

Interest Rate Shock Scenarios

Banks shall apply six prescribed interest rate shock scenarios to capture parallel and non-parallel gap risks for EVE and two prescribed interest rate shock scenarios for NII (the scenarios of parallel shock up and parallel shock down). These scenarios are applied to IRRBB exposures in each currency for which banks have material positions. In order to accommodate heterogeneous economic environments across jurisdictions, the six shock scenarios reflect currency specific absolute shocks as specified in Table 2 below. Under this approach, IRRBB is measured by means of the following six scenarios:

- a) parallel shock up;
- b) parallel shock down;
- c) steeper shock (short rates down and long rates up);
- d) flattener shock (short rates up and long rates down);
- e) short rates shock up; and
- f) short rates shock down

2. The interest rate shocks for exposures to INR and other currencies¹ are as follows:

Table 2

	Specified size of interest rate shocks:									
	INR	ARS, BRL, IDR, MXN, RUB, TRY, ZAR	AUD	CAD, USD, SEK, SAR	CHF	CNY, GBP	EUR, HKD	JPY	KRW	SGD
Parallel	250	400	300	200	100	250	200	100	300	150
Short	300	500	450	300	150	300	250	100	400	200
Long	200	300	200	150	100	150	150	100	200	100

¹ These shocks have been calibrated by BCBS based on data of historical time series ranging from 2000 to 2015 for various maturities. These shocks will be reviewed by RBI from time to time. Exposure in currencies less than 5 percent of the total of either the bank's global assets or global liabilities, shall be treated under residual category and the shocks pertaining to the largest among the residual currencies shall be applied to it. If banks have exposures to currencies not listed in Table 2, the highest of the shocks prescribed will be applicable.

Given the above table, the instantaneous shocks to the risk-free rate for parallel, short and long, for each currency, the following parameterisations of the six interest rate shock scenarios should be applied:

a) Parallel shock for currency c: a constant parallel shock up or down across all time buckets.

$$\Delta R_{parallel,c}(t_k) = \pm \bar{R}_{parallel,c}$$

b) Short rate shock for currency c: Shock up or down that is greatest at the shortest tenor midpoint. That shock, through the shaping scalar $S_{short}(t_k) = (e^{-\frac{t_k}{x}})$, where $x=4$, diminishes towards zero at the tenor of the longest point in the term structure^{2 3}.

$$\Delta R_{short,c}(t_k) = \pm \bar{R}_{short,c} \cdot S_{short}(t_k) = \pm \bar{R}_{short,c} \cdot e^{-\frac{t_k}{x}}$$

c) Long rate shock for currency c (note: this is used only in the rotational shocks): Here the shock is greatest at the longest tenor midpoint and is related to the short scaling factor as: $S_{long}(t_k) = 1 - S_{short}(t_k)$

$$\Delta R_{long,c}(t_k) = \pm \bar{R}_{long,c} \cdot \left(1 - e^{-\frac{t_k}{x}}\right)$$

d) Rotation shocks for currency c: involving rotations to the term structure (i.e. steepeners and flatteners) of the interest rates whereby both the long and short rates are shocked and the shift in interest rates at each tenor midpoint is obtained by applying the following formulas to those shocks:

$$\Delta R_{steepener,c}(t_k) = -0.65 \cdot |\Delta R_{short,c}(t_k)| + 0.9 \cdot |\Delta R_{long,c}(t_k)|$$

$$\Delta R_{flattener,c}(t_k) = +0.8 \cdot |\Delta R_{short,c}(t_k)| - 0.6 \cdot |\Delta R_{long,c}(t_k)|$$

Examples:

Short rate shock:

Assume that a bank uses the framework with $K=19$ time bands and with $t_k=25$ years (the midpoint (in time) of the longest tenor bucket K), and where t_k is the midpoint (in time) for bucket k . In the standardised framework, if $k=10$ with $t_k=3.5$ years, the scalar adjustment for the short shock would be: $S_{short}(t_k) = \left(e^{-\frac{3.5}{4}}\right) = 0.417$. Banks would

² The value of x in the denominator of the function $e^{-\frac{t_k}{x}}$ controls the rate of decay of the shock. This should be set to the value of 4 for all currencies.

³ t_k is the midpoint (in time) of the k th bucket and t_K is the midpoint (in time) of the last bucket K . There are 19 buckets in the indicative framework, but the analysis may be generalised to any number of buckets.

multiply this by the value of the short rate shock to obtain the amount to be added to or subtracted from the yield curve at that tenor point.

$$\Delta R_{short,c}(t_k) = \pm \bar{R}_{short,c} \cdot S_{short}(t_k) = \pm \bar{R}_{short,c} \cdot e^{-\frac{t_k}{x}}$$

$$\Delta R_{short,c}(3.5years) = \pm \bar{R}_{short,c} \cdot 0.417$$

If the short rate shock was +100 bp, the increase in the yield curve at $t_k = 3.5$ years would be 41.7 bp.

$$\Delta R_{short,c}(3.5years) = 100 \cdot 0.417 = 41.7 bp$$

Steepener: Assume the same point on the yield curve as above, $t_k = 3.5$ years. If the absolute value of the short rate shock was 100 bp and the absolute value of the long rate shock was 100 bp (as for the Japanese yen), the change in the yield curve at $t_k = 3.5$ years would be the sum of the effect of the short rate shock plus the effect of the long rate shock in basis points:

$$\Delta R_{steepener,c}(t_k) = -0.65 \cdot |\Delta R_{short,c}(t_k)| + 0.9 \cdot |\Delta R_{long,c}(t_k)|$$

$$\Delta R_{short,c}(3.5years) = 100bp \cdot 0.417 = 41.7 \text{ (calculated above)}$$

$$S_{long}(t_k) = 1 - S_{short}(t_k) = 1 - 0.417 = 0.583 bp$$

$$\Delta R_{long,c}(3.5years) = 100bp \cdot (1 - 0.417) = 58.3bp$$

$$\Delta R_{steepener,c}(3.5years) = -0.65 \cdot 41.7bp + 0.9 \cdot 58.3bp = \pm 25.4bp$$

Flattener: The corresponding change in the yield curve for the shocks in the example above at $t_k = 3.5$ years would be:

$$\Delta R_{flatener,c}(t_k) = +0.8 \cdot |\Delta R_{short,c}(t_k)| - 0.6 \cdot |\Delta R_{long,c}(t_k)|$$

$$\Delta R_{flatener,c}(3.5years) = +0.8 \cdot 41.7bp - 0.6 \cdot 58.3bp = -1.6bp$$

Indicative methodology for computing Δ EVE

Banks have been provided with flexibility to develop their own system to compute Δ EVE. However, it is expected that banks' systems and parameters used to compute Δ EVE are not significantly different from the methodology and process provided in this Appendix. Wherever, significant deviation is considered desirable by banks, a well-reasoned argument for the same should be recorded and made available to RBI when requested.

2. Steps involved in computation:

2.1 The steps involved in measuring banks' Δ EVE for IRRBB would generally be following:

Step 1. Interest rate-sensitive banking book positions are allocated to one of three categories (i.e. amenable, less amenable and not amenable to standardisation).

Step 2. Determination of slotting of cash flows based on repricing maturities.

This is a straightforward translation for positions amenable to standardisation.

For positions less amenable to standardization, they are excluded from this step.

For positions with embedded automatic interest rate options, the embedded interest rate option is stripped out from the process of slotting of notional repricing cash flow. The optionality should be treated together with other interest rate options as per Step 4 given below.

For positions that are not amenable to standardisation, there is a separate treatment for:

(a) Non-Maturity Deposits (NMDs) – According to separation of core and non-core cash flows via the approach described in subsequent paragraph of this Appendix.

(b) Behavioural options (fixed rate loans subject to prepayment risk and term deposits subject to early redemption risk) – Behavioural parameters relevant to the position type may rely on a scenario-dependent look-up table provided in subsequent paragraph of this Appendix.

Step 3: Determination of ΔEVE for relevant interest rate shock scenarios for each currency. The ΔEVE is measured per currency for all six prescribed interest rate shock scenarios.

Step 4: Add-ons for changes in the value of automatic interest rate options (whether explicit or embedded) are added to the EVE changes. Automatic interest rate options sold are subject to full revaluation (net of automatic interest rate options bought to hedge sold interest rate options wherever permitted or possible) under each of the six prescribed interest rate shock scenarios for each currency. Changes in values of options are then added to the changes in the EVE measure under each interest rate shock scenario on a per currency basis.

Step 5. IRRBB EVE calculation. The ΔEVE under the standardised framework will be the maximum of the worst aggregated reductions to EVE across the six prescribed interest rate shocks in Appendix 1.

3. Cash flow bucketing

3.1 Banks may project all future notional repricing cash flows arising from interest rate-sensitive assets¹, liabilities², and off-balance sheet items onto 19 predefined time buckets (indexed numerically by k) as given in Table 3 below into which they fall according to their repricing dates.

3.2 Banks may deduct commercial margins and other spread components from the notional repricing cash flows, using a prudent and transparent methodology, if they consider it appropriate to do so.

3.3 Floating rate instruments are assumed to reprice fully at the first reset date. Hence, the entire principal amount is slotted into the bucket in which that date falls, with no additional slotting of notional repricing cash flows to later time buckets (other than the spread component which is not repriced).

¹ Assets which are not deducted from Common Equity Tier 1 (CET1) capital and which exclude (i) fixed assets such as real estate or intangible assets and (ii) equity exposures in the banking book.

² Liabilities (including all non-remunerated deposits), other than CET1 capital under the Basel III framework.

Table 3

Indicative table for maturity schedule for notional repricing cash flows repricing at t^{CF}

Time Bucket								
Short-term rates	Overnight (0.0028 Y)	Overnight < $t^{CF} \leq$ one month (O/N-1 month) (0.0417Y)	1-month < $t^{CF} \leq$ 3 months (0.1667 Y)	3 months < $t^{CF} \leq$ 6 months (0.375 Y)	6 months < $t^{CF} \leq$ 9 months (0.625 Y)	9 months < $t^{CF} \leq$ 1 year (0.875 Y)	1 year < $t^{CF} \leq$ 1.5 years (1.25Y)	1.5 year < $t^{CF} \leq$ 2 years (1.75Y)
Medium-term rates	2 years < $t^{CF} \leq$ 3 years (2.5Y)	3 years < $t^{CF} \leq$ 4 years (3.5Y)	4 years < $t^{CF} \leq$ 5 years (4.5Y)	5 years < $t^{CF} \leq$ 6 years (5.5Y)	6 years < $t^{CF} \leq$ 7 years (6.5Y)			
Long-term rates	7 years < $t^{CF} \leq$ 8 years (7.5Y)	8 years < $t^{CF} \leq$ 9 years (8.5Y)	9 years < $t^{CF} \leq$ 10 years (9.5Y)	10 years < $t^{CF} \leq$ 15 years (12.5Y)	15 years < $t^{CF} \leq$ 20 years (17.5Y)	$t^{CF} > 20$ years (25Y)		

The number in brackets is the time bucket's midpoint.

3.4 All notional repricing cash flows associated with interest rate-sensitive assets, liabilities and off-balance sheet items, for each currency, are allocated to the prescribed time buckets (henceforth, denoted by $CF_{i,c}(k)$ under interest rate shock scenario i and currency c) based on their amenability to standardisation.

4. Process for positions that are amenable to standardisation

4.1 Notional repricing cash flows can be slotted into appropriate time buckets based on their contractual maturity, if subject to fixed coupons, or into the next repricing period if coupons are floating. Positions amenable to standardisation fall into two categories:

4.1.1 Fixed rate positions: Such positions generate cash flows that are certain till the point of contractual maturity³. All coupon cash flows and periodic or final principal repayments should be allocated to the appropriate time buckets based on their contractual maturity.

4.1.2 Floating rate positions: Such positions generate cash flows that are not predictable past the next repricing date other than that the present value would be

³ Examples are fixed rate loans without embedded prepayment options, term deposits without redemption risk and other amortising products such as mortgage loans.

reset to par. Accordingly, such instruments can be treated as a series of coupon payments until the next repricing and a par notional cash flow at the appropriate time bucket into the next reset date bucket.

4.2 Positions amenable to standardisation include positions with embedded automatic interest rate options where the optionality (whether sold or bought) should be ignored for the purpose of slotting of notional repricing cash flows. That is, the stripped-out embedded automatic interest rate option must be treated together with explicit automatic interest rate options.

5. Process for positions that are less amenable to standardisation

For explicit automatic interest rate options, as well as embedded automatic interest rate options⁴ that are separated or stripped out from assets or liabilities (i.e. the host contract), the methodology for automatic interest rate options is described in subsequent paragraph of this Appendix.

6. Process for positions not amenable to standardisation

Positions not amenable to standardisation include (i) Non Maturity Deposits (NMDs), (ii) fixed rate loans subject to prepayment risk and (iii) term deposits subject to early redemption risk.

6.1 Treatment of NMDs

Banks may first separate their NMDs according to the nature of the deposit and depositor. Banks should then identify, for each category, the core and non-core deposits, up to the limits specified in Table 4. Finally, banks should determine an appropriate cash flow slotting for each category, in accordance with the average maturity limits specified in Table 4.

Table 4

Caps on core deposits and average maturity by category

	Cap on proportion of core deposits (%)	Cap on average maturity of core deposits (years)
Retail/transactional	90	5
Retail/non-transactional	70	4.5

⁴ An example of a product with embedded automatic interest rate options is a floating rate mortgage loan with embedded caps and/or floors. Any behavioural option position with wholesale customers that may change the pattern of notional repricing cash flows are considered as embedded automatic interest rate option.

Wholesale	50	4
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(a) NMD categories

NMDs must be segmented into retail and wholesale categories. Retail deposits are defined as deposits placed by an individual person. Deposits made by small business customers (with total aggregate deposits up to Rs. 7.5 crores) and managed as retail exposures are considered as having similar interest rate risk characteristics to retail accounts and thus can be treated as retail deposits. Retail deposits should be considered as held in a transactional account when regular transactions are carried out in that account (e.g., when salaries are regularly credited) or when the deposit is non-interest bearing. Other retail deposits should be considered as held in a non-transactional account. Deposits from legal entities, sole proprietorships or partnerships are captured in wholesale deposit categories.

(b) Separation of NMDs

Banks should distinguish between the stable and the non-stable parts of each NMD category using observed volume changes over the past 10 years. The stable NMD portion is the portion that is found to remain undrawn with a high degree of likelihood. Core deposits are the proportion of stable NMDs which are unlikely to reprice even under significant changes in the interest rate environment. The remainder constitutes non-core NMDs.

Banks are required to estimate their level of core deposits using this two-step procedure for each deposit category, and then to aggregate the results to determine the overall volume of core deposits subject to imposed caps as shown in Table 4.

(c) Cash flow slotting

NMDs should finally be slotted into the appropriate time bucket. Non-core deposits should be considered as overnight deposits and accordingly should be placed into the overnight time bucket.

Banks should determine an appropriate cash flow slotting procedure for each category of core deposits, up to the maximum average maturity per category as specified in Table 4.

6.2 Treatment of positions with behavioural options other than NMDs

6.2.1 The treatment set out in this paragraph applies only to behavioural options related to retail customers. Where a wholesale customer has a behavioural option that may change the pattern of notional repricing cash flows, such options must be included within the category of automatic interest rate options⁵.

6.2.2 The standardised framework is applied to fixed rate loans subject to prepayments and term deposits subject to early redemption risk. In each case, the customer has an option, which, if exercised, will alter the timing of banks' cash flows. The customer's exercise of the option is, among other factors, influenced by changes in interest rates. In the case of the fixed rate loan, the customer has an option to repay the loan early (ie prepay); and for a fixed-term deposit, the customer may have an option to withdraw their deposit before the scheduled date.

6.2.3 The optionality in these products is estimated using a two-step approach. Firstly, baseline estimates of loan prepayments and early withdrawal of fixed-term deposits are calculated given the prevailing term structure of interest rates. In the second stage, the baseline estimates are multiplied by scenario-dependent scalars that reflect the likely behavioural changes in the exercise of the options.

6.3 Fixed rate loans subject to prepayment risk

6.3.1 Prepayments, or parts thereof, for which the economic cost is not charged to the borrower, are referred to as uncompensated prepayments. For loan products where the economic cost of prepayments is never charged, or charged only for prepayments above a certain threshold, the standardised framework for fixed rate loans subject to prepayments set out below must be used to assign notional repricing cash flows.

6.3.2 Banks may determine the baseline conditional prepayment rate (CPR) for each portfolio p of homogeneous prepayment-exposed loan products denominated in currency c , under the prevailing term structure of interest rates. The CPR for each portfolio of homogeneous prepayment- exposed loan products denominated in currency c , under interest rate scenario i , is given as:

$$CPR_{i,c}^p = \min(1, \gamma_i \cdot CPR_{0,c}^p)$$

⁵ An example of such an option would be a puttable fixed coupon bond issued by the bank in the wholesale market, for which the owner has the right to sell the bond back to the bank at a fixed price at any time.

where $(CPR_{0,c}^p)$ is the (constant) base CPR of a portfolio of homogeneous prepayment-exposed loans given in currency c and given the prevailing term structure of interest rates. γ_i is a multiplier applied for scenario as given in Table 5.

6.3.3 Prepayment speeds vary according to the interest rate shock scenario. The multipliers γ_i reflect the expectation that prepayments will generally be higher during periods of falling interest rates and lower during periods of rising interest rates.

Table 5

CPRs under the shock scenarios

Scenario number (i)	Interest rate shock	γ_i (scenario multiplier)
1	Parallel up	0.8
2	Parallel down	1.2
3	Steeper	0.8
4	Flattener	1.2
5	Short rate up	0.8
6	Short rate down	1.2

6.3.4 The prepayments on the fixed rate loans must ultimately be reflected in the relevant cash flows (scheduled payments on the loans, prepayments and interest payments). These payments can be broken up into scheduled payments adjusted for prepayment and uncompensated prepayments:

$$CF_{i,c}^p(k) = CF_{i,c}^s(k) + CPR_{i,c}^p \cdot N_{i,c}^p(k-1)$$

Where $CF_{i,c}^s(k)$ refers to the scheduled interest and principal repayment, and $N_{i,c}^p(k-1)$ denotes the notional outstanding at time bucket $k-1$. The base cash flows (i.e. given the current interest rate yield curve and the base CPR) are given by $i=0$, while the interest rate shock scenarios are given for $i=1$ to 6.

6.4 Term deposits subject to early redemption risk

6.4.1 Term deposits lock in a fixed rate for a fixed term and would usually be hedged on that basis. However, term deposits may be subject to the risk of early withdrawal, also called early redemption risk. Consequently, term deposits may only be treated as fixed rate liabilities and their notional repricing cash flows slotted into the time buckets up to their corresponding contractual maturity dates if it can be shown that:

- the depositor has no legal right to withdraw the deposit; or

- an early withdrawal results in a significant penalty that at least compensates for the loss of interest between the date of withdrawal and the contractual maturity date and the economic cost of breaking the contract.

6.4.2 If neither of these conditions is met, the depositor holds an option to withdraw and the term deposits are deemed to be subject to early redemption risk. Further, if banks issue term deposits that do not meet the above criteria to wholesale customers, they must assume that the customer will always exercise the right to withdraw in the way that is most disadvantageous to banks (i.e. the deposit is classified as an automatic interest rate option).

6.4.3 Banks may determine the baseline term deposit redemption ratio TDRR, applicable to each homogeneous portfolio p of term deposits in currency c and use it to slot the notional repricing cash flows. Term deposits which are expected to be redeemed early are slotted into the overnight time bucket ($k=1$).

6.4.4 The term deposit redemption ratio for time bucket k applicable to each homogeneous portfolio p of term deposits in currency c and under scenario i is obtained by multiplying $TDRR_{0,c}^p$ by scalar u_i that depends on the scenario i , as follows:

$$TDRR_{i,c}^p = \min(1, u_i \cdot TDRR_{0,c}^p)$$

The values of scalar u_i are given in the following table.

Table 6

Term deposit redemption rate (TDRR) scalars under the shock scenarios

Scenario (i)	Interest rate shock scenarios	Scalar multipliers u_i
1	Parallel up	1.2
2	Parallel down	0.8
3	Steeper	0.8
4	Flattener	1.2
5	Short rate up	1.2
6	Short rate down	0.8

6.4.5 The notional repricing cash flows which are expected to be withdrawn early under any interest rate shock scenario i are described as:

$$CF_{i,c}^p(1) = TD_{0,c}^p \cdot TDRR_{i,c}^p$$

Where $TD_{0,c}^p$ is the outstanding amount of term deposits of type p .

7. Automatic interest rate options

7.1 This paragraph describes the method for calculating an add-on for automatic interest rate options, whether explicit or embedded⁶. This applies to sold automatic interest rate options. Banks have a choice to either include all bought automatic options or include only automatic options used for hedging sold automatic interest rate options:

a) For each sold automatic option o in currency c , the value change, denoted $\Delta FVAO_{i,c}$, is calculated for each interest rate shock scenario i . The value change is given by:

i. an estimate of the value of the option to the option holder, given:

- a. a yield curve in currency c under the interest rate shock scenario i ; and
- b. a relative increase in the implicit volatility of 25%;

minus

ii. the value of the sold option to the option holder, given the yield curve in currency c at the valuation date.

b) Likewise, for each bought automatic interest rate option q , banks must determine the change in value of the option between interest rate shock scenario i and the current interest rate term structure combined with a relative increase in the implicit volatility of 25%. This is denoted as $\Delta FVAO^q_{i,c}$.

c) Banks' total measure for automatic interest rate option risk under interest rate shock scenario i in currency c is calculated as:

$$KAO_{i,c} = \sum_{o=1}^{n_c} \Delta FVAO_{i,c}^o - \sum_{q=1}^{m_c} \Delta FVAO_{i,c}^q$$

Where n_c (m_c) is the number of sold (bought) options in currency c .

⁶ The most important automatic interest rate options likely to occur in the banking book are caps and floors, which are often embedded in banking products. Swaptions, such as prepayment options on non-retail products, may also be treated as automatic interest rate options, as, in cases where such options are held by sophisticated financial market counterparties, the option holder will almost certainly exercise the option if it is in their financial interest to do so. Any behavioural option positions with wholesale customers that may change the pattern of notional repricing cash flows are considered as embedded automatic interest rate options for the purposes of this sub-paragraph.

7.2 If the bank chooses to only include bought automatic interest rate options that are used for hedging sold automatic interest rate options, the bank must, for the remaining bought options, add any changes in market values reflected in the regulatory capital measure of the respective capital ratio (i.e. CET1, AT1 or total capital) to the total automatic interest rate option risk measure $KAO_{i,c}$.

8. Determination of change in EVE for each currency for all six-prescribed interest rate shock scenarios

The change in economic value of equity under scenario i and currency c is calculated for each currency, as follows:

- a) Under each scenario i , all notional repricing cash flows are slotted into the respective time bucket $k \in \{1, 2, \dots, K\}$. Within a given time bucket k all positive and negative notional repricing cash flows are netted⁷ to form a single long or short position, with the cancelled parts removed from the calculation. Following this process across all time buckets leads to a set of notional repricing cash flows $CF_{i,c}(k)$, $k \in \{1, 2, \dots, K\}$ ⁸.
- b) Net notional repricing cash flows in each time bucket k are weighted by a continuously compounded discount factor:

$$DF_{i,c}(t_k) = \exp(-R_{i,c}(t_k) \cdot t_k)$$

that reflects the interest rate shock scenario i in currency c as set out in Appendix 1, and where t_k is the midpoint of time bucket k . This results in a weighted net position, which may be positive or negative for each time bucket. The cash flows should be discounted using either a risk-free rate⁹ or a risk-free rate including commercial margin and other spread components (only if the bank has included commercial margins and other spread components in its cash flows).

- c) These risk-weighted net positions are summed to determine the EVE in currency c under scenario i (excluding automatic interest rate option positions):

⁷ Intra-bucket mismatch arises as notional repricing cash flows with different maturity dates but falling within the same time bucket, are assumed to match perfectly. This is mitigated by introducing a high number of time buckets (i.e. $K=19$)

⁸ Note that depending on the approach taken for NMDs, prepayments and products with other embedded behavioural options, the notional repricing cash flows may vary by scenario i (scenario-dependent cash flow products).

⁹ The discounting factors must be representative of a risk-free zero coupon rate. An example of an acceptable yield curve is Zero Coupon Yield Curve published by the benchmark administrator.

$$EVE_{i,c}^{nao} = \sum_{k=1}^K CF_{i,c}(k) \cdot DF_{i,c}(t_k)$$

- d) Then, the full change in EVE in currency c associated with scenario i is obtained by subtracting $EVE_{i,c}^{nao}$ from the EVE under the current interest rate term structure $EVE_{0,c}^{nao}$ and by adding the total measure for automatic interest rate option risk $KAO_{i,c}$ as follows:

$$\Delta EVE_{i,c} = \sum_{k=1}^K CF_{0,c}(k) \cdot DF_{0,c}(t_k) - \sum_{k=1}^K CF_{i,c}(k) \cdot DF_{i,c}(t_k) + KAO_{i,c}$$

- e) Finally, the EVE losses $\Delta EVE_{i,c} > 0$ are aggregated under a given interest rate shock scenario i and the maximum loss across all interest rate shock scenarios is the EVE risk measure.

$$\text{Standardised EVE risk measure} = \max_{i \in \{1,2,\dots,6\}} \left\{ \max \left(\mathbf{0}; \sum_{c: \Delta EVE_{i,c} > 0} \overbrace{\Delta EVE_{i,c}}^{\text{loss in currency } c} \right) \right\}$$

Formats for disclosure of IRRBB

Table A

Purpose: To provide a description of the risk management objectives and policies concerning IRRBB	
Scope of application: Mandatory for all banks	
Content: Qualitative and quantitative information	
Frequency: Annual	
Format: Flexible	
Qualitative disclosure	
A	A description of how the bank defines IRRBB for purposes of risk control and measurement.
B	A description of the bank's overall IRRBB management and mitigation strategies. Examples are: monitoring of EVE and NII in relation to established limits, hedging practices, conduct of stress testing, outcomes analysis, the role of independent audit, the role and practices of the ALCO, the bank's practices to ensure appropriate model validation, and timely updates in response to changing market conditions.
C	The periodicity of the calculation of the bank's IRRBB measures, and a description of the specific measures that the bank uses to gauge its sensitivity to IRRBB.
D	A description of the interest rate shock and stress scenarios that the bank uses to estimate changes in the economic value and in earnings.
E	Where significant modelling assumptions used in the bank's internal measurement system (i.e. the EVE metric generated by the bank for purposes other than disclosure, e.g. for internal assessment of capital adequacy) are different from the modelling assumptions prescribed for the disclosure in Table B, the bank should provide a description of those assumptions and of their directional implications and explain its rationale for making those assumptions (e.g. historical data, published research, management judgment and analysis).
F	A high-level description of how the bank hedges its IRRBB, as well as the associated accounting treatment.
G	A high-level description of key modelling and parametric assumptions used in calculating Δ EVE and Δ NII in Table B, which includes: <ul style="list-style-type: none"> • For ΔEVE, whether commercial margins and other spread components have been included in the cash flows used in the computation and discount rate used. • How the average repricing maturity of non-maturity deposits in (1) below has been determined (including any unique product characteristics that affect assessment of repricing behaviour). • The methodology used to estimate the prepayment rates of customer loans, and/or the early withdrawal rates for time deposits, and other significant assumptions.

*Appendix 3 - Governance, measurement and management
of Interest Rate Risk in Banking Book*

	<ul style="list-style-type: none"> • Any other assumptions (including for instruments with behavioural optionalities that have been excluded) that have a material impact on the disclosed ΔEVE and ΔNII in Table B, including an explanation of why these are material. • Any methods of aggregation across currencies and any significant interest rate correlations between different currencies.
H	(Optional) Any other information which the bank wishes to disclose regarding its interpretation of the significance and sensitivity of the IRRBB measures disclosed and/or an explanation of any significant variations in the level of the reported IRRBB since previous disclosures.
Quantitative disclosures	
1	Average repricing maturity assigned to NMDs.
2	Longest repricing maturity assigned to NMDs.
	<p>Quantitative information is based on the daily or monthly average of the year or on the data as of the reporting date.</p> <p>Note: If a bank computes the information daily/monthly, it cannot choose to disclose it based on data as on March 31 only. In such cases, bank should disclose the information based on daily/monthly average of the year.</p>

Table B

Scope of application: Mandatory for all banks				
Content: Quantitative information.				
Frequency: Annual, as at end-March.				
Format: Fixed.				
Accompanying narrative: Commentary on the significance of the reported values and an explanation of any material changes since the previous reporting period.				
In reporting currency	ΔEVE		ΔNII	
Period	T	T-1	T	T-1
Parallel up				
Parallel down				
Steeper				
Flattener				
Short rate up				
Short rate down				
Maximum				
Tier 1 capital				
Maximum as % of Tier 1 Capital				

Definitions

For each of the specified interest rate shock scenarios, the bank must report for the current period (T) and for the previous period (T-1):

- the change in the economic value of equity based on its internal measurement system, using a run-off balance sheet and an instantaneous shock and
- the change in projected NII over a forward-looking rolling 12-month period compared with the bank's own best estimate 12-month projections, using a constant balance sheet assumption and an instantaneous shock.