Project: **Financial Instruments (Replacement of IAS 39) – Hedge Accounting**

Topic: **Macro hedge accounting – a bottom layer approach**

Introduction

Background and purpose of this paper

1. This paper is one of a series of papers that discusses portfolio fair value hedge accounting for interest rate risk (PFVHA). Agenda paper 10 provides an overview of the staff's approach.

2. Agenda paper 10C highlighted the hedge ineffectiveness issue that arises from applying the *proportion* approach to identifying and designating the hedged item under the current PFVHA model in IAS 39.

3. This paper considers whether a (bottom) *layer* approach, instead of a *proportion* approach, could be applied for PFVHA. The Board will recall that it has already discussed a bottom layer approach for certain hedged items[1]. Those papers specifically excluded prepayable instruments from their scope. That is because there are additional considerations to be made when contemplating a bottom layer approach for prepayable items.

4. For ease of analysis this paper will use the same example through out where the hedged item is a portfolio of prepayable mortgage assets.

[1] See agenda paper 3 from the 3 August 2010 meeting and agenda paper 5 from the 24 August meeting.

Structure of paper

5. This paper is structured as follows:

   (a) summary of the staff's proposed approach to address the hedge ineffectiveness issue discussed in paper 10C (see paragraphs 6 to 8);

   (b) analysis of the proposed alternative to use a bottom layer approach to defining the hedged item and the associated changes to the hedge designation (see paragraphs 9 to 39); and

   (c) staff conclusions and question to the Board (see paragraphs 40 to 41).

The Approach

6. Given the consequences of the current PFVHA model in IAS 39 described in paper 10C, the staff has considered alternative hedge accounting solutions.

7. As described in paper 10B, although a fair value hedge accounting model is applied by many banks, the model's objective is not fully consistent with a banks' risk management policy. Given this issue the staff see two alternative approaches to dealing with this inconsistency:

   (a) Either develop an entirely new hedge accounting model with different objectives to the current cash flow or fair value hedge alternatives that is consistent with the risk management objective; or

   (b) Consider certain changes to the objective and workings of the current PFVHA model to make it more operational and consistent with the risk management objective.

8. At this stage the staff has chosen the approach in 7(b) as they feel this is more likely to produce an acceptable solution for the Board (given the time constraints) and will ultimately be the most efficient approach. As the staff discuss their proposals with the Board it will become more apparent whether this approach will be effective.

Analysis of a bottom layer approach

9. Given the consequences of the *proportion* approach in the current PFVHA model in IAS 39, the staff has considered an alternative hedge designation that is more closely aligned to the risk management objective of such hedges.

10. The alternative considered by the staff is to adopt a (bottom) *layer* approach to measuring hedge ineffectiveness, instead of a *proportion* approach.

11. The previous Board that approved the PFVHA model that exists in IAS 39 today dismissed a bottom layer approach in favour of a proportional approach. The basis for this decision can be seen in the basis for conclusions in IAS 39.

12. The staff's objective is not to re-open the same debate. Instead it proposes to change the accounting objectives of the PFVHA model such that they are more consistent with the risk management objective (yet still remain consistent with the hedge accounting principles).

13. These changes to the accounting objective of the model are discussed below. The staff consider a bottom layer approach to measuring hedge ineffectiveness as more consistent with the revised objective of the model.

Revised objectives of the hedge

14. The staff proposes the following three changes to the PFVHA model:

    (a) **Proposal #1:** Permit the hedge designation to include both benchmark interest rate risk and *full* prepayment risk (ie not just the interest rate risk part of the prepayment risk).

    (b) **Proposal #2:** Allow an entity to partial term hedge *some* of the cash flows of a portfolio of prepayable items. As a consequence this allows

an entity to only hedge the prepayment risk associated with the hedged cash flows and not all the cash flows[2].

(c) **Proposal #3:** Allow an entity to view its portfolio of prepayable items as a single unit that behaves in a more predictable manner. With this view an entity can characterise the prepayable nature of the bottom layer cash flows differently to the top layer. In other words, the cash flows in the bottom layer are viewed to be far less exposed to prepayment risk than the cash flows in the top layer..

Rationale for Proposal #1 – include full prepayment risk

15. As described in paper 10A, a bank's risk management strategy will consider the full effect of prepayment risk when forecasting its expected cash flows, not just the effect that benchmark interest rates may have on prepayment behaviour. This is because overall prepayment behaviour will determine the eventual cash flows of a prepayable item.

16. Furthermore, in practice, it is difficult, or impossible, to separately identify the effect that changes in benchmark interest rates have on prepayment behaviour. This is because in practice there are a myriad of factors that affect prepayment in different directions and magnitude. This is evidenced by the fact that borrowers do not necessarily prepay their loans in situations where it may appear to be economically favourable from an interest rate perspective.

17. Including full prepayment risk in the forecast of expected fixed cash flows takes into account the fact that there are other factors that affect prepayment behaviour. Some of these factors can offset the effect of a change in benchmark interest rates. This is more consistent with the risk management view.

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[2] From a single instrument perspective, this is the equivalent to an entity hedging a fixed rate prepayable item for a partial term of the *expected* term. In such a case, the entity does not hedge the entire prepayment option, because it does not hedge *all* the expected cash flows of the instrument. This is helpful because the prepayment option is more likely to affect the far end cash flows rather than the near end cash flows.

18. For example, consider the effect of recent interest rate changes on the prepayment behaviour of prepayable mortgages. The recent reduction in benchmark interest rates that we have observed in many economies has occurred at the same time as a reduction in house prices. The effect of the reduction in house prices is an increase in loan-to-value ratios, which limit mortgage refinancing options. For example, a borrower with a loan-to-value in excess of 100% is unlikely to find an alternative source of finance because it simply does not exist.

19. Furthermore, those with sufficient equity (or deposit) who do have access to alternative finance have found that the overall interest chargeable (ie including the credit spread) has sometimes increased despite the benchmark interest rate decreasing (ie the decrease in the benchmark interest rate is outweighed by the increase in credit spreads).

20. Therefore, although the reduction in benchmark interest rates makes the prepayment much more likely when considering *only* the benchmark interest rate effect (ie makes the prepayment option more of a liability for the bank), the fall in house prices and the increase in the price of credit offsets this effect. Hence the prepayment risk overall has not changed in line with the change in benchmark interest rates. As a result the prepayment behaviour may not have changed overall (or indeed resulted in *longer* effective average maturities).

Rationale for Proposal #2: Partial term hedge only some of the fixed cash flows

21. As described in paper 10A, a bank's strategy is normally to under-hedge their exposure to interest rate risk.

22. Illustrating this using a (very) simplified example, if the expected time to re-pricing of a 10 year fixed rate mortgage is 7 years, a bank might only hedge the interest rate risk out to 6 years to avoid being in an over-hedged position. An overhedged position could arise if the mortgage prepaid sooner than expected. Hence only hedging out to 6 years provides a 1 year buffer.

23. This under-hedging strategy shows that an entity is not hedging *all* of the expected cash flows on the prepayable debt instrument. Instead, it is hedging the more likely to occur fixed cash flows from the total cash flows that it expects to arise.[3]

24. It is not possible to separate a prepayable item into a combination of a non-prepayable item and a prepayment option and designate only part of the non-prepayable item in a partial term hedge and ignore the prepayment option. To do so would ignore the risk that the hedged cash flows may not arise due to prepayment.

25. Hence the staff propose that for the designated hedged cash flows, *any* prepayment risk that affects the likelihood of the hedged cash flows arising are taken into account.

26. The overall effect of this is equivalent to hedging a prepayable item for *part* of the interest rate risk (ie not for the full term) and *part* of the prepayment risk (ie not all the prepayment risk on all the cash flows).

27. This differs to the approach under the current PFVHA model that attempts to hedge an amount of prepayable items for their *full* term including the interest rate risk part of the *whole* prepayment option.

28. Instead the approach is to hedge *some* of the contractual cash flows and then hedging only the part of the prepayment option that affects those hedged cash flows.

29. Such a designation would align better with the risk management objective but yet still be consistent with the hedge accounting principles.

30. This is partly because the effect of *not* including the *whole* prepayment option (ie that relates to all cash flows) results in accounting ineffectiveness that is

[3] In effect what this means is that in the above example, an entity is hedging the interest cash flows for the first 6 years for their full term and also hedging the principal repayment for a partial term of 6 years (it is a partial term because the principal cash flow is not expected until year 7).

more representative of the ineffectiveness resulting from the risk management strategy.

Rationale for Proposal #3: portfolio layered view to prepayment risk

31. The rationale for this is that because the amount hedged does not identify individual hedged items, it is not possible to distinguish which items fall into the hedged amount. Therefore, this approach assumes that if the bottom layer has not been breached the cash flows originally hedged still remain in the time-band and hence no ineffectiveness arises. This assumption means that a change in prepayment risk affects some but not all of the cash flows in the hedged time-band and that it affects those cash flows at the 'top' first.

32. This may not be a reasonable assumption under the current model where only the interest rate component of prepayment risk is hedged. That is because a change in benchmark interest rates would be expected to affect the fair value of the prepayment option for *all* the cash flows in the portfolio because all the cash flows are affected by the benchmark interest rate.

33. However, in a model where the *full* prepayment risk associated with only *some* of the expected cash flows (eg say the 6 year flows of the expected 7 year flows described in paragraph 22) is hedged , it is feasible (and often the case) that other factors offset the effect of a change in benchmark interest rates (as described in paragraph 15 to 18) such that the overall prepayment risk does not change.

34. Hence, this assumes that the effect of prepayment risk on the hedged cash flows has been nil (ie the likelihood of changes in the timing of the hedged cash flows has not been affected by any change in prepayment risk – the expectation of their occurrence has remained the same).

35. The level of expectation for each hedged cash flow partly depends on the timing of that cash flow. For example, the expectation of occurrence of the first three months' of cash flows of a 25-year prepayable mortgage is far greater than the same for the last three months. Therefore, the effect of prepayment risk (ie the

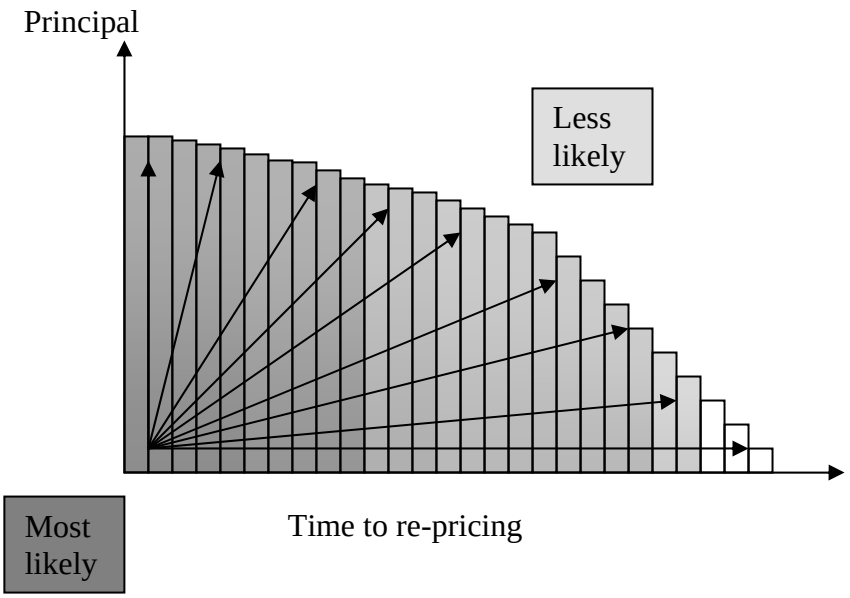
likelihood of occurrence) will vary for different cash flows over the term of a prepayable instrument.

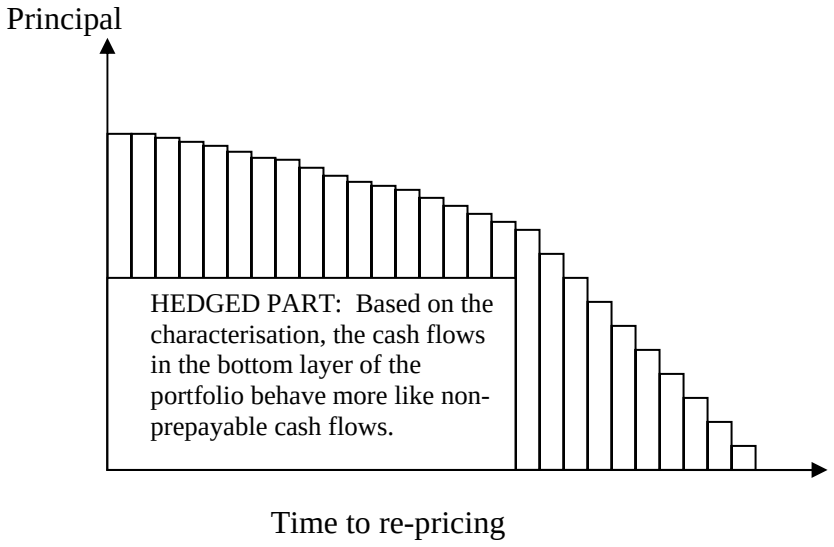
36. For example, if the cash flows in a time-band are characterised in such a way that those with lower prepayment risk attached to them are viewed to be at the bottom of the time band, and those with higher prepayment risk are viewed to be at the top, a 100% expectation for those cash flows in the bottom layer could be reasonable in some cases. Such an assertion can be further enhanced by shortening the term out to which cash flows are hedged. For example for a 7-year expected term instrument, the cash flows for the first year are more certain than the cash flows for the second year and so on.

37. The staff do not believe that it is appropriate to characterise all cash flows in a time-band in the same way. For example, under the current PFVHA model, any change in prepayment behaviour is inferred onto the entirety of the hedged amount (see paper 10C).

38. The staff believe that prepayment risk will vary for the individual assets that make up the overall portfolio and will be affected differently by various factors. For example, based on historical evidence it can be seen that some borrowers will never prepay a mortgage however favourable a prepayment option may become (eg because they are never aware of the value or because they do not want to deal with the administration). Conversely, some borrowers will prepay even in cases where it is not favourable (eg due to life events such as death, divorce, retirement, etc). At an individual asset level it is not feasible to accurately predict a borrower's behaviour. However, at an aggregated portfolio level estimates can be much more reliable.

39. The diagram below shows how the prepayment risk varies across a portfolio that is scheduled into time-bands. It shows that at a portfolio level, it is possible to reliably identify a part of the whole book that exhibits less prepayment risk. Or put another way, it is possible to identify fixed cash flows that are highly likely to occur and hence give rise to interest rate risk similar to a non-prepayable item.





Conclusion

40. Given the characteristics of this part of the portfolio and the hedge objectives described in paragraph 14, the staff believe that this could support a bottom layer approach to defining the hedged amount. This is different to the current PFVHA model in IAS 39, which requires it to be identified as a *proportion*. The reason for this difference is because of the difference in the hedged risk. Proposals #1 and #2 render a proportion approach inappropriate for the hedged

risk. The proposed hedged risk would include *full* prepayment risk[4] for *some* of the cash flows. Put another way, the forecast cash flows in each time-band are not treated as though they all behave the same, because they do not.

41. Under a bottom layer approach, ineffectiveness would only arise if the revised expectation of assets re-pricing in the hedged time-band results in a lower amount than the hedged amount.

Question to the Board

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Does the Board support the staff's suggested:

(a) overall approach to developing a new PFVHA model (see paragraphs 6 to 8); and

(b) proposals for changes in the hedge accounting objective in paragraph 14 to facilitate further consideration of a bottom layer approach to defining the hedged item?

If not, what does the Board propose instead and why?

[4] By 'full' prepayment risk, we mean not just the interest rate risk part of the prepayment option.