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Introduction

1. As part of the discussion of the ‘11 steps’ introduced at the November 2011 IASB meeting¹, this paper discusses the implications of a risk limit concept for accounting purposes.
2. A key question in considering an accounting model for macro hedging that is based on a revaluation approach is how to distinguish ‘ineffectiveness’ and unhedged positions (ie items that are intentionally left unhedged). The relevance of this distinction is that in order to be consistent with IFRSs, value changes that represent ineffectiveness would be recognised in profit or loss whereas value changes on risk positions that are unhedged would remain unrecognised². In general, when entities apply a risk limit concept they consider their macro hedging as ‘effective’ as long as the expected interest rate sensitivity stays within pre-defined risk limits.
3. An entity establishes risk limits to set thresholds for risk levels that it is willing to tolerate, ie levels it can accept without seeking mitigation. This has ramifications for hedging, which is a form of risk mitigation. As long as a risk position remains within the risk limit, the entity does not have to take any steps to maintain a position that is acceptable to it. But when the risk position threatens to exceed the risk limit the entity needs to react and adjust its hedge

¹ See staff paper 7A for that meeting.

² For those items that would not be remeasured for the hedged risk by default, eg financial instruments measured at amortised cost are not remeasured for changes in interest rate risk.

position in order to avoid getting into a situation in which it is exposed to a higher risk than it is willing to tolerate.

4. The consequence of revaluing an *entire* risk position (for the hedged risk) and the related hedges is that any mismatches between their respective value changes lead to profit or loss volatility—even if the remaining net risk position (ie after the effect of the hedges) is within the risk limits. Whether this outcome is appropriate depends on the point of view:
 - (a) If the net revaluation effect is viewed as representing an ‘imperfect’ hedge the volatility in profit or loss is the appropriate accounting consequence (similar to hedge ineffectiveness in a fair value hedge).
 - (b) The alternative view is that the effect of a risk limit is to leave a risk position (at least in part) unhedged. This should not lead to recognising gains and losses from revaluing that unhedged risk position. The rationale for this view is that in other situations in which a risk position is left unhedged it would not be revalued for this risk either (eg financial instruments otherwise accounted for at amortised cost).

Ineffectiveness versus unhedged position

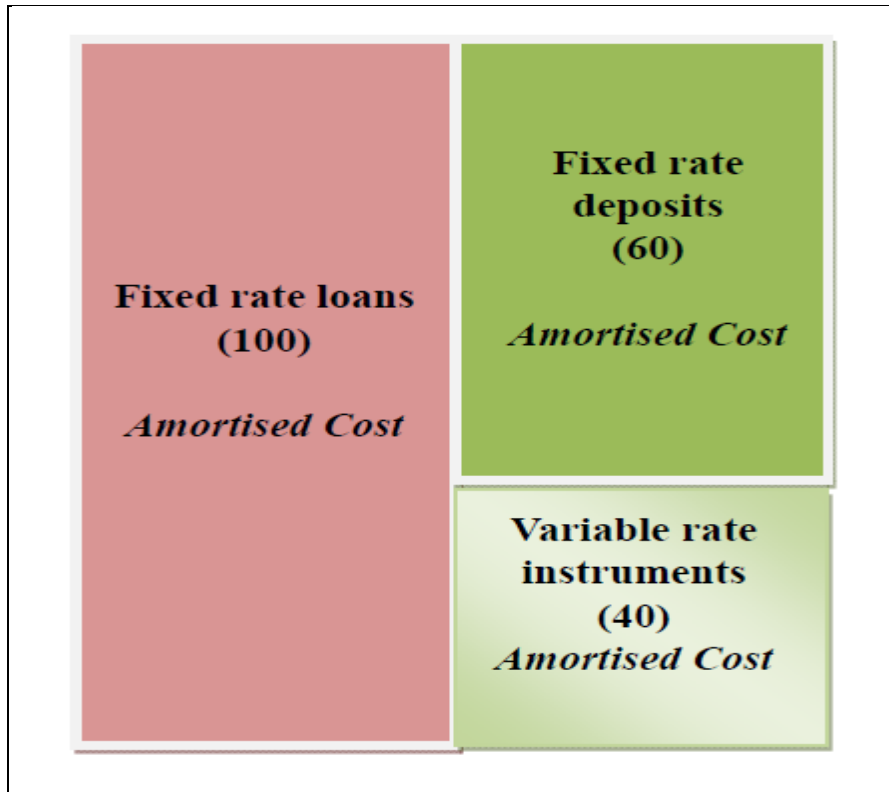
5. The difficulty of distinguishing ‘ineffectiveness’ and ‘unhedged positions’ can be explained with the following simple examples.

Example of a situation without hedges

6. Suppose a bank has a simple balance sheet at the start of 20X0 with loans and deposits. The notional amount of loans is 100, which includes various types of fixed rate loan portfolios including mortgages, consumer and corporate loans and so on, with the overall (average) maturity being 10 years. The notional amount of fixed rate deposits is 60 with the maturity being 10 years as well. The remaining 40 is funded through the market using instruments with variable interest rates³. For simplicity, the benchmark yield curve is

³ For simplicity, it is assumed that there is no funding through equity in this paper. Accordingly, the issue of an equity model book (discussed in July 2012—see staff paper 4 of that meeting) does not apply.

assumed to be flat at 3%. Product margins for loans and deposits are 1 percentage point. This means the interest rate on loan portfolios is 4%, on deposits 2% and on the variable rate funding it is the benchmark rate.



7. It is obvious that there is interest rate risk (fair value risk) between assets and liabilities, as the interest rate risk of 40 of fixed rate assets is not offset by deposits. However, as the entity has not transacted any derivatives (interest rate swaps) for hedging purposes, there are no revaluations of any assets or liabilities. In other words, loans and deposits are accounted for at amortised cost. The effect of interest rate risk is shown in profit or loss over the lives of loans and deposits on an accrual basis. For instance, if an upward shift of the benchmark yield curve materialises at the end of 20X0, net interest income between 20X1 and 20X9 decreases as funding costs through the instruments with variable interest rates rise. But, fair value changes resulting from that upward shift of the benchmark yield curve are not reflected in the financial statements.

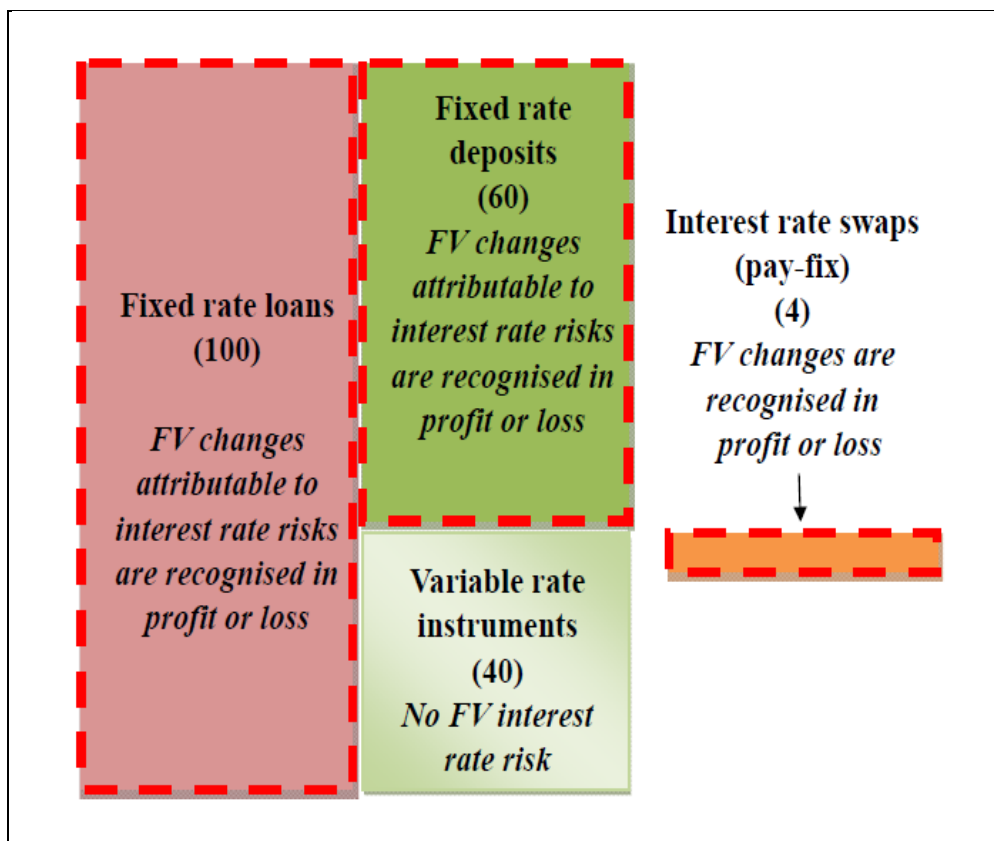
The entity’s journal entries for the year 20X0 are as follows.

(Dr) Cash 4.0

(Cr) Interest revenue		4.0 ⁴
(Dr) Interest expense	2.4	
(Cr) Cash		2.4 ⁵

Example of a situation with a small volume of hedges

8. The only difference to the previous example is that in this example the entity has entered into 10 year pay-fix interest rate swaps with a notional amount of 4. The risk management purpose of the swap transactions is to hedge **a part of** the total fair value interest rate risk of all assets and liabilities (ie for a notional amount of 4 out of 40).



9. Here, the issue is the identification of the hedged risk position. With the net position revaluation approach, the obvious candidate is the entire net interest rate risk position based on all fixed rate assets and liabilities (40). In this case, both the value changes on the entire net interest rate risk position (40) and on the interest rate swaps position (4) are recognised in profit or loss. On the

⁴ $100 \times (3\% \text{ benchmark rate} + 1\% \text{ product margin for fixed rate loans}) = 4.0$

⁵ $60 \times (3\% \text{ benchmark rate} - 1\% \text{ product margin for fixed rate deposits}) + 40 \times (3\% \text{ benchmark rate}) = 2.4$

assumption that the market interest rate increases by 1 percentage point and it leads to 10% changes in the values of loans/deposits and swaps with 10 year maturity⁶ at the end of 20X0, the journal entries of the year are as follows.

(Dr) Cash	4.0	
(Cr) Interest revenue		4.0
(Dr) Interest expense	2.4	
(Cr) Cash		2.4
(Dr) Loss on the hedged risk position	4.0	
(Dr) Hedged risk position (deposits)	6.0	
(Cr) Hedged risk position (assets)		10.0
(Dr) Interest rate swaps	0.4	
(Cr) Gain on derivatives		0.4

10. The above example results in recognising a net loss of 3.6 (excluding the net interest margin), which has the same outcome as recognising the difference in the value changes as ineffectiveness. This obviously increases the volatility of profit or loss to a large extent. The reason is that the entity transacted interest rate swaps with a notional amount of only 4 when the net open position is 40. Even though the entity wants to hedge only a small part of the net interest rate position with the remaining large part being intentionally left unhedged, the differences in the revaluation of the entire net open position and of the hedges are recognised in profit or loss. It is counter-intuitive for the entity that profit or loss shows more volatility when it hedges some of the risk position than it would show if it did not hedge at all.

The risk limit concept

11. This section explains the concept of risk limits as a possible way to link the entity's objective to hedge only a part of the risk position with the accounting model for macro hedging that is based on a revaluation approach.
12. The basic concept of risk limits can be summarised as follows:

⁶ Strictly speaking, interest rate sensitivities for loans, deposits (fixed rates) and swaps are different, since their durations are slightly different reflecting margin elements. For simplicity, however, that effect is ignored here.

As long as the amount of risk is within the risk limit set by the management, a hedge is regarded as perfectly or automatically effective.

In other words, a hedge of a portion of a risk position is perfectly successful on the condition that the risk limits are not breached. As long as that condition is met, value changes on the remaining portion of assets and liabilities are not recognised because that remaining portion was left unhedged. However, once the risk amount is above the risk limit, the hedge is no longer regarded as effective, and ineffectiveness is recognised in profit or loss.

13. The following diagram illustrates one way in which the risk limit concept is applied in risk management practice. This type of diagram is widely used in the banking industry.

		Interest rate sensitivity (changes in fair value attributable to interest rate risk per 10bps changes in benchmark rates)							
		O/N	3M	6M	1Y	...	10Y	20Y	Total
Deposits	Demand Deposits								
	Core Deposits								
	Non Core Deposits								
	Term Deposits								
Risk Limits									
Loans	Corporates								
	Mortgages								
	Consumers								
	Risk Limits								
Securities	Corporates								
	Governments								
	Risk Limits								
Derivatives (interest rate swaps)									
Risk Limits									
Total									
Risk Limits									

14. Important features of the interest rate risk management based on this diagram can be summarised as follows.

- (a) Interest rate risks in *all* financial assets and liabilities are managed in an integrated manner. It is not important from what type of instrument the interest rate risk arises; for example, the distinction

between non-derivatives and derivatives is not important (it matters for what particular type of interest rate risk arises).

- (b) In addition to the management on an overall basis, interest rate risks are managed by maturity⁷. This is because the impact of the changes in the level and the shape of the yield curve can be different by maturity.
- (c) The amounts of interest rate risks are measured based on a technique called Grid Point Sensitivity (GPS). This is a method to measure the change in value that would materialise in each maturity bucket if the benchmark market rate of corresponding maturity changes by XX bps⁸ (10bps, for instance).⁹
- (d) Risk limits are imposed on individual buckets as well as totals.

15. The simple numerical example below shows how the accounting model for macro hedging might be applied based on the GPS type interest rate risk management¹⁰. In this example, GPS is measured with the assumption that the benchmark market rate for each maturity decreases by 10 bps.

	1Y	3Y	5Y	10Y	Total
Deposits	-50	-50	-50	-200	-350
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Loans	100	1250	1250	1800	4400
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Derivatives(Interest Rate Swaps)	0	0	-250	-400	-650
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Total	50	1200	950	1200	3400
<i>Risk Limit(Absolute number)</i>	1000	1000	1000	1000	3500

⁷ Strictly speaking, interest rate risks are managed according to the timing of the next interest rate changes. In case of fixed rate products, maturity and the timing of the next interest rate changes coincide. In case of variable rate products, they do not coincide (the next reset date for the variable rate is relevant).

⁸ Bps = basis points (100bps = 1 percentage point).

⁹ The granularity of the sensitivity depends on how an entity measures and manages risk. An entity that manages its portfolios by different benchmark rates uses the respective benchmark rate that applies for each specific type of financial product. For example, that is the case for an entity that uses Transfer Pricing transactions based on the Multiple Pool Rate Matching Approach (see staff paper 6C of the March 2012 board meeting). Under that approach the GPS analysis for Libor-based loans would be made based on Libor, that for Prime-based loans would be made based on Prime rates, etc.

¹⁰ For simplicity, it is assumed in the example that only four buckets (1Y, 3Y, 5Y and 10Y) are used in the interest rate risk management. In reality, however, more buckets are usually used with the duration of each bucket being shorter.

1Y bucket

16. Both deposits and loans are within risk limits. There are no derivatives. In this situation there would be no issue for the application of the accounting model for macro hedging if it could be assumed that:
- (a) the revaluation model would allow individual cash flows of a financial instrument to be designated into different maturity buckets.¹¹ This creates operational difficulties (eg determining the carrying amount when only some but not all cash flows are revalued or to determine the amounts that are affected if a financial instrument is derecognised)¹²; or
 - (b) financial instruments are included in their entirety in one bucket. This is not a realistic assumption for entities that use metrics for interest rate risk sensitivity such as GPS.

This assumption applies to the approach of using maturity buckets in general, ie it also applies to the other maturity buckets described below. There is also a more general operational difficulty that arises when there is a change in the need to use (or not to use) derivatives to hedge a particular bucket (or when the change in the remaining maturity of a financial instrument means it moves between hedged and unhedged maturity buckets).¹³

3Y bucket

17. Loans are above the risk limit. Reflecting this, the total is also above the risk limit. Hence, the hedging for this maturity bucket is assessed as not effective. However, there are no hedges (interest rate swaps). Therefore, the fact that the entity failed with its hedging to keep the risk for this bucket below the maximum acceptable level cannot be shown under the current accounting framework (ie current accounting conventions treat it in the same way as the 1Y bucket).

¹¹ The discussions of the revaluation model have so far assumed that a financial instrument would be remeasured *in its entirety* for interest rate risk.

¹² This is complicated by the fact that the maturity of each cash flow changes over time (eg the payment of an instalment or an interest coupon *at the cash flow level* means derecognition).

¹³ See paragraph 31.

5Y bucket

18. Loans are above the risk limit. But, because of the hedging using interest rate swaps, the total interest rate risk exposure is within the limit. This is a situation in which the risk limit concept would make a difference for what is regarded as the ineffectiveness (expressed as interest rate sensitivity in bps):
- (a) *Without* the risk limit concept, the ineffectiveness is fair value changes on the derivatives as well as loans and deposits that give rise to the interest rate sensitivity of 950.
 - (b) *With* the risk limit concept, there is no ineffectiveness. This is because the hedging is successful in that the *total* interest rate sensitivity for the time bucket is below the risk limit. In the context of hedging only a part of a net risk position, it is implicit in this view that:
 - (i) the net loans are only hedged in part and hedging is perfectly successful for that part; and
 - (ii) the remaining part of net loans is deliberately left unhedged.

10Y bucket

19. This is a situation in which the risk limit for the time bucket in total is breached, even after taking the hedges into account. This leads to ineffectiveness even under a risk limit concept.
20. For an accounting model that would accommodate a risk limit concept this raises the question of how to account for the ineffectiveness.¹⁴ This is because such an accounting model would not recognise in profit or loss the mismatches in value changes as long as the risk limits are not breached. This would essentially require a model that is not based on a revaluation approach but instead:
- (a) the deferral of fair value changes on derivatives with no fair value measurement for the hedged position; or

¹⁴ For an accounting model that is based on revaluation of the entire net risk position even within risk limits this question does not arise as all items are continuously revalued and the changes in value are recognised in profit or loss (see paragraph 10). In order to accommodate a risk limit concept, however, a different accounting model would be needed.

- (b) the deferral of fair value changes on derivatives *and* the hedged position (by recognising them in other comprehensive income, ‘neutralising’ them with an offsetting position in the balance sheet, or not recognising them at all)¹⁵.

21. *If such an accounting model is used*, there are basically two approaches for how to account for the ineffectiveness:

- (a) In the period in which the risk limit is breached, recognise the cumulative fair value changes of the derivatives in profit or loss. This means that the accounting treatment for derivatives reverts to the general requirements (ie FVTPL).¹⁶ According to this approach, ineffectiveness is the previously unrecognised cumulative fair value change on the derivatives that give rise to the interest rate sensitivity of -400.¹⁷ This approach corresponds with the accounting treatment to defer fair value changes on derivatives with no fair value measurement for the hedged position when the risk limit for the total is not breached.
- (b) In the period in which the risk limit is breached, recognise the cumulative value changes on the hedged risk position and the derivatives in profit or loss. This means accounting for macro hedging as if there had not been any risk limit concept from the start. According to this approach, ineffectiveness is the previously unrecognised cumulative value change on the hedged risk position *and* the derivatives that give rise to the interest rate sensitivity of

¹⁵ NB: all these alternatives are different from the revaluation model the board has considered over the past months and that was summarised at the meetings in February and March 2012. For instance, in the case where fair value changes on derivatives are deferred with no fair value measurement for the hedged position, ‘neutralising’ in the balance sheet would essentially require recognising a deemed asset or liability that offsets the revaluation of the derivatives used as hedges for the respective net position for which the risk limits are met (the effect on profit or loss is the same as if the fair value changes of the derivatives were recognised in other comprehensive income but would avoid equity volatility). Not recognising the fair value changes essentially means ‘as you go’ accounting for derivatives, eg for an interest rate swap accruing only the cash flows for the current settlement period (sometimes referred to as ‘accrual accounting’).

¹⁶ Depending on the accounting model, this would mean a reclassification adjustment for the balance accumulated in other comprehensive income, derecognising the deemed asset or liability used to ‘neutralise’ the fair value changes of derivatives or switching from ‘as you go’ accounting to measurement at fair value.

¹⁷ Because the risk limits in this example are not expressed as currency amounts but as interest rate sensitivity by time bucket, there is no straightforward way of expressing the ineffectiveness in a currency amount so that it could be used for recognition in the financial statements.

1,200. This approach corresponds with the accounting treatment to defer fair value changes on derivatives *and* the hedged position when the risk limit for the total is not breached.

22. Note that such numbers as -400 and 1200 are amounts that cannot be used in profit or loss as they just show *what the effect would be if the benchmark rates decreased by 10 bps*. In general, if risk limits are set using a measure other than currency amounts (like GPS) there is no straightforward way of expressing ineffectiveness in a currency amount so that it could be used for accounting purposes.

Entire Total

23. The analysis so far is based on the assumption that the accounting for macro hedging would apply on a maturity bucket basis. However, it would also be possible to apply the accounting and risk limit concept on an entire interest rate risk basis when an entity manages its interest rate risk on that basis instead of the more granular approach that differentiates by maturity buckets. On that basis, the total of the entire interest rate risk exposure in this example is within the limit. Hence, no ineffectiveness would be recognised.

Accounting Considerations

Alternatives for the accounting treatment of risk limits

24. From an accounting perspective there are two broad alternatives how to deal with risk limits:
- (a) **Alternative 1—Ignore for recognition and measurement purposes:** The valuation impact resulting from the accounting model for macro hedging would be based on the valuation of *all* items (those that make up the hedged risk position—such as loans, bonds, deposits—and derivatives) without considering risk limits. Under this alternative the risk limit concept might still play some role for other aspects, eg what type of risk positions should qualify for the accounting model serving as a broad kind of ‘prospective

effectiveness test'. However, it would not directly affect recognition or measurement (like under Alternative 2).

- (b) **Alternative 2—Use as a criterion for recognition and measurement purposes:** As long as the risk limits are not breached volatility that results from valuation mismatches would *not* be recognised in profit or loss. As a consequence, the risk limit system would be used as a criterion when gains and losses from revaluations are recognised in profit or loss.

Pros and cons of using risk limits for accounting purposes

25. Pros and cons *of using risk limits* for accounting purposes (ie of Alternative 2) can be summarised as follows.

Pros

26. The difficult issue of distinguishing 'ineffectiveness' and 'unhedged positions' can be addressed in line with a common interest rate management view in the banking sector. In that sense, ineffectiveness can show whether the entity's hedging activities achieved the objective of remaining within the risk limits that are the determined acceptable risk levels (eg regarding stabilising the net interest margin). It would also avoid revaluing some unhedged parts of a risk position that otherwise (ie under the default accounting treatment or when using general hedge accounting) would not be revalued.
27. It would reduce the incentive to use other accounting solutions at a lower level than at which the risk is actually being managed (eg fair value option, general hedge accounting).

Cons

28. An accounting model that accommodates the risk limit concept would require departures from IFRS principles (depending on the particular model¹⁸, this would mean not recognising all ineffectiveness as that cannot be identified, recognising deemed assets or liabilities, or not measuring derivatives at fair value).

¹⁸ See paragraph 20.

29. An additional difficult issue arises when derivatives are used for trading purposes, not hedging purposes. The following example illustrates this issue.

	1Y	3Y	5Y	10Y	Total
Deposits	-50	-50	-50	-200	-350
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Loans	100	1250	1250	1800	4400
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Derivatives(Interest Rate Swaps)	50	0	-250	-400	-600
<i>Risk Limit(Absolute number)</i>	500	500	500	500	
Total	100	1200	950	1200	3450
<i>Risk Limit(Absolute number)</i>	1000	1000	1000	1000	3500

The diagram is the same as the example above except for 50 instead of 0 for derivatives in the 1Y time bucket. In this case, the position of interest rate swaps cannot be considered as used for hedging purposes, because it *increases* the open position in loans or net loans. It is more natural to regard it as used for trading purposes. However, the total interest rate sensitivity for the 1Y time bucket (100) is well within the risk limit. In that case, even derivatives used for trading (unless they were identified and screened out) would not be measured at FVTPL as long as it is included in the GPS type risk management framework with risk limits.

30. The accounting would create a moral hazard. The wider the risk limits are, the less ineffectiveness (volatility) profit and loss shows. In other words, the more tolerant entities are to take open positions or risk, the more stability profit and loss shows. When risk limits are set wide enough, information on the accuracy of hedging measures taken is largely lost in the financial statements because it would only emerge over time on an ‘as you go’ basis in net interest income.¹⁹ From the perspective of users, this accounting outcome would reduce transparency and create counter-intuitive outcomes. This might amplify a moral hazard problem in that entities set wider risk limits seeking a more stable profit or loss. To address this moral hazard and transparency

¹⁹ Information lost will include risks such as basis risk, which inevitably arises when different benchmark rates are used for different types of financial products in the asset-liability management (ALM) framework based on the Multiple Pool Rate Matching Approach (see footnote 9).

implications, detailed disclosures on factors influencing valuation effects could be considered, for example:

- (a) defined risk limits (narrow or wide);
- (b) defined scenarios for sensitivity analysis;
- (c) parameters used for identifying interest rate risk (notional amounts, cash flows, present values, interest revenue);
- (d) definition of time buckets when a bucketing approach is used (days, months, quarters, years); and
- (e) actual changes in market interest rates.

While (a) and (b) relate to the strictness of the risk limits, (c) and (d) address the level of accuracy for the identification of interest rate risks.

31. Operational feasibility is also an issue. If the approach that divides interest risk into time bands (buckets) is used to reflect actual hedging activities, it is likely that in some time buckets hedges need to be used whereas no hedges will be needed in other buckets. To make matters more complicated, the need for using hedges in each particular bucket can change over time. Similarly, the change in the remaining maturity of a financial instrument means it might move between hedged and unhedged buckets. This leads to the issue whether an entity is allowed to ‘switch on/off’ the interest rate risk related revaluation of the hedged position. If allowed, it would create difficult operational issues of changing the measurement of existing assets and liabilities frequently.
32. Another operational problem would arise if the revaluation model would allow individual cash flows of a financial instrument to be designated into different maturity buckets (see paragraph 16).

Conclusion

33. A key factor in the decision about the role of the risk limit concept for accounting purposes is what information users find useful.
34. For instance, for prudential regulators the ‘economic value perspective’ appears to be relevant in the assessment of a bank’s interest rate risk

exposure²⁰. According to this perspective, fluctuations in benchmark market interest rates can affect the economic value of a bank's assets, liabilities and derivatives. More generally, the sensitivity of a bank's economic value to fluctuations in benchmark interest rates is an important consideration of shareholders, management, and supervisors alike. Following this perspective, the risk limit concept would not be used as a criterion for recognition and measurement purposes. Instead, the volatility in profit or loss resulting from an accounting model based on a revaluation approach is considered useful information about the interest rate risk related change in the economic value of a bank.

35. However, it needs to be considered that if applying the accounting model for macro hedging is optional there will be a trade-off for entities. They would have to choose between:
- (a) using an accounting model that provides operational relief but also entails volatility in profit or loss from risk positions that are unhedged; and
 - (b) retaining the accounting for the hedges and the hedge risk positions *without* an accounting model for macro hedging (that would typically be operationally more difficult but allow not recognising value changes on unhedged positions)²¹.

This trade-off will be different depending on the circumstances of each particular entity and on the exact accounting model for macro hedging.

36. On the other hand, using the risk limit concept for recognition and measurement purposes would reflect how an entity sees the success or failure of its hedging. Because determining and changing risk limits reflects management's goal setting, such an approach must be accompanied with detailed disclosures (see paragraph 30).
37. Even with such disclosures, however, the moral hazard that would be created by using the risk limit concept for recognition and measurement purposes is a significant concern (see paragraph 30).

²⁰ Basel Committee on Banking Supervision (July 2004), 'Principles for the Management and Supervision of Interest Rate Risk.'

²¹ For example using the general hedge accounting model or the fair value option.

38. Using the risk limit concept for recognition and measurement purposes would also create conceptual problems for the accounting model:
- (a) The model as a whole would require a design that entails significant departures from IFRS principles (see paragraphs 20 and 28).
 - (b) It would raise the question of how to account for breaches of the risk limits. There is no satisfactory conceptual answer (see paragraphs 20 and 22).
39. In addition, significant operational difficulties arise when the approach that divides interest risk into time bands (buckets) is allowed to reflect actual hedging activities, since it can lead to a frequent ‘switch on/off’ of interest rate risk related revaluations of the hedged position of each bucket. Other operational difficulties would arise from allowing individual cash flows of a financial instrument to be designated into different maturity buckets.