



Methods Of Calculating Capital Adequacy In Commercial Banks: A Comparison Of International And National Practices

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ABSTRACT

Capital adequacy ratios underpin bank solvency oversight by linking the quality and quantity of regulatory capital to risk-weighted assets (RWA). Although the Basel framework provides a common architecture, methods for calculating credit, market, and operational risk capital vary across standardized and internal model approaches and are implemented differently by jurisdictions, which affects comparability, cyclicity, and supervisory use. This article analyzes the methodological core of capital adequacy measurement—covering the composition of capital, the computation of RWAs under standardized and internal ratings-based (IRB) approaches, the leverage ratio backstop, and Pillar 2 overlays—and contrasts international prescriptions with typical national practices in advanced and emerging markets. The discussion highlights how choices about risk weights, model approvals, data quality, and transitional arrangements shape reported ratios and risk sensitivity. The paper concludes that credible convergence requires robust risk-data governance, transparent model validation, proportionate use of standardized backstops such as the output floor, and clear disclosure that bridges accounting and prudential views of loss.

KEYWORDS

Capital adequacy, Basel III, risk-weighted assets, IRB, standardized approach, leverage ratio, Pillar 2, output floor

INTRODUCTION

Capital adequacy expresses a bank's ability to absorb unexpected losses without jeopardizing its obligations to depositors and the stability of the financial system. In regulatory practice it is most often represented by the Common Equity Tier 1 (CET1) ratio, defined as CET1 capital divided by risk-weighted assets, complemented by Tier 1 and total capital ratios, buffers, and a non-risk-based leverage ratio. The Basel framework standardizes definitions of capital and sets minimum requirements, but permits different methods for quantifying risk, from standardized formulas to internal models. National authorities transpose these elements with local discretions, sequencing, and supervisory processes that reflect market structure, data availability, and policy priorities. As a result, two banks with similar portfolios can report different capital ratios because of methodological and implementation choices rather than differences in underlying risk.

This study aims to compare methods used to calculate capital adequacy in commercial banks under the international Basel framework and to examine how national practices adapt, refine,

or constrain those methods, with attention to implications for risk sensitivity, comparability, and supervisory effectiveness.

The paper employs a comparative-analytical approach based on international regulatory texts and supervisory guidance on credit, market, and operational risk capital, complemented by accounting standards relevant to expected-loss recognition. Conceptually, it contrasts a “pure” Basel implementation with typical national regimes in large advanced economies and emerging markets. The analysis focuses on the mechanics of capital composition, the standardized and IRB approaches for credit risk, the revised market-risk framework, the standardized measurement of operational risk, and the leverage ratio. It evaluates how discretions such as risk-weight calibrations, approval thresholds for internal models, macroprudential buffers, and transitional arrangements affect aggregate capital requirements and their variability across jurisdictions.

Internationally, the numerator of the capital ratio is anchored in a strict definition of CET1 that emphasizes loss-absorbing quality by deducting goodwill, certain deferred tax assets, and non-significant investments, while recognizing additional Tier 1 and Tier 2 instruments under eligibility criteria. The denominator—RWA—is constructed by aggregating risk charges across credit, market, and operational risk. For credit risk, banks may use the standardized approach, which applies regulator-set risk weights based on counterparty type, credit assessments, collateral, and exposures such as mortgages or corporates, or they may use the IRB approach where approved models estimate probability of default, loss-given default, and exposure at default. The Basel “end-game” introduces an output floor that caps model-based RWAs at no less than a fixed percentage of the standardized calculation, seeking to limit unwarranted variability while preserving incentives for risk management.

Market risk has been overhauled by the Fundamental Review of the Trading Book, which refines the boundary between trading and banking books and replaces earlier metrics with more risk-sensitive standardized charges and desk-level internal models subject to the profit-and-loss attribution test. Operational risk has shifted to a single standardized measurement approach using business indicators and internal loss experience to derive capital, reducing the diversity of past model-based outcomes. Alongside risk-based ratios, a leverage ratio provides a non-risk-based backstop that guards against model risk and measurement error, while buffers such as the capital conservation and countercyclical buffers modulate requirements through the cycle and interact with supervisory review under Pillar 2.

National implementations translate these building blocks into practice with notable differences. In the European Union, the Capital Requirements Regulation and Directive embed Basel definitions largely intact, apply the leverage ratio across institutions, and permit IRB models under a structured approval regime that coexists with standardized approaches for smaller banks. Macroprudential authorities layer systemic buffers on systemically important institutions and deploy countercyclical adjustments based on credit conditions, while disclosure is harmonized to support market discipline. In the United States, standardized and advanced approaches operate in parallel, with stress testing and a stress capital buffer integrating forward-looking loss projections into going-concern capital planning; treatment of certain exposures and the prominence of the supplementary leverage ratio for large institutions shape binding constraints. Emerging markets often prioritize the standardized approach because of data limitations, supervisory capacity, and the desire for comparability,

while applying national discretions such as preferential risk weights for domestic-currency sovereign exposures or prudential filters for foreign-exchange risk. Where internal models are allowed, approvals are typically limited to larger banks, and authorities rely more on Pillar 2 add-ons and conservative parameter floors to compensate for data gaps.

These choices carry consequences. Extensive use of internal models can improve risk sensitivity but may create variability that hampers comparability across banks and jurisdictions; conversely, exclusive reliance on standardized approaches can misstate risk in portfolios with specialized collateral or low-default, high-quality exposures. The output floor offers a compromise by bounding dispersion without discarding modelling benefits. The interaction between accounting expected-credit-loss recognition and prudential expected loss, particularly under IFRS 9, can alter the timing and distribution of losses between profit and capital; jurisdictions that require explicit bridges and reconciliations tend to show more stable capital trajectories in stress. Data governance is decisive: jurisdictions that enforce principles for risk-data aggregation and reporting reduce measurement error, accelerate supervisory review, and support credible public disclosure. Finally, the leverage ratio's role varies: in markets with low-risk assets and advanced modelling, it often becomes the binding constraint, steering banks toward balance-sheet adjustments that may not reduce economic risk; elsewhere, risk-based ratios dominate, particularly when standardized approaches are prevalent.

Methods for calculating capital adequacy in commercial banks reflect a balance between risk sensitivity and simplicity. The Basel framework provides a coherent grammar—capital quality definitions, risk-based RWAs, a leverage backstop, and supervisory overlays—yet national translations shape outcomes through choices about models, discretions, buffers, and sequencing. Convergence toward credible, comparable, and resilient capital metrics depends on robust data infrastructure, transparent model validation, proportionate use of standardized backstops including the output floor, and disclosures that bridge accounting and prudential views. Jurisdictions at different stages of financial development can tailor implementation while maintaining the core objectives of solvency, comparability, and market discipline.

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