

# The Long Road to Risk-Based Capital in India's Insurance Sector: A Historical and Strategic Overview

Sonjai Kumar\*

Certified Fellow Member of the Institute of Risk Management, London

## \*Corresponding Author

Sonjai Kumar, Certified Fellow Member of the Institute of Risk Management, London.

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## Abstract

*Risk-Based Capital (RBC) has become the cornerstone of solvency supervision in insurance worldwide. Its purpose is to align regulatory capital requirements with the actual risk profile of insurers, thereby strengthening policyholder protection and financial stability. India's transition toward RBC has been a long-running reform project, spanning nearly two decades. Despite multiple committees, consultations, and pilot studies, the framework remains a work-in-progress as of 2025. This article provides a comprehensive historical overview of the RBC journey in India—tracing its conceptual roots, policy milestones, challenges, and current implementation roadmap under the Insurance Regulatory and Development Authority of India (IRDAI). The discussion situates India's efforts within global RBC developments (Solvency II in Europe, the US RBC model, and emerging frameworks in Asia) and highlights the structural, operational, and cultural factors that have delayed full adoption. It concludes by outlining the likely contours of India's forthcoming regime and its implications for solvency, governance, and market discipline.*

**Keywords:** Risk-Based Capital, Insurance Regulation, Solvency, IRDAI, India, Risk Management, QIS, Solvency II, Prudential Supervision

## 1. Introduction

Insurance is inherently a business of long-term promises. Solvency regulations exist to ensure that insurers can meet those promises even under stress. For decades, India—like many emerging markets—relied on rule-based solvency standards, prescribing a uniform margin of 150 % of required solvency capital across insurers irrespective of their unique risk profiles. While this provided simplicity and comparability, it also led to regulatory blind spots: capital adequacy did not necessarily track the riskiness of asset allocation, product guarantees, or concentration exposures.

Globally, the inadequacy of flat solvency ratios became evident after multiple crises. The 1990s saw the United States adopt the RBC formula; the 2000s brought Solvency II in Europe and risk-based supervisory frameworks across Asia. In India, the conversation began soon after the liberalization of the insurance sector in 2000. The IRDA (later IRDAI) recognized early that principle-based solvency supervision would be essential as the

market matured. Yet, more than twenty years later, India is only now conducting Quantitative Impact Studies (QIS) and drafting final regulatory proposals.

This prolonged gestation period provides a unique policy study in balancing prudential innovation with local realities—product complexity, actuarial capacity, data infrastructure, and capital market depth.

## 2. Conceptual Foundations of Risk-Based Capital

Risk-Based Capital is designed to ensure that insurers hold capital commensurate with the aggregate of material risks they assume. Instead of a fixed solvency margin, the framework considers:

- **Underwriting Risk** (mortality, morbidity, catastrophe, and pricing deviations)
- **Market Risk** (interest rate, equity, property, foreign exchange)
- **Credit Risk** (default or counterparty exposure)
- **Operational Risk** (system, process, and people failures); and

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• **Diversification and Correlation Effects** among these risks.

The formula generally follows the principle:

**Total Required Capital =  $\Sigma$  (risk capital components) – diversification benefit**

- The US RBC system applies standardized factors to exposure bases.
- Solvency II employs modular risk aggregation, a 99.5 % Value-at-Risk (VaR) confidence level, and the concept of Own Risk and Solvency Assessment (ORSA).
- Asian markets such as Singapore, Malaysia, and Japan have developed regional variants blending simplicity with risk sensitivity.

India’s forthcoming model seeks a “proportionate RBC”, balancing risk sensitivity with implement ability for diverse insurers.

### 3. Early Discussions in India (2000–2010)

#### 3.1 Post-Liberalization Context

The IRDA Act of 1999 opened India’s insurance market to private participation. At inception, solvency requirements were set at a flat 150 % solvency ratio, mirroring the early UK model. During the 2000s, market growth outpaced regulatory modernization: product innovation (ULIPs, non-traditional savings products), equity exposure, and long-duration guarantees proliferated.

By the mid-2000s, IRDA began acknowledging the need for risk-sensitive solvency supervision. In annual reports (2005–2008), the regulator referenced the global RBC trend and commissioned preliminary studies with actuarial consultants (notably Milliman and Towers Watson).

#### 3.2 Initial Academic and Professional Debates

Professional bodies such as the Institute of Actuaries of India (IAI) and the Federation of Indian Chambers of Commerce and Industry (FICCI) organized conferences debating the feasibility of RBC. Challenges identified included:

- Limited actuarial capacity to model stochastic risk;
- Gaps in credible mortality/morbidity tables;
- Low penetration of catastrophe and reinsurance modeling;
- Incomplete data on lapse and persistency.

While conceptual consensus existed, data and capability deficits postponed practical implementation.

### 4. The 2010s: Global Influence and Domestic Preparations

#### 4.1 The Solvency II effect

The European Union’s Solvency II Directive (effective 2016) reshaped prudential supervision globally. IRDAI participated in International Association of Insurance Supervisors (IAIS) forums and observed parallel reforms in Singapore (RBC2) and Malaysia (RBC Framework 2011).

Recognizing the convergence trend, IRDAI’s 2011–2015 strategic plans included a medium-term objective of developing an RBC framework for India. In 2015, the Authority created internal working groups to review solvency regulations and assess quantitative data requirements.

#### 4.2 Early Working Group Reports

In 2016, the Working Group on Risk-Based Capital and Solvency Regime presented a draft outlining guiding principles:

1. Alignment with IAIS Insurance Core Principles (ICPs 16 and 17).
2. Phased transition to internal models for large insurers.
3. Integration with enterprise risk management (ERM) and ORSA.

The group recommended pilot testing (QIS-1) and sector consultation, emphasizing capacity building. However, market stress events (notably large underwriting losses in health and crop segments and investment shocks from IL&FS 2018) shifted regulatory focus temporarily toward immediate solvency oversight.

### 5. The Decade of Data and Caution (2015–2020)

IRDAI recognized that RBC success depends on robust, comparable data. The regulator initiated standardized Asset–Liability Management (ALM) formats, improved Form 3A/3B returns, and mandated appointed actuary reports with sensitivity analyses.

Between 2017 and 2020, IRDAI issued several circulars on:

- ORSA guidelines (discussion stage);
- Economic capital studies for selected life insurers;
- Stress-testing for market risk and catastrophe risk.

However, no formal RBC quantitative field testing occurred during this period. The sector continued under the 150 % solvency margin, albeit with informal stress buffers encouraged by the regulator.

In parallel, Solvency II adoption abroad revealed challenges— notably model complexity and cost—which reinforced India’s cautious stance. The Authority publicly emphasized a “fit-for-India” model, prioritizing proportionality and cost-benefit balance.

### 6. Renewed Momentum: 2020–2025

#### 6.1 Policy Push under the IRDAI Vision 2047

In 2022, IRDAI articulated an ambitious Vision 2047 to “insure every Indian.” To sustain penetration with prudence, a modern solvency regime became imperative. The Authority re-constituted the Risk-Based Capital and Solvency Framework Committee (2022) with representatives from insurers, actuaries, auditors, and consultants.

The committee’s mandate:

- Develop a modular RBC formula;
- Define risk components and correlation matrices;
- Recommend a phased roadmap for transition.

#### 6.2 Quantitative Impact Studies (QIS)

In 2023–24, IRDAI conducted QIS-1 across a sample of life, non-

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life, and reinsurance companies to test data quality and model calibration. In 2025, the regulator launched QIS-2, expanding coverage and refining risk weights. Interim findings indicate:

- Adequate overall capitalization at industry level;
- Need for granular data on catastrophe and lapse risk;
- Sensitivity of smaller non-life players to catastrophe and concentration risk.

### 6.3 RBC Design Features (as Currently Proposed)

While official parameters may evolve, public discussions suggest the following contours:

- Target capital adequacy ratio: approximately 100 % of the Total Risk Requirement (replacing 150 % solvency ratio).
- Risk modules: market, credit, underwriting (life/non-life), operational.
- Methodology: standardized formula with optional internal models (post-approval).
- Supervisory ladder: preventive, corrective, and intervention stages based on solvency control levels.
- Integration with ORSA and ERM: insurers to maintain forward-looking solvency assessments.

## 7. Comparative Perspectives: Lessons from Abroad

### 7.1 The United States

The NAIC RBC framework (1990s) provides a factor-based, formulaic approach that is simpler but less risk-sensitive than Solvency II. It offers early-warning thresholds (Company Action Level, Regulatory Action Level, etc.) that trigger supervisory responses.

### 7.2 Europe (Solvency II)

Solvency II's three-pillar architecture—quantitative requirements, governance/ERM, and disclosure—sets a high benchmark but demands advanced modeling. India's regulators view it as too resource-intensive for immediate replication.

### 7.3 Asia-Pacific

Countries such as Singapore, Malaysia, and Hong Kong have adopted phased RBC regimes balancing risk sensitivity and practicality. Singapore's RBC 2 (2019) incorporates interest-rate and equity stresses while allowing transitional reliefs. Malaysia's RBC Framework 2011 emphasizes proportionate capital charges. These examples influence India's thinking toward a "simplified yet risk-linked" regime emphasizing standard formulas, transparent factors, and gradual model approval.

## 8. Why India's RBC Journey Has Been Slow

The delay is often misinterpreted as regulatory inertia. In fact, several structural challenges explain the extended gestation.

### 8.1 Data Quality and Consistency

RBC calibration requires credible time-series data on mortality, morbidity, catastrophe frequency, and asset correlations. Fragmented historical records and inconsistent data capture across insurers hampered early progress.

### 8.2 Actuarial and Modeling Capacity

India's actuarial profession, though expanding, faced shortages in quantitative modeling expertise necessary for stochastic simulation, internal models, and validation.

### 8.3 Product Heterogeneity and Public Schemes

Government-sponsored lines such as crop and health insurance exhibit volatile loss patterns and state-linked payment cycles. Modeling these within a uniform capital formula poses difficulty.

### 8.4 Legacy of Rule-Based Culture

Decades of compliance-driven supervision fostered a check-list mindset. Transitioning to a principles-based system demands cultural change—board-level accountability, forward-looking risk appetite, and cross-functional ownership.

### 8.5 Capital Market Depth

RBC frameworks rely on market-consistent valuation. Limited availability of long-duration government bonds and derivative instruments complicates realistic interest-rate and market-risk modeling.

## 9. Interlinkages with Parallel Reforms

### 9.1 Ind AS 117 / IFRS 17 Convergence

India's move to Ind AS 117 (Insurance Contracts) from 2024 brings market-consistent measurement and contractual service margin concepts. RBC implementation will benefit from this accounting modernization, as both frameworks require granular asset-liability data and discounted cash-flow projections.

### 9.2 Enterprise Risk Management (ERM) and ORSA

IRDAI's Guidelines on Corporate Governance (2016) and later communications promote ERM integration. RBC will make ORSA mandatory, linking risk appetite to solvency planning. This represents a cultural shift from "regulatory solvency" to "economic capital management."

### 9.3 Digital and Cyber Risks

As insurers digitize, operational risk capital will expand to include cyber and data breach components. RBC's forward-looking calibration must reflect this emerging dimension.

## 10. Industry Readiness and Market Implications

### 10.1 Life Insurance Sector

Large life insurers—LIC, HDFC Life, SBI Life, ICICI Prudential—already perform internal stress tests and capital modeling. RBC will formalize these practices and may even release trapped capital for well-diversified players with low guaranteed liabilities. However, smaller insurers with concentrated portfolios may need fresh capital infusion.

### 10.2 Non-Life Sector

The general insurance sector faces more volatility from catastrophe, health, and crop exposures. RBC's explicit catastrophe and operational risk charges may reveal higher capital needs for PSUs and smaller regional players. Nevertheless, transparency could

attract reinsurance and foreign investment.

### 10.3 Reinsurers

GIC Re and foreign branches will need to align their group solvency under multiple frameworks (India RBC, home-country Solvency II or NAIC). Harmonization of reporting standards will become crucial.

### 10.4 Investors and Rating Agencies

A transparent RBC regime provides risk-adjusted comparability, allowing investors and rating agencies to price capital efficiency. Equity markets may reward insurers demonstrating strong capital modeling.

## 11. Supervisory Challenges Ahead

IRDAI must navigate implementation challenges on three fronts:

1. Calibration and Proportionality – Selecting factors that reflect Indian market risk without excessive volatility.
2. Supervisory Capacity – Training regulatory staff to interpret models, validate assumptions, and perform peer benchmarking.
3. Transition Management – Phased adoption with grandfathering and transitional capital relief to avoid market disruption.

A parallel-run phase (expected 2026–2028) is anticipated, during which insurers will compute both existing solvency margins and RBC ratios before full migration.

## 12. Strategic Significance: Beyond Compliance

Risk-Based Capital is not merely a regulatory metric; it is a strategic management tool. It enables boards to:

- Optimize portfolio mix for return-on-risk-adjusted capital (RORAC);
- Align reinsurance purchasing with capital efficiency;
- Price products with explicit cost of capital;
- Link risk appetite and dividend policy.

For India, RBC will mark the transition from “growth-driven supervision” to “risk-responsive supervision.”

## 13. Current Status (2025): Work in Progress

As of 2025, India stands at the threshold of implementation:

- QIS-2 completed, results under evaluation;
- Draft RBC Regulations expected in 2026;
- Industry training and actuarial data repositories being expanded;
- ORSA guidelines in consultation stage;
- Alignment with Ind AS 117 proceeding concurrently.

Despite progress, full implementation is likely post-2028, consistent with the regulator’s cautious, phased approach. Thus, the phrase “work in progress” accurately captures India’s pragmatic incrementalism.

## 14. Lessons from the Journey

1. Institutional patience is necessary. Solvency regimes evolve over decades; a rushed transition could destabilize smaller insurers.
2. Data precedes models. Without credible empirical data, calibration would be arbitrary. IRDAI’s focus on data standardization was justified.

3. Culture matters as much as capital. Boards must internalize risk culture; otherwise, RBC becomes another compliance exercise.

4. Integration is key. RBC, ORSA, and Ind AS 117 are interdependent; implementing them separately would fragment risk oversight.

5. Stakeholder communication builds trust. Periodic updates (e.g., QIS results) sustain industry confidence and investor understanding.

## 15. The Road Ahead: Outlook for 2030

Looking forward, India’s RBC journey can be expected to follow three phases:

1. Preparatory phase (2025–2026): final calibration, training, and parallel runs.
2. Transitional phase (2027–2028): partial implementation, public disclosure pilots.
3. Full adoption (post-2028): formal replacement of the solvency-margin regime with a comprehensive RBC framework.

By 2030, India could have a risk-sensitive, principle-based solvency regime comparable to peers in Asia, with sufficient data to refine models dynamically. The integration of climate-related financial risk and stress testing for ESG exposures may form the next frontier.

## 16. Conclusion

India’s pursuit of Risk-Based Capital exemplifies evolution rather than revolution. The process, stretching from early conceptualization in the 2000s to active field testing in 2025, reflects the regulator’s prudence and the sector’s maturation. Each stage—conceptual, preparatory, experimental—has added layers of data discipline, actuarial capability, and governance awareness. While critics may highlight delays, the deliberate pace has avoided disruptive shocks witnessed in some early adopters. The outcome, when finalized, promises a regime rooted in Indian realities yet aligned with global standards. It will redefine solvency not as a fixed percentage but as a dynamic reflection of risk—linking prudence, performance, and protection.

As India advances toward its Vision 2047 of comprehensive insurance inclusion, RBC will provide the prudential backbone ensuring that growth remains sustainable. The journey is long, but the direction is unmistakable: from rules to risk, from compliance to capability.

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