

Risk Based Supervision for Pension Plans

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Presentation Path

- Setting the Context
- Concept of RBS (Risk Based Supervision)
- Why RBS?
- Evolution of RBS
- A Quick look at the RBC Balance Sheet
- Process of RBS for Pension Plans
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Setting the Context



- In many jurisdictions – Netherlands, Denmark, Mexico, UK and Australia – pension regulators have transitioned from a Rule Based Supervision Framework to Risk Based Supervision (RBS) framework.
- The International Organization of Pension Supervisors (IoPS) has embedded RBS as one of the key principles of private pension supervision
- In the Indian context, the pensions regulator can use the RBS framework for
 - Regulating private pension plans
 - Setting up a robust risk management framework around NPS (National Pension Scheme) and UPS (Unified Pension Scheme)
 - The RBS Framework can be used for designing risk based self supervision checklists for large DB and DC Pension Plans including Exempt Provident Funds – Own Risk & Solvency Assessment (ORSA)

Concept of RBS



- The international Organization of Pension Supervisors (IoPS) defines RBS as “a structured approach which focuses on the potential risks faced by the pension plans or pension funds; and the assessment of the financial and operational factors in place to manage and mitigate those risks.
- From the above definition it follows that the RBS process allows the pension regulator to direct its resources towards the issues and institutions which pose the greatest threat

Why RBS

- While implementing an RBS process for pension plans is a challenging task, there are a number of benefits of doing so. These benefits include:
- RBS enhances the likelihood of identifying significant issues and concerns in a timely fashion; and addresses these issues/concerns in the most effective manner.
- RBS helps to optimize the use of the scarce regulatory resources.
- RBS incentivizes the pension plans to run their business well, so that they receive the minimum attention from the regulator.

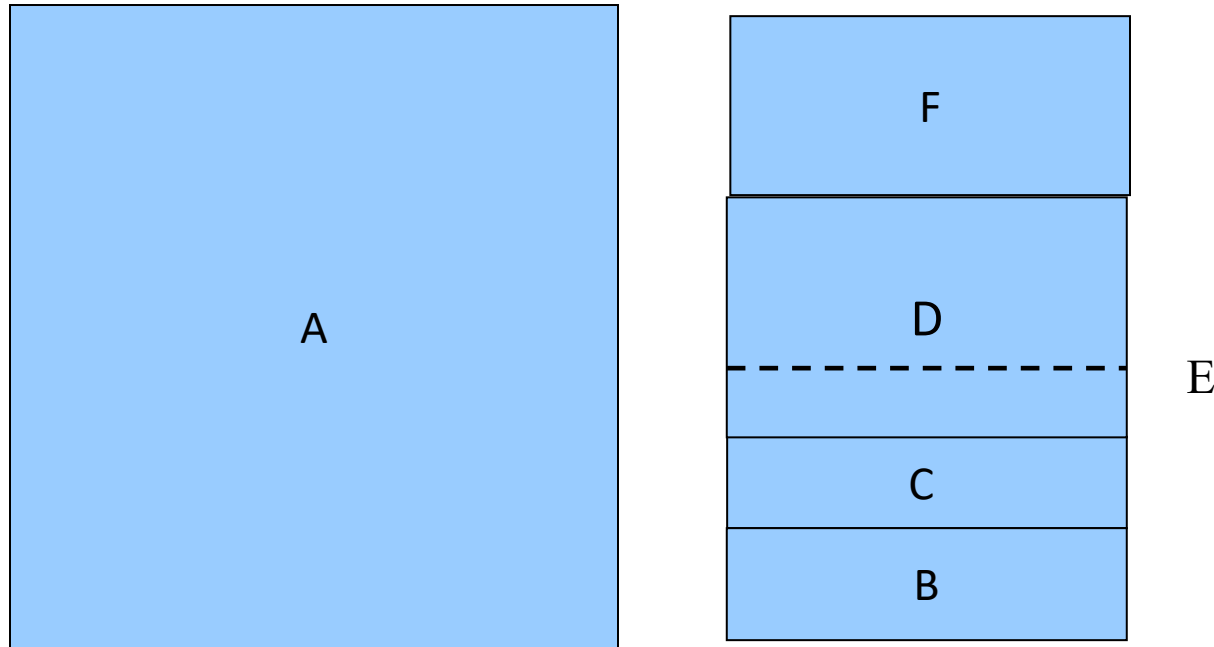
Evolution of RBS Framework

- The RBS framework first evolved in the insurance and banking sectors.
- The RBS framework for banks is referred to as the Basel Accords (particularly Basel II)
- The popular RBS framework for insurance firms is the Solvency II framework.

Evolution of RBS Framework

- RBS frameworks for banks and insurance firms are predicated on a three-pillar framework.
- Pillar I focusses on quantification of the risk-based capital requirement (referred to as Solvency Capital requirement under Solvency II).
- Pillar II deals with supervisory processes for evaluating the risk management systems of the supervised entities; and (b) for assessing additional capital requirements for risks not identified under pillar 1 (e.g.: liquidity risk).
- Pillar III is about the reporting requirements aimed at enhancing the transparency of the disclosures. The reporting requirements are classified into categories :what needs to be reported in the public domain; and what needs to be reported only to the regulators.

Risk Capital Based Balance Sheet



A = Fair / Market Value of Assets

B = Best Estimate of Liabilities (BEL)

C = Risk Margin (RM)

D = Risk Capital (Solvency Capital Requirement or SCR)

E = Minimum Capital Requirement (MCR)

F = Excess Capital (Surplus Capital)

Technical Provisions = B + C = BEL + RM

Sources of Risks for Pension Plans

Sources of Risk	Sub- Classifications
Insurance Risk	• Pre retirement Mortality • Post Retirement Longevity
Market Risk	• Interest Rate Risk – ALM Risk • Equity Risk • Spread Risk • Currency Risk
Credit Risk	• Sponsor Current Risk • Self Investment Risk
Operational Risk	• Data Risk • Governance Risk • Legal Risk
Liquidity Risk	
Regulatory and Political Risks	
Salary Escalation Risk & Pension Escalation Risk	
Emerging Risk	Climate Risk

Five Step Process

- Step 1: Setting the objectives of the pension regulator and articulating its risk focus
- Step 2: Risk Profiling
- Step 3: Risk Assessment and Risk Weighting
- Step 4: Setting Up a Quality Control Process
- Step 5: Developing a Risk Classification Matrix

Challenges in Implementation

- The experience of the regulators who have introduced RBS framework in the pensions sector like Netherlands, Denmark, Mexico, United Kingdom, and Australia has revealed that RBS is worth doing; but it is not a straightforward process.
- The pooled experience of the pension regulators and the regulators in banking and insurance sectors who have been involved in RBS shows that there are some common pitfalls such as:
 - Not having a clearly articulated risk based supervisory strategy.
 - Not defining the specialist assistance that is needed for RBS; and not mapping the required resources to planned resources
 - Not invested adequately in risk profiling & risk classification which can lead to an inadequate review of the supervised entities.

Desired Outcomes of RBS

- Having discussed the RBS framework, the next question is:
 - What should be the desired outcome of RBS?
- What is the desired outcome of RBS for a life insurer ?
- What is the desired outcome of RBS for a pension plan ?
- Clearly a key desired outcome will be to minimize the pension risk of the plan.
- Interpreting pension risk will depend upon the nature of the pension plan.

Desired Outcome(s) of RBS for a DB Plan



- In the case of the DB pension plan, the pension risk will be the risk of not meeting the promised benefits of the members as and when they fall due for payment in the future.
- The objective (or the desired outcome) of the RBS will be to minimize the likelihood of the occurrence of this pension risk.
- In other words, the regulator will want to ensure that the pension risk management framework and processes of the pension plan are geared towards maintaining an adequate level of solvency –measured through a solvency ratio or funding ratio defined as :
$$\text{Funding Ratio} = V(A)/V(L)$$
- where $V(A)$ measures the fair value of the assets; and $V(L)$ measures the fair value of the liabilities assessed through an actuarial valuation process.
- Articulating Risk Appetite or Risk Tolerance

Desired Outcomes of RBS for a DC Plan



- In a DC Pension Plan, the benefits are not guaranteed. At best, these benefits are linked to a “target pension” (like the Collective Defined Contribution Plan).
- Therefore, in a DC pension plan, the pension risk is that the actual pension is different from the target pension.
- In other words, the pension risk is the volatility of the standard of living that a contributor (member) of the plan can maintain in retirement.
- Minimizing pension risk in a DC plan therefore means minimizing the risk of having an inadequate pension.

Desired Outcomes of RBS for a DC Plan



- This risk of having an inadequate pension is a function of four factors.
- The level of contributions throughout the accumulation phase
- The security of the funds contributed.
- The net investment earnings (net of fees and transaction costs) on the fund
- The interest rate environment at the time of annuitizing the fund pension conversion risk)
- Of the above factors, the contribution risk is often outside the regulator's control. What the regulator can ensure is that the risk management framework and processes of the DC pension plan must be geared towards minimizing the operational risk (which enhances the security of the funds) and minimizing the investment risk (reduce the volatility of the investment returns)
- Explicit Pension Targets

Proposed RBS Framework for Pension Plans



- What is proposed here is a self driven or regulator driven RBS Framework in the Indian Context which draws on (a) the current RBS framework as outlined by IOPS; (b) the ERM Architecture for Insurance Companies; and (c) the methodologies used by the rating agencies like (Standard & Poors) for rating the ERM practices of insurance companies.
- The key building blocks of the proposed RBS framework are:
- Risk Focused Objectives
- Evaluation Criteria
- Risk Classification Table

Proposed RBS Framework – Risk Focused Objective



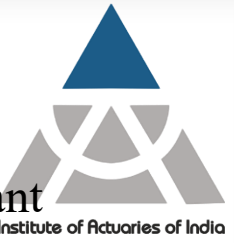
- The pension regulator needs to ensure that all supervised pension plans must have risk focused objectives.
- We believe that the primary risk focused objective for a pension plan must be to minimize the pension risk for the plan members.
- For a DB plan, minimizing the pension risk will translate to ensuring that the funding level of the plan is adequate. This can be done by (a) stipulating that the funding ratio of the plan does not fall below a predetermined level (e.g.: 95%); and (b) the sponsoring employer's covenant expressed in terms of a credit rating must not fall below a particular level (e.g.: the rating must not fall below A)
- For a DC plan, the regulator must insist that all supervised pension plans must have explicit target pension. Given a target pension, minimizing pension risk can translate to a probabilistic statement like: “the likelihood of the actual pension at retirement falling below the target pension must not exceed 5% over the next one year”.

Proposed RBS Framework – Evaluation Criteria



- We have identified the following evaluation criteria for evaluating the robustness of the risk management framework of pension plans:
 - Risk Culture
 - Risk Controls
 - Risk Models and Capital Models
 - Strategic Risk Management

Proposed RBS Framework – Evaluating Risk Culture



- The risk management culture reflects the degree to which risk and risk management are important considerations to the pension plan sponsor and the trustees in all aspects of decision making.
- The indicators of a strong risk management culture will include:
 - The Board of Trustees has a Risk Committee to support effective risk management.
 - The pension plan has clearly articulated risk appetite and risk tolerance statements.
 - The pension plan risk management rests with staff who are adequately trained in risk management.
 - There is a robust risk reporting process in place.
- Risk Management policies and procedures are clearly documented and articulated.
- There is a high level of risk transparency, which means information on risks and risk management is shared with all stakeholders including the sponsoring employer and the members of the plan.

Regulatory Requirements Related to Pension Fund Risk Culture

Country	Risk Management Plan Strategy	Board Committees for Risk Management
Netherlands	Required to be included in the business plan submitted at time of licensing	Accountability body that inter alia reviews long term risk management
Denmark	Board of Directors required to issue risk management guidelines	No specific requirements
Australia	Required for Licencing: Complexity and detail depend on fund size	No specific requirements
Mexico	Written policies and procedures for addressing operational and financial risk	Two Board Committees for operational and financial risk

Proposed RBS Framework – Evaluating Risk Controls



- While evaluating the robustness of risk controls, the supervisory authority must consider the following aspects:
- The pension plan has an appropriate process for identifying all material risk exposures
- The pension plan monitors all risk exposures regularly using appropriate risk measures
- The pension plan has translated the risk tolerances into risk limits for all material categories of risk; and these risk limits are well understood and adhered to by those who are running the day-to-day operations of the plan.
- The pension plan has well defined and articulated risk management programs in place to manage the risks

Proposed RBS Framework – Assessing Risk Models and Capital Models



- The regulator needs to ensure that the supervised pension plans have:
- Appropriate financial/statistical models for assessing the risks which are quantifiable.
- Appropriate checks and controls around the quality of data fed into the risk models, the consistency of the underlying assumptions, and the validation of the models.
- The risk models are appropriate to handle tail risks -risk of extreme events like sponsor insolvency.
- Usually, pension plans are not required to calculate risk-based capital requirements. However, as a matter of best practice, large pension plans- particularly DB pension plans, can develop an internal methodology for estimating risk capital requirements for the key categories of risks like insurance risk, salary & pension escalation risks, market risk, credit risk and operational risk, and aggregating these capital requirements into an overall capital requirement. In that case the regulator needs to review the capital models as well.

Selected Risk Models

Risk Category	Modelling Techniques
Mortality Risk	Survival Models with future mortality improvement adjustments
Market Risk	- Value at Risk and Conditional, Value at Risk (or Tail Value at Risk) Models - Sensitivity Testing - Scenario Testing
Credit Risk	- Credit Scoring Models (e.g.: Altman's Z Score, Logistic Regression) - Structural Models (e.g.: Merton and KMV Models) - Reduced Form Models (e.g.: Transition Matrix Approach)
Liquidity Risk	Maturity Gap Analysis or broadly asset-liability modelling
Operational Risk	- Scenario Analysis - Simulation

Proposed RBS Framework – Evaluating Strategic Risk Management



- The risk management framework of a pension plan must culminate in improving the quality of the strategic decisions taken by the trustees of the plan; and in ensuring that the goal of “minimizing pension risk” is met.
- Towards this end, the regulator needs to assess how the risk management framework is embedded in the decisions around.
- Plan Design: For example, what are the risks associated with embedding a minimum pension guarantee in a DC pension plan: and what are the risk mitigants which can be used to mitigate these risks.
- Strategic Asset Allocation Decision: In this case the trustees should consider the risks of the chosen asset allocation pattern from the standpoint of protecting the security of benefits for the members,
- Outsourcing Decisions: whether all the risks of outsourcing have been considered; and appropriate risk mitigants (like contract wording) are in place to address these risks.
- Funding (or Contribution) decision: For example, in the case of a DC plan the trustees need to periodically assess the risk of not being able to meet the target pension with the current contribution levels; and the need for upward revision in the contribution levels.
- Rewarding third party service providers like external investment managers:
- The Pension Plan must use appropriate risk-adjusted measures of performance to evaluate and incentivize the third-party service providers. For example the external investment managers can be evaluated on the basis of risk adjusted performance measures like the Sharpe Ratio [ratio of the excess of the portfolio investment return over the risk-free rate divided by the standard deviation of portfolio returns] and the Treynor Ratio [ratio of the excess of the portfolio investment return over the risk-free rate divided by the portfolio beta]

Proposed RBS Framework – Evaluating Strategic Risk Management



- The supervisory authority can decide on the weightages to be assigned for the above evaluation criteria (rating factors); and assign a numerical score (say on a scale of 1-10) to its judgement on how the pension plan has fared on each evaluation criterion. Using the weights and the scores, the supervisory authority can determine a weighted score for the pension plan.
- A risk classification table can be developed based on the weighted scores. An example of such a classification is given below:

Proposed RBS Framework – Risk Scoring



Risk Classification Table

Weighted Score (on a scale of 1-10)	Classification	Comments
8-10	Strong	Minimal Supervisory Attention
4-7	Adequate	Periodical Supervisory Attention
Less than 4	Weak	More frequent and in-depth supervisory reviews culminating in supervisory intervention in extreme situations

The risk-based supervision framework proposed in this section needs to be viewed just as a starting point. It can be refined further to develop a more elaborate risk based supervisory process. It should also be ensured that the risk-based supervision framework adheres to the principle of proportionality – the supervision is proportional to the risks being mitigated.

Points to Ponder

- The key take aways from this paper can be summarized in the form of some points to ponder over :
- Develop a RBS framework around NPS and UPS .
- Develop a risk checklist for the key risks to be monitored as part of self –supervision for large private pension plans and Exempt Provident Funds
- Do a QIS [Quantitative Impact Study] around assessing the risk capital requirements for large pension plans – probably UPS to start

Reference



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Thank You

Appendix

Market Risk Defined



- Refers to the risks arising from changes in the market values of investments
- Encompasses the following risk categories
 - Interest Rate Risk
 - Equity Risk
 - Property Risk
 - Spread Risk
 - Concentration Risk
 - Currency Risk
- We are concerned about the impact of market risk on Basic Owned Fund =
Surplus = $A - L$

Calculating Interest Rate Risk Capital: A Simple Numerical Example



- Balance Sheet of XYZ Insurer as on 31 March 2023

Liabilities		Assets	
Share Capital	150	MV (Assets)	600
Reserves	300		
BEL	150		
Total	600	Total	600

- Duration of Assets : 7 Years
- Duration of Liabilities (BEL) : 10 Years
- (Flat) Risk Free Rate of Interest : 7%

Calculating Interest Rate Risk Capital: A Simple Numerical Example (Continued)



- Surplus = Basic Owned Funds
= Share Capital + Free Reserves
= 150 + 300
= 450
= MV (Assets) – BEL
= 600 – 150
- Assume a 50% instantaneous increase in risk free interest rates
- Revised Interest Rate = $(7\% + 50\% * 7\%) = 10.5\%$

Calculating Interest Rate Risk Capital: A Simple Numerical Example (Continued)



- Change in MV (Assets) = $[600 * 7 * (0.035 / 1.07)] = 137$
- Revised MC (Assets) = $600 - 137 = 463$
- Change in BEL = $[150 * 10 * (0.035 / 1.07)] = 49$
- Revised BEL = $150 - 49 = 101$
- Revised Surplus = Revised BOS
= $463 - 101 = 362$
- Change in BoS = $362 - 450 = (-) 88 = \text{SCR}$
- Impact of an instantaneous decrease in risk free rates has not been considered in this example: Why?