

Cost of Risk Calculation in Banks: Methodology, Interpretation and Supervisory Considerations

Introduction

The **cost of risk**, commonly abbreviated as **CoR**, is one of the most important measures of a bank's credit performance. It shows how much of the bank's lending portfolio is being absorbed by credit impairment charges during a reporting period.

In simple terms, cost of risk answers the question:

For every 100 units of loans held by the bank, how much has been charged against profit to recognise expected or realised credit losses?

The ratio is closely monitored by bank boards, senior management, investors, auditors and banking supervisors because it directly links asset quality with profitability. A rising cost of risk can indicate deterioration in borrowers' repayment capacity, adverse economic conditions, weaknesses in underwriting or more conservative provisioning. Conversely, a very low cost of risk may reflect strong asset quality, but it may also result from provision reversals, delayed recognition of problem loans or overly optimistic assumptions.

The Basic Cost of Risk Formula

The most commonly used formula is:

$$\text{Cost of Risk} = \frac{\text{Net credit impairment charge for the period}}{\text{Average gross loans and advances}} \times 100$$

Banks often express the result in **basis points**:

$$\text{Cost of Risk in basis points} = \frac{\text{Net credit impairment charge}}{\text{Average gross loans}} \times 10,000$$

One basis point is equal to 0.01%. Therefore:

- 25 basis points = 0.25%
- 50 basis points = 0.50%
- 100 basis points = 1.00%
- 150 basis points = 1.50%

The European Central Bank has used more than one closely related presentation. Its supervisory statistics define cost of risk using annualised adjustments in allowances for estimated loan losses divided by loans and advances subject to impairment. In other analytical work, the ECB defines it as provisions during the year divided by the average volume of loans.

This variation means that a bank must clearly disclose its numerator, denominator, annualisation method and portfolio scope before its cost of risk can be compared with another institution.

A Simple Worked Example

Assume that a bank reports the following figures:

Item	Amount
Gross loans at the beginning of the year	BD 9.8 billion
Gross loans at the end of the year	BD 10.2 billion
Net credit impairment charge	BD 72 million

Average gross loans are:

$$\frac{BD\ 9.8\ \text{billion} + BD\ 10.2\ \text{billion}}{2} = BD\ 10.0\ \text{billion}$$

The cost of risk is:

$$\frac{BD\ 72\ \text{million}}{BD\ 10.0\ \text{billion}} \times 100 = 0.72\%$$

Expressed in basis points:

$$0.72\% \times 100 = 72\ \text{basis points}$$

The bank therefore incurred a credit cost of **72 basis points** during the year. In practical terms, it recognised 720 fils of credit impairment expense for every BD100 of average loans.

Determining the Numerator

The numerator should normally represent the **net impairment charge recognised in the income statement** during the period. Depending on the bank's accounting presentation, it may include:

- Expected credit loss charges on performing loans;
- Additional lifetime expected credit losses following migration to Stage 2;
- Impairment charges on Stage 3 or credit-impaired exposures;
- Charges resulting from borrower defaults;
- Changes in probability of default, loss given default or exposure at default;
- Changes in macroeconomic scenarios and scenario weightings;
- Post-model adjustments or management overlays;
- Impairment on loan commitments and financial guarantees;
- Recoveries and provision releases; and
- Impairment on debt securities or interbank exposures, where included within the defined scope.

Under IFRS 9, Stage 1 exposures generally carry 12-month expected credit losses. Stage 2 exposures carry lifetime expected credit losses following a significant increase in credit risk, while Stage 3 exposures remain subject to lifetime expected credit losses after becoming credit-impaired. Consequently, substantial migration from Stage 1 to Stage 2 can increase cost of risk even before borrowers become non-performing.

Net impairment charge versus movement in allowances

A major calculation error is to treat the change in the balance-sheet allowance as automatically equal to the impairment expense reported in profit or loss.

Consider the following allowance reconciliation:

Allowance movement	BD million
Opening loss allowance	310
Impairment charge recognised in profit or loss	72
Foreign-exchange and other adjustments	4
Write-offs against existing allowances	(50)
Disposals and other movements	(2)
Closing loss allowance	334

The closing allowance increased by only BD24 million, from BD310 million to BD334 million. However, the income-statement impairment charge was BD72 million.

Using BD24 million as the numerator would materially understate the cost of risk. Write-offs reduce both the loan balance and the existing allowance but may not create a new expense where the exposure was already fully provided. Foreign-exchange movements, acquisitions, disposals, transfers and accounting reclassifications can also cause the movement in allowances to differ from the impairment charge.

The numerator should therefore be obtained from the relevant impairment expense line or reconciled carefully from the allowance movement schedule.

Determining the Denominator

The denominator is commonly based on **gross loans and advances**, before deducting expected credit loss allowances.

Using net loans after allowances can artificially increase the ratio because the denominator has already been reduced by the same credit losses that appear in the numerator.

The most analytically sound denominator is usually:

$$\text{Average gross loans} = \frac{\text{Opening gross loans} + \text{Closing gross loans}}{2}$$

Monthly or quarterly averages may provide a more accurate measure where loan balances fluctuate significantly during the year.

Possible denominator definitions include:

1. Average gross customer loans;
2. Period-end gross customer loans;
3. Loans and advances subject to impairment;
4. Total credit-impaired financial assets;
5. Loans, debt securities and interbank placements subject to expected credit loss requirements; or
6. On- and off-balance-sheet credit exposures.

There is no single denominator used universally in every published bank ratio. For meaningful comparison, the denominator should remain consistent over time and exclusions should be disclosed.

Assets measured at fair value through profit or loss are normally excluded from an IFRS 9 impairment-based denominator because changes in their credit value are generally reflected through fair-value measurement rather than a separate expected credit loss allowance.

Annualising Interim Cost of Risk

When cost of risk is calculated for a quarter or half-year, banks commonly annualise the impairment charge.

For a quarterly result:

$$\text{Annualised CoR} = \frac{\text{Quarterly impairment charge}}{\text{Average loans}} \times 4 \times 10,000$$

Suppose the bank records a net impairment charge of BD18 million during the first quarter and holds average gross loans of BD10 billion:

$$\frac{BD\ 18\ \text{million}}{BD\ 10\ \text{billion}} \times 4 \times 10,000 = 72\ \text{basis points}$$

For a six-month period, the charge would normally be multiplied by two.

Annualisation assumes that the period's impairment experience continues for the remainder of the year. This can be misleading when a quarter contains a large one-off default, exceptional provision release, model change or macroeconomic overlay. Banks should therefore present both the actual year-to-date charge and the annualised ratio.

Relationship with Expected Credit Loss

Cost of risk is an accounting and performance ratio, while expected credit loss is the underlying measurement of anticipated credit losses.

At a conceptual level, expected loss is frequently represented as:

$$\text{Expected Loss} = \text{Probability of Default} \times \text{Loss Given Default} \times \text{Exposure at Default}$$

In an IFRS 9 framework, the calculation must also reflect the time value of money, multiple probability-weighted economic outcomes and reasonable and supportable forward-looking information. Basel guidance expects banks' ECL processes to incorporate borrower-specific factors, collateral values, cash-flow estimates, historical loss experience and current and future macroeconomic conditions.

Cost of risk is not calculated directly by multiplying the portfolio's average PD, LGD and EAD. Instead, it reflects the **net change in expected credit losses recognised through profit or loss during the period**, divided by the relevant exposure base.

Gross and Net Cost of Risk

Banks may monitor both gross and net measures.

Gross cost of risk

Gross cost of risk may include all new impairment charges before recoveries and provision releases:

$$\text{Gross CoR} = \frac{\text{New impairment charges}}{\text{Average gross loans}}$$

Net cost of risk

Net cost of risk deducts releases and recoveries:

$$\text{Net CoR} = \frac{\text{Impairment charges} - \text{releases} - \text{eligible recoveries}}{\text{Average gross loans}}$$

The net measure is more commonly reported because it corresponds more closely to the net impact on profitability. However, gross and net figures together provide better information. A stable net cost of risk could conceal high new defaults that were offset by unusually large recoveries or releases from older provisions.

Cost of risk can occasionally become negative where provision releases and recoveries exceed new impairment charges. ECB supervisory definitions explicitly recognise that adjustments in allowances may be negative in some periods.

Main Drivers of Cost of Risk

A bank's cost of risk is influenced by several interacting factors.

Credit quality and defaults

An increase in delinquency, restructuring, forbearance or default generally increases impairment charges. The impact depends on collateral coverage, cure rates and expected recoveries.

Stage migration

A movement from Stage 1 to Stage 2 can create a substantial increase because the allowance changes from 12-month ECL to lifetime ECL. Cost of risk can therefore rise before the NPL ratio increases.

Macroeconomic assumptions

Changes in GDP growth, unemployment, interest rates, property prices, inflation and commodity prices may affect expected borrower defaults and recoveries.

Portfolio composition

Unsecured consumer lending, credit cards, small-business lending, commercial real estate and concentrated corporate exposures may produce different cost-of-risk patterns from highly collateralised residential mortgages or sovereign lending.

Loan growth

Rapid loan growth can initially reduce the reported ratio by expanding the denominator. However, insufficiently seasoned new lending may create higher impairment charges later. Cost of risk should therefore be examined by lending vintage.

Collateral and guarantees

Higher expected collateral recoveries can reduce LGD and impairment. Supervisors should nevertheless assess whether collateral valuations are current, independently supported and appropriately discounted for the time and cost required for enforcement.

Model and management adjustments

Changes in models, data, scenario weightings, overlays or significant-increase-in-credit-risk criteria can materially affect cost of risk without an equivalent change in actual arrears.

Interpreting the Ratio

Cost of risk should never be interpreted in isolation.

A low ratio may indicate:

- Strong underwriting;
- High-quality borrowers;
- Effective collateralisation;
- Favourable economic conditions;
- Successful recoveries; or
- Release of previously established allowances.

It may also indicate:

- Delayed recognition of deterioration;
- Weak Stage 2 classification;
- Optimistic collateral values;
- Insufficient macroeconomic adjustments;
- Excessive reliance on cures or restructurings; or
- Provision releases used to support earnings.

A high ratio may reflect genuine deterioration, but it can also result from prudent front-loading of expected losses, conservative model assumptions, portfolio clean-up or accelerated recognition of legacy problems.

Basel guidance places responsibility on boards and senior management for maintaining sound credit-risk assessment processes and appropriate provisions. Supervisors are expected to assess whether provisioning methods produce reasonable, prudent and timely estimates of credit losses.

Cost of Risk Versus Other Asset-Quality Indicators

Cost of risk should be distinguished from related measures:

Indicator	Nature	Typical calculation
Cost of risk	Flow measure	Impairment charge ÷ average loans
NPL ratio	Stock measure	Non-performing loans ÷ gross loans
Stage 2 ratio	Stock and early-warning measure	Stage 2 loans ÷ gross loans
Coverage ratio	Loss-absorption measure	Allowances ÷ relevant impaired exposures
Write-off ratio	Realised-loss measure	Write-offs ÷ average loans
Credit-loss allowance ratio	Balance-sheet measure	Total ECL allowance ÷ gross loans
Risk-adjusted margin	Pricing measure	Lending margin less expected credit cost

A bank can have a low current cost of risk but a high NPL ratio where the problem loans were provisioned in earlier years. It can also have a rising cost of risk with a stable NPL ratio where performing loans migrate from Stage 1 to Stage 2.

Supervisory Review of Cost of Risk

A supervisory assessment should examine more than the reported headline number. At a minimum, the following questions should be considered:

- Is the calculation based on gross or net loans?
- Is the numerator taken from the income statement or derived from allowance movements?
- Are write-offs, recoveries and provision releases treated consistently?
- Are off-balance-sheet provisions included?
- Has the ratio been annualised?
- Are foreign-exchange and acquisition effects excluded from the impairment charge?
- How much of the movement comes from Stage 1, Stage 2 and Stage 3?
- Are model changes and management overlays separately identified?
- Is the ratio consistent with changes in arrears, NPLs, forbearance and internal ratings?
- Does the bank's actual cost of risk materially differ from its budget and stress-test projections?
- Are there unusual concentrations by sector, geography, product, large borrower or lending vintage?
- Is the bank recognising deterioration early enough?

Supervisors should also reconcile the ratio with profitability and capital. Higher impairment expense reduces pre-tax profit and retained earnings and may therefore weaken capital generation. Under the Basel internal ratings-based framework, accounting provisions also interact with the regulatory calculation of expected losses and capital.

Recommended Internal Reporting Format

A bank's management report should present:

1. Current-period and year-to-date cost of risk;
2. Annualised and non-annualised results;
3. Budget, forecast and prior-year comparisons;
4. Cost of risk by business line and product;
5. Stage 1, Stage 2 and Stage 3 contributions;
6. New charges, releases, recoveries and write-offs;
7. Model-driven and management-overlay effects;
8. Major individual borrower charges;
9. Cost of risk under adverse scenarios; and
10. A reconciliation between impairment expense and movement in allowances.

This level of information enables management and supervisors to distinguish between underlying credit deterioration, methodological changes and temporary accounting movements.

Conclusion

Cost of risk is a relatively simple ratio, but its reliability depends on disciplined definition and reconciliation. The preferred general formulation is the net impairment charge divided by average gross loans, expressed in basis points. However, differences in portfolio scope, allowance movements, write-offs, annualisation and recoveries can produce materially different outcomes.

The ratio is most useful when analysed over several periods and alongside Stage 2 migration, NPLs, coverage, write-offs, lending growth and macroeconomic assumptions. A credible cost-of-risk assessment should explain not only whether the ratio increased or decreased, but also **why it changed, whether the change is sustainable and whether expected credit losses are being recognised prudently and on time.**

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