus and risk factors.

Table 1: Risk Indicators

Supervisory Objectives	Risk Focus	Risk Factors	Risk Indicators
Prevent Fund Failure Ensure Promised Benefits Delivered Promote member outcomes	<i>Funding and Solvency</i> <i>Sustainability</i>	<i>Investment /market risks</i> <i>Mismatch risks</i> <i>Actuarial risks</i> <i>Liquidity risks</i> <i>Operational risks</i> <i>(including IT risks)</i> <i>Governance risks</i>	Funding Levels Results of stress tests Results of ALM tests Volatility measures Portfolio concentration Asset correlation measures Trustee/ fiduciary knowledge IT Security Sensitivity to fraud Net investment returns/ forecasted ability to deliver on promises Fees and expenses
Prevent Excess Consumer Loss	<i>Risk-management Systems</i>	<i>Investment / market risks</i> <i>Operational risks (including IT risks)</i> <i>Governance risks</i>	Investment strategy Results of VaR tests Management ability Outsourcing Non/late payment of contributions
Ensure Fair, Competitive Markets Promote Market Stability Prevent Financial Crime Promote Market Development	<i>Conflicts of Interest</i>	<i>Governance risks</i> <i>Market conduct risks</i> <i>Counterparty/ credit risk</i> <i>External/strategic risks</i> <i>Law /regulatory risks</i> <i>IT risk</i> <i>Operational risk</i>	Outsourcing Probability of default Concentration and correlation Enforceability of contracts IT Security Sensitivity to fraud Custody arrangements Management ability Money laundering and other financial crime

Example: Uganda



In 2016 the Uganda Retirement Benefits Regulatory Authority (URBRA) started streamlining the compliance supervisory approach to a risk focused analysis with the existing regulations at the time. An RBS supervisory manual and an Excel assessment toolkit were developed with weights of assessment focused on Inherent Risk, Governance/Control and Funding.

Risk focus	INHERENT RISK		GOVERNANCE & CONTROL		FUNDING	
Weight	30%		40%		30%	
	DB (30%)	DC (35%)	DB (25%)	DC (45%)	DB (45%)	DC (20%)
Risk Factors & Indicators	Investment Risk DB(15),DC(20) <ul style="list-style-type: none"> Investment policy Investment returns and compliance with the set cap Risk measures 		Trustee oversight. DB(10),DC(25) <ul style="list-style-type: none"> Trustees fit and proper criteria and composition Self assessment The risk management policy lines of reporting 		Funding. DB(25),DC(0) <ul style="list-style-type: none"> Funding/solvency ratio Deficit recovery plan Actuarial valuations Rates of returns 	
	Insurance risk. DB(10),DC(10) <ul style="list-style-type: none"> Presence of death and disability benefits If the benefits are insured or not Capacity to handle non-insured risks 		Operations and Control. DB(10),DC(10) <ul style="list-style-type: none"> Filing of statutory returns Complaints handling mechanisms Expenses incurred by the scheme 		Employer. DB(20),DC(20) <ul style="list-style-type: none"> Timely remittances of contributions Timely payments of benefits owing Communication to members 	
	Non-Financial Risks. DB(5),DC(5) <ul style="list-style-type: none"> Transparent outsourcing procedures Capacity to handle greater complexity Presence of reserves 		Independent Review. DB(5),DC(10) <ul style="list-style-type: none"> Review of the audited accounts of the scheme. Outsourcing service provision to independent professionals 			

SECTION 3: SYSTEMIC RISK

Risks can be identified and assessed on two levels, on a ‘micro’ and a ‘macro’ basis – taking a ‘bottom up’ approach and attempting to identify risks at the level of individual supervised entities, or a ‘top down’ approach looking at a risk on a sector or thematic basis.

The term ‘systemic risk’ used in the IOPS Toolkit for Risk-based Supervision refers to both:

- systemic risk - i.e. a specific external risk factor which can have an impact on the pension sector as a whole (e.g. increased volatility in worldwide capital markets, as was experienced in 2008/2009) and;
- system-wide risk – i.e. a risk factor which may be prevalent within most pension funds (e.g. weak governance)

Systemic risk can affect all or most supervised entities, or some sub-section of them (for example all or most defined contribution funds or plans or all or most defined benefit plans) or even the whole financial sector. If all entities of a particular type are subject to this risk, it is not productive to deal with this particular risk on a fund by fund basis; it should be dealt with by improving the entire pension system. This can be challenging and might require legislative changes and/or cooperation with professional bodies.

Often, the risk assessments performed under risk based supervision relate to specific entities, with the results triggering supervisory responses directed at each entity individually, based on its particular circumstances. However, individual risk assessments may only become meaningful once systemic risks are recognised and eventually dealt with (top down approach). Information can also flow in the other direction (from the bottom up). Sometimes individual risk assessments identify or highlight issues that are relevant to more than one entity, perhaps even to the industry as a whole, arising from current unsound practices which might pre-date more rigorous supervision, or changes in the pension environment in which firms are operating.

The Central Bank of Hungary (MNB) point out that top down and bottom up analysis should constantly interact – with entity level analysis throwing up issues which need to be considered on a sector wide basis, and thematic analysis pointing out risks which may need to be analysed further within entity specific investigations.

Example: Hungary



Simplified risk map of the Central Bank of Hungary (MNB)

1. Business model	2. Corporate governance	3. Financial and operational risks	4. Risk of sustainability and reserves	5. Risk of market presence
1.1. Environment	2.1. Ownership	3.1. Insurance risk	4.1. Investment risk of pension coverage reserve	5.1. Products, services
1.2. Strategy, business plans	2.2. Internal management	3.2. Investment risk of operational and liquidity reserve	4.2. Capital	5.2. Members
1.3. Sustainability of operating	2.3. Risk management system	3.3. Operational risk	4.3. Operating and liquidity reserve	
	2.4. Internal control system			

Part of the risk-based supervisory process should therefore involve looking beyond institution-specific data to gather and analyse information on the industry and the financial system as a whole, including relevant international market information. The risk identification process should also be forward-looking in nature, in order to detect trends that may pose new or emerging risks. The supervisor must then distil this information and identify the risks of greatest concern. For example, a 20% concentration of the assets of the pension fund industry as a whole in a particular industry may represent a much greater risk to the financial system than would a 20% (or even higher) concentration in the asset portfolio of a single pension fund, meriting greater supervisory attention to how this risk is being managed.

When is systemic risk important?

Some pension supervisory authorities have to rely more on systemic risk analysis as they oversee too many entities to produce an in-depth risk-score for each one. Likewise, supervisory authorities covering more emerging pension systems may focus more on systemic risk as these are where their main challenges lie (see box).

Systemic Risk in Emerging Economies

The importance of identifying systemic industry risks as well as individual institution risks needs particular emphasis in the context of emerging market countries. For example, it has been the experience of many newly established pension supervisory authorities to find that poor record-keeping and administration by pension funds is a systemic problem. The supervisory authority may choose to focus resources on finding an industry-wide solution to improving record-keeping (e.g. through training, issuing of model or mandatory management information system requirements, imposing a centralised administration system, etc.) rather than devoting inspection resources to the record-keeping performances of individual pension funds and pursuing actions in a piecemeal fashion.

Systemic risks often arise when a supervisory system is first implemented or significantly strengthened. For example, there could be poor working practices on the part of service providers. The pension supervisory authority can work with industry groups to improve these. Likewise, training may be needed to get trustees up to speed, or to improve the quality of data used (e.g. actuarial assumptions). Pension supervisory authorities may work with professional organisations to gain information and improve standards.

Systemic risks also arise as a result of the change in the financial, economic and social environment, even if initial systemic issues have been resolved satisfactorily. Such changes naturally include a significant market correction outside the normal fluctuations of stock and bond markets. For example, it can be difficult to immunise assets in emerging markets (due to a lack of instruments, investment restrictions, etc.) and therefore pension supervisory authority needs to be vigilant regarding mismatch risk.

An important aspect of RBS is the need to understand the risk management and investment strategies of pension funds and the investment markets in which they operate. For example (as discussed in Module 1), a full range of investment grade securities is not readily available in some developing countries. The stock market may offer only a limited range of securities and be volatile. Foreign investment may be limited, so the large liquid and low cost (of transaction) markets in developed countries are not as accessible as they could be. This means that all portfolios would be considered high risk, due to the fact that portfolios have difficulty in accessing securities that would be more appropriate (for example many are probably overweight in property). This is a systemic risk, rather than a specific risk for each pension plan or fund.

Other changes to the socio-economic landscape are less dramatic and can often be planned for. Such changes could include improvements in public health and education which lead to an expectation of significant mortality improvement. Other social changes, such as greater acceptance of common-law spouses and/or same sex spouses, which could increase the cost of survivor benefits, also need to be monitored. Pension supervisory authorities need to ensure actuaries include such factors in assessing the costs and solvency of defined benefit pension plans, otherwise these costs will be underestimated. These phenomena also affect defined contribution pension plans as they reduce the amount of prospective benefit to all beneficiaries for a given amount of capital at retirement and so might cause a reappraisal of adequate contribution levels to meet reasonable expectations as to target replacement ratios.

While these types of issues are more likely to face pension supervisors in an emerging market country than in a developed financial system, a developed system with many small funds could present this type of problem as well. The consideration of such systemic issues therefore needs to be built into the risk analysis of pension supervisory authorities overseeing such systems.

Systemic risk may also take on increased importance at particular times. For example, the financial and economic crisis of 2008/2009 highlighted the need to include systemic risk analysis into risk-based supervisory regimes by displaying the importance of monitoring ‘contagion channels’ (to use the IMF’s phrase) between financial sectors and between the financial sector and the real economy.²⁵ Consequently, during this period the German supervisor, the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) - for example - set up a special Task Force to deal with the crisis. Increased reporting requirements for risk, solvency, liquidity and liability coverage for major Institutions for Occupational Retirement Provision

²⁵ See Impavido, Tower (2009).

(IORPs) were set up, the frequency of reporting on investment and/or hidden reserves was increased from quarterly to monthly, and a type of regular liquidity monitoring was increased – all activities being designed to improve the ability of the supervisory authority to track developments within the sector and identify potential risks as soon as possible. BaFin paid attention to IORPs' investments in particular firms or products (Lehman, AIG, structured credit products, banking sector, Madoff), as well as to other investment risks which may not only affect the pension sector (including: exposure to countries with high CDS spreads; exposure to automotive industry; exposure to banks issuing covered bonds.)²⁶

The Covid-19 pandemic was also a period where a risk based approach enabled supervisors to dynamically adjust their focus towards systemic risks. For example, jurisdictions noted that there was heightened supervisory focus on liquidity risk due to policy changes (such as the ability to make early withdrawals). For defined benefit funds, there was also greater focus on an employer's liquidity position and their ability to make contribution payments during the Covid period²⁷.

It may also be necessary to pay attention to functional activities or risk categories, which do not require immediate attention at the individual entity itself, but where the entity may form part of the benchmark for other entities. In such cases, an appropriate supervisory response might well be industry-wide in nature.

How can systemic risk be identified?

Examples of systemic risk identification include performing sector-wide risk analyses (e.g. stress-testing, focused surveys or self-assessments). Other assessments could include:

- Early-warning systems
- Macro-economic conditions
- Market conditions
- Industry funding levels
- 3rd Party oversight
- Member complaints
- Examination of compliance with new legislation or regulation
- Industry wide practices, such as the selection of actuarial assumptions and methods, or interest crediting policies for defined contribution plans
- Thematic onsite or offsite reviews across a group of entities on specific topics of interest or concern

How can systemic analysis be incorporated into overall risk assessments?

Systemic analysis can identify risks requiring further attention across the peer group, sector or entire industry and can assist in determining which activities should be undertaken within a specific area of focus. It can also provide insights into the effectiveness of the prudential framework and identify areas where the framework may not be effective or require revision. For instance, Guernsey note that for low impact pension funds, their supervision is partially reactive and so thematic supervision enables it to bolster their supervision of low impact firms across key sectoral issues. Poland emphasises the benefit of consistency that comes from thematic reviews as it enables identical areas of activity to be assessed in the same standardised way.

²⁶ For examples of other countries responses to the financial crisis see, IOPS (2009), [Private Pensions and Policy Responses to the Financial and Economic Crisis](#), IOPS Working Paper No. 9 and [Responses to COVID-19](#)

²⁷ See IOPS (2021), [RBS IOPS Workshop Summary note](#)

However, practical difficulties may arise when undertaking thematic analysis - including how to integrate such analysis into the assessment of individual institutions - one solution being to pre-populate score sheets with these factors. Developing systems for comparing risks across the whole of a supervisory authority's portfolio of firms is also not easy – with central databases, specific divisions and specialist staff usually required. In some cases, the supervisory authority may need to supplement its internal expertise in order to help identify risks or to more fully understand their importance. The supervisor should have the authority to retain external experts, as necessary (e.g. the supervisor may retain experts to provide advice on the potential risks in a new type of derivative instrument).

Pension supervisory authorities can incorporate systemic risk analysis into their overall risk assessment in different ways. They can build systemic risk considerations into the risk scores produced for the individual entities they are assessing (as is the case, for example with the Central Bank of Hungary or the Australian Prudential Regulation Authority). In the past, some jurisdictions have added systemic risk as a further layer of analysis directing supervisory action after individual risk scores have been produced. Alternatively, where individual risk scores are not produced for all entities supervised (as is the case with the United Kingdom's Pensions Regulator) systemic considerations may directly form a part of any 'probability' ratings.

In the Netherlands, the De Nederlandsche Bank (DNB) systemic risk is incorporated within its ATM model and is taken on board in the risk assessment and scoring. The DNB also monitor systemic risks continuously (monthly/quarterly) via (automatic) assessments and these analyses can influence individual scoring (and supervisory action) continuously.

Example: Australia



In Australia, the Australian Prudential Regulation Authority (APRA) incorporates systemic analysis into risks assessments through a variety of different methods.

Systemic risks are captured within the 'External Factors' risk category in the Supervision Risk and Intensity (SRI) model, which is used to determine risk and supervisory intensity for regulated entities. The level of risk assessed for the External Factors category in the SRI model may scale up an entity's overall risk rating, as well as provide useful for information for supervisors to consider. The External Factors category recognises that an entity does not operate in isolation and its risk will be impacted by factors outside of its control. These factors may impact an entity's viability, community trust and market confidence. APRA's assessment occurs on a regular basis throughout the year and focuses on the external operating environment and the risks it may present to the entity's long-term viability. It includes an assessment of political, economic, social, technological, environmental, and legal factors, competition, and industry-wide risks. Entities operating in similar markets with comparable businesses will have commonality in the assessment of relevant external factors.

APRA regularly reviews each industry it supervises, considering risks from an industry or sector wide perspective. This 'top-down' analysis provides supervisors with information on industry developments and emerging issues or trends that may adversely impact regulated entities' risk profiles. It may lead to actions relating to a specific regulated entity and/or lead to a revision of APRA's prudential requirements. Supervisors are responsible for developing an appropriate supervisory action plan to mitigate any risks or issues identified. Supervisory actions will vary by regulated entity and reflect APRA's risk-based approach.

APRA also conducts risk horizon scanning for each industry throughout the year to identify key emerging risks. Views are informed by supervisory work, macroeconomic and risk specialist teams and dedicated horizon scanning exercises. A risk register is maintained of key industry-wide risks. Risks are an input used to inform APRA's risk-based supervisory strategy. In addition, top rated risks are allocated to an individual risk-owner determined by the Executive Group. This person is responsible for developing suggested supervisory actions to ensure the issue/risk is adequately addressed by supervisors in the upcoming year.

Ad-hoc industry-based studies may also be conducted by research, cross-industry insight and data focused teams. Peer group financial analysis and other analytical support tools are also used. A regular review of financial information is conducted and used to identify key trends within an industry sector and outlier regulated entities. Outliers will be raised directly with supervisory teams to review and potentially raise issues with the regulated entity.

Example: Hungary



The Central Bank of Hungary (MNB) integrates both institutional and thematic analysis into their risk analysis framework. Thematic risks considered include regulatory and market/ product changes.

The MNB usually assess systemic risks in order to draw conclusions for the sector. Depending on the results, further follow up investigations with a group of or specific individual institutions then take place.

Thematic analysis is also fed into the organisation's electronic, risk assessment system which provides a risk score for each supervised institution. Sector and thematic risk pages can be viewed by the supervisors overseeing a specific institution, with some risk categories (which feed into the overall result) scored centrally by sectoral analysts.

In addition, an analysis of the macroeconomic environment is used in the risk assessment.

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