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RESERVE BANK OF INDIA
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RBI/2012-13/

DBOD.No.BP.BC. /21.06.001/2012-13 September 17, 2012

The Chairman and Managing Director/
Chief Executive Officer
All Scheduled Commercial Banks
(Excluding RRBs and LABs)

Dear Sir,

Draft Supplementary Guidance on Treatment of Illiquid Positions

Please refer to para 8.8 in the guidelines on treatment of illiquid positions contained in our Master Circular DBOD.No.BP.BC.16/21.06.001/2010-11 dated July 2, 2012 on the New Capital Adequacy Framework. The prudent valuation adjustment for illiquid positions has assumed greater importance in the wake of the recent financial crisis. Basel Committee on Banking Supervision (BCBS) has sought to address the issue in two ways. *First*, the Prudent Valuation Guidance contained in the Basel II Market Risk Framework was substantially revised in July 2009 to address the deficiencies and challenges in valuation of illiquid positions observed during the crisis. These changes were duly reflected in the circular DBOD.No.BP.BC.73/21.06.001/2009-10 dated February 8, 2010 on Enhancements to Basel II Framework. *Secondly*, the BCBS has issued guidance on computing capital for Incremental Risk Charge in the Trading Book (IRC) under the Internal Models Approach (IMA) extending the liquidity horizon to a minimum of 3 months for measurement of capital charge for default and migration risk in the credit- related assets held in the Trading Book. This guidance reflected the inability of banks to dispose of such assets within the 10-day horizon assumed for the VaR models under Internal Models Approach for Market Risk. In addition, Credit

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Valuation Adjustments (CVA) to the mark-to market values of derivatives transactions to reflect the differences in credit worthiness of the counterparties and the capitalization of CVA losses have also been the focus of the measures to improve the capital adequacy framework for counterparty risk taken under Basel III.

2. Inappropriate valuation of illiquid positions raises additional supervisory concerns during stressed periods when the processes and controls surrounding the valuation practices are more likely to become weak. Therefore, it becomes necessary to ensure that the valuation practices are improved substantially during benign periods and are embedded in the risk management culture of banks. Further, Indian banks are still following the Standardised Measurement Method (SMM) for computing capital charge for market risk and even the RBI's guidelines on Internal Models Approach (IMA) for market risk have not extended the VaR-based methodologies to specific risk. Therefore, the capitalization of unexpected losses due to illiquidity of positions as envisaged under IMA and IRC by Indian banks is likely to take some time. Many banks are going to continue to follow the Standardized Measurement Method for a long time. It is, therefore, considered very crucial for Indian banks to make concerted efforts to implement the Prudent Valuation Guidance issued by RBI to capture at least the expected losses due to illiquidity.

3. In order to ensure that a consistent methodology is adopted by banks for the purpose, a Working Group on valuation adjustments and treatment of illiquid positions was constituted by the Reserve Bank of India in June 2010 in pursuance to the announcement made in the Annual Policy Statement for the year 2010-11. Based on the recommendations of the Working Group and other relevant inputs, a draft supplementary guidance prepared in this regard is furnished in **Annex** to enable the banks to begin implementation thereof in a standardised manner. Banks/other interested parties may offer their comments / suggestions on the various proposals enumerated therein latest by October 19, 2012 by mail to the Chief General Manager-in-Charge, Reserve Bank of India, Department of Banking

Operations and Development, Central Office, 12th floor, Central Office Building, Shahid Bhagat Singh Marg, Mumbai-400001 or through e-mail.

Yours faithfully,

(Deepak Singhal)
Chief General Manager-in-Charge

Encls: as above

Annex

Guidance for Valuation Adjustments for Illiquid Positions

1. Introduction

As per para 8.7 of circular DBOD.No.BP.BC.73/21.06.001/2009-10 dated February 8, 2010 on Enhancements to Basel II Framework, banks are required to make valuation adjustments for all positions which are marked-to-market or otherwise subject to fair valuation as per RBI guidelines or relevant accounting standards. In particular, banks are required to establish and maintain procedures for determining the liquidity of its positions which are marked to market and for applying adjustments to capital for illiquid positions. Valuation adjustment for derivatives portfolio deserve special attention as some of the positions may be valued using internal pricing models of banks. This guidance seeks to provide indicative guidelines to banks to define illiquid positions and subsequent valuation adjustments through Tier I capital. The guidance also contains certain additional valuation adjustment to be made to the derivatives portfolio.

2. Factors Affecting Liquidity of Positions

As per Basel II Framework, banks are required to consider the following market related and/or institution- specific factors in assessment/quantification of the valuation adjustments for illiquidity:

2.1 Recent market events, if any, impacting liquidity

Recent market events such as large capital inflows/outflows, global financial crisis, international financial crisis, drastic changes in the monetary policy, large increases in government borrowings, frauds involving many active market participants or issuers in particular market segments leading to erosion of confidence in the financial markets, etc. could render the prices quoted a few days back or even the same day unreliable for fair valuation. Banks need to take into account such events while valuing their positions.

2.2 Concentrated and/or stale positions

Liquidation of large concentrated positions may result in adverse movement in the price the moment the off-loading starts, particularly when the market is not deep. Concentration of cash positions in equity/bonds of a particular issuer/ sector may also expose the trader to high idiosyncratic risk. Indicators of concentration could be 'percentage of the size of the bank's position to total size of the issue', 'percentage of the size of the bank's position to the average daily volumes traded of the security during last three months'. Therefore, the quoted market price for such instruments, even if available, will not be a reliable input for valuation of the positions. Banks need to make a downward adjustment to the fair value of such positions reflected in the books of the banks, to reflect this uncertainty. Analysis of the total trading cost (bid-ask spread, market impact and opportunity cost) of similar sales in the past by the bank or any other entity could throw useful information to quantify the valuation adjustment on this score.

2.3 Volatility(standard deviation) of bid-offer spreads

Volatility of bid-offer spread in the past would help in forecasting the likely spread to be realized when the bank actually exits the position. This would be particularly relevant in a situation where due to non-availability of the current prices, the bank is placing reliance on the prices of the trades which had taken place in the past.

2.4 Number of active participants in the market

The larger the number of market participants/investors and the market makers, the greater would be the liquidity of the position, and vice versa.

2.5 Hedging opportunities available

Availability of hedging opportunities is positively correlated to the liquidity of the position. The factors to be considered in this regard would be the availability of the hedging opportunities both in cash and derivatives markets, range of the derivatives instruments (forwards, futures, swaps, options, CDS, etc.), and range

of markets available (domestic, international, exchange–traded, OTC, etc.). Non-availability of hedging opportunities would likely create higher volatility in the spreads when the sentiment turns negative, and thereby creating greater uncertainty regarding the effective spreads to be realised especially in the case of thinly traded positions.

2.6 Aging of positions

Aging of trades, including rolling off of cash flows, path dependency and exercise of options may have implications for liquidity risk of positions. The liquidity risk arises due to cash flow implications of settlement and re-investment requirements associated with particular positions. Banks need to assess the liquidity risk of positions in relation to the liquidity horizons.

2.7 The extent to which the valuation relies upon mark-to-model

Valuation of positions requiring use of level 2 and level 3 inputs [1] would involve model risk. The positions, such as certain mortgage related securitised assets, which derive their value from the underlying one or more steps removed from the investment, would experience less trading and would also be difficult to price with

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[1] **Level 1 Inputs**: Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. An active market for the asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis

Level 2 Inputs : Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. If the asset or liability has a specified (contractual) term,

a Level 2 input must be observable for substantially the full term of the asset or liability. Level 2 inputs include the following: a. Quoted prices for similar assets or liabilities in active markets

b. Quoted prices for identical or similar assets or liabilities in markets that are not active, that is, markets in which there are few transactions for the asset or liability, the prices are not current, or price quotations vary substantially either over time or among market makers (for example, some brokered markets), or in which little information is released publicly (for example, a principal-to-principal market)

c. Inputs other than quoted prices that are observable for the asset or liability (for example, interest rates and yield curves observable at commonly quoted intervals, volatilities, prepayment speeds, loss severities, credit risks, and default rates)

d. Inputs that are derived principally from or corroborated by observable market data by correlation or other means (market-corroborated inputs).

Level 3 inputs: Level 3 inputs are unobservable inputs for the asset or liability. Unobservable inputs shall be used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at the measurement date. unobservable inputs shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk).

For further guidance on this topic a reference may be made to International Accounting Standards 39 , issued by International Accounting Standards Board (IASB).

certainty. When finally sold, their realised price is likely to reflect this uncertainty and the lack of transparency and result in sale proceeds much below the value shown by the bank in its accounts. Banks should assess the model risk involved in their positions and consider valuation adjustment on account of such risk. One way of assessing the model risk could be to value the position using one or more alternative models and compare the output from these models with the price arrived at by using the basic model. The adjustment required could be based on the difference in valuations between the bank's model and other models.

2.8 Volatility of trading volumes

Higher volatility of trading volumes would create uncertainty regarding the depth of the market. This uncertainty should be captured through an appropriate valuation adjustment, particularly if the trading is also thin at the same time.

3. Rationale for Making Prudent Valuation Adjustments

Prudent Valuation Adjustment is justified on the following grounds:

- Illiquid positions are generally disposed of at much lower price than the value reflected by banks in the books of accounts as per applicable accounting standards. These concerns have become more pronounced after the financial crisis.

- Banks would normally collect the illiquidity premium in the form of higher dividends/coupon on illiquid investments and would also build appropriate premium to compensate them for the lack of hedging opportunities for exotic/complex derivatives /structured products in their pricing. Taking the entire income on these products to P&L without accounting for the expected capital losses on disposal owing to illiquidity of these investments would not be in order.

- For banks not using the Internal Models Approach and Incremental Risk Charge Approach for market risk, the illiquidity risk is undercapitalized. Therefore, at least the present valuations should be adjusted for illiquidity.

4. Methodology to Determine the Valuation Adjustment for Illiquid Positions

4.1 It would be appropriate to look at the liquidity/illiquidity, not as a binary situation, but as a continuum from a highly liquid position requiring no valuation

adjustment to a highly illiquid position necessitating a significant amount of adjustment. Ideally, any valuation adjustment on account of aforesaid factors should be based on a scientific measure of illiquidity caused by one or more of the factors mentioned in para 2 above. The primary pre-requisites for such measures would be the availability of a sufficient amount of historical data as also the capability to model/predict the likely impact of these factors on the liquidity of financial instruments in a forward looking manner.

4.2 Prudent valuation of positions involves a *two-step approach*. First, the basic valuation (without considering illiquidity discount) should be robust. Second, the adjustment for illiquidity should be determined in an appropriate manner. It is recognized that the methodologies to quantify the impact of various factors enumerated in para 2 above on illiquidity of positions are not well developed, and the required data in Indian markets to capture different dimensions of illiquidity may also not be available. However, it would be imprudent not to make any valuation adjustment on this ground. Studies have shown that illiquidity discounts can be substantial [certain Pre-IPO studies have estimated the mean Discounts for Lack of Marketability (DLOM) in the case of unlisted equities in the range of 40-60%]. During the recent financial crisis banks had to book heavy losses on disposal of illiquid mortgage related assets. Therefore, it is imperative to make valuation adjustment for illiquidity, even if these are based on certain proxies to quantify the illiquidity impact until banks are able to use their internal measures for this purpose. There is also fair amount of academic literature[2] available at least on the subject of determination of illiquidity discounts for equity and fixed income positions, which should be used by banks to quantify the illiquidity discounts to be applied to these asset classes. Banks should also begin to collect necessary data

[2]

- The Price of Illiquidity: Valuation Approaches Across Asset Classes, December 1, 2009 By Dr. Cindy W. Ma & Andrew Mac Namara, December 2009
- Marketability and Value: Measuring the Illiquidity Discount, Aswath Damodaran, Stern School of Business, July 2005
- International Private Equity and Venture Capital Valuation Guidelines, August 2010

to support such measurement systems and try to achieve the capability to determine the valuation adjustments based on such measures in due course.

4.3 In order to enable banks to begin implementation of the guidance, a standardized score-based methodology has been formulated keeping in view the characteristics of different types of positions. The methodology is described below.

4.3.1 Basic fair valuation for the purpose of accounting

The positions should be first valued as per RBI guidelines and/or the applicable accounting standards for the purpose of reflecting in the books of accounts. This would mean valuation using:

- quoted/traded prices,
- the inputs published by FIMMDA,
- non-current prices, or
- valuation models.

In partial modifications to these guidelines, valuation of unquoted equity may be carried out according to one of the standard valuation models used for valuation of such positions. Some of these methods are Break-up Value, Price of Recent Transaction, Adjusted Net Asset Method (Asset Approach), Discounted Cash Flow (Income Approach), and Guideline Public Company Method (Market Approach). These approaches also allow for valuation adjustment for the illiquidity to be made as an input to the model. The methodology applied should be appropriate in the light of the nature, facts and circumstances of the investment and its materiality in the context of total portfolio of such investments as well as overall investment portfolio. Banks should use reasonable data and market inputs, assumptions and estimates. The equity which cannot be valued using one or more such techniques due to non-availability of data from the public sources or from the company may be valued at Re.1/- as per extant instructions.

4.3.2 Prudent Valuation Adjustment Including that for Illiquidity

Prudent valuation adjustment would be applied on the valuation arrived as above and will consist of the following two parts:

4.3.2.1 Adjustment to Mid-market Price

In the case of quoted instruments/positions, the first part of the adjustment would include the re-valuation of the long positions at the 'bid' quote and all short positions at 'ask' quote available in the market at the close of the business, if valuation at para 4.3.1 above has been made at mid market price. Unquoted instruments would not involve this adjustment.

4.3.2.2 Additional Adjustments

For the purpose of application of second part of the valuation adjustments, the entire portfolio of positions subject to fair valuation, and consequently prudent valuation, would be divided into the following categories and adjustment would be computed as indicated against each of them:

(i) Instruments quoted/traded in active markets

A financial instrument is regarded as quoted in an active market if quoted prices, which reflect normal market transactions, are readily and regularly available from an exchange, dealer, broker, industry group, pricing service or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis. The market for these instruments can be treated as highly liquid and the illiquidity adjustment minimal considering that most of the factors referred to in para 2 above would either be irrelevant or would have already been factored in the quoted prices of these instruments. The illiquidity discount, if any, applicable to these instruments may be attributed to market impact in case of large positions and certain institution–specific factors such as concentration/staleness of positions. Banks may calculate the valuation adjustment to be applied in the case of such instruments as per **Table 1** of the **Appendix**.

(ii) Instruments quoted/traded in markets other than active markets

The instrument not quoted in active markets may suffer from the illiquidity impact of varying degree attributed to one or more of the factors referred to in para 2 above. Banks may calculate the valuation adjustment to be applied in the case of such instruments as per **Table 2** of the Appendix.

(iii) Unquoted cash instruments

Unquoted cash instruments would suffer the highest amount of illiquidity attributed to one or more of the factors referred to in para 2 above, especially that related to use of level 2 and level 3 inputs. Banks may calculate the valuation adjustment to be applied in the case of such instruments as per **Table 3** of the Appendix.

(iv) Forex positions: Actively traded currencies

Instruments denominated in foreign currencies may require valuation adjustments to reflect the illiquidity in both the local market for the instrument as well as the illiquidity of the relevant foreign currency. The actively traded currencies may not require valuation adjustment for illiquidity, as these currencies may be considered to be highly liquid. However, some valuation adjustment may be required due to institution specific factors such as concentration of positions and possible market impact if the size is large in relation to trading volumes. Banks may calculate the valuation adjustment as per **Table 4** of the Appendix. It may be re-iterated that the valuation adjustment on account of foreign currency element would be in addition to the adjustment required to reflect the illiquidity of the instrument in the relevant local market i.e. equity/debt market. For instance, an investment in unquoted dollar denominated bond issued by a US corporate would require adjustment both as per **Table 3 and Table 4** of the Appendix.

(v) Forex positions: Currencies not actively traded

The currencies which are not traded actively may require valuation adjustment for many factors affecting their liquidity as enumerated in **Table 5**. This valuation

adjustment will be in addition to the adjustment required to reflect the illiquidity of the instrument in the relevant local market i.e. equity/debt market. For instance, an investment in unquoted bond denominated in Russian currency issued by a Russian corporate would require adjustment both as per **Table 3 and Table 5**.

(vi) Derivatives

Most derivatives do not have quoted prices and use level 2 and level 3 inputs for valuation. The liquidity of derivatives positions would be affected by many factors enumerated in **Table 6** which need to be taken into account in valuation adjustment for such positions.

4.4 The range of valuation adjustments envisaged in terms of the above methodology is summarized in the Table below.

	Category of the financial instrument	Maximum Score	Range of valuation adjustment required as a percentage of pre-adjustment valuation (%)	Reference Table No. in the Appendix
(i)	*Instruments quoted/traded in active markets*	25	0-5	1
(ii)	*Instruments quoted/traded in markets other than active markets*	60	3-12	2
(iii)	*Unquoted cash instruments*	100	5-20	3
(iv)	*Forex positions: Actively traded currencies*	25	0-5	4

(v)	*Forex positions: Currencies not actively traded*	75	4-15	5
(vi)	*Derivatives*	80	4-16	6

4.5 Banks can also follow a hybrid approach involving quantification of the adjustment for a position in respect of some of the parameters indicated as per the Tables above and use of internal estimates to quantify the remaining parameters. In that case, the latter may be assigned zero value while evaluating as per relevant Table. The total illiquidity adjustment would be the sum of the adjustment computed as per the Table and that estimated as per internal method(s).

4.6 All the valuation adjustments made in terms of para 4 may be documented and made at the end of **every quarter** for the HFT positions and at the end of **every half year** for the AFS positions. <u>These valuation adjustments need not be reflected in the P&L Account. However, these should be deducted from Tier I capital while computing the CRAR of the bank</u>.

4.7 The valuation adjustments are required for both assets and liabilities subject to fair valuation. Accordingly, in the case of derivatives, these would be applicable to both positive MTM (assets) and negative MTM (liabilities). The adjustments should result in increase in liabilities and decrease in asset values.

4.8 The 'valuation adjustment' required in terms of this guidance may be adjusted downwards to the extent the bank has already incorporated illiquidity discount in valuation of the basic model. However, in order to be eligible for such treatment, banks would need to unambiguously demonstrate that the illiquidity discount was indeed factored in the basic valuation model.

5. Additional Valuation Adjustment for Derivatives Portfolios

In addition to the valuation adjustments made as per **Table 1**, the following additional valuation adjustments should be considered by banks with respect to derivatives positions:

- Incurred CVA losses
- Operational risks[3]
- Early termination, investing and funding costs
- Future administration costs
- Model Risk

5.1 Valuation Adjustment for incurred CVA losses

5.1.1 As per the final guidelines on Basel III issued by RBI, banks may use the following formula to calculate incurred CVA loss on derivatives transactions:

ICVALt = Max [0,{(EEt *RPt) - (EE0 *RP0)}]

Where

ICVALt = Cumulative Incurred CVA loss at time 't'.

EEt = Value of counterparty exposure projected after one year from 't' and discounted back to 't' using CEM and a risk free discount rate for one year

EE0 = Counterparty exposure estimated at time '0' using CEM

RPt = Credit spread of the counterparty as reflected in the CDS or bond prices. In cases where market based credit spreads are not available, risk premium applicable to the counterparty according to its credit grade as per the internal

[3] This adjustment may be considered under Pillar II in the form of additional Tier I capital requirement if it is considered that higher operational risk (e.g. legal risk) observed in derivatives transactions is not adequately captured under BIA/TSA/AMA.

credit rating system of the bank used for pricing/loan approval purposes at time 't' may be used.

RP0 = Credit spread of the counterparty as reflected in the CDS or bond prices. In cases where market based credit spreads are not available, risk premium applicable to the counterparty according to its credit grade as per the internal credit rating system of the bank used for pricing/loan approval purposes at time '0' i.e. the date of the transaction.

5.2 Other Valuation Adjustments for Derivatives

5.2.1 Banks should make an attempt to estimate the costs incurred due to early termination of derivatives contracts, investing and funding costs associated with the cash flows generated by the derivatives transactions, operational risks and future administrative costs based on the past data. Wherever no reliable estimate is possible, valuation adjustments may be made as per **Table 7 of the Appendix**:

5.3 The valuation adjustment for incurred CVA losses may be carried out at the end of **every month**. All other valuation adjustments in respect of derivatives required as per para 5 may be made at the end of **each quarter**. <u>All these adjustments need not be debited to the P&L Account and made as deduction to Tier I capital for the computation of bank's CRAR.</u>

6. Verification of Valuation Adjustments

All the valuation adjustments made under this guidance should be duly documented and audited by both the internal and external auditors of the bank.

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Appendix

Table 1: Methodology for Computing Valuation Adjustment for Illiquid Positions: Instruments Quoted in Active Markets

		Weight (%)	Zero risk (0)	Low risk (5)	Medium risk (10)	High risk (20)	Weighted score (column 4* column 3
1	2	3	4				5
A.	**Volatility of bid-ask spreads**	**5**					
1.	Average of standard deviation of relevant bid-offer spreads of the underlying over last one year	**5**	When standard deviation of bid offer spreads is less than 1%.	When standard deviation of bid offer spreads is between 1-5%.	When standard deviation of bid offer spreads is between 5-10%. If the trading has been there but, it is not possible to collect relevant data for calculating standard deviation.	When standard deviation of bid offer spreads is more than 10%. Or The trading is so infrequent that no meaningful standard deviation number could be calculated.	
B.	**Concentration of positions in relation to market depth**	**10**					
2.	Percentage of the size of the bank's position to total positions of all holders of similar positions	**5**	If this percentage is less than 1 % of the issue size/notional of similar positions in case of derivatives.	If this percentage is between 1- 5 %.	If this percentage is between 5-10%.	If this percentage is more than 10 %.	
3.	Percentage of the size of the bank's position to daily	**5**	If the daily traded volume is at least 5 times the	If the daily traded volume is 3-5 times the position held by the bank	If the daily traded volume is 1-3 times the position held by the bank	If the daily traded volume is less than the position held by the	

	volume traded		position held by the bank			bank	
B	**Staleness of Positions**	**5**					
4.	Time since last trading	**5**	Part/whole of the position was traded during last one week	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
C	**Aging of positions**						
5.	Addressing cash flow related issues of associated with aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **completely** taken care of	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	
	Total	**25**					

Note:

(i) A financial instrument is regarded as quoted in an active market if quoted prices, which reflect normal market transactions, are readily and regularly available from an exchange, dealer, broker, industry group, pricing service or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis.

(ii) Maximum Score: 5

Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <1	Nil
1 to <3	3%
3 to 5	5.0%

Table 2: Methodology for Computing Valuation Adjustment for Illiquid Positions: All cash instruments (e.g. Equities/bonds/units etc. quoted, but markets are not considered to be active)

		Weight(%)	Low risk (5)	Medium risk (10)	High risk (20)	Weighted score (column 4* column 3
1	**2**	**3**	**4**			**5**
A.	**Expected price volatility in the market**	**10**				
1.	Market events affecting the investor confidence, events leading to restrictions on sale/purchase of the instrument, events affecting the use of instrument as collateral for borrowing etc.	**5**	One or two events have occurred but the impact is mild.	The events which may indicate unfolding of a local or global financial crisis having moderate to medium impact on the market segment.	There is full blown local or global financial crisis with significant implications for the market segment in question ..	
2	Average of standard deviation of relevant bid-offer spreads over last one year	**5**	When standard deviation of bid offer spreads is less than 1-5%.	When standard deviation of bid offer spreads is less than 5-10%. If the trading has been there but, it is not possible to collect relevant data for calculating standard deviation.	When standard deviation of bid offer spreads is more than 10%. Or The trading is so infrequent that no meaningful standard deviation number could be calculated.	
B.	**Market Depth**	**10**				
3.	Number of active participants and/or	**3**	If this number is more than 40.	If this number is between 20 and 40.	If this number is less than 20.	

	market makers in the market					
4.	Volatility of trading volumes over last one year	**3**	When standard deviation of daily trading volume between 5-10%.	When standard deviation of daily trading volume between 10-15%.	When standard deviation of daily trading volume is more than 15%	
5.	Market Impact cost	**4**	2-5%	5-10%	>10%/impact cost is not available/ measurable	
C.	**Institution-specific factors**	**20**				
	Concentration of positions in relation to market depth	**10**				
6.	Percentage of the size of the bank's position to total positions of all holders of similar positions	**5**	If this percentage is between less than 5%.	If this percentage is between 5-10%.	If this percentage is more than 10 %.	
7.	Percentage of the size of the bank's position to daily volume traded	**5**	If the daily traded volume is 3-5 times the position held by the bank	If the daily traded volume is 1-3 times the position held by the bank	If the daily traded volume is less than the position held by the bank	
8.	Staleness of Positions	**5**	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
9.	Aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	
D.	**Hedging**	**10**				

	opportunities available					
10.	Number of Hedging tools available	**3**	Both cash or derivative market instruments are available. At least two instruments(forward/futures/swaps/options) are available in derivatives market	Either cash or derivative market instruments are available. Not more than one instruments(forward/futures/swaps/options) is available in derivatives market	No hedging instrument is available.	
11.	Number of dealers/market makers available	**3**	There is adequate number of market makers /dealers	There are a few market makers/dealers	There is hardly any recognised dealer/market maker.	
12.	Availability /accessibility of domestic and foreign markets	**2**	Both domestic or international markets with some restrictions (where relevant) are accessible/available.	Either the domestic or international markets(where relevant) are accessible/available.	No organized market is available	
13.	Time taken for hedging	**2**	Possible to hedge within one week of taking decision to hedge	Possible to hedge within a month of taking decision to hedge	Tme taken to hedge is more than a month.	
E.	**Model Risk**	**10**				
14.	The extent to which the valuation relies upon mark-to-model(Model Risk)	**10**	A model is used for valuation but, inputs to the model are based on the observable market parameters.	A model is used for valuation but, inputs to the model are only partly based on the observable market parameters	Full reliance on model based valuation.	
	Total	**60**				

Note:

i) Maximum Score: 12

(ii) In case one or more of the parameters given in **Table 2** are not relevant for a particular position, the total score may be calculated based on the relevant parameters only.

(iii) The above adjustments will be made after the long positions have been re-valued at the 'bid' quote and all short positions at 'ask' quote available in the market at the close of the business, if valuation has been made at mid market price.

Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <3	3%
3 to <6	6%
6 to <9	9%
9 to 12	12%

Table 3: Methodology for Computing Valuation Adjustment for Illiquid Positions: Unquoted instruments

		Weight(%)	Low risk (5)	Medium risk (10)	High risk (20)	Weighted score (column 4* column 3
1	**2**	**3**	**4**			**5**
A.	Recent market events	**10**				
1	Market events affecting the investor confidence, events leading to restrictions on sale/purchase of the instrument, events affecting the use of instrument as collateral for borrowing etc.	**10**	One or two events have occurred but the impact is mild.	The events which may indicate unfolding of a local or global financial crisis having moderate to medium impact on the market segment in question.	There is full blown local or global financial crisis with significant implications for the market segment in question .	
B.	**Market Depth**	**30**				
2.	Number of transactions in the last six months	**5**	More than 12	6 -12	1-6	
3.	Listing status	**5**	Listed but not part of the main index	Unlisted, but bond rated AA and above	Equity is unlisted and there is no rated debt or rated below AA	
4.	External Rating of debt	**5**	AAA	BBB to AA	Below BBB and unrated	

5.	Size of the issue	**10**	Larger than Rs.1000 crore	Rs.500 -1000 crore	Less than Rs. 500 crore	
6.	Financial position of the issuer (leverage, profitability, liquidity etc.)	**5**	Very Good (Company would have been eligible for top internal credit rating grade of the bank)	Good (Company would have been eligible for internal investment grade of the bank)	Poor (company would not have been eligible for Investment grade of the bank)	
C.	**Institution-specific factors**	**20**				
7	Concentration of positions in relation to market depth	**10**				
8.	Percentage of the size of the bank's position to total positions of all holders of similar positions	**5**	If this percentage is between 1- 5 %.	If this percentage is between 5-10%.	If this percentage is more than 10 %.	
9.	Staleness of Positions	**5**	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
10.	Aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	
D.	**Hedging opportunities available**	**20**				
11.	Number of Hedging tools available	**5**	Both cash or derivative market instruments are available. At least two instruments(	Either cash or derivative market instruments are available. Not more than one instruments(	No hedging instrument is available.	

			forward/futures/swaps/options) are available in derivatives market	forward/futures/swaps/options) is available in derivatives market		
12.	Number of dealers/market makers available	**5**	There is adequate number of market makers /dealers	There are a few market makers/dealers	There is hardly any recognised dealer/market maker.	
13.	Availability /accessibility of domestic and foreign markets	**5**	Both domestic or international markets with some restrictions (where relevant) are accessible/available.	Either the domestic or international markets (where relevant) are accessible/available.	No organized market is available	
14.	Time taken for hedging	**5**	Possible to hedge within one week of taking decision to hedge	Possible to hedge within a month of taking decision to hedge	Time taken to find and execute a suitable hedge is more than a month.	
E.	**Model Risk**	**20**				
15.	The extent to which the valuation relies upon mark-to-model	**20**	A model is used for valuation but, inputs to the model are based on the observable market parameters.	A model is used for valuation but, inputs to the model are only partly based on the observable market parameters	Full reliance on model-based valuation.	
	Total	**100**				

Note:

ii) Maximum Score: 20

(ii) In case one or more of the parameters given in **Table 3** are not relevant for a particular position, the total score may be calculated based on the relevant parameters only.

Table 3: Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <5	5%
5 to <10	10%
10 to <15	15%
15 to 20	20%

Table 4: Methodology for Computing Valuation Adjustment for Illiquid Positions: Forex Cash positions (Actively traded currencies)

		Weight(%)	**Zero risk (0)**	**Low risk (5)**	**Medium risk (10)**	**High risk (20)**	**Weighted score (column 4* column 3**
1	**2**	**3**	**4**				**5**
1.	Average of standard deviation of relevant bid-offer spreads of the underlying over last one year	**5**	When standard deviation of bid offer spreads is less than 1%.	When standard deviation of bid offer spreads is between 1-5%.	When standard deviation of bid offer spreads is between 5-10%. If the trading has been there but, it is not possible to collect relevant data for calculating standard deviation.	When standard deviation of bid offer spreads is more than 10%. Or The trading is so infrequent that no meaningful standard deviation number could be calculated.	
2.	Market Impact cost	**5**	upto 2%	2-5%	5-10%	>10%/impact cost is not available/ measurable	
3.	Percentage of the size of the bank's position to daily volume traded	**5**	If the daily traded volume is at least 5 times the position held by the bank	If the daily traded volume is 3-5 times the position held by the bank	If the daily traded volume is 1-3 times the position held by the bank	If the daily traded volume is less than the position held by the bank	
4.	Staleness of Positions	**5**	Part/whole of the position was traded during last one week	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
5.	Aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **completely** taken care of	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	
	Total	**25**					

Note:

iii) Maximum Score: 5

(ii) In case one or more of the parameters given in **Table 4** are not relevant for particular position, the total score may be calculated based on the relevant parameters only.

(iii) It is presumed that the parameters incorporated in the above Table are generally not captured in the quoted bid-ask prices or the prices/values which would normally be used by banks to value the positions for the purpose of reflecting them in books of accounts and financial reporting. If a bank believes that any of the parameters used in the above Table have already been captured by it in its valuations for the purpose of accounting, the onus of producing such a proof would lie with the bank.

(iii) In the case of quoted instruments/positions, the above adjustments will be made after the long positions have been re-valued at the 'bid' quote and all short positions at 'ask' quote available in the market at the close of the business, if valuation has been made at mid market price.

Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <1	Nil
1 to <3	3%
3 to <5	5%

Table 5: Methodology for Computing Valuation Adjustment for Illiquid Positions: Forex Cash positions (Other Currencies)

		Weight(%)	Zero risk (0)	Low risk (5)	Medium risk (10)	High risk (20)	Weighted score (column 4* column 3
1	**2**	**3**	**4**				**5**
A.	**Expected price volatility in the market**	**25**					
1	Recent market events inducing volatility and uncertainty in the forex market (e.g. imposition/removal of capital controls, drastic changes in monetary policies, trade controls, political events, etc)	**20**	No significant market event in general and in specific sectors to which the security belongs	One or two events have occurred but the impact is mild.	The events which may indicate unfolding of a local or global financial crisis having moderate to medium impact on the market segment.	There is full blown local or global financial crisis with significant implications for the market segment in question ..	
2	Average of standard deviation of relevant bid-offer spreads of the underlying over last one year	**5**	When standard deviation of bid offer spreads is less than 1%.	When standard deviation of bid offer spreads is less than 1-5%.	When standard deviation of bid offer spreads is less than 5-10%. If the trading has been there but, it is not possible to collect relevant data for calculating standard deviation.	When standard deviation of bid offer spreads is more than 10%. Or The trading is so infrequent that no meaningful standard deviation number could be calculated.	
B.	**Market Depth**	**15**					
3.	Number of active participants and/or market makers in	**5**	If this number is more than 30.	If this number is between 20 and 30.	If this number is between 10 and 20.	If this number is less than 10.	

	the market						
4.	Volatility of trading volumes over last one year	**5**	When standard deviation of daily trading volume less than 5%.	When standard deviation of daily trading volume between 5-10%.	When standard deviation of daily trading volume between 10-15%.	When standard deviation of daily trading volume is more than 15%	
5.	Market Impact cost	**5**	upto 2%	Between 2-5%	Between 5-10%	>10%/impact cost is not available/ measurable	
C.	**Institution-specific factors**	**15**					
	Concentration of positions in relation to market depth	**5**					
6.	Percentage of the size of the bank's position to daily volume traded	**5**	If the daily traded volume is at least 5 times the position held by the bank	If the daily traded volume is 3-5 times the position held by the bank	If the daily traded volume is 1-3 times the position held by the bank	If the daily traded volume is less than the position held by the bank	
7.	Staleness of Positions	**5**	Part/whole of the position was traded during last one week	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
8.	Aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **completely** taken care of	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	
D.	**Hedging opportunities available**	**20**					
9.	Number of Hedging tools available	**5**	Large number of hedging tools/products	Both cash or derivative market instruments are available. At least two	Either cash or derivative market instruments are available. Not more than	No hedging instrument is available.	

			both in cash and derivatives markets available	instruments(forward/futures/swaps/options) are available in derivatives market	one instruments(forward/futures/swaps/options) is available in derivatives market		
10.	Number of dealers/market makers available	**5**	There is large number of dealers/ market makers	There is adequate number of market makers /dealers	There are a few market makers/dealers	There is hardly any recognised dealer/market maker.	
11.	Availability /accessibility of domestic and foreign markets	**5**	Both domestic or international markets(where relevant) are accessible/available.	Both domestic or international markets with some restrictions (where relevant) are accessible/available.	Either the domestic or international markets (where relevant) are accessible/available.	No organized market is available	
12.	Time taken for hedging	**5**	Possible to hedge within a day of taking decision to hedge	Possible to hedge within one week of taking decision to hedge	Possible to hedge within a month of taking decision to hedge	Time taken to hedge is more than a month.	
	Total	**75**					

Note:

iv) Maximum Score: 15

(ii) In case one or more of the parameters given in **Table 5** are not relevant for particular position, the total score may be calculated based on the relevant parameters only.

(iii) It is presumed that the parameters incorporated in the above Table are generally not captured in the quoted bid-ask prices or the prices/values which would normally be used by banks to value the positions for the purpose of reflecting them in books of accounts and financial reporting. If a bank believes that any of the parameters used in the above Table have already been captured by it in its valuations for the purpose of accounting, the onus of producing such a proof would lie with the bank.

(iii) In the case of quoted instruments/positions, the above adjustments will be made after the long positions have been re-valued at the 'bid' quote and all short positions at 'ask' quote available in the market at the close of the business, if valuation has been made at mid market price.

Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <4	4%
4 to <8	8%
8 to <12	12%
12 to 15	15%

Table 6: Methodology for Computing Valuation Adjustment for Illiquid Positions: Derivatives

		Weight(%)	Zero risk (0)	Low risk (5)	Medium risk (10)	High risk (20)	Weighted score (column 4* column 3
1	2	3	4				5
A.	**Expected price volatility in the market**	**20**					
1	Market events affecting the investor/client confidence, events leading to restrictions on the transactions making exit difficult, etc.	**15**	No significant market event in general and in specific sectors to which the security belongs	One or two events have occurred but the impact is mild.	The events which may indicate unfolding of a local or global financial crisis having moderate to medium impact on the market segment.	There is full blown local or global financial crisis with significant implications for the market segment in question ..	
2	Average of standard deviation of relevant bid-offer spreads of the underlying over last one year	**5**	When standard deviation of bid offer spreads is less than 1%.	When standard deviation of bid offer spreads is between 1-5%.	When standard deviation of bid offer spreads is between 5-10%. If the trading has been there but, it is not possible to collect relevant data for calculating standard deviation.	When standard deviation of bid offer spreads is more than 10%. Or The trading is so infrequent that no meaningful standard deviation number could be calculated.	
B.	**Market Depth**	**20**					
3.	Number of active participants and/or market makers in the market	**5**	If this number is more than 60.	If this number is between 40 and 60.	If this number is between 20 and 40.	If this number is less than 20.	
4.	Volatility of trading volumes over last	**5**	When standard deviation of daily	When standard deviation of daily trading volume	When standard deviation of daily trading volume	When standard deviation of daily	

	one year		trading volume less than 5%.	between 5-10%.	between 10-15%.	trading volume is more than 15%	
5.	Tradability during last three months		Traded every day	Traded on 10 - 20 working days in a month	Traded on 5-9 days in a month	Traded less frequently than 5 days in a month	
6.	Market Impact cost	**5**	upto 2%	2-5%	5-10%	>10%/impact cost is not available/ measurable	
C.	**Institution-specific factors**	**20**					
	Concentration of positions in relation to market depth	**10**					
7.	Percentage of the size of the bank's position to total positions of all holders of similar positions	**5**	If this percentage is less than 1 % of the issue size/notional of similar positions in case of derivatives.	If this percentage is between 1- 5 %.	If this percentage is between 5-10%.	If this percentage is more than 10 %.	
8.	Percentage of the size of the bank's position to daily volume traded	**5**	If the daily traded volume is at least 5 times the position held by the bank	If the daily traded volume is 3-5 times the position held by the bank	If the daily traded volume is 1-3 times the position held by the bank	If the daily traded volume is less than the position held by the bank	
9.	Staleness of Positions	**5**	Part/whole of the position was traded during last one week	Part/whole of the position was traded 1-3 months back	Part/whole of the position was traded 3-6 months back	Part/whole of the position was traded more than 6 months back	
10.	Aging of positions	**5**	Liquidity related issues associated with the aging of positions have been **completely**	Liquidity related issues associated with the aging of positions have been **largely** taken care of	Liquidity related issues associated with the aging of positions have been taken care of to **some extent.**	Liquidity related issues associated with the aging of positions have **not been assessed or not been taken care of**	

			taken care of				
D.	**Hedging opportunities available**	**20**					
11.	Number of Hedging tools available	**5**	Large number of hedging tools/products both in cash and derivatives markets available	Both cash or derivative market instruments are available. At least two instruments(forward/futures/swaps/options) are available in derivatives market	Either cash or derivative market instruments are available. Not more than one instruments(forward/futures/swaps/options) is available in derivatives market	No hedging instrument is available.	
12.	Number of dealers/market makers available	**5**	There is large number of dealers/ market makers	There is adequate number of market makers /dealers	There are a few market makers/dealers	There is hardly any recognised dealer/market maker.	
13.	Availability /accessibility of domestic and foreign markets	**5**	Both domestic or international markets(where relevant) are accessible/available.	Both domestic or international markets with some restrictions (where relevant) are accessible/available.	Either the domestic or international markets(where relevant) are accessible/available.	No organized market is available	
14.	Time taken for hedging	**5**	Possible to hedge within a day of taking decision to hedge	Possible to hedge within one week of taking decision to hedge	Possible to hedge within a month of taking decision to hedge	Time taken to hedge is more than a month.	
	Total	**80**					

Note:

v) Maximum Score: 16

(ii) In case one or more of the parameters given in **Table 6** are not relevant for a particular position, the total score may be calculated based on the relevant parameters only.

Calibration Table

Score	Downward Valuation Adjustment (% of the market value before adjustment)
0 to <4	4%
4 to <8	8%
8 to <12	12%
12 to 16	16%

Table 7: Additional Valuation Adjustments

Risk/Costs	Valuation Adjustment Required
Early termination	0.02% of MTM(+ or -)
Investing and funding costs	0.02% of MTM(+ or -)
Future administration costs	0.002% of notional value of the outstanding derivatives transactions
Model Risk (Level 2 inputs)	0.02% of MTM(+ or -)
Model Risk (Level 3 inputs)	0.04% of MTM(+ or -)