The Actuary India

Magazine of the Institute of Actuaries of India

February 2026

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Editorial

February's edition of The Actuary India brings together themes that sit at the very core of actuarial work: capital strength, market volatility, sectoral resilience, and technological transformation. If January is about resetting assumptions, February often tests whether those assumptions were realistic to begin with. The articles in this issue collectively remind us that prudence levels are not static—they must evolve with regulation, markets, climate realities and data capabilities.

In the White Paper on Risk-Based Capital, Jinal Pandit and colleagues examine the implications of India's transition towards a more risk-sensitive solvency framework under the stewardship of IRDAI. The article highlights how a shift to risk-reflective capital will influence product strategy, asset-liability management, and enterprise risk governance, making regulatory capital a more dynamic measure of an insurer's true risk profile.

In Equity Walk, Kunj Behari Maheshwari reflects on equity market behaviour, volatility cycles and the discipline required when long-term liabilities are supported by inherently fluctuating assets. The piece reinforces the importance of maintaining actuarial perspective during market swings, distinguishing short-term noise from long-term financial fundamentals.

Mangesh Niranjan Patankar explores the dynamics of crop insurance in India through his article, discussing the complexity of underwriting agricultural risk in a landscape shaped by climate variability, regional diversity and policy intervention. With schemes such as Pradhan Mantri Fasal Bima Yojana forming a key pillar of the ecosystem, the authors emphasise pricing adequacy, basis risk management and the growing role of data and technology in strengthening rural risk protection.

Finally, in AI-Driven Underwriting, Jatin Varshney and his colleagues demonstrate how experienced underwriting judgement can be translated into scalable machine-learning models using large historical decision datasets. The article shows how high-precision automation, continuous model monitoring and embedded governance can enhance consistency, efficiency and decision intelligence without diluting professional judgement.

Taken together, the contributions in this issue illustrate a profession actively engaging with change: regulatory recalibration through RBC, financial market discipline through equity analysis, societal impact through crop insurance, and operational transformation through AI. The contexts differ, but the underlying mandate remains familiar—to measure uncertainty with integrity, to manage risk with prudence, and to ensure that innovation strengthens rather than destabilises the foundations on which insurance and the actuarial function rests.

Prakhar Mody
Editor, The Actuary India
Magazine of the Institute of Actuaries of India

February 2026

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Features

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Solvency Regulation

Risk-Based Capital Across Borders

Jinal Pandit and her team, in this article, compare how five jurisdictions namely India, Singapore, the UAE, Sri Lanka, and Mauritius, are designing and implementing risk-based capital frameworks at different stages of maturity. The article highlights key contrasts, common trends, and practical lessons for insurers and regulators navigating the transition toward risk-sensitive solvency regimes.

Download White Paper (Detailed white paper is available for download)

Executive Summary

This white paper provides a comparative analysis of the Risk-Based Capital (RBC) frameworks adopted by five insurance regulatory authorities: the Insurance Regulatory and Development Authority of India (IRDAI), the Central Bank of the United Arab Emirates (CBUAE), the Insurance Regulatory Commission of Sri Lanka (IRCSL), the Financial Services Commission of Mauritius (FSC), and the Monetary Authority of Singapore (MAS). As insurance markets evolve and expand in complexity, robust capital adequacy requirements are critical to ensuring solvency, protecting policyholders, and aligning with global regulatory standards such as those outlined by the International Association of Insurance Supervisors (IAIS).

Purpose

The objective of this paper is to examine the design, scope, and implementation of RBC frameworks in the selected jurisdictions, highlighting commonalities, divergences, and regulatory maturity. It also aims to support industry stakeholders and policymakers in identifying best practices and potential areas for harmonization or enhancement.

Key Insights

- **Regulatory Evolution and Alignment:**
  All 5 jurisdictions have transitioned or are transitioning from rule-based solvency to risk-based capital regimes. India's RBC framework is in a pilot QIS stage, designed with reference to Solvency II principles. UAE has a structured solvency and guarantee fund model, while Sri Lanka has adopted a CAR-based formula since 2016. Mauritius applies a stress-test-based approach in particular the OCAR/TCAR method. Singapore transitioned to sophisticated RBC 2 framework, emphasizing risk sensitivity and sound capital management practices.

- **Capital Composition and Adequacy Thresholds:**
  While the minimum required capital varies by jurisdiction, all regimes define Total Available Capital (TAC) and assess risk-weighted exposures. Sri Lanka mandates a CAR of at least 120%, whereas UAE defines Solvency Capital Requirement and a Minimum Guarantee Fund. Mauritius sets capital adequacy through a modelled buffer over best estimate liabilities. India's QIS2 introduces a comprehensive aggregation of risks including market, insurance, operational, and counterparty default risk. Singapore requires insurers to maintain a Capital Adequacy Ratio (CAR) at prescribed levels with Financial Resources and Total Risk Requirements, incorporating comprehensive risk charges and capital buffers.

- **Risk Scope and Aggregation:**
  India's framework is notably granular, using stress factors for sub-risks and capital charges. UAE mandates detailed asset-class limits and group capital assessments. Sri Lanka applies regulatory rules for admissibility and stress valuation. Mauritius uniquely focuses on both termination and ordinary capital adequacy scenarios to assess asset sufficiency. The Singapore framework covers a broad scope including market, credit, insurance, operational, and catastrophe risks with aggregation at both company and fund levels, incorporating annual Own Risk and Solvency Assessment (ORSA) practices.

- **Asset Valuation and Admissibility:**
  All jurisdictions emphasize market-consistent valuations and define admissible assets. India mandates insurance companies to estimate the value of assets on a fair value basis. However, thresholds differ significantly. For example, UAE allows up to 30% investment in real estate, whereas Sri Lanka enforces tiered limits across insurance lines. Singapore mandates market-consistent valuation of assets and liabilities.

- **Governance and Risk Management:**
  Strong emphasis is placed across all jurisdictions on actuarial certification, internal controls, and stress testing. The UAE and Mauritius go further in requiring risk- based internal assessments and contingency planning. In Singapore, ORSA reports designed to ensure comprehensive risk management and capital adequacy.

Recommendations

- **India** could benefit from expanding internal model usage and incorporating real-time risk feedback into capital calculations as its RBC framework matures.
- **Sri Lanka** may enhance resilience by incorporating dynamic stress testing and introducing operational risk explicitly into its capital requirements.
- **UAE** could further align its asset admissibility rules with international risk-weighted frameworks for improved comparability.
- **Mauritius** should consider integrating its stress-test requirements into a broader RBC system to cover non-life and cross-border risks more comprehensively.
- **Singapore** could deepen integration of emerging risks like Cyber security, ESG; and can also expand recognition and supervision of internal models.

Conclusions

This comparative review underscores the increasing convergence of regulatory systems towards risk-sensitive capital assessment while retaining local adaptations. Strengthening supervisory oversight, harmonizing with IAIS core principles, and promoting cross- jurisdictional dialogue will be key to enhancing the robustness of insurance markets in the region.

About the author(s)

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With over 15 years of experience in the Life Insurance domain, Jinal has extensive experience of working across many different jurisdictions in South Asia, Middle East, Mauritius and specializes consulting on Risk Based Capital Valuations, Statutory Valuations, Asset Liability Management & Risk Management Frameworks. She is a nature enthusiast, loves to travel and explores creative pursuits.

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> Risk-Based Capital frameworks align regulatory capital with actual risk, strengthening solvency and policyholder protection.

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Crop Insurance, PMFBY

Mind the Cap: Technical Pricing Imperatives for Burn Cost-Linked Surplus Sharing Models

Mangesh Patankar examines PMFBY at a critical inflection point, marked by the introduction of burn-cost-linked Surplus Sharing Models in FY 2025–26 and the approaching 2026–29 multi-year tender cycle. The article analyses how these changes are reshaping actuarial pricing discipline, risk transfer, and reinsurance strategies, and outlines the scenarios likely to unfold in the near term as India's agriculture insurance market transitions toward a more risk-sensitive and technically anchored framework.

Overview Of PMFBY Framework

Since its launch in February 2016, the Pradhan Mantri Fasal Bima Yojana (PMFBY) has been India's flagship crop insurance programme, designed to provide affordable risk mitigation to the country's agricultural sector. PMFBY replaced earlier schemes such as the National Agriculture Insurance Scheme (NAIS) and the Modified National Agriculture Insurance Scheme (MNAIS) by expanding coverage, enabling actuarial premium rate discovery, reducing farmer premium burdens, and emphasizing timely claim settlement for the full insured amount.

The PMFBY scheme protects farmers against crop losses caused by natural disasters, bad weather, pests, and diseases. Coverage starts from sowing and continues until after harvesting. Losses are assessed and compensated based on average yields in a specific area, such as a village or revenue circle, which makes the process easier to manage. Apart from this, add-on covers — such as prevented sowing, mid-season adversity, localized calamity (e.g. landslides), and post-harvest loss — are offered based on budgetary constraints, social objectives, and regional risk factors.

Premiums are heavily subsidized—farmers pay a capped share (2% for Kharif food and oilseeds, 1.5% for Rabi food and oilseeds, and 5% for commercial/horticultural crops), with the remaining premium shared between the Central and State Governments on a 50:50 basis (90:10 in North Eastern states).

Further Evolution and New Modalities

Over nearly a decade of implementation, PMFBY has aimed to stabilize farmer incomes, ensure credit flow, and promote resilient agricultural production. The scheme proved to be a valuable instrument - particularly during the distress years which witnessed multiple regional and national adverse climatic events such as droughts, unseasonal rainfall, floods, and cyclones.

Although the scheme is going to complete ten years of operations in 2026, a persistent challenge has been the alignment of actuarial principles with the scheme's objectives and fiscal constraints—particularly as risk profiles have evolved due to climate change and the increasing frequency of extreme weather events.

Under the traditional PMFBY model launched in 2016, insurers used to assume full underwriting risks, subject to minimal statutorily defined adjustments, while central and state governments subsidized premiums. Since FY 2020-21, we have seen evolution of Surplus Sharing Model (SSM), whereby, if the insurer's loss ratio falls below a certain threshold (80% or 60%), surplus profits are shared with the government. This ensures the government can recover excess profitability in favourable/low-loss years, preventing windfall gains. On the other hand, when loss ratio exceeds a certain threshold (110% or 130%), the government steps in to absorb part of the additional loss, preventing insurers from facing unlimited downside risk.

In FY 2025–26, a significant structural shift is underway with the introduction of burn cost-linked Surplus Sharing Models (SSMs) in select states. This evolution marks a departure from earlier premium-rate-linked SSMs and introduces a more technically rigorous anchoring of risk sharing to actuarial loss experience. However, the co-existence of traditional PMFBY, earlier premium-linked SSMs, and the nascent burn cost-linked frameworks creates a fragmented risk landscape that demands renewed emphasis on pricing discipline, portfolio risk management, and reinsurance strategy.

In the next part of the article, we will analyse the implications of this shift, explores the foundations of burn cost, and assess the impact on key stakeholders, including insurers, reinsurers, and state governments.

Burn Cost And Risk Sharing: Technical Foundations

Burn Cost in Agriculture Insurance

In crop insurance, burn cost should ideally capture underlying agronomic risk, climate variability, and other systemic factors. In India, for finding burn costs, insurers have been traditionally relying upon historical yields measured at the insured unit level (village, revenue circle etc.) through random sampling exercises. Such yields of past 10 to 15 years are made available by the states. Insurers often use de-trending to find the average loss by studying the past volatility of the yields, measured after taking into consideration the effect of the deductibles. Such loss is often adjusted for data unavailability at the insured unit and catastrophic years. Other considerations may be given to take care of add-on benefits – such as post-harvest losses, localized losses, sowing failures etc.

This reflects the expected pure loss component of the premium before adding expense loadings, risk margins, and capital charges.

An alternative approach could be designed to create yield predictors in various climatic conditions, and the weather variations w.r.t. individual crop-region combinations can be then used to predict the burn for individual crops. However, such method needs credible yield prediction models and careful fine-tuning of such models at localized levels, and is not popular among Indian agriculture insurance underwriters.

Shifting from Premium-Linked to Burn-Cost-Linked SSMs

Earlier surplus sharing arrangements (e.g., 80–110 and 60–130 "cup and cap" models) tied insurer downside exposure and surplus return thresholds to the quoted premium. This linkage inadvertently created incentives for aggressive underwriting: lower quotes reduced downside exposure but also constrained surplus returns, generating ambiguous incentive environment for pricing discipline.

Intense industry competition and expense-of-management (EOM) pressures, combined with SSM structures, have driven premium rates downwards – thereby reducing the upfront premium subsidies under PMFBY. However, this has increased the likelihood of states having to bear claim costs beyond the defined caps, since even moderate catastrophic events could push loss ratios above those thresholds. As a result, state governments became exposed to substantial downside risk in even moderately adverse climatic events. This was particularly evident in some of the southern states in 2024, where certain clusters experienced slightly adverse weather conditions and losses significantly exceeded the 110% loss cap, resulting in sizable claim outgo from state exchequers.

To address this issue, burn cost-linked SSMs were introduced in Maharashtra, Odisha and Tripura in FY2025-26 to anchor risk transfer on actuarial technical rates rather than distorted market-driven premiums. Under this structure, state government liability is triggered after 110% or 130% of burn cost or premium rates, whichever is higher. Consequently, if insurers discount premium rates below burn cost, they retain higher exposure. The state's view of burn costs is transparently shared before the actual bidding, thereby allowing insurers to validate their own burn costs and formulate their bidding strategies.

Key features of this model include:

- **Caps and corridor triggers** based on actuarially derived burn costs rather than competitive quotes.
- **Underpriced bids** below burn cost increase insurer retained risk rather than reducing downside caps.
- **Fiscal exposure for states** becomes more predictable as actuarial fundamentals drive expected loss distributions.

This alignment helps restore pricing adequacy, reduces adverse selection incentives, and enhances resilience in extreme loss scenarios.

Table 1: Structural Differences Across Models

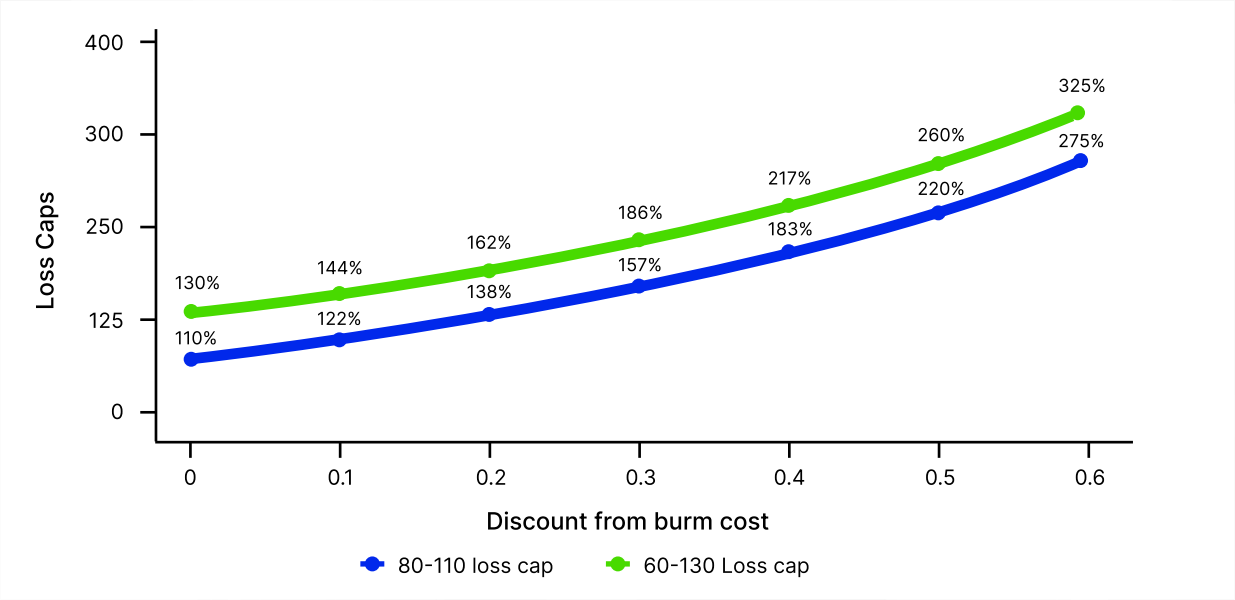
Feature	Traditional PMFBY	Earlier SSM	Burn-Cost-Linked SSM
Risk Transfer	Full	Moderate	Moderate–High (pricing dependent)
Basis of Loss Cap	None	Quoted premium	Burn cost
Effect of Under-pricing for Insurer	Very high downside	Reduced downside	Increased downside
Administrative Complexity	Low	Moderate	Higher
State Fiscal Exposure	Low	Moderate-High	More predictable

Burn-cost-linked SSM effectively **restores technical pricing discipline**, but exposes sub-optimal bids to elevated tail risk.
As an example,

If a state has opted for 80-110 model under burn cost linked SSM, and has declared burn cost for a cluster to be 10%: If the insurer's quoted gross premium rate = 8% Maximum loss cost for the cluster (beyond which insurer's liability ceases to exist) = 110%*10% = 11% Implied loss ratio cap for the cluster for the insurer = 11% / 8% = 137.5%	If a state has opted for 60-130 model under burn cost linked SSM, and has declared burn cost for a cluster to be 10%: If the insurer's quoted gross premium rate = 8% Maximum loss cost for the cluster (beyond which insurer's liability ceases to exist) = 130%*10% = 13% Implied loss ratio cap for the cluster for the insurer = 13% / 8% = 162.5%

Below is an illustration showing how discounting relative to the benchmark burn cost significantly increases the insurer's downside risk. This heightened exposure often raises reinsurance costs and gradually reduces the economic viability of underwriting this line of business.

Graph 1: Implied loss ratio cap vs rate discount on burn cost

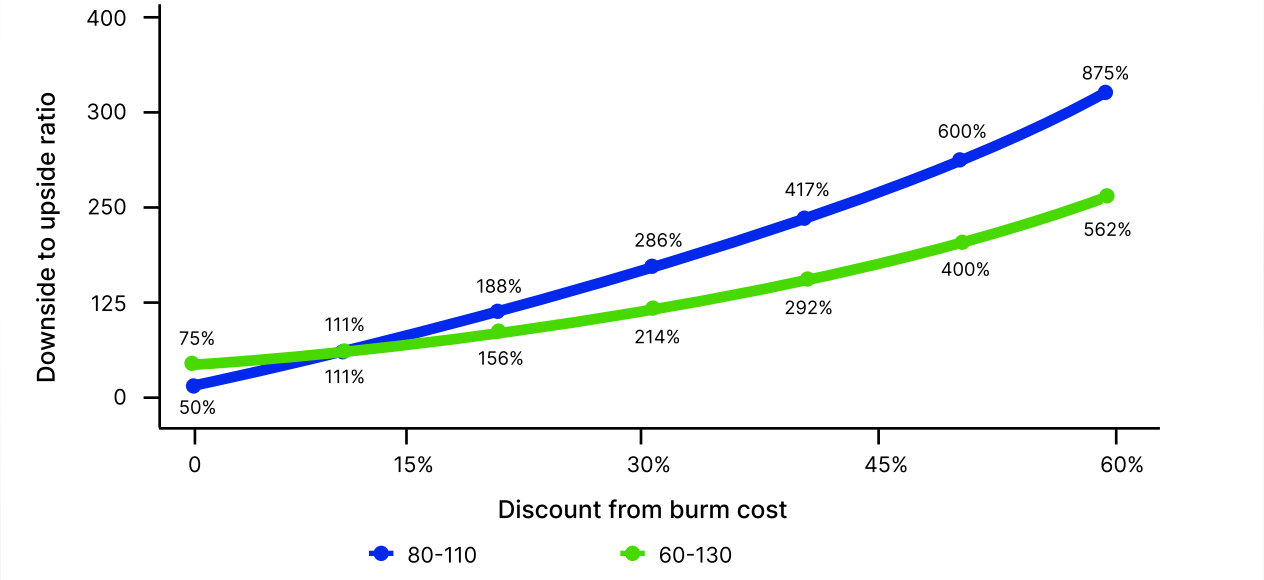


The downside-to-upside ratio increases sharply as the quoted premium diverges from the declared burn cost. While the absolute downside remains fixed as a proportion of the burn cost, the insurer's effective downside grows relative to diminishing profit potential when rates fall.

E.g. in the illustrations stated before, where the insurer quotes 8% instead of the published burn cost of 10%, i.e. underquotes by 20%:

Under 80-110 model under burn cost linked SSM:	Under 60-130 model under burn cost linked SSM:
Maximum upside possible = 100%-80% = 20%	Maximum upside possible = 100% - 60% = 40%
Maximum downside possible = 137.5% - 100% = 37.5%	Maximum downside possible = 162.5% - 100% = 62.5%
Thus, downside to upside ratio = 37.5% / 20% = 187.5%	Thus, downside to upside ratio = 62.5% / 40% = 156.25%

Graph 2: Downside to upside ratio vs discount on burn cost



Note that the above illustrations do not have any considerations towards costs of operation. If we add the cost of operations in the workings, the overall implied loss increases further.

Tender And Pricing Implications

Accurate pricing discipline is crucial for PMFBY, particularly under the new burn cost anchored surplus sharing model, as insurers must set premium rates that reflect expected losses, volatility, catastrophe loadings, operational expenses, and capital costs. Failure to incorporate these factors risks inadequate rates and heightened exposure to tail risk, especially in extreme climate scenarios. The shift from premium-linked to burn cost-linked SSMs discourages distortionary under-pricing by tying downside exposure directly to expected loss costs, making aggressive bidding financially unattractive. Insurers are therefore compelled to rigorously model portfolio profitability across varied scenarios—including stressed monsoon variability and inter-district yield correlations—to maintain technical adequacy and market confidence.

Reinsurance Strategy And Capital Considerations

Reinsurance acts as a mechanism for diversifying risk globally and providing capacity support to strengthen insurer balance sheets. Major reinsurers are driven by sound fundamentals and technical rate adequacy. Reinsurance capacity has played a critical role in supporting PMFBY, with both proportional and non-proportional arrangements helping to stabilize the market, particularly during adverse years.

Proportional Reinsurance and Capacity

In the erstwhile SSM regime, especially under 80-110, several insurers had resorted to higher retentions due to limited downside. That is bound to change if the states decide to go for burn-cost-linked SSM. Naturally, the retentions will drop and need for proportional reinsurance will increase.

Under burn-cost-linked SSM, inadequate premium rates may lead to imposition of lower loss caps in proportional cessions and reduced reinsurance participation. This, in turn, exposes insurer balance sheets to larger net losses without adequate protection.

Non-Proportional Covers and Stop-Loss Protection

Insufficient technical pricing increases tail risk, often requiring insurers to make greater use of stop-loss protection to safeguard net retentions under burn-cost-linked SSM — particularly when high discounting leads to elevated SSM loss caps, as illustrated in Graph 1. Without strong pricing discipline, the additional cost of such protection can render this line of business economically unsustainable.

Historically, some insurers have relied on quota share arrangements with limited loss protection through lower loss caps. Under the revised SSM framework, these arrangements may prove inadequate if loss ratios exceed the quota share cap, thereby exposing insurers' balance sheets to significant volatility. In such cases, additional protection through non-proportional reinsurance may be required.

Importance of Rate Discipline

In the absence of disciplined pricing, reinsurance costs may increase, raising the overall cost of doing business. To avoid such situations, insurers must demonstrate strong primary rate discipline—especially under burn cost models—as reinsurers scrutinize deviations from indicated burn costs closely. Maintaining technical adequacy is critical to preserving market confidence.

In essence, burn-cost-linked SSMs make actuarial discipline a prerequisite for securing efficient reinsurance arrangements.

Conclusion

The shift toward burn cost-linked surplus-sharing models under PMFBY represents a structurally sound move that better aligns risk-sharing with actuarial fundamentals and strengthens the scheme's long-term financial resilience amid rising climate-driven volatility. In this evolving environment, insurers and reinsurers must place greater emphasis on:

- **Robust burn cost-anchored pricing** to ensure technical adequacy
- **Clear, disciplined risk-appetite frameworks** aligned with climate and portfolio volatility
- **Appropriate reinsurance structures** — including stop-loss protection—especially as India transitions to a more risk-sensitive **RBC regime** in the coming years, where inadequate protection directly affects capital requirements
- **Transparent estimates of expected losses, uncertainty and reinsurance effects** for all tenders, consistent with emerging **IFRS-based financial reporting**

Burn-cost-linked SSMs strengthen alignment between underlying risk and insurer behaviour, but their effectiveness depends on strong pricing discipline and actuarial governance. As regulatory expectations under RBC and IFRS increase, agriculture underwriters and actuaries will play a central role in ensuring that PMFBY remains technically sound, capital-efficient, and sustainable for insurers, reinsurers, and state governments alike.

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Mangesh is a climate-risk and reinsurance specialist with extensive experience across Asia Pacific and Africa, driving innovative agricultural insurance solutions and policy engagements. In his leisure time, he enjoys gardening and music.

> In a climate-stressed environment, crop insurance cannot rely solely on fiscal support; it must rest on technical pricing discipline.

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Life Insurance, Innovation

AI-Driven Underwriting

Jatin Varshney and his team, in this article examines how underwriting judgment of experienced professionals can be translated into scalable AI-driven decision intelligence. Drawing on over two million historical underwriting decisions, it demonstrates how machine-learning models can automate risk selection with high precision while preserving governance, consistency and control in life insurance underwriting.

Download White Paper (Detailed white paper is available for download)

Abstract

This research paper presents a detailed analysis of the transformation of manual underwriting expertise into an artificial intelligence (AI) model within Aditya Birla Sun Life Insurance. Through four progressive iterations of model development, the organization successfully built a system capable of automating 60% of underwriting decisions while maintaining 99% precision and 90% accuracy. The study evaluates the model's performance using key metrics such as Accuracy, Precision, Sensitivity, Specificity, and F1 Score, which are essential for assessing reliability in real-world insurance applications. A central focus of this work is the integration of human decision-making logic into machine learning architecture. By capturing the cognitive patterns and rule-based reasoning of experienced underwriters, the AI model was trained to replicate expert-level judgment. This approach not only improved operational efficiency but also ensured consistency and scalability in underwriting processes. The findings demonstrate the potential of AI to enhance decision automation in life insurance, offering valuable insights for future advancements in intelligent underwriting systems.

Introduction

Life insurance underwriting has traditionally depended on the specialized judgment of experienced professionals who assess diverse risk factors, interpret medical and financial data, and apply complex business rules aligned with regulatory standards. Although effective, this manual process is time-intensive, resource-heavy, and susceptible to inconsistencies.

The rise of artificial intelligence (AI) and machine learning (ML) offers a transformative opportunity to replicate expert decision-making in automated systems. At Aditya Birla Sun Life Insurance (ABSLI), we launched a multi-phase initiative to embed the cognitive reasoning of human underwriters into a machine learning framework, enabling decisions that match the rigor and consistency of expert judgment.

This was achieved by leveraging a large dataset of historical underwriting decisions— starting with 851,860 policies in Model 1 and expanding to over 2.2 million combined records by Model 4 (see Figure 1). Each record captured the decision logic of human underwriters, forming the foundation for training a model that could emulate their reasoning. Through this iterative process, the system evolved into a decision-intelligent platform capable of automating 60–70% of non-term product cases, significantly reducing manual intervention while maintaining compliance and accuracy.

Several algorithms were explored during development, including deep neural networks [1] and random forest classifiers [2]. After extensive experimentation and benchmarking, XGBoost [3] emerged as the most effective, delivering superior precision, accuracy, and interpretability. Following an initial beta phase, the production-ready model was launched on 19 January 2023, delivering 99% precision, 90% accuracy, KS (Kolmogorov–Smirnov) statistic 54% and F1 Score 82% [4]. This milestone demonstrates the successful translation of human underwriting expertise into a scalable AI-driven solution and marks the first adoption of AI-based underwriting automation by a life insurance company in India, as reported by leading media outlets, including The Times of India [5].

This paper provides a comparative analysis of the model's evolution across four iterations, emphasizing how domain knowledge was systematically embedded into the AI architecture. It highlights the strategic integration of expert insights, data-driven learning, and performance optimization to create a robust and scalable underwriting solution.

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Jatin Varshney is Executive Vice President, New Business Operations, Underwriting & Claims at Aditya Birla Sun Life Insurance with over 25 years of professional work experience. He pioneered the implementation of AI-driven automated underwriting systems in ABSLI and Indian insurance industry. As President of the Association of Insurance Underwriters, he continues to drive the sector's digital transformation by championing technology that enhances risk management and operational efficiency.

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Abhishek Pandey is a visionary executive with over 18 years of technical leadership experience, driving digital transformation through the strategic application of AI, machine learning, and cloud data platforms. He specializes in aligning technological vision with business goals to build intelligent ecosystems that accelerate growth and operational excellence.

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Ajay Bhamare is a seasoned technology leader with over 20 years of experience in the life insurance sector, currently heading Applications Delivery and Business Solutions at Aditya Birla Sun Life Insurance. He has played a pivotal role in driving digital transformation by building robust eSales platforms for distributors and orchestrating the technical launch of over 50 innovative insurance products.

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Resources

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Life insurance whitepaper

"Equity walk": Demonstrating equivalence between Indian Embedded Value (IEV) and the Ind AS Comprehensive Equity

Kunj Behari Maheshwari presents a paper to develop an analytical framework to articulate the steps required to reconcile the market-consistent Indian Embedded Value (and the associated Value of New Business, or VNB) with the Ind AS Comprehensive Equity (and the corresponding Contractual Service Margin or Loss Component at initial recognition for new business).

एकं सद् विप्राः बहुधा वदन्ति | Truth is one, the wise describe it in many ways.

- Rig Veda, 1.164.46

What's in a name? That which we call a rose, by any other word would smell as sweet.

- Juliet Capulet, Romeo & Juliet, William Shakespeare

A Company is worth what its future cash flows are worth, no matter how you model it.

- Aswath Damodaran

Abstract

Valuations of life insurance companies in India currently rely on the Indian Embedded Value (IEV) framework to establish the economic worth of the business - offering a shareholder-centric view of value that captures both tangible net assets and the present value of future profits. With the adoption of the Indian Accounting Standards (Ind AS), a new valuation lens emerges: Comprehensive Equity, comprising reported equity and the Contractual Service Margin, designed to reflect the economic worth of the life insurance business aligned with the International Financial Reporting Standards (IFRS).

This paper presents the "Equity Walk", a structured approach to demonstrate areas of equivalence between the Indian Embedded Value and the Ind AS Comprehensive Equity. For the observed differences, the paper introduces a practical reconciliation toolkit comprising a series of transparent adjustments and a structured bridge across the two frameworks. By introducing a "waterfall" model of key differences such as tax adjustments and other core conceptual differences (non-attributable expenses, frictional costs and allowance for operational risks) – this paper aims to empower actuaries, finance and investor relations professionals to map the difference between the two metrics with confidence and clarity.

While IEV and Ind AS Equity arise from different professional contexts – one actuarial and another accounting, both frameworks converge to reflect the same underlying economic value of the business. Through this reconciliation, the paper reinforces that valuation is invariant to the metric chosen, provided the translation is robustly understood and consistently applied.

Introduction

> The value of a business is measured not by what has been put into it, but by what can be taken out of it.
>
> **- Benjamin Graham (Attributed)**

Understanding the underlying value of any business is crucial to all stakeholders as it provides a clear view of the company's true economic worth beyond surface-level metrics. For investors and shareholders, intrinsic valuations inform investment decisions, helping them identify whether the company's worth is priced fairly, undervalued, or overvalued and guides expectations for risk and return. For management, an accurate valuation serves as a benchmark for strategic planning, resource allocation and performance measurement, ensuring that decisions create genuine long-term value rather than temporary gains. Most crucially, ongoing assessments of value help understand whether the actions and interactions between the business, the management and its shareholders enhance or diminish the value of the enterprise over time. For the wider industry, transparent valuations foster market efficiency by enabling fair competition, benchmarking and informed partnerships or acquisitions. Meanwhile, other stakeholders, including distributors, employees, regulators and customers, benefit from a clear understanding of a company's financial health and sustainability, which underpins trust, confidence and long-term engagement. Ultimately, valuing a business is not just a financial exercise; it is a vital tool for aligning incentives, guiding strategy and sustaining the ecosystem in which the company operates.

The choice of metric for valuing Indian life insurers has largely converged to the Indian Embedded Value (IEV), a market-consistent measure of embedded value (EV); and the associated Value of New Business (VNB). This convergence has been driven by the adoption of Actuarial Practice Standard 10 (APS10) by the Institute of Actuaries of India since 2012. Analysts and investors routinely value Indian life insurance businesses as a multiple of the published IEV and/or the corresponding VNB, as evidenced by prevailing commentary on listed insurers and by the metrics employed in mergers and acquisitions within the sector.

IEV reporting is currently voluntary with only listed and select large life insurers in India providing such disclosures – often with varying levels of detail. As such, value metrics derived from consistent, comparable and audited financial statements remain elusive for life insurers. In August 2024, the Government of India notified Indian Accounting Standard 117 (Ind AS 117), the Indian equivalent of IFRS 17. The Insurance Regulatory and Development Authority of India (IRDAI) has since outlined a roadmap for adopting Ind AS, aligning financial reporting for Indian insurers with globally adopted IFRS standards. Over two years, in preparation of full adoption, insurers are required by the IRDAI to submit to the regulator pro forma Ind AS financial statements that have undergone limited review by both an independent auditor and an independent actuary.

Against this backdrop, a pertinent question arises: can equivalent information on value metrics as that provided by the supplementary IEV reporting be derived from the audited primary accounts under Ind AS? If so, how might the various stakeholders seeking to understand the value of life insurance businesses in India reconcile the currently published IEV with the proposed Ind AS equity position?

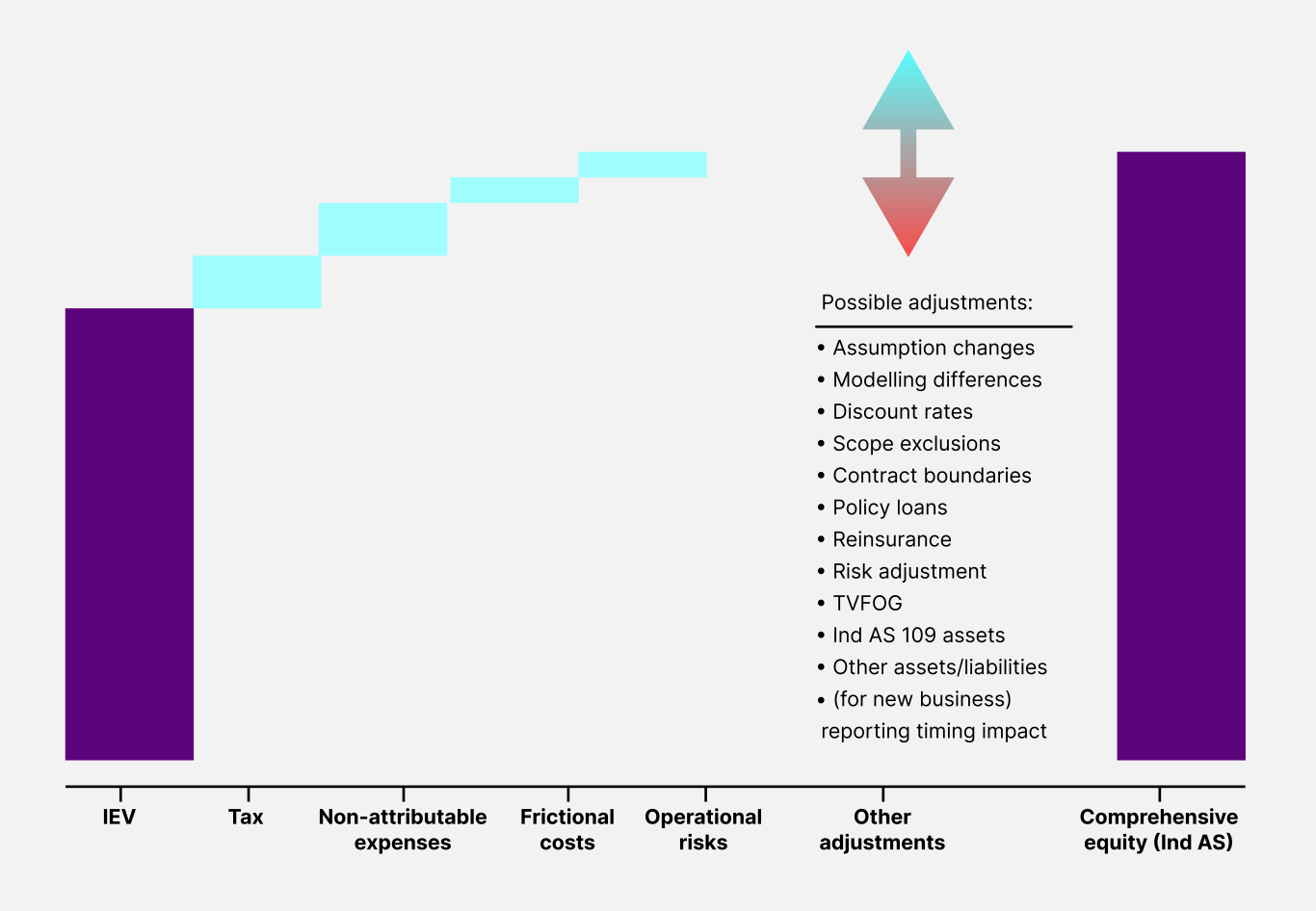
A waterfall chart for summary reconciliation steps

The whitepaper establishes the detailed conceptual foundations, measurement principles and algebraic basis for equivalence, including identifying reconciliation areas to bridge IEV with Ind AS Comprehensive Equity. We now synthesise these findings into a visual summary. A waterfall chart provides a clear and intuitive representation of the step-by-step movements that reconcile IEV to Ind AS Comprehensive Equity.

Preparers may utilise this approach to aid transparency and ease of understanding. The chart below is illustrative only and provides a practical tool for internal validation and stakeholder communication. By explicitly mapping each adjustment in a sequential "walk," preparers can demonstrate the logical continuity between accounting and economic perspectives of value, reinforcing that while the two frameworks may differ in emphasis, both ultimately describe the same underlying financial reality through different lenses.

Bridging IEV and Ind AS Comprehensive Equity: a waterfall summary

For illustrative purpose only



Conclusion

With the introduction of Indian Accounting Standards (Ind AS) for the insurance industry, the financial reporting landscape for Indian life insurers will undergo a profound transformation. For the first time, the audited balance sheets of insurers would now embed much of the same conceptual richness that was historically accessible only through supplementary disclosures such as the Indian Embedded Value (IEV) – and be able to provide a truer reflection of the underlying economics of the business underwritten. Both frameworks, while originating from distinct philosophical standpoints – one accounting-based and the other market-consistent and investor-oriented – ultimately seek to portray the same underlying economic reality: value of in-force and current period new business adjusted for the risk exposures that underpin it.

In this ever-evolving environment, it is recommended that preparers continue to disclose IEV alongside Ind AS figures, supported by clear reconciliation "walks" between the two, at least in the short run. Such reconciliations serve as a bridge for analysts, regulators and investors to understand the drivers of any observed differences and to build confidence in both frameworks. This dual presentation allows for continuity of investor communication while reinforcing the credibility of both the IEV and the Ind AS financial statements through transparent linkages between the newly introduced metrics to the existing well-established and well-understood metrics.

Over time, as understanding of Ind AS 117 matures and stakeholders grow more comfortable interpreting the Ind AS outputs, discourse within the industry may naturally converge toward a unified measure of shareholder value. Until that point, however, maintaining both perspectives - connected through a well-articulated reconciliation "walk" or "waterfall" as demonstrated in this paper - provides not only clarity but also a valuable interpretive lens through which the transition from embedded value to comprehensive equity can be meaningfully understood.

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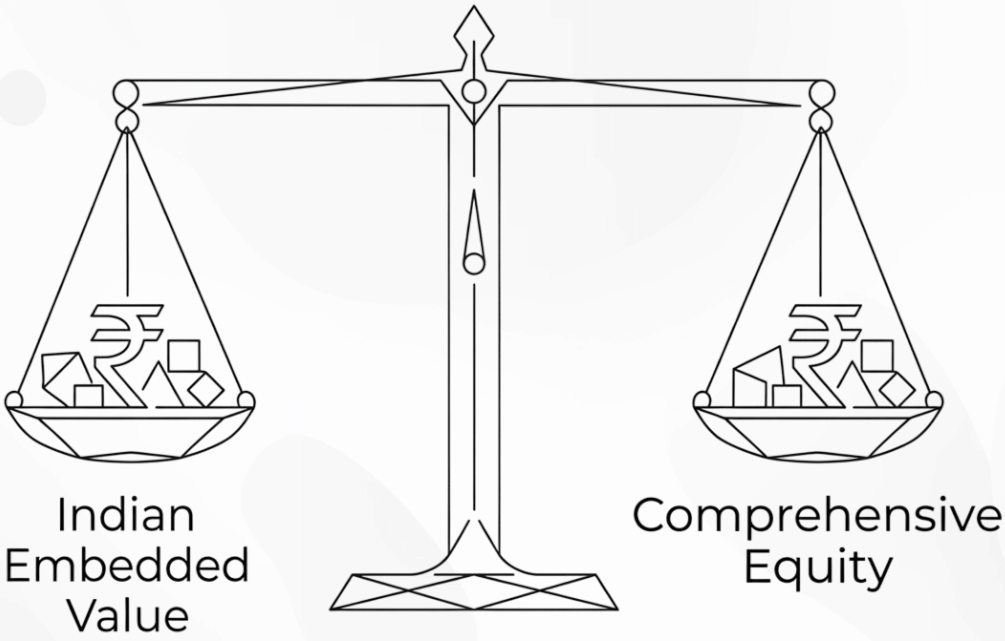
Kunj Behari Maheshwari is a Fellow of the Institute of Actuaries of India. He serves as the Chairperson of the Institute's 'Working Group on IFRS 17 (Ind AS 117)' and is a member of the 'Expert Committee on Implementation of Ind AS/IFRS in Insurance sector' established by the Insurance Regulatory and Development Authority of India (IRDAI). In his professional capacity as an actuarial consultant at WTW, Kunj leads several Ind AS 117 / IFRS 17 implementation projects and provides Embedded Value Opinions for multiple leading life insurers in India.

> Indian Embedded Value and Ind AS Comprehensive Equity may arise from different disciplines, but they converge on the same economic truth.

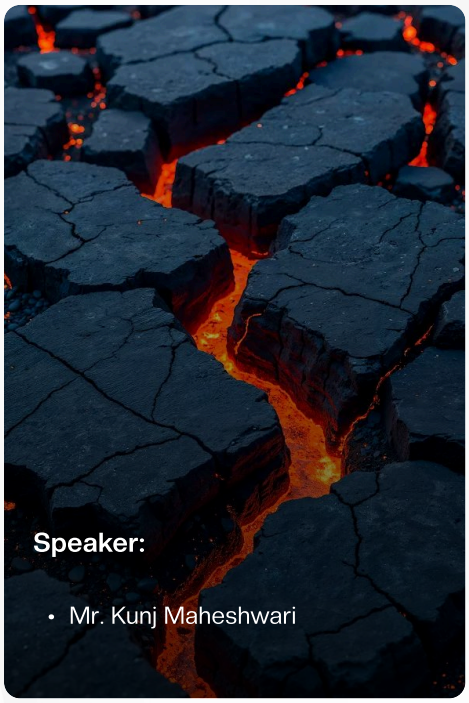


Events

The Actuary India
Magazine Of The Institute Of Actuaries Of India

EVENTS: Seminar
20th Current Issues Seminar in Life Assurance

Reportage by **Kanak Agarwal**



Speaker:

- Mr. Kunj Maheshwari

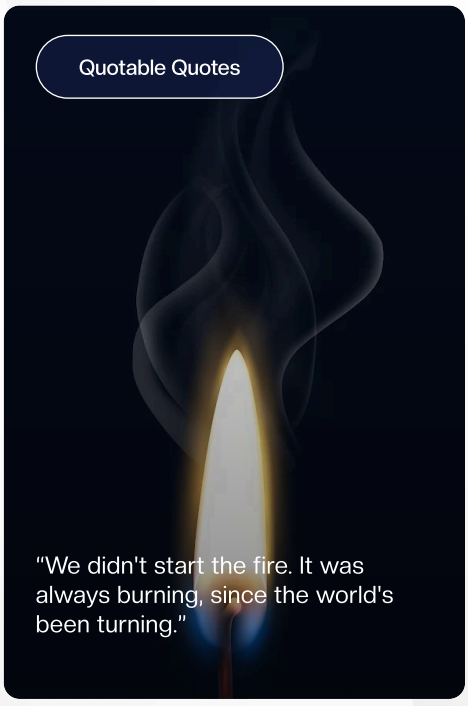
Summary

IEV and Ind AS Comprehensive Equity measure the same underlying insurance value through different frameworks, and step-by-step reconciliations ensure transparency, comparability, and a clear understanding of differences for stakeholders.

Quotable Quotes

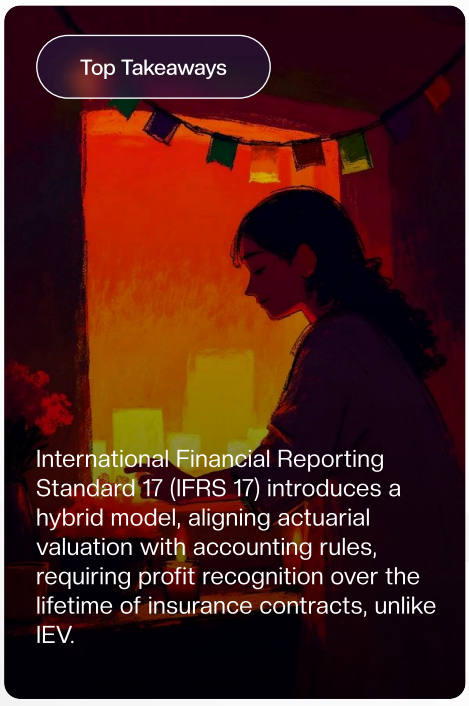
"The value of a business is measured not by what has been put into it, but by what can be taken out of it."

Quotable Quotes



"We didn't start the fire. It was always burning, since the world's been turning."

Top Takeaways



International Financial Reporting Standard 17 (IFRS 17) introduces a hybrid model, aligning actuarial valuation with accounting rules, requiring profit recognition over the lifetime of insurance contracts, unlike IEV.

Session Notes

Topic: Demonstrating Equivalence Between IEV, IndAS

Date: November 26, 2025

Introduction

- Understanding a life insurer's true economic value is critical for investors, management, regulators and other stakeholders.
- Indian life insurers have traditionally been valued using Indian Embedded Value (IEV) and Value of New Business (VNB) under APS 10. With the adoption of Ind AS 117, a key question is whether comparable value metrics can be derived from audited financial statements. Reconciling IEV with Ind AS equity will be crucial for transparent and consistent valuation.

Evolutions of different methods

- Life insurance valuation evolved from early Discounted Cash Flow approaches in the 1950s to Traditional Embedded Value, providing more meaningful shareholder information than accounting book values.
- High-profile events like the Australian Mutual Provident – Pearl Group takeover accelerated the adoption of EV and highlighted its strategic importance.
- Market-Consistent Embedded Value (MCEV) / Indian Embedded Value (IEV) emerged with stochastic modeling and risk-adjusted valuations, formalized in India under Actuarial Practice Standard 10 (APS 10).

Components of Indian Embedded Value

- Embedded Value (EV) measures shareholders' interest in a life insurance business as Adjusted Net Worth plus Value of In-Force Business.
- Value of New Business (VNB) represents the value created from policies written during a period.

Comprehensive Equity

- Comprehensive Equity under Ind AS is the sum of equity (assets minus liabilities) and the Contractual Service Margin (CSM).
- CSM represents unearned profits from insurance contracts, recognised over the life of the policies.
- This metric captures both realised profits and future economic benefits, offering a forward-looking view of value.
- It aligns conceptually with Embedded Value, providing a more complete measure of shareholder value in life insurers.

Bridging IEV and Ind AS Comprehensive Equity

- IEV is designed to capture shareholder value, while Ind AS Comprehensive Equity focuses on true and fair representation of the entity's financial position.
- A major difference arises from future shareholder taxes, which are deducted in IEV but not recognized as liabilities under Ind AS.
- Expenses in IEV are fully loaded to reflect all costs from a shareholder perspective, whereas Ind AS includes only expenses directly attributable to insurance contracts.
- IEV deducts Frictional Cost of Capital for holding regulatory or internal required capital, which is not recognized under Ind AS.
- IEV includes operational risk allowance within the Cost of Residual Non-Hedgeable Risks (CRNHR), while Ind AS Risk Adjustment excludes operational risks.
- New business profits in IEV are recognized at the point of sale, whereas Ind AS spreads recognition over the lifetime of contracts via the Contractual Service Margin (CSM).
- Both frameworks rely on market-consistent valuation and discounting of future cash flows to reflect economic value.
- Reconciliation from IEV to Ind AS requires adding back deductions for future taxes, non-attributable expenses, FCoC, and operational risks to align the metrics.

Reconciliation between IEV and Ind AS Comprehensive Equity:

- A three-way reconciliation is required between IEV PVFP, Ind AS PVCF, and statutory reserves, with the key check being Pre-tax PVFP = Reserves – Best Estimate Liability.
- IEV uses a risk-neutral discount rate that may include a liquidity premium, whereas Ind AS allows more flexibility in discount rate methodology.
- The timing of new business reporting differs: IEV VNB may be reported at point-of-sale or period-end, while Ind AS recognises new business at inception with CSM or LC.
- Scope exclusions and contract boundaries can differ, as IEV may exclude immaterial or out-of-scope products while Ind AS captures all contracts under its standards.
- Policy loans are treated as assets under IEV but are incorporated into fulfilment cash flows under Ind AS, potentially impacting CSM and equity.
- Reinsurance is reflected in IEV based on economic impact, whereas Ind AS measures reinsurance contracts separately, considering timing, credit risk, and recoveries.
- IEV CRNHR reflects a market participant perspective, including operational risk, while Ind AS Risk Adjustment reflects the entity perspective and excludes operational risk.
- Investment assets are measured at mark-to-market under IEV, whereas Ind AS measurement depends on classification and may include amortised cost, FVOCI, or FVTPL, leading to differences.
- Variations in assumptions, actuarial models, discounting methods, and computational approaches can create differences between IEV and Ind AS.
- Liquidity premium treatment differs, as IEV derives it from assets backing illiquid liabilities while Ind AS considers liabilities on a standalone basis.

All differences—including assumptions, scope, policy loans, reinsurance, risk adjustments, investment valuations, and timing—should be identified, quantified, and documented in a reconciliation "walk" from IEV to Ind AS Comprehensive Equity.

Conclusion

IEV and Ind AS Comprehensive Equity provide different lenses but reflect the same underlying economic value of an insurer. Stepwise reconciliations help explain differences and enhance transparency for stakeholders.

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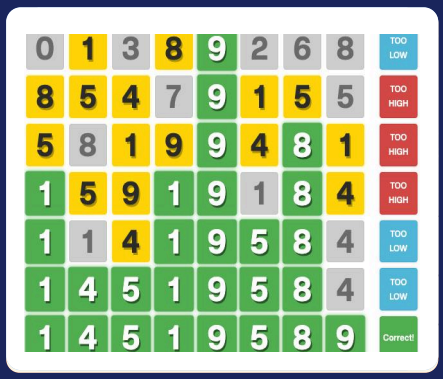
> Climate risk isn't abstract anymore —open-source data lets us see it, measure it, and plan for it.

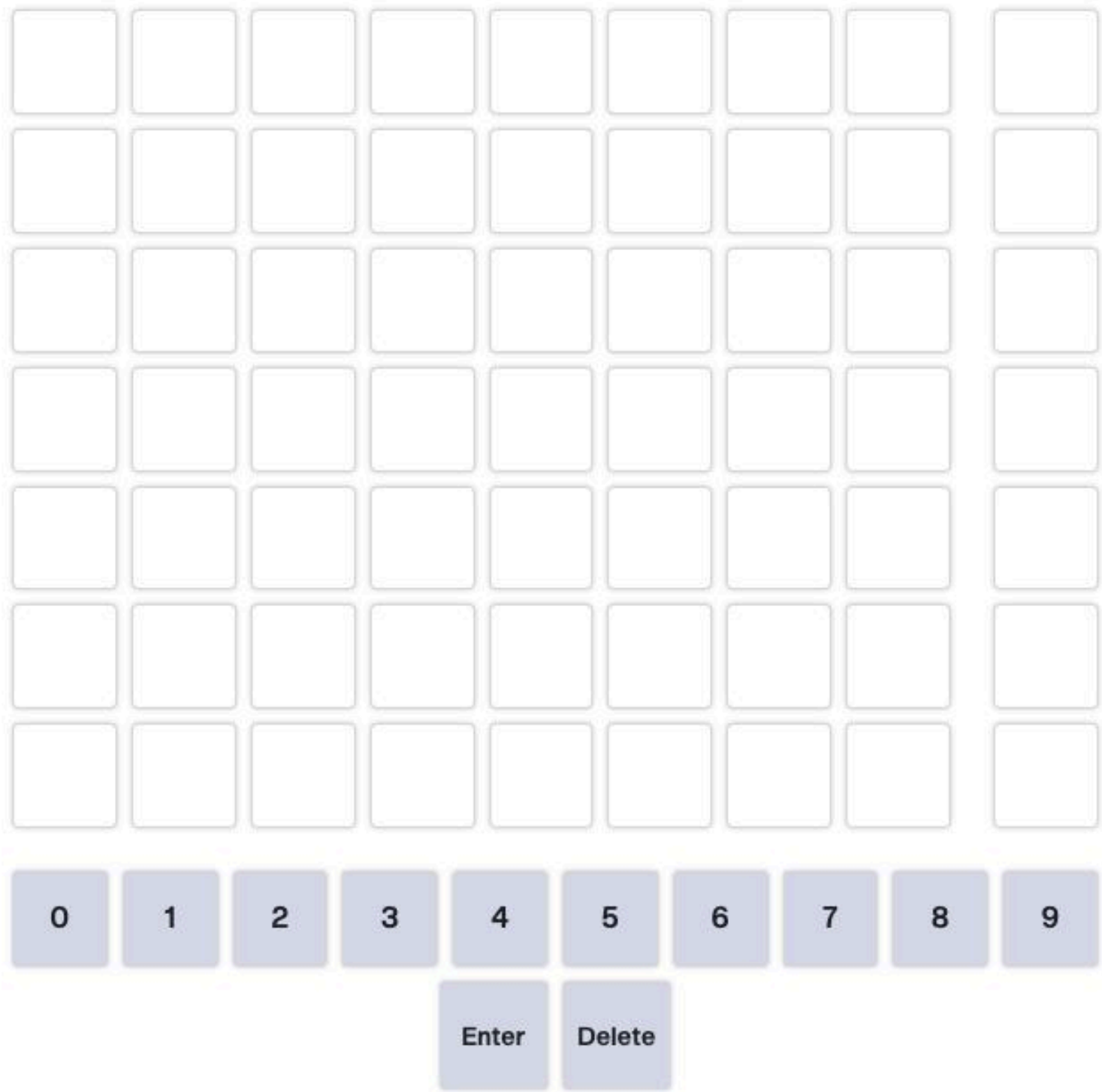
Puzzle

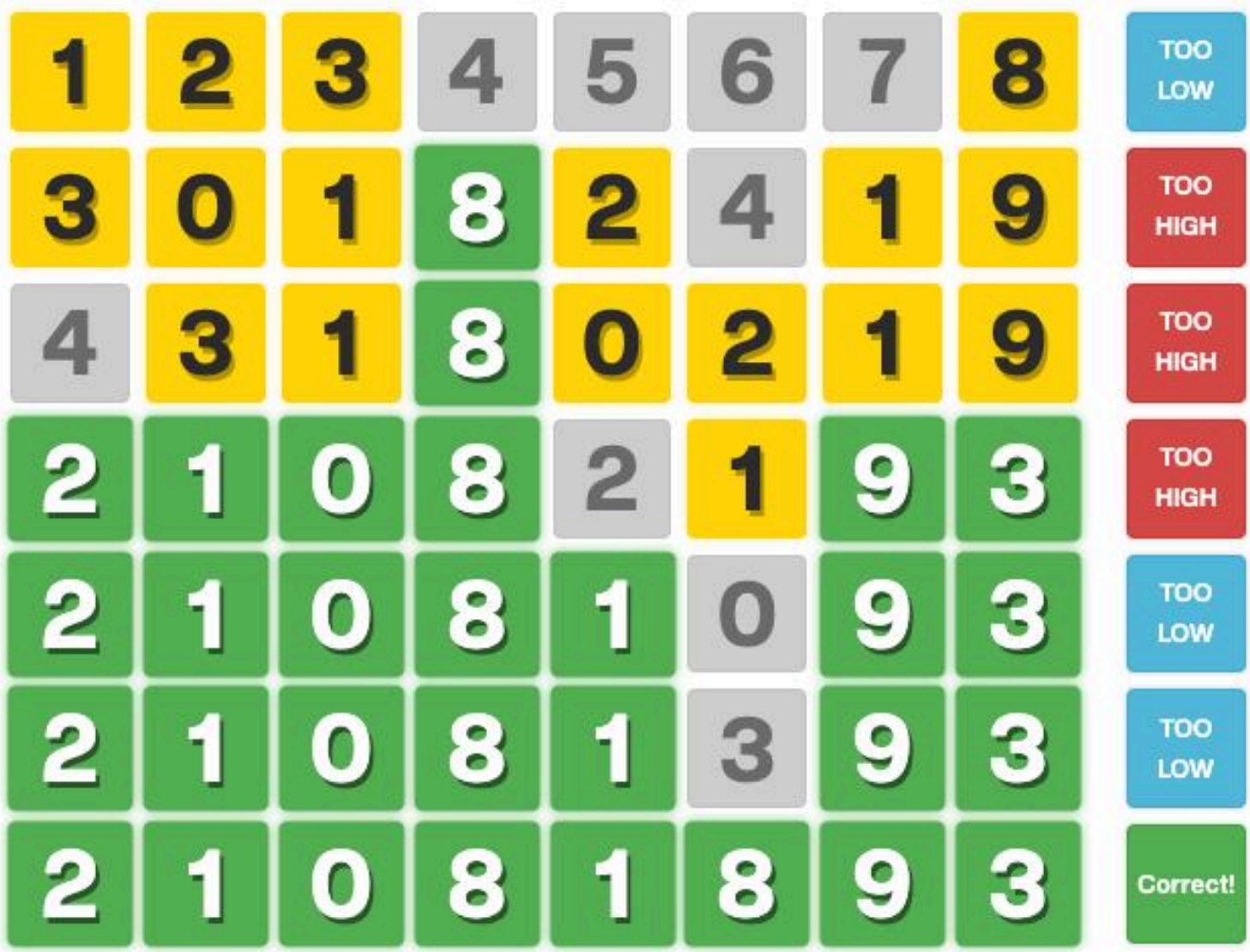
Numerical Wordle

Numerical Wordle

Solve this puzzle by filling the correct number in each cell. Green indicates the number input is in the correct place in the mystery number. Yellow indicate the number input exists in the mystery number but is currently in the wrong place. Grey indicates the number input in the cell does not exist anywhere in the mystery number. Take your time and as many attempts as you want (most importantly, don't give up). These are no more trickier than developing replicating portfolios! Enjoy this brain teaser by the Puzzle master: **Kathan Jain**.







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Humour

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A light-hearted take on the hopes, aspirations, trials, tribulations and perhaps even foibles of everyday actuaries in their everyday lives.

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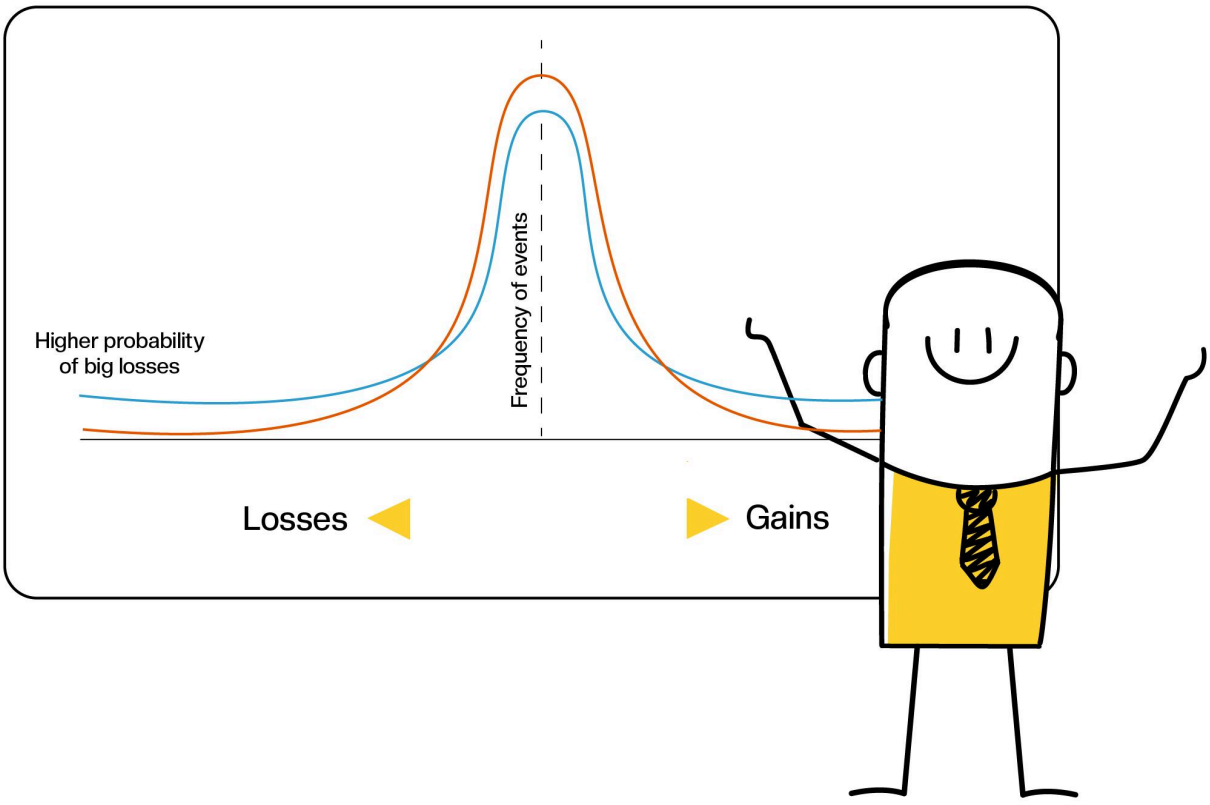

Confidence intervals widen,
so will your success

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