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**RESERVE BANK OF INDIA**

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November 4, 2010

The Chairman and Managing Directors/  
Chief Executive Officers of  
All Scheduled Commercial Banks  
(Excluding RRBs and LABs)

### **Guidelines on Banks' Asset Liability Management Framework – Interest Rate Risk**

Please refer to [paragraph 155](#) of Second Quarter Review of Monetary Policy 2009-10 announced on October 27, 2009 on introduction of Duration Gap Analysis for interest rate risk management. Accordingly, Guidelines on Banks' Asset Liability Management Framework- Interest Rate Risk are furnished in Annex.

2. As banks are aware, interest rate risk is the risk where changes in market interest rates affect a bank's financial position. Changes in interest rates impact a bank's earnings (i.e. reported profits) through changes in its Net Interest Income (NII). Changes in interest rates also impact a bank's Market Value of Equity (MVE) (hereinafter 'equity' would mean 'networth' unless indicated otherwise) through changes in the economic value of its interest rate sensitive assets, liabilities and off-balance sheet positions. The interest rate risk, when viewed from these two perspectives, is known as 'earnings perspective' and 'economic value perspective', respectively. The earlier guidelines ([DBOD. BP. BC. 8 / 21.04.098/ 99 dated February 10, 1999](#)) to banks indicated approach to interest rate risk measurement from the 'earnings perspective' using the Traditional Gap Analysis (TGA). To begin with, the TGA was considered as a suitable method to measure Interest Rate Risk. Reserve Bank had also indicated then its intention to move over to modern techniques of Interest Rate Risk measurement like Duration Gap Analysis (DGA), Simulation and Value at Risk over a period of time, when banks acquire sufficient expertise and sophistication in acquiring and handling MIS. -



3. In this context, it is clarified that Duration Gap Analysis (DGA) is aimed at providing an indication of the interest rate risk to which the bank is exposed. Accordingly, the estimated drop in MVE as a result of the prescribed shock applied would indicate the economic impact on the banks' equity should the shock scenario materialise but would not be an accounting loss as banking book is not marked to market.

4. The revised guidelines furnished in Annex will be effective from April 1, 2011. However, banks are advised to start full-fledged test runs on these guidelines with effect from January 1, 2011 with a view to enable them to gain more experience in the operation of the revised framework.

5. The salient features of the guidelines furnished in the Annex are

- i) Banks shall adopt the DGA for interest rate risk management in addition to the TGA followed presently.
- ii) The framework, both DGA and TGA, should be applied to the global position of assets, liabilities and off-balance sheet items of the bank, which are rate sensitive. Banks should compute their interest rate risk position in each currency applying the DGA and TGA to the rate sensitive assets/ liabilities/ off balance sheet items in that currency, where either the assets, or liabilities are 5 per cent or more of the total of either the bank's global assets or global liabilities. The interest rate risk position in all other residual currencies should be computed separately on an aggregate basis.
- iii) Keeping in view the level of computerisation and the current MIS in banks, adoption of a **uniform ALM System** for all banks may not be feasible. The proposed guidelines have been formulated to serve as a benchmark for banks. Banks which have already adopted more sophisticated systems may continue their existing systems but should also adopt the DGA and TGA as supervisory reporting/ disclosure frameworks.
- iv) Banks should adopt the modified duration gap approach while applying the DGA to measure interest rate risk in their balance sheets from the economic value perspective. In view of the evolving state of computerisation and MIS in banks, a simplified framework has been suggested, which allows banks to:
  - a) group rate sensitive assets, liabilities and off balance sheet items under the broad categories indicated in **Appendix I** under various time buckets; and



- b) compute Modified Duration (MD) of these categories of assets/ liabilities and off-balance sheet items using the suggested common maturity, coupon and yield parameters.
  - v) Measurement of interest rate risk with the above method is an approximation. Hence banks which have the capability to compute the weighted average MD of their assets and liabilities based on the MD of each item of Rate Sensitive Asset (RSA) / Rate Sensitive Liability (RSL) may do so.
  - vi) Each bank should set appropriate internal limits for interest rate risk based on its risk bearing and risk management capacity, with prior approval of its Board / Risk Management Committee of the Board.
  - vii) Banks should compute the potential decrease in earnings and fall in MVE under various interest rate scenarios.
  - viii) In addition to extant frequency of supervisory reporting of interest rate sensitivity as per Traditional Gap Analysis (TGA), banks shall submit a report on interest rate sensitivity as per DGA in the stipulated format with effect from June 30, 2011 on a quarterly basis till March 31, 2012 and monthly with effect from April 30, 2012.
- 6.** It is clarified that the framework prescribed in this circular is aimed at determining the impact on the MVE of the bank arising from changes in the value of interest rate sensitive positions across the whole bank i.e. both in the banking and trading books. This requirement is in addition to the existing guidelines for assessing capital adequacy requirement for interest rate sensitive positions in the trading book and banking book (under Pillar II) separately. For the purpose of capital adequacy trading and banking books are treated separately because generally no offset of positions between the banking book and trading book is considered due to different accounting/valuation norms.
- 7.** After gaining significant experience with the methodology laid down in the circular, banks may consider switching over to this methodology for management of interest rate risk in the banking book under Pillar II.
- 8.** As per extant guidelines on management of interest rate risk in the banking book under Pillar II, banks where the economic value of the banking book declines by more than 20% of the MVE as a result of a standardised interest rate shock of 200 basis points are considered outlier from supervisory perspective. However, no such calibration is envisaged at this stage for decline in the MVE based on the impact of the standardised interest rate



shock of 200 basis points on the entire balance sheet, under the guidelines on banks' ALM contained in this circular.

9. Please acknowledge receipt.

Yours faithfully,

(B. Mahapatra)  
Chief General Manager-in-Charge

Encls: as above

## **Guidelines on Banks' Asset Liability Management Framework – Interest Rate Risk**

### **1. Scope**

Banks should compute their interest rate risk position in each currency applying the Duration Gap Analysis (DGA) and Traditional Gap Analysis (TGA) to the Rate Sensitive Assets (RSA)/ Rate Sensitive Liabilities (RSL) items in that currency, where either the assets, or liabilities are 5 per cent or more of the total of either the bank's global assets or global liabilities. The RSA and RSL include the rate sensitive off balance sheet asset and liabilities. The interest rate risk position in all other residual currencies should be computed separately on an aggregate basis.

### **2. Adoption of Earnings and Economic Value Approach**

Interest rate risk is the risk where changes in market interest rates affect a bank's financial position. Changes in interest rates impact a bank's earnings (i.e. reported profits) through changes in its Net Interest Income (NII). Changes in interest rates also impact a bank's Market Value of Equity (MVE) or Net Worth through changes in the economic value of its rate sensitive assets, liabilities and off-balance sheet positions. The interest rate risk, when viewed from these two perspectives, is known as 'earnings perspective' and 'economic value perspective', respectively. Generally, the former is measured using the TGA and the latter is measured using more sophisticated DGA. Banks should carry out both the analyses.

### **3. Earnings Perspective - TGA**

The focus of the TGA is to measure the level of a bank's exposure to interest rate risk in terms of sensitivity of its NII to interest rate movements over the horizon of analysis which is usually one year. It involves bucketing of all RSA and RSL and off balance sheet items as per residual maturity/ re-pricing date in various time bands, as is being currently done (circular DBOD. BP. BC. 8 / 21.04.098/ 99 dated February 10, 1999) and computing Earnings at Risk (EaR) i.e. loss of income under different interest rate scenarios over a time horizon of one year.

### **4. Economic Value Perspective – DGA**

The focus of the DGA is to measure the level of a bank's exposure to interest rate risk in terms of sensitivity of Market Value of its Equity (MVE) to interest rate movements. The DGA involves bucketing of all RSA and RSL as per residual maturity/ re-pricing dates in

various time bands and computing the Modified Duration Gap (MDG). The RSA and RSL include the rate sensitive off balance sheet asset and liabilities. MDG can be used to evaluate the impact on the MVE of the bank under different interest rate scenarios.

#### 4.1 Relationship between MDG and sensitivity of MVE to interest rate changes

(i) MD of an asset or liability measures the approximate percentage change in its value for a 100 basis point change in the rate of interest.

(ii) The MDG framework involves computation of Modified Duration of RSA (MDA) and Modified Duration of RSL (MDL). MDA and MDL are the weighted average of the Modified Duration (MD) of items of RSA and RSL respectively. The MDG can be calculated with the help of the following formula:

$$\underline{MDG = \left[ MDA - \left( MDL * \frac{RSL}{RSA} \right) \right]}$$

The MDG as defined above reflects the degree of duration mismatch in the RSA and RSL in a bank's balance sheet. Specifically, larger this gap in absolute terms, the more exposed the bank is to interest rate shocks.

(iii) The **impact** of changes in the interest rates on the MVE can be evaluated by computing  $\Delta E$  with the help of following formula

$$\Delta E = -[MDG] * RSA * \Delta i$$

In the above equations:

- Equity would mean Networth as defined in DBS Circular No. DBS.CO.PPD.ROC. 12 /11.01.005/2007-08 dated April 7, 2008.
- 'ΔE' stands for change in the value of equity
- 'Δ i' stands for change in interest rates in percentage points ( 1% change to be written as 0.01)

Ideally, in the calculation of changes in MVE due to changes in the interest rates, market values of RSA and RSL should be used. However, for the sake of simplicity, banks may take the book values of the RSA and RSL (both inclusive of notional value of rate sensitive off-balance sheet items) as an approximation.

(iv) **Illustration:**

A schematic hypothetical illustration for computation of MDG, and  $\frac{\Delta E}{E(\%)}$  for an interest rate shock of 200 basis points is given below:

(Rs. in crore)

Particulars	Amount
Equity as on date	1350.00
RSA as on date	18251.00
RSL as on date	18590.00
MDA (Weighted Modified Duration of Assets)	1.96
MDL (Weighted Modified Duration of Liabilities)	1.25
MDG [1.96- {1.25*(18590/18251)}]	0.687
$\Delta E = - [MDG]*RSA*\Delta i$	-250.77
For a 200 bps rise in rate of interest, MVE will fall by (250.77/1350)*100	18.58%

## 4.2 Preparation of Interest Rate Sensitivity statement

### 4.2.1 Need for behavioural studies

In the **Interest Rate Sensitivity (IRS) Statement** as per format prescribed in **Appendix II**, while RSA and RSL with fixed maturities are straightaway classified in the relevant time buckets based on residual maturity/ re-pricing dates, there could be an element of variance in the manner of bucketing those items which do not have a fixed maturity or have embedded optionality (i.e savings bank deposits, current account deposits and mortgage loans etc.). This calls for behavioural studies to be undertaken by banks in order to have a realistic assessment of the interest rate sensitivity, an issue which has already been highlighted in the present ALM guidelines. Banks should not only have an appropriate process to conduct such behavioural studies in a consistent manner, but also have a detailed framework to review these studies and their output periodically (say annually). Banks may apply the results of the behavioural studies on a consistent basis and the results may be reviewed/ revised **once a year in the first quarter of the financial year, if necessary**. The behavioural studies should be based on at least three years data. Banks may evolve a suitable mechanism, supported by empirical studies and behavioural analysis to estimate the future behaviour of assets and liabilities and off-balance sheet items with respect to changes in market variables. Pending such studies, banks may use the indicative framework for bucketing of assets and liabilities, as furnished in **Appendix I**.

#### 4.2.2 Introduction of additional time buckets

The past few years have seen banks' foray into financing long-term assets such as home loans, infrastructure projects, etc. Banks also have been allowed to raise funds through long-term bonds with a minimum maturity of five years to the extent of their exposure of residual maturity of more than 5 years to the infrastructure sector. Hence, it has been decided to add the following time buckets to the existing Statement of Interest Rate Sensitivity viz; 'over 5 years and up to 7 years', 'above 7 years and up to 10 years' and 'over 10 years and up to 15 years' and 'over 15 years. The existing and revised time buckets for compiling the Statement of Interest Rate Sensitivity, both under TGA and DGA, are given below:

#### **Statement of Interest Rate Sensitivity – Time buckets**

Sr. No.	Existing time buckets	Revised time buckets
1.	1-28 days	1-28 days
2.	29 days and up to 3 months	29 days and up to 3 months
3.	Over 3 months and up to 6 months	Over 3 months and up to 6 months
4.	Over 6 months and up to 1 year	Over 6 months and up to 1 year
5.	Over 1 year and up to 3 years	Over 1 year and up to 3 years
6.	Over 3 years and up to 5 years	Over 3 years and up to 5 years
7.	Over 5 years	Over 5 years and up to 7 years
8.	Non-sensitive	Over 7 years and up to 10 years
9.		Over 10 years and up to 15 years
10.		Over 15 years
11.		Non-sensitive

#### 4.2.3 Grouping of assets and liabilities in time buckets

(i) Calculation of the MD of each individual rate sensitive asset, liability and off-balance sheet position and taking their weighted average to derive the MD of RSA and RSL would enhance the accuracy of calculation. However, it may lead to an increase in volume and complexity of calculations. The feasibility of this approach would depend on bank's information technology infrastructure (availability of core banking solution, MIS capability), staff skills, size of the branch network, etc. Banks have therefore been provided certain extent of flexibility in applying the proposed framework. Those banks which are not equipped to compute the MD of each individual rate sensitive asset, liability and off balance sheet position may:

- a) group RSA and RSL under the broad categories indicated in **Appendix I** under various time buckets; and
- b) compute Modified Duration (MD) of these categories of assets/ liabilities and off balance sheet items using the suggested **common** maturity, coupon and yield parameters indicated in **Appendix I**.



(ii) The Modified Duration Gap (MDG) computed from the above would be simpler and may also lead to a cost-benefit advantage, in spite of the approximations in the calculation of MD. However, banks which have the capability to compute the MD of each item of RSA and RSL may do so in order to improve the accuracy of measurement of interest rate risk.

(iii) Banks may compile the ALM statements and compute the MDG for the Balance Sheet as a whole, which would be a combination of the Banking and Trading books. Trading Book currently comprises securities included under Held for Trading and Available for Sale categories and specified derivative positions.

#### **4.2.4 Treatment of positions in various currencies**

As indicated in para 1, banks should separately compute their interest rate risk position in each currency for the purpose of DGA where either the assets, or liabilities are 5 per cent or more of the total of either the bank's global assets or global liabilities. The interest rate risk position in all other residual currencies should be computed separately on an aggregate basis. While reporting the above interest rate risk position in Part B of Appendix II, the foreign currencies would be converted into Indian Rupees using the relevant spot closing rates as published by FEDAI. MD of each item or group of items of rate sensitive assets, liabilities and off-balance sheet items may be computed using the appropriate coupon and appropriate foreign currency yield curve. For residual currencies, the appropriate coupon and appropriate foreign currency yield curve of the largest among the residual currencies may be used. In deciding on coupon and yield curves, the principles behind the choice of coupons and yield curve in Appendix I may be followed.

#### **4.2.5 Treatment of Interest Rate Derivatives instruments**

- (i) Derivatives are converted into positions in the relevant underlying. The amounts considered are the principal amount of the underlying or of the notional underlying.
- (ii) Interest Rate Swaps could be considered as a combination of a short position and a long position. The notional of the fixed and floating leg of an Interest Rate Swap could be shown in the respective maturity bucket based on the *maturity date for the fixed leg* and *the reset date for the floating leg*. Suppose, a bank receives 5-year fixed and pays floating MIBOR, then the fixed leg of the swap could be shown as an asset in the '5-7 year' bucket and the floating leg would be shown as a liability in '1-28 days' bucket. Similarly, a currency swap may be considered as a combination of a short position in one currency and long position in another currency. The two positions will be sensitive to the changes in the respective interest rates. The notionals of the two currencies will be bucketed as a short/long positions in the respective currency with relevant maturity.
- (iii) Interest Rate Futures (IRFs) and Forward Rate Agreements (FRAs) could also be considered as a combination of a short position and long position. For instance, a

long position in a September three month FRA (taken on June 1), can be bucketed as a short position in a bond with a maturity of six months and a long position in a bond with a maturity of three months. The amount to be shown in the Statement of interest rate sensitivity is the notional of FRA. IRFs could also be considered as a combination of a short position and a long position. For instance, a long position in a September three month IRF (taken on June 1), can be bucketed as a long position in a Government bond, with a maturity of six months and a short position in Government bond with a maturity of three months. The amount to be shown in the Statement of interest rate sensitivity is the notional of IRF.

- (iv) Interest Rate Options (wherever permitted) are considered according to the delta equivalent amount of the underlying or of the notional underlying.

#### **4.2.6 Reporting format of the Statement of Interest Rate Sensitivity**

Currently banks are reporting interest rate sensitivity as a part of DSB returns which is based on the Traditional Gap Approach. The methodology for compiling these statements stands revised to the extent specified in these guidelines, viz; in relation to maturity buckets, methodology for bucketing various items of RSA and RSL. In addition to extant reporting, interest rate sensitivity as per DGA approach should be reported in the formats stipulated in **Appendix II** on a quarterly basis with effect from June 30, 2011 till March 31, 2012 and on a monthly basis with effect from April 30, 2012. The quarterly returns may be submitted within 21 days from the end of the quarter and monthly returns may be submitted within 15 days from the end of the month. The average yield and coupons on assets / liabilities used for computation of modified duration may be reported as per format stipulated in **Appendix IIA**.

#### **4.3 Methodology for computing Modified Duration Gap**

This framework is based on the utilization of book values of banking book assets and liabilities for the purpose of computation of MD. However, banks which have the capability to use market value of assets and liabilities of banking book may do so. Market values of assets and liabilities may be determined by discounted cash flow method. The step-by-step approach for computing modified duration gap is as follows:

- i) Identify variables such as principal amount, maturity date / re-pricing date, coupon rate, yield, frequency and basis of interest calculation for each item / category of RSA/RSL.
- ii) Plot each item / category of RSA/RSL under the various time buckets. For this purpose, the absolute notional amount of rate sensitive off-balance sheet items

in each time bucket should be included in RSA if positive or included in RSL if negative.

- iii) The mid-point of each time bucket may be taken as a proxy for the maturity of all assets and liabilities in that time bucket, except for those for which the bank is able to compute modified duration on individual basis.
- iv) Determine the coupon for computation of MD of RSAs and RSLs as indicated in Appendix-I except for those for which the bank is able to compute MD on individual basis.
- v) Determine the yield curve for arriving at the yields based on current market yields or current replacement cost or as specified in **Appendix I** for each item / category of asset / liability/ off-balance sheet item.
- vi) Calculate the MD in each time band of each item/ category of RSA/RSL using the maturity date, yield, coupon rate, frequency, yield and basis for interest calculation.
- vii) Calculate the MD of each item/category of RSA/RSL as weighted average MD of each time band for that item.
- viii) Calculate the weighted average MD of all RSA (MDA) and RSL (MDL) to arrive at MDG and MDOE.

## **5. Risk management and control issues**

As a step towards enhancing and fine-tuning the existing risk management practices in banks, Guidance Notes on Credit Risk Management and Market Risk Management were issued to banks on October 12, 2002, giving indicative guidelines for effective credit risk and market risk management. Additionally, banks may ensure that:

**5.1** Each bank should set appropriate internal limits on Earnings at Risk (EaR) and on the volatility in the Market Value of Equity with the approval of its Board / Risk Management Committee of the Board by **March 31, 2011**. These limits may be linked to MVE for DGA and the NII (for TGA). Further, the Board / ALCO must also periodically review the above limits after assessing various scenarios of interest rates and the resultant volatility of earnings in terms of Net Interest Income and volatility in networth.

**5.2** The institutionalised framework of the ALCO in banks must be strengthened and the ALCO's prior approval must be taken for deciding upon yields, assumptions used / proposed to be used, bucketing, behavioural studies, etc. for duration gap analysis. Banks must also ensure that these are compliant with regulatory prescriptions.

**5.3** It is also imperative that material assumptions made, if any, are updated regularly to reflect the current market and operating environment. Further, the process of developing material assumptions should be formalized and reviewed periodically (say annually).

**5.4** As prescribed in para 4.2 of Annex 10 of Master Circular dated July 1, 2010 on Prudential Guidelines on Capital Adequacy and Market Discipline- Implementation of the New Capital Adequacy Framework, a level of interest rate risk which generates a drop in the value of equity of more than 20% of MVE with an interest rate shock of 200 basis points, will be treated as excessive and such banks would be required by RBI to take action as indicated in the circular. It is clarified that under this circular the shock of 200 basis points will be applied to the entire balance sheet including the trading book. This is considered appropriate considering the illiquidity in various market segments and the trading book generally being smaller in relation to the entire balance sheet. Banks should monitor their interest rate risk positions and take appropriate corrective action with reference to the stipulations in para 5.1 for internal limits on volatility of MVE i.e. percentage variation in the MVE and the limits on individual gaps. Any significant difference in the assessment of interest rate risk for the bank under two scenarios – (i) the bank as a whole and (ii) separately for banking and trading book with different shocks – and their implication for regulatory capital would be considered under Supervisory Review and Evaluation Process (SREP).

**5.5** Banks should also measure their vulnerability to loss in stressed market conditions, including the breakdown of key assumptions, and consider these results when establishing and reviewing their limits and policies in respect of Interest Rate Risk. The possible stress scenarios may include: changes in the general level of interest rates, e.g. a change in the yield by 200 and 300 basis points or more in a year, changes in interest rates in individual time bands to different relative levels (i.e. yield curve risk), changes in volatility of market rates, and earlier withdrawal of the core portion of current account and savings accounts deposits ( i.e. placement of the core portion of savings deposits in the first time band as also in the 3 to 6 months bucket than in the 1 to 3 year bucket) etc.

**5.6** Banks must adopt the practice of periodic model validation. Thus, where internal models / software packages are being used, the integrity and validation of data/ assumptions being used to generate the results, its validation and functioning of the entire system of interest rate risk management should be subjected to an independent audit either by an experienced internal auditor or external auditor who is conversant with risk

management processes. The Audit Committee of the Board (ACB) would be responsible to ensure suitability of auditors after a proper due diligence process.

**5.7** Banks should ensure documentation in respect of discount rates, coupons, assumptions used / proposed to be used, bucketing, behavioural studies, validation process etc. All material assumptions, regardless of the source, should be supported with analysis and documentation. Banks shall ensure that sufficient documentation is made available at the time of validation, internal audit, statutory audit and RBI inspection.

## Appendix I

### Guidelines on bucketing of various items of assets and liabilities in the Interest Rate Sensitivity Statement, along with the coupons and yields to be used

Sr. 1.	Heads of Accounts 2.	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement 3.	Revised Framework for bucketing of assets/ liabilities/off balance sheet items and computation of Modified Duration 4.
	<b>Liabilities</b>		
1.	<b>Capital-Equity shares</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Non-sensitive for TGA.</li> <li>• Not to be bucketed for DGA.</li> </ul>
2.	<b>Reserves and Surplus</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Non-sensitive for TGA.</li> <li>• Not to be bucketed for DGA.</li> </ul>
3.	<p><b>(i) Innovative Perpetual Debt Instruments(IPDI) eligible for Tier I status</b></p> <p><b>(ii) Debt capital Instruments qualifying as Upper Tier II Capital and Tier II bonds</b></p> <p><b>(iii) Preference shares eligible for Tier I and Tier II Capital</b></p>		<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Bucketing as per residual maturity/ re-pricing.</li> <li>• Coupon rate: Contract rate.</li> <li>• Yield: Govt. of India yield for corresponding period with appropriate mark up for rated bonds (corresponding to rating of the instrument) published by FIMMDA.</li> </ul>
4(i)	<b>Current Deposits</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Banks better equipped to estimate the behavioral pattern of current deposits should classify them in the appropriate buckets based on behavioral maturity as per the behavioural study. In such cases to compute the Modified Duration, banks must use its relevant term deposit rates as the discount rate, coupon rate being zero.</li> <li>• However, banks which have</li> </ul>

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			<p>not conducted the above behavioral study may classify 15% of the current deposits as <i>volatile and place it in the first time bucket</i> (viz. 1-28 days) and 85% may be placed in the 1-3 years time bucket.</p> <ul style="list-style-type: none"> <li>• Coupon Rate: Zero.</li> <li>• Yield :</li> </ul> <p>(i) As the mid-point of the 1-28 days time bucket is 14 days, each bank could take its 14 days term deposit rate as the yield to compute the MD of the volatile portion.</p> <p>(ii) As the mid-point of the 1-3 years time bucket is 2 years, each bank could take its 2-year term deposit rate as the discount rate to compute the Modified Duration of the core portion.</p>
4(ii).	<b>Savings Bank Deposits</b>	<p>Sensitive to the extent of interest paying (core) portion. This may be included in over 3-6 months bucket. The non-interest paying portion may be shown in non-sensitive bucket.</p> <p>Where banks can estimate the future behaviour/sensitivity of current/savings bank deposits to changes in market variables, the</p>	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Banks may estimate the future behaviour / sensitivity of savings bank deposits to changes in market variables, the sensitivity so estimated could be shown under appropriate time buckets. The existing savings bank rate may be used as coupon and the bank's own relevant term deposit rates must be used as the yield to compute the MD.</li> </ul>

Sr. 1.	Heads of Accounts 2.	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement 3.	Revised Framework for bucketing of assets/ liabilities/off balance sheet items and computation of Modified Duration 4.
		sensitivity so estimated could be shown under appropriate time buckets	<ul style="list-style-type: none"> <li>• However, where banks have not undertaken any behavioral study they may include core portion (say 90%) as rate sensitive and include the same in 1-3 years time bucket. The volatile portion (10% ) may be placed in 1-28 days bucket.</li> <li>• Coupon Rate: Existing Savings Bank interest rate, i.e. 3.5 %.</li> <li>• Yield: <ul style="list-style-type: none"> <li>(i) As the mid-point of the 1-28 days time bucket is 14 days, each bank could take its 14 days term deposit rate as the yield to compute the MD of the volatile portion.</li> <li>(ii) As the mid-point of the 1-3 years time bucket is 2 years, each bank could take its 2-year term deposit rate as the discount rate to compute the Modified Duration of the core portion.</li> </ul> </li> </ul>
4(iii).	<b>Term deposits</b>	Sensitive and reprices on maturity. The amounts should be distributed to different buckets on the basis of remaining term to maturity. However, in case of floating rate term deposits, the amounts may be shown under the time	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Banks may study the behavioural pattern of large value fixed rate term deposits to arrive at the percentage of deposits encashed/ foreclosed and renewed before maturity, i.e the quantum on which the</li> </ul>



Sr. 1.	Heads of Accounts 2.	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement 3.	Revised Framework for bucketing of assets/ liabilities/off balance sheet items and computation of Modified Duration 4.
		<p>bucket when deposits contractually become due for re-pricing.</p>	<p>option is exercised. The amount of deposits which are estimated to be prone to pre-mature withdrawal as per such studies may be placed in the corresponding maturity buckets.</p> <ul style="list-style-type: none"> <li>• The other fixed rate term deposits may be distributed in various time buckets on the basis of remaining term to maturity.</li> <li>• In the case of floating rate term deposits, the amounts may be shown under the time bucket when the deposits contractually become due for re-pricing.</li> <li>• Coupon rate:  Banks may compute the average coupon on the term deposits by comparing the interest paid/ accrued during the relevant accounting period on term deposits to the monthly average outstanding term deposits.</li> <li>• Yield: Each bank's card interest rate for deposits for the relevant term may be used.</li> </ul>
4(iv).	<b>Certificates of Deposit</b>	<p>Sensitive and re-prices on maturity. The amounts should be distributed to different buckets on the basis of remaining term to maturity. However, in case of floating rate term</p>	<ul style="list-style-type: none"> <li>• Sensitive and re-prices on maturity.</li> <li>• The amounts should be distributed to different buckets on the basis of remaining term to maturity. However, in case of floating</li> </ul>

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		deposits, the amounts may be shown under the time bucket when deposits contractually become due for re-pricing.	<p>rate CDs, the amounts may be shown under the time bucket when CDs contractually become due for re-pricing.</p> <ul style="list-style-type: none"> <li>• Coupon rate: Calculated in a similar manner as term deposits.</li> <li>• Yield: Govt. of India yield for corresponding period with mark up for rated bonds (corresponding to CD ratings of the bank) published by FIMMDA may be taken as yield.</li> </ul>
5.	<b>Borrowings</b>	<p>Borrowings – Fixed Sensitive and reprices on maturity. The amounts should be distributed to different buckets on the basis of remaining maturity.</p> <p>Borrowings – Floating Sensitive and reprices when interest rate is reset. The amounts should be distributed to the appropriate bucket with reference to the repricing date.</p> <p>Borrowings – Zero Coupon Sensitive and reprices on maturity. The amounts should be distributed to the respective maturity buckets.</p>	
5(i).	<b>Money at Call and Short Notice</b>		<ul style="list-style-type: none"> <li>• The amounts should be distributed to different buckets on the basis of remaining maturity/ re-pricing date.</li> </ul>

Sr. 1.	Heads of Accounts 2.	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement 3.	Revised Framework for bucketing of assets/ liabilities/off balance sheet items and computation of Modified Duration 4.
			<ul style="list-style-type: none"> <li>Overnight call money rate may be taken as both the coupon and yield.</li> </ul>
5(ii).	<b>Inter-bank (Term)</b>		<ul style="list-style-type: none"> <li>The amounts should be distributed to different buckets on the basis of remaining maturity/ re-pricing date.</li> <li>The coupon will be as per actual rate for each inter-bank term loan and yield may be based on the FIMMDA-NSE MIBOR curve, with appropriate mark up as per rating of the Tier II bonds of the bank.</li> </ul>
5(iii).	<b>Refinances</b>	<p>Borrowings from RBI – upto 1 month bucket.</p> <p>Refinances from other agencies</p> <p>Fixed rate as per respective maturity.</p> <p>Floating rate reprices when interest rate is reset.</p>	<ul style="list-style-type: none"> <li>The amounts should be distributed to different buckets on the basis of remaining maturity in the case of fixed rate refinances and re-pricing date for floating rate refinances.</li> <li>The appropriate refinance rate of RBI, NHB, NABARD, etc. may be used as the coupon and yield may be based on the GOI securities of corresponding tenors.</li> </ul>
5(iv).	<b>Others (specify)</b>	-	-
6.	<b>Other Liabilities and Provisions</b>		
i)	<b>Bills Payable</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>Non-sensitive.</li> </ul>
ii)	<b>Inter-office adjustment</b>	Non-sensitive	<ul style="list-style-type: none"> <li>Non-sensitive.</li> </ul>
iii)	<b>Provisions</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>Non-sensitive.</li> </ul>
iv)	<b>Others</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>Non-sensitive.</li> </ul>

Sr. 1.	Heads of Accounts 2.	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement 3.	Revised Framework for bucketing of assets/ liabilities/off balance sheet items and computation of Modified Duration 4.
7.	<b>Repos (Funds borrowed)</b>	Reprices only on maturity and should be distributed to the respective maturity buckets.	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• The amounts should be distributed to different buckets on the basis of remaining maturity.</li> <li>• The coupon will be as per actual rate for each repo and yield may be based on FIMMDA-NSE MIBOR curve.</li> </ul>
8.	<b>Bills Re-discounted (DUPN)</b>	Re-prices only on maturity and should be distributed to the respective maturity buckets.	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• The amounts should be distributed to different buckets on the basis of remaining maturity.</li> <li>• Coupon rate: Appropriate discount rate.</li> <li>• Yield: FIMMDA- NSE MIBOR curve may be used as the yield, with appropriate mark up as per rating of the Tier II bonds of the bank.</li> </ul>
9.	<b>Forex Swaps (Buy/Sell)</b>	Re-prices only on maturity and should be distributed to the respective maturity buckets.	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Actual MD for each contract may be computed using the rupee implied rate through forward premium/discount as both coupon and discount rate.</li> </ul>
10.	<b>Others</b>	-	-
<b>A.</b>	<b>Total Liabilities</b>		

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
1.	<b>Cash</b>	Non - sensitive.	<ul style="list-style-type: none"> <li>• sensitive. Non-</li> </ul>
2.	<b>Balances with RBI</b>	Interest earning portion may be shown in over 3 - 6 months bucket. The balance amount is non-sensitive.	<ul style="list-style-type: none"> <li>• sensitive. Non-</li> </ul>
3.	<b>Balances with other banks</b>		
i)	<b>Current account</b>	i) Non-sensitive.	<ul style="list-style-type: none"> <li>• sensitive. Non-</li> </ul>
ii)	<b>Money at Call and Short Notice.</b>	ii) Sensitive on maturity. The amounts should be distributed to the respective maturity buckets.	<ul style="list-style-type: none"> <li>• on maturity. Sensitive</li> <li>• The amount should be plotted in the 1-28 days bucket.</li> <li>• The overnight call money rate may be used as both coupon and yield.</li> </ul>
iii)	<b>Term deposits and other placements</b>	Sensitive on maturity. The amounts should be distributed to the respective maturity	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• The amounts should be distributed to different time buckets on the basis of residual maturity or residual period to repricing, as relevant.</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
		buckets.	<ul style="list-style-type: none"> <li>• Coupon rate: Relevant rate of term deposit / placement.</li> <li>• Yield: Term deposit rates of the corresponding tenors of the banks with whom deposits are placed.</li> </ul>
4.	<b>Investments (Performing) (including those under reverse repos but excluding repos)</b>	<p>Fixed rate/zero coupon – sensitive on maturity.</p> <p>Floating rate – sensitive at next re-pricing date.</p>	<ul style="list-style-type: none"> <li>• Sensitive</li> <li>• For the purpose of bucketing and calculation of Modified Duration, investments may be classified into SLR and non-SLR investments as indicated below:</li> </ul>
i)	<b>SLR investments</b>	<p>Fixed rate/zero coupon – sensitive on maturity.</p> <p>Floating rate – sensitive at next repricing date.</p>	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Actual Modified Duration of each SLR security should be used.</li> <li>• Yield: G-Sec yield curve.</li> </ul>
ii)	<b>Non-SLR investments</b>	<p>Fixed rate/zero coupon – sensitive on maturity.</p> <p>Floating rate – sensitive at next repricing date.</p>	<ul style="list-style-type: none"> <li>• Sensitive (except equity which may be put in the non-sensitive bucket).</li> <li>• Actual Modified Duration of each Non-SLR security should be used.</li> <li>• Yield: FIMMDA benchmark curve.</li> </ul>
iii)	<b>Re-capitalisation bonds</b>		<ul style="list-style-type: none"> <li>• Sensitive.</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
			<ul style="list-style-type: none"> <li>Actual Modified Duration of each recapitalization bond may be computed.</li> </ul>
iv)	Investments in SRs issued by ARCs		<ul style="list-style-type: none"> <li>Non-sensitive.</li> </ul>
5.	Advances (Performing)		<ul style="list-style-type: none"> <li>Sensitive.</li> <li>The amounts should be distributed to different time buckets on the basis of residual maturity or residual period to re-pricing, as relevant.</li> <li>Banks may compute the average coupon for the advances portfolio by comparing the interest income during the relevant accounting period from 'standard' advances to the monthly average outstanding 'standard' advances.</li> <li>The average rating of the advances portfolio may be estimated by each bank to arrive at the applicable yield. One of the methods for estimating the average rating may be as follows:  Multiply the outstanding advances in each bucket with the internal rating scores to arrive at the weighted average rating of the advances in that bucket. Thereafter, this rating may be mapped to an external rating. In case a major portion of the bank's advances in a particular time bucket happens to be unrated, the bank may use the rating scores of large advances/ rated advances in each bucket (mapped with the rating of external agency) for arriving at weighted average rating for the bucket. On the basis of the average rating of each bucket, the yield may</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
			be arrived at using the FIMMDA yield curve for Govt securities with appropriate mark-up.
i)	<b>Bills Purchased and Discounted (incl. Bills under DUPN)</b>	(i) Sensitive on maturity.	<ul style="list-style-type: none"> <li>• Sensitive on maturity.</li> <li>• The average coupon and yield for the advances portfolio, as computed above, may be used.</li> </ul>
ii)	<b>Cash credit/Overdrafts (incl. TODs/Loans repayable on demand)</b>	(ii) Sensitive only when PLR/Base Rate /risk premium is changed. Each bank should foresee the direction of interest rate movements of funding options and capture the amounts in the respective maturity buckets which coincide with the time taken by banks to effect changes in PLR/Base Rate in response to changes in market	<ul style="list-style-type: none"> <li>• Sensitive on re-pricing/ date of next renewal, whichever is earlier. In the case of BPLR/Base Rate– linked advances, banks may estimate the re-pricing date based on the past experience and future forecast for the changes in their BPLR/Base Rate.</li> <li>• The average coupon and yield for the advances portfolio, as computed above, may be used.</li> </ul>



Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
		interest rates.	
iii)	<b>Term Loans</b>	(iii) Sensitive only when PLR/Base Rate/risk premium is changed. Each bank should foresee the direction of interest rate movements of funding options and capture the amounts in the respective maturity buckets which coincide with the time taken by banks to effect changes in PLR/Base Rate in response to changes in market interest rates.	<ul style="list-style-type: none"> <li>• Sensitive on re-pricing/ maturity, whichever is earlier. In the case of BPLR/Base Rate linked advances, banks may estimate the re-pricing date based on the past experience and future forecast for the changes in their BPLR/Base Rate.</li> <li>• The average coupon and yield for the advances portfolio, as computed above, may be used.</li> </ul>
6.	<b>NPAs (Advances and Investments) *</b>	Sub-standard –over 3-5 years bucket.  Doubtful and loss –over 5 years bucket.	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Sub-standard NPAs should be slotted in the 1-3 years time bucket.</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
			<ul style="list-style-type: none"> <li>• Doubtful and Loss Assets –should be slotted in the 3-5 years time bucket.</li> <li>• Coupon: The coupon rate will be taken as zero.</li> <li>• The yield curve prescribed by FIMMDA for unrated exposures/ default category may be used as yield.</li> </ul>
7.	<b>Fixed Assets</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Non-sensitive.</li> </ul>
8.	<b>Other Assets</b>		
i)	<b>Inter-office adjustment</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Non-sensitive.</li> </ul>
ii)	<b>Leased Assets</b>	Sensitive on cash flows. The amounts should be distributed to respective maturity buckets corresponding to the cash flow dates.	<ul style="list-style-type: none"> <li>• Sensitive on cash flows.</li> <li>• The amounts should be distributed to respective maturity buckets corresponding to the cash flow dates.</li> <li>• Yield curve prescribed by FIMMDA for valuation of corporate bonds as per the average rating estimated for leased assets to be used for arriving at the yields.</li> <li>• The average coupon for the leased assets portfolio, as computed for advances, may be used.</li> </ul>
iii)	<b>Others</b>	Non-sensitive.	<ul style="list-style-type: none"> <li>• Non-sensitive.</li> </ul>
9.	<b>Reverse Repos (Funds Lent)</b>	Sensitive on maturity.	<ul style="list-style-type: none"> <li>• Sensitive. The amounts should be distributed to different buckets on the basis of remaining maturity.</li> <li>• The coupon will be as per actual rate for</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
			each repo and yield may be based on FIMMDA-NSE MIBOR curve.
10.	<b>Forex Swaps (Sell / Buy)</b>	Sensitive on maturity	<ul style="list-style-type: none"> <li>• Sensitive.</li> <li>• Actual MD for each contract may be computed using the rupee implied rate through forward premium/discount may be used as both coupon and discount rate.</li> </ul>
11.	<b>Bills Rediscounted (DUPN)</b>	Sensitive on maturity.	<ul style="list-style-type: none"> <li>• Overnight call money rate may be used as both the yield and coupon rates.</li> </ul>
12.	<b>Others (specify)</b>	-	-
B.	<b>Total Assets</b>		
13.	Other Products (Interest Rate Derivatives)		<ul style="list-style-type: none"> <li>• Actual modified duration for each contract may be computed using the contracted rate as coupon and the relevant yield curve for discounting factor. Alternatively all interest rate derivatives can also be dealt with in the following manner:</li> </ul>
	<b>i) FRAs</b>	Suitably classified.	<ul style="list-style-type: none"> <li>• Forward Rate Agreements (FRAs) could also be considered as a combination of a short position and a long position. For instance, a long position in a September three month FRA (taken on June 1), can be bucketed as a short position in a bond with a maturity of 6 months and a long position in a bond with a maturity of 3 months. Accordingly a liability in the 3-6 months bucket and an asset in the 28 days to 3 months bucket may be shown. The amount to be reckoned for computing interest rate sensitivity is the notional value of the FRA.</li> </ul>
	<b>ii) Swaps</b>	Sensitive and should be distributed	<ul style="list-style-type: none"> <li>• Interest Rate Swaps could be considered as a combination of a short position and a long position. The notional of the fixed and floating</li> </ul>

Sr.	Assets	Rate sensitivity and time bucket as per extant ALM Guidelines for interest rate sensitivity statement	Revised Framework for bucketing of assets/liabilities/off balance sheet items and computation of Modified Duration
		under different buckets with reference to maturity.	leg of an Interest Rate Swap could be shown in the respective maturity bucket based on the <i>maturity date for the fixed leg</i> and the <i>reset date for the floating leg</i> . Suppose, a bank receives 5-year fixed and pays floating MIBOR, then the fixed leg of the swap could be shown as an asset in the '5-7 year' bucket and the floating leg would be shown as a liability in '1-28 days' bucket. Similarly, a currency swap may be considered as a combination of a short position in one currency and long position in another currency. The two positions will be sensitive to the changes in the respective interest rates. The notionals of the two currencies will be bucketed as a short/long positions in the respective currency with relevant maturity.
	<b>iii) Futures</b>	Suitably classified.	<ul style="list-style-type: none"> <li>Interest Rate Futures (IRFs) could also be considered as a combination of a short position and long position. For instance, a long position in a September three month IRF (taken on June 1), can be bucketed as a long position in Government bond, with a maturity of six months and a short position in Government bond with maturity of three months. The amount to be reckoned for computing interest rate sensitivity is the notional value of the IRF.</li> </ul>

\* Net of provisions, interest suspense and claims received from ECGC/DICGC.

Note:

- Wherever FIMMDA spreads are proposed to be used, the FIMMDA Corporate Bond Spreads table may be used. The same can be downloaded from the FIMMDA website ([www.fimmda.org](http://www.fimmda.org)) or more from the exact link at [http://www.fimmda.org/Products\\_and\\_Services/asp/spread\\_gilt.asp](http://www.fimmda.org/Products_and_Services/asp/spread_gilt.asp)
- Equity holding whether strategic or for investment purposes may be treated as Non-sensitive and bucketed accordingly.







**PART B: Aggregation of RSL and RSA across all currencies and computation of MDG and sensitivity of MVE under different scenarios**

A.	Computation of Aggregate RSL (i)+ (ii)	
(i)	RSL of rupee liabilities	
(ii)	Rupee equivalents of RSL in different currencies	
B.	Computation of Aggregate RSA (i)+(ii)	
(i)	RSA of rupee Assets	
(ii)	Rupee equivalents of RSA in different currencies	
C.	Weighted Average MD of RSL across all currencies( $MD_{RSL}$ )	
D.	Weighted Average MD of RSA across all currencies( $MD_{RSA}$ )	
E.	Modified Duration Gap (MDG) [MDA - MDL*(RSL/RSA)]	
F.	% Change in MVE( $\Delta E/E$ )= $(- [MDG]*RSA*\Delta i/E)$ When	
(i)	There is 100 bps change in interest rates i.e. $\Delta i=1\%$	
(ii)	There is 200 bps change in interest rates i.e. $\Delta i=2\%$	
(iii)	There is 300 bps change in interest rates i.e. $\Delta i=3\%$	
(iv)	Other scenarios (pl. specify)	









