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Project	<b>Financial Instruments (Replacement of IAS 39) – Hedge Accounting</b>
Topic	<b>Macro hedge accounting – the economic objective</b>

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## 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. Agenda paper 10 provides an overview of the papers to be discussed.
2. **This paper provides the background that gives rise to the accounting issues outlined in paper 14B presented to the Board in September 2010.**
3. There are no questions to the Board in this paper.

## Interest rate risk management strategy of a bank

### *Overview*

4. A core function of a retail bank is to collect funds from depositors and invest them in loans to customers<sup>1</sup>.
5. The difference between interest paid on funding and interest received on investments represents net interest income/expense (hereafter referred to as ‘net

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<sup>1</sup> Banks also raise funds by other means, such as issuing equity instruments and debt securities, and invest in other items, such as bonds and equities.

This paper has been prepared by the technical staff of the IASCF for discussion at a public meeting of the IASB.

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IASB Staff paper

interest margin'). This is a key component of profit or loss for a bank, and hence a key performance indicator.

6. Put simplistically, variation in net interest margin can arise over a period when there is a mismatch in the time to maturity of (or repricing of) fixed rate (floating rate) assets and liabilities. If there is a mismatch, and interest rates change, one side of the net interest margin calculation (ie interest receivable or interest payable) will change whilst the other side will remain fixed, hence giving rise to variability in net interest margin.
7. It is common for a bank to manage this risk by matching the maturity of (or repricing of) fixed rate (floating rate) assets and liabilities. Where such assets and liabilities do not naturally match, a bank would use interest rate derivatives as a tool to reduce the mismatch to levels acceptable to management. This 'hedging' would be done by a bank's Asset Liability Management function. Paragraphs 24 to 29 explains in more detail how this is done.
8. It should be noted that, as well as reducing cash flow variability, matching interest cash flows on both sides of the balance sheet, also reduces fair value variability due to changes in interest rates. Hence, the objective of stabilising interest margin, to some extent, goes hand in hand with reducing fair value exposure of the portfolio as a whole<sup>2</sup>.
9. Although the concept of matching interest on assets and liabilities is simple, in practice there are many complicating factors to consider (see below). These factors add variability to the timing and amount of cash flows that arise on interest bearing assets and liabilities. Hence, these factors make predicting the behaviour of the cash flows more challenging, consequently making hedging them more challenging too.

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<sup>2</sup> Note that interest rate fair value exposure still remains for the net portfolio by virtue of the fact that the target net interest margin is fixed.

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**Complicating factors***Prepayment options*

10. Fixed rate assets of a bank, such as fixed rate mortgages, often contain prepayment options that allow the customer to repay their loan early. These options often have value, because the prepayment amount is not equivalent to the market value of the loan.
11. Changes in interest rates, amongst other factors, affect the value of the prepayment option. Hence, changes in interest rates influence (to varying degrees) the likelihood of a customer prepaying their loan early.
12. A customer is less likely to prepay its loan early if market interest rates for the remaining term of the mortgage rise (because the customer has locked in a lower rate). Conversely, a customer is more likely to prepay if market interest rates fall (because the customer may be able to refinance at a lower rate). Other factors will also influence the decision to prepay<sup>3</sup>. These other factors can outweigh the effect of interest rates on prepayment behaviour.

*Demand deposits*

13. Banks fund part of their lending activity with demand deposits<sup>4</sup>. The interest rates paid on these deposits are usually below the bank's other funding costs and can often be 0%. The rates may have a loose relationship to market interest rate indices (such as LIBOR), but normally do not change directly in line with changes in such market rates. Instead, the rates change at the discretion of the bank, sometimes in response to the competitive landscape for deposits and/or sometimes to manage the overall size of the bank's deposit base .

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<sup>3</sup> For example, the cost (or penalty) payable for exercising the right to prepay, the availability and cost of alternative finance (which itself is dependent on a number of factors, such as the credit risk of the borrower, the current value of any mortgaged property, bank liquidity, etc), life events (such as retirement, death, divorce), etc..

<sup>4</sup> Demand deposits are customer deposits that the customer can withdraw on-demand, without notice.

IASB Staff paper

14. Although customers can withdraw demand deposits without notice, in practice they behave as longer-term instruments. Therefore, for risk management purposes, banks model these deposits based on their *expected*, not contractual, cash flow profile.
15. It should be noted that the expected cash flows used for risk management are not exclusively related to current, on-balance-sheet, deposits. The expected cash flow analysis includes *future* deposits and withdrawals.
16. The expected cash flows (ie deposits and withdrawals) vary due to changes in various factors, which can include changes in market interest rates. For example in the current low interest rate environment, the opportunity cost of leaving cash in a 0% current account is relatively low. If rates were higher, customers would be more likely to actively manage their finances and transfer excess funds to higher interest bearing savings accounts.
17. Portfolios of such deposits can be reliably modelled, such that a core level of deposits can be identified (ie a 'core deposit' base which has a high probability of being maintained over an extended period (eg 5 - 7 years)). Such modelling is used for internal liquidity and risk management (see section below on risk management approach), and is also used extensively by prudential regulators.

*Pipeline fixed rate offers*

18. Banks will make public offers of products, such as mortgages, at fixed rates. However, by the time the products are contractually taken up by customers, the originally offered fixed rate products may be 'off-market'. That is, interest rates may have changed in the intervening period between the products being offered and the customers contractually entering into them with the bank.
19. In the intervening period, any change in value of the offered loan (positive or negative) is absorbed by the issuing bank. In other words, the loan proceeds equal the original principal amount even if the contractual rate on the loan is off-market at the date the contract becomes binding (ie no discount or premium is applied to reflect the change in market rates).

IASB Staff paper

20. Although a bank is not contractually bound to lend to a customer at an off-market rate, it usually does, even if interest rates have changed unfavourably. It is seen as a necessary cost of making loans in the retail market.
21. Therefore, when a new fixed rate product is offered to the market, a bank may hedge an amount of total *expected* lending for interest rate risk. This is because, if interest rates change, the fair value of the forecast contract changes (note that the cash flows do not change).

*Hedging interest rate risk in combination with FX risk*

22. Banks with international operations may hedge interest rate risk in combination with foreign currency risk by gathering group-wide risks to a central unit from where it is hedged with instruments such as cross-currency interest rate swaps.

*Daily changes in the portfolio*

23. The number of interest bearing assets and liabilities in the hedged portfolio change on a daily basis and the volume of items is significant. Coupled with the fact that the expectations of the above variable factors change on a continual basis, this makes hedging more challenging.

***Risk management methodology for hedging net interest margin***

*Grouping into time-bands*

24. To measure interest rate risk exposure, a bank would typically begin by scheduling interest-sensitive assets and liabilities (which can include off-balance sheet positions) into time bands according to their maturity (if fixed rate) or time remaining to their next re-pricing (if floating rate). This schedule is often referred to as a gap analysis because it shows the mismatch (or 'gap') between assets and liabilities, which can ultimately give rise to variation in interest margin (as well as variation in fair value of the portfolio).
25. This scheduling is prepared based on the *expected* time to maturity or re-pricing. The factors noted in paragraphs 10 to 21 affect the expected time to maturity or

IASB Staff paper

re-pricing and therefore are themselves risks (eg prepayment risk), some of which are managed as part of interest rate hedging.

26. To predict the behaviour of these ‘other risks’, banks will typically use historical statistical information coupled with market-based forecasts. This analysis is performed on a portfolio basis, at which level predictions can be more accurate because of the ‘law of large numbers’. This analysis is a key component of a bank’s risk management strategy and hence is monitored closely by a bank’s management and prudential regulators.

*Under-hedging*

27. Because of the uncertainties that affect the expected cash flows of the hedged portfolio, banks usually under-hedge their interest exposure. In other words, their objective would not be to hedge 100% of the expected exposure, but instead hedge a component of this in order to reduce the likelihood of being over-hedged.

*Continuous net position hedging*

28. As described above a bank will hedge (some of) its net position on a daily basis. Over time, this can give rise to an accumulation of hedging derivatives that partially offset (eg the fixed leg on two interest rate swaps may partially offset for a partial term of both swaps).
29. As detailed above, the gap analysis considers both fixed and floating rate items together to manage the net interest margin. Therefore, the hedging derivatives executed, *together* hedge *both* fixed and floating rate items. Hence, they are not executed to hedge only one type of item (eg they are not taken out to solely convert all floating rate instruments to fixed rates or vice-versa).

**Summary**

30. In summary the Board should keep in mind the following key points:

IASB Staff paper

- (a) When hedging interest rate risk, a key objective of a bank is to stabilise net interest margin over a given period (eg 5 to 7 years);
- (b) A bank would typically under-hedge its interest rate exposure;
- (c) A bank hedging interest rate risk will consider both fixed rate and floating rate assets and liabilities together and not focus only on one type of instrument (eg fixed or floating) on one side of the balance sheet (eg asset or liability); and
- (d) Matching interest cash flows on both sides of the balance sheet, not only reduces cash flow variability but also reduces fair value variability due to changes in interest rates. However, the risk management objective is not to fully offset the fair value change of pre-payable items due to changes in interest rates. It is to stabilise net interest margin.