STAFF PAPER

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Project	**Macro Hedge Accounting**		
Paper topic	Open portfolios and definition of repricing risk (steps 5&6)		
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Introduction

1. The purpose of this paper is to discuss accounting alternatives for an *open* portfolio. The main difference of an open portfolio in comparison to a closed one is that there are also constant additions (new business or replacements) to the portfolio. As a consequence the portfolio and therefore its value (risk position) become subject to ongoing changes which require risk management approaches that reflect these dynamics.
2. In addition, the terms and conditions of new instruments that enter the portfolio often are not identical to ones of the other instruments in the portfolio or the derecognised instruments that they replace, which creates non-homogeneous portfolios in this respect.
3. This paper builds on and expands the discussions for closed portfolios (agenda paper 3A). It highlights additional consequences of the described characteristics of open portfolios. Therefore it also uses as a basic example a prepayable loan portfolio that is managed for repricing risk on a portfolio level.
4. The first section is focussed on the loan portfolio only (gross position). In a second step the refinancing transactions and the resulting consequences are considered (net position). The discussion to this point addresses step 5 described in agenda paper 7A of the November 2011 IASB meeting.
5. Finally the application of the bottom layer approach, especially for non-homogeneous portfolios is discussed, which relates to step 6 of the same paper.

Gross position

6. As a starting point the analysis focuses on a prepayable loan portfolio with a notional amount of 100 where all loans have a (maximum) term of 6 years and bear an interest rate of 5% (fixed). This is the same portfolio also used for the discussion of closed portfolios. Again it is assumed that at the end of each period loans with a notional of 10 are prepaid. But this time the prepaid loans are replaced by new loans. Those have the same remaining maturity and notional amount as the prepaid ones but a different interest rate as they are granted at then current market conditions.

7. The risk management approach assumes the replacement of prepaid loans. Therefore the starting portfolio[1] is hedged for its repricing risk with an interest rate swap with a notional of 100, a term of 6 years and a fixed leg of 5%, which exactly matches the starting population.

8. Regarding the prepayments in each period it is assumed that all loans are impacted equally independent of their contractual interest rate. This is to reflect the fact that in practice prepayments also usually have an impact on the entire population rather than only instruments with particular terms given that prepayments are not only driven by interest rate changes. This leads to the following development of the portfolio over time:

Period	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Interest Rate	5.0%	4.5%	4.0%	3.5%	3.0%	2.5%	2.0%
Tranche A (5.0%)	100.0	90.0	81.0	72.9	65.6	59.0	59.0
Tranche B (4.5%)		10.0	9.0	8.1	7.3	6.6	6.6
Tranche C (4.0%)			10.0	9.0	8.1	7.3	7.3
Tranche D (3.5%)				10.0	9.0	8.1	8.1
Tranche E (3.0%)					10.0	9.0	9.0
Tranche F (2.5%)						10.0	10.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] The starting portfolio in this example is used for simplification. In a real dynamic process there would be no real starting portfolio but only a current balance which is already the result of past changes.

Hedge accounting in accordance with IAS 39[2]

9. As in this example the prepayments occur at each period-end only risk management uses a portfolio fair value hedge for the entire portfolio with the interest rate swaps as hedging instruments.

10. At the end of the first period the portfolio (after prepayments but before replacements) is measured for changes attributable to the hedged interest rate risk (only repricing risk). The prepayments of 10 lead to an impact on profit or loss reflecting the fact that the portfolio value is based on a notional of 90 while the swap's notional amount remains at 100.

11. As the overall portfolio value in respect of its notional amount has not changed risk management does not adjust the hedging instruments. For accounting purposes tranche A of the loan portfolio of 90 remains hedged, while the derivatives that are considered to be related to the derecognised loans are designated as hedging instruments of the new loans (tranche B).[3]

12. For accounting purposes it has to be considered that the designation of the new tranche generates a "late hedge" relationship[4] as the hedging instruments have already been subject to fair value changes while the values of the new loans start at their notional amounts (ie issued at par). This difference has to be taken into account for the effectiveness testing.

13. The described process has to be repeated at each period end to reflect the prepayments and the new designations.

Alternative portfolio valuation

14. Applying the portfolio valuation as introduced with agenda paper 3A to the portfolio would lead to an ongoing valuation of the *entire* portfolio on the basis of its *current* population. Hence the prepayments of 10 at the end of the first period

[2] IAS 39 *Financial Instruments: Recognition and Measurement*.

[3] A proportionate discontinuation is not covered by IAS 39 for this situation but was introduced with the Exposure Draft on the general hedge accounting model. Refer also to the respective discussion in agenda paper 3A of this series.

[4] See also the explanation in agenda paper 7B of the July 2010 IASB meeting on "late hedges". This refers to the same topic from the perspective of an interest rate swap with and without upfront payments.

would lead to a "one-time" impact on the portfolio valuation as the prepaid loans had a value above par resulting from the decrease in interest rates.[5]

15. In this example the portfolio valuation leads to the same result as the described IAS 39 hedge accounting approach. However, this is because it is assumed that prepayments and additions to the portfolio do only occur at the end of each period and are not spread over the period. Otherwise hedge accounting would have required adjusting the hedging relationship immediately each a time a change occurs to end up with the same result as the portfolio valuation. This is an unrealistic scenario in practice given the portfolio size and frequency of changes. More realistically, a hedge accounting approach would have designated the existing population (here: the portfolio of 100) for a short *period* of time (eg a month). After that the monthly changes would have been reflected through releases of the hedge adjustment to consider the prepayment and the designation of the new loans. However, as the new loans already have values reflecting interest rate changes for the time period from their recognition to the actual later designation date, "late hedges" are set up on an ongoing basis. As explained with closed portfolios, those "late hedges" require further amortisations and therefore are a higher operational burden.

16. Furthermore the example assumes that the adjustment of the hedge at each period end is *not* treated as a *complete* discontinuation of the hedging relationship but rather a proportionate one for the prepaid loans.[6] The complete discontinuation would have required the amortisation of each hedge adjustment. Beside the operational burden additional biased results occur when the simplified amortisation method is applied (see also the respective discussion for closed portfolios in paper 3A).

17. But most importantly, the example assumes identical gross and net risk positions and there an identical definition of the hedging relationship for accounting and risk management purposes. This leads to a constant hedged proportion over time.

[5] For this example it is assumed that risk management does not consider prepayments on the basis of an expected cash flow pattern but only when they occur. This is a simplified simulation of deviations between expected and actual cash flows as part of the accounting analysis.

[6] See discussion in paragraph 11 of this paper and the related footnote regarding the applicability under IAS 39.

18. The described problems disappear with a portfolio valuation. The advantages of this approach become even more obvious when net risk positions are taken into account (see below).

Net position

19. The analysis for this section assumes that the prepayable loan portfolio described above is now refinanced with liabilities with a notional of 60, a maximum term of 6 years and an interest rate of 5% (fixed). This leaves a net fixed rate position (the risk position) of 40, which is addressed accordingly with interest rate swaps (notional of 40 and a fixed maturity of 6 years).

Hedge accounting in accordance with IAS 39

20. As described for closed portfolios the entity would designate a portfolio fair value hedge for the portfolio of 100 and the hedging instruments of 40 leading to a hedged proportion of 40%.
21. After the first period the prepayments lead to a proportionate release of the hedge adjustment of 10% (10 out of 100 are prepaid). As the prepaid loans are replaced by new ones the gross risk position remains at 100. At the same time it is assumed that the fixed rate liabilities reduced to 50 leading to a net risk position of 50. The hedging instruments are adjusted accordingly. Therefore the hedging relationship for the second period is designated as 50% of the portfolio.
22. However, the tracking of the hedge adjustment for future periods creates massive complexity. The loans that are part of the portfolio from the beginning with an interest rate of 5% (tranche A) have to be split into two sub-tranches (A1 and A2). Tranche A1 represents 40% of its remaining notional amount of 90. Tranche A2 the additional 10% (increase in hedged proportion). The separate tranche takes into account that this is a “late” designation and therefore the pull-to par effect has to be considered. Finally, the new loans are designated at the current hedged proportion of 50%).

23. Under the assumption that 'old' and 'new' loans are equally affected by prepayments of 10% in the second period and that also the hedged proportion decreases again to 40%[7] the following calculation has to be carried out:

Tranche	**Original Designation**		**Release**		**New Designation**		**Amortisation**	
	Notional amount	Hedged proportion	Notional amount	Hedged proportion	Notional amount	Hedged proportion	Notional amount	Hedged proportion
A	90	50%	9	n.a.	81	40%	81	10%
A1	90	40%	9	40%	81	32%	81	8%
A2	90	10%	9	10%	81	8%	81	2%
B	10	50%	1	50%	9	40%	9	10%
C					10	40%		

24. The table shows the development of the designation from the beginning of period 2 (the original designation) and the adjustments required at the end of the period to reflect the changes to the portfolio. The prepayments have to be considered twice for the original A-tranche to reflect the fact that not the entire hedge adjustment is calculated on the same basis (different periods and pull-to-par effect). The new designation on the new notional amounts takes into account the decrease in the hedged proportion for all tranches equally. This follows the requirement not to adopt layer approaches. Finally the proportions that represent the decrease in the hedged proportion are shown. Following the accurate method would require the application of the effective interest method for that, ie the applicable effective interest rate for each tranche.

25. This very simple example provides an indication of the complexity encountered when applying this to a portfolio with more frequent changes, more diversified instruments in respect of their terms and considering more than just one maturity. This issue is addressed by the standard by allowing a more simplified tracking of the hedge adjustment. However, this leads to biased results over time, especially when the amortisation is based on average portfolio maturities or durations.

[7] For example, the issue of new fixed rate liabilities of 10 decreased the net risk position triggering the respective adjustment (reduction in volume) of the hedging instruments.

26. Another consequence of the described tracking issue is that interpretation of the resulting hedge adjustment in the statement of financial position as well as the income statements becomes very difficult because of the various influencing factors. Also, the impact of prepayments is only shown dependent on the individual hedged proportion applicable to the prepaid loan (under consideration of allowed simplifications).

Portfolio valuation for the net position

27. With this approach the entire loan portfolio as well as the liabilities would become subject to the valuation of the hedged interest rate risk. This leads to an easier approach with clear results, which increases transparency.

28. For example, taking the loan portfolio as described above and assuming that the liabilities and therefore the hedging instruments remain unchanged for the entire period would lead to the following presentation in profit or loss:

Period end	**1**	**2**	**3**	**4**	**5**	**6**
Interest Rate	4.5%	4.0%	3.5%	3.0%	2.5%	2.0%
Interest Revenue	5.000	4.950	4.850	4.700	4.500	4.250
Interest Expense (fix)	(3.000)	(3.000)	(3.000)	(3.000)	(3.000)	(3.000)
Interest Expense (floating)	(2.000)	(1.800)	(1.600)	(1.400)	(1.200)	(1.000)
Net Interest Income (unhedged)	0.000	0.150	0.250	0.300	0.300	0.250
Swap Interest Accrual	0.000	(0.200)	(0.400)	(0.600)	(0.800)	(1.000)
Net Interest Income	**0.000**	**(0.050)**	**(0.150)**	**(0.300)**	**(0.500)**	**(0.750)**
Loan Portfolio Valuation	1.975	1.110	0.277	(0.492)	(1.163)	(1.707)
Liability Valuation	(1.317)	(0.861)	(0.344)	0.225	0.833	1.463
Swap Valuation	(0.878)	(0.574)	(0.229)	0.150	0.555	0.976
Net Valuation Impact	**(0.219)**	**(0.325)**	**(0.296)**	**(0.116)**	**0.225**	**0.732**
Profit or Loss	**(0.219)**	**(0.375)**	**(0.446)**	**(0.416)**	**(0.275)**	**(0.028)**

29. The overview shows that the unhedged net interest income becomes positive as a consequence of the prepayments. The entity benefits from the fact that 40% of the funding is floating and adjusts to the lower rates over time. This effect however is overridden by the interest accruals of the interest rate swaps on the basis of the original interest rate.

30. The valuation in this example represents the entire impact of prepayments in the loan portfolio. As the replacement carries current interest rates the effect is like resetting the value back to par each time. In addition, the fact that the terms of the swaps and the net portfolio do not exactly match because of the different terms of the replacements creates additional valuation impacts.

31. In addition, the valuation impact would also reflect any over- or under-hedge situation, ie whenever the risk profile of the hedging instruments over- or under-compensates the one of the hedged portfolio.

32. Furthermore each change in expected cash flows becomes visible with its impact on the hedged repricing risk. The fact that the entity in the example above ignores any prepayments before they occur could be seen as under-estimating prepayments. This under-estimation becomes visible with each actual prepayment. If in contrast the entity would have reflected the prepayments correctly on the basis of expected cash flows and therefore set up its hedging relationship (hedging instruments) accordingly no ineffectiveness would have occurred. This requires a dynamic approach that reacts to each change within the portfolio. This can only be reflected with a portfolio approach that considers each change (like an addition) immediately rather than only infrequently with every new designation.

33. Finally, with the net valuation approach it is not possible to influence the valuation impact by picking stable hedging relationships on a gross basis. For this example this would have been the case if 50 of the loan portfolio would not be prepayable at all. The entity could have designated the entire population of hedging instruments to hedge those loans only. The information about the actual behaviour of the entire risk position underlying the derivatives would be missing (ie non-transparent).

Criteria for the definition of an open portfolio

34. The discussion of the advantages of the valuation of an open portfolio in comparison to today's hedge accounting approach leaves the questions regarding the qualifying criteria for an open portfolio.

Clear allocation at any time

35. At any time it must be traceable whether a financial instrument is part of the portfolio and for how long. This is to avoid the "retrospective designation" of instruments. This is basically a risk management process topic as from the beginning it has to be decided and tracked for each instrument whether it belongs to a managed portfolio. Therefore usually the internal portfolio allocation and its tracking will ensure that this requirement is met. This includes the tracking of reclassifications of instruments into or out of an open portfolio independent of their initial recognition (late hedge) or derecognition (early discontinuation). Reclassifications should not impact profit or loss because of the missing market transaction and are expected to be rare.[8]

Homogeneity regarding the hedged risk

36. All items within the portfolio must be managed for (hedged for) and therefore subject to the hedged risk. Hence there must be a correlation of all items regarding the hedged risk to avoid biased results. The required level of correlations for the acceptance for accounting purposes has to be discussed.

Size of the portfolio

37. The described strategy to consider prepayments on the basis of the expected behaviour for the management of repricing risks requires a decent size of the portfolio. If the portfolios are too small the statistical results are no good indicators of actual outcomes, even in situations where the general assessment of prepayment likelihoods is appropriate.[9]

[8] The topic of reclassifications has to be discussed in more detail in connection with the influence and appropriate accounting treatment of judgement in the risk management process.

[9] This issue was explained in more detail in the agenda paper 6A of the April 2011 IASB meeting.

Bottom layer approaches for open portfolios

38. The discussion so far assumes that the entire portfolio is considered for risk management activities on the basis of the expected behaviour. However, as discussed for closed portfolios, there are also approaches for which only a portion (like a bottom layer) becomes subject to risk management. Therefore this section discusses the application of bottom layer approaches for accounting purposes. This does not relate to situations in which a bottom layer is defined solely for accounting purposes (ie not reflecting risk management) as described and discussed in the context of closed portfolios.[10]

39. Bottom layer approaches for risk management purposes are usually applied to address uncertainty. For example, a simplified view could separate a prepayable loan portfolio into three layers. One layer for which a prepayment is highly likely, one which is assumed not to be prepaid and one which might be prepaid. Different hedging strategies could be applied to each layer: Only the layer for which no prepayments are assumed is managed solely for repricing risk. This is to ensure that only 'stable' positions are considered for the management of repricing risk without considering optionality risk. The layer that might be prepaid could be hedged on the basis of options or the entity accepts the risk on its interest margin resulting from that layer and considers this within the product pricing.[11]

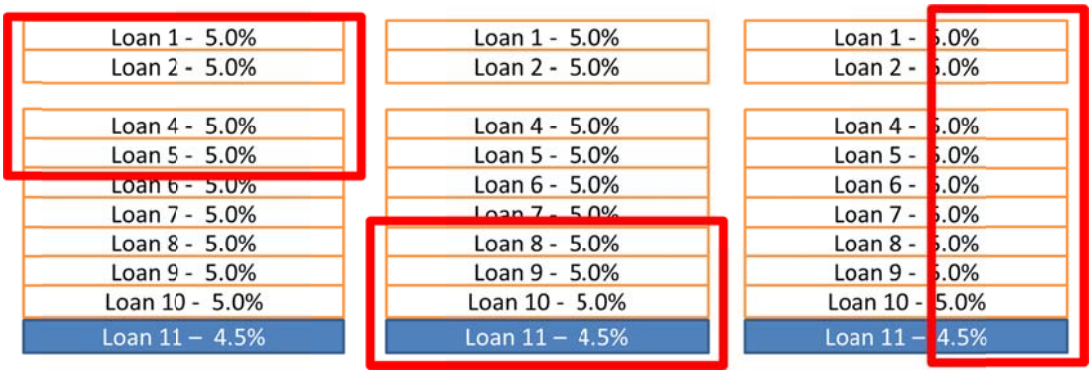
Determination of the bottom layer

40. Applying the bottom layer concept to an open portfolio leads to the question regarding the appropriate definition of the layer population and therefore its valuation.

41. For that the prepayable loan portfolio is taken as an example. It is assumed that it consists of 10 loans whereby one (ie loan #3) is prepaid after the first period but replaced by another one at the same terms but a different interest rate (loan 11). For the determination of a layer that represents 40 of the entire portfolio the following alternatives apply:

[10] For further detail see discussion in agenda paper 3A of this series starting with paragraph 61.

[11] For further discussion see agenda paper 6A of the April 2011 IASB meeting, the presentation of the European Banking Federation at the education session with the IASB in June 2011 as well as the cover paper to this paper (for the pricing aspect).



42. **Alternative 1** is to use the *original* loans to support the bottom layer. In this example prepayments would not impact the valuation of the layer as long as sufficient instruments of the original population are available. This concept is relatively stable and does also pick up the bottom layer idea of a population that will not be prepaid. However, it rather fits a closed portfolio as it requires a starting point, like a starting population.

43. In addition, it would lead to a selection problem when the loans 1 to 10 would have different terms. This is a realistic scenario for an open portfolio. Whatever loans are picked for the valuation of the layer impacts its value and therefore the effectiveness of the hedging relationship.

44. **Alternative 2** is to consider latest additions for the valuation of the layer. This is to address the impact of prepayments that are ignored with alternative 1. In this example the effect of the prepayment of one loan would hit profit or loss in its entirety. Technically this approach rather represents a top layer approach.

45. **Alternative 3** is a combination of both alternatives by applying a proportionate approach to the entire portfolio. This is to reflect the change in the portfolio value because of the replacement—but not in its entirety. It would also address the selection problem described with alternative 1 as the entire population would be considered.

46. Technically this is like applying the portfolio valuation approach introduced with this paper but only for a particular proportion of it. This would still be different from today's hedge accounting approach that uses a hedged proportion to track the hedge adjustment. However, this approach requires a stable proportion over time, eg setting a bottom layer of 40% applicable to the current portfolio volume.

47. This approach might contradict the fact that layers are usually defined as a notional amount or valuation model (like a replication portfolio) rather than as a proportion of an open portfolio.

48. The selection problem regarding the population of the bottom layer would not occur when any replacement to the portfolio would have the same terms as the other portfolio items in respect of maturity and cash flow pattern, which includes the amount of cash flows and their timing. Avoiding any deviation to the cash flow pattern of the portfolio and therefore any valuation consequences also requires that the repayment amount of the prepaid loan and the amount granted for the new one are identical and both transactions occur at the same day. This is an unrealistic scenario for a typical open loan portfolio. However, there are situations where the conditions described apply: core demand deposits.

49. The definition of a stable core balance of demand deposits could be seen as applying the bottom layer concept for an open portfolio. For current accounts each cash payment could be seen as either repayment or new addition ('investment') to the demand deposit portfolio creating an open portfolio.[12] Those payments meet the requirement of identical cash flow patterns as all balances are on demand and share the same interest rate (independent of the individual start date). Even when interest is paid (like with savings accounts) change to the rate apply to all balances equally for one type of products. Furthermore all payments occur on the basis of the notional amount, which also leads to the assumption that the fair value and notional amount are identical on an individual basis.

50. The interpretation as a layer approach results from the fact that usually only a portion of the demand deposit balance is determined as a "core" balance. The history of stable balances is usually longer and the volume higher than assumed for accounting purposes. This is to reflect the uncertainty related to future projections.

51. An accounting concept that allows the introductions of a bottom layer approach for *homogeneous* portfolios under the preconditions discussed above would allow considering core demand deposits. This would have to be limited by product type. Considering various products together like non-interest bearing current accounts

[12] This corresponds with the discussion in IAS 39.BC187 (a) where those payments are interpreted in the same way in connection with the suggestion to apply the first in first out method.

and interest-bearing savings accounts would contradict the precondition of identical terms. This would create the mentioned selection problem again. In addition, accounting would have to accept that the objective of the described risk management approach and therefore the valuation of the risk position is driven by margin considerations rather than hedging fair value risk.[13]

Bottom layer approaches for non-homogeneous portfolios (Step 6)

52. As mentioned earlier in this paper the definition of a bottom layer for a (non-homogeneous) loan portfolio is often based on notional amounts or a model valuation. The model valuation could for example simply be the internal transfer pricing transaction. In the example above the business unit could enter into an internal funding transaction with a notional of 40 and an interest rate of 5% for the bottom layer for which a prepayment is considered highly unlikely. This transaction would then become subject to risk management activities and actually represents a layer of the prepayable portfolio. More sophisticated approaches take into account the dynamics of the underlying portfolio by adjusting the valuation on an ongoing basis. An example for this is a replication portfolio.[14]

53. Determining a layer on the basis of notional amounts or a fixed term structure ignores the differences in the terms of the portfolios items. This is like ignoring a portion of the repricing risk for risk management purposes. This can be illustrated with a simple example.

54. It is assumed that a portfolio consists of two items. Both loans were granted at 100 and have a term of two years. However, one loan requires an interest payment after the first period at the current market rate. The other loan is a zero-coupon bond and therefore it has no interest payments during the term. This leads to the following overview:

[13] For this refer to the discussion in agenda paper 4B of the December 2011 IASB meeting.

[14] A replication portfolio is a valuation model that simulates the behaviour of the underlying portfolio in respect of the hedged risk. Replication portfolios might also consider changes to the portfolio volume and related terms. This approach is often used for the management of core demand deposits to reflect the passage of time and potential adjustment to interest rates.

	Notional Amount	**Cash Flow Period 1**	**Cash Flow Period 2**	**Present Value**
Loan (zero-coupon)	100.00	0	108.16	100
Loan (interest-bearing)	100.00	4	104	100
Reinvestment			*4.16*	-

55. Both loans share the same notional amount (starting investment) and the same present value when discounted with the current market rate of 4%. The discount rate assumes that all difference in cash flows between both loans are reinvested / refunded at the discount rate. For this example, it assumes that the interest cash flow of 4 after the first periods can be reinvested at 4%, which leads to the reinvestment balance of 4.16 at the end of period 2. This reinvestment interest rate is just an assumption on the basis of current market conditions. It is not fixed for the interest-bearing loans. In contrast the zero-coupon loan has a fixed reinvestment rate by design, which is reflected in the way it is calculated. Therefore the repayment at the end of period two is 108.16 rather than just 108.

56. Hedging a layer of 100 (50%) of the entire portfolio on the basis of notional amounts treats both loans as being entirely equal (ie homogeneous). It ignores the impact of the differences in the cash flow structures and the related repricing risk. Setting the layer on the basis of notional amounts with identical maturities ignores (or carves out) the repricing risk related to the reinvestment or refunding of cash flow differences.

57. This approach could be improved by looking at the cash flows for each period rather than just the notional amounts at maturity. Then the risk in the first period would become visible. This requires treating interest and capital cash flows the same way. For instruments with premiums or discounts (like zero-coupon instruments) the distinction in interest and capital cash flows is rather artificial. The repayment of a zero-coupon instrument represents interest and capital.

58. The described cash flow view could lead to a definition of a bottom layer on the basis of a cash flow pattern for all periods. As long as the portfolio generates sufficient cash flows to support the cash flow pattern of the layer it would be accepted. Conceptually, this leads to a pure view of the portfolio as the unit of

account as for this the actual individual instruments within the portfolio are completely ignored. However, even when following this approach it would still require that the cash flows assumed by the layer and the actual ones occur at the same day to address the repricing risk resulting from those timing mismatches.

59. This can only be addressed through a present value approach as the discounting makes those differences comparable. However, rather than a simple present value comparison the sensitivity of the present values has to be considered. For the example above the present value indicates that the portfolio consists of two identical instruments. When the present value is calculated on the basis of interest rate scenarios (sensitivities) the described differences become obvious.

60. From that one could draw the conclusion that a bottom layer could be derived from present value sensitivities. As such a layer could be seen as supported by the actual portfolio as long as the present value sensitivity of the portfolio is higher than the one of the layer. That would indicate the layer represents a portion of the risk and therefore addressing it would not lead to (hidden) over-hedge scenarios.

61. The problem with this approach is that it requires a very restrictive definition of the hedged risk to exclude any present value movements that might lead to accidental merely coincidental offset.

Changes to the layer

62. Finally, for all approaches described it has to be discussed how changes to the bottom layer impact the financial statements. Those changes could be:

    (a) Increase of the layer (hedging 50 rather than 40 of the notional amounts).

    (b) Decrease of the layer (hedging 30 rather than 40 of the notional amounts)

    (c) Change to the terms of the layer (different benchmark rate, maturity).

63. The first change is like an *additional* designation to lock in current market conditions. Therefore it should not lead to any valuation effects and therefore not impact profit or loss.

64. The decrease is like the partial discontinuation of 10 of the hedged layer. It should be treated like other discontinuations. When the decrease results from the fact that

the layer is not supported by underlying instruments any more the consequence would be the release of the related hedge adjustment. Otherwise the hedge adjustment becomes subject to amortisation (similar to a 'normal' hedge accounting relationship).[15]

65. Changes to the layer like setting a different benchmark rate or changing the maturity might occur with open portfolios over time. This is because a benchmark selected today might not be applicable any more in 10 or 20 years. Similar is the change of the maturity which might occur in connection with core demand deposits. Both could be treated like a change in valuation (to be reflected in profit or loss) or a change in the risk management approach (not to be reflected in profit or loss immediately). This has to be discussed in connection with the treatment of model risk and changes to the modelling approach.

Summary

66. The appendix contains a summary of the approaches described in this paper (hedge accounting in accordance with IAS 39, portfolio valuation approach and bottom layer approach). They are compared in respect of the financial statement information they provide in respect of prepayment risk, over- and under-hedges, interpretations of net income and operational concerns.

[15] The amortisation scenario applies when the layer is determined and therefore adjusted on the basis of worst case scenarios rather than expected ones. In those situations the actual balance would be usually higher than the one of the bottom layer.

Scenario / **Accounting Approach**	**Over-hedge** of the net risk position	**Under-hedge** of the net risk position	**Prepayment risk** of the net risk position (unexpected prepayments and change in expected prepayments)	**Ineffectiveness** resulting from mismatches in terms between hedged items (net risk position) and hedging instruments	**Operational considerations**
Hedge accounting in accordance with IAS 39 ("portfolio fair value hedge of interest rate risk")	**Not visible** to the extent that hedging instruments are covered by the gross position.	**Not visible.**	**Partly visible**. Release of hedge adjustment dependent on the hedged proportion and the designated hedged items out of the net risk position. In addition, impacts from prepayments that are compensated on net portfolio level and therefore not impact net risk.	**Partly visible** dependent on the hedged proportion and the designated hedged items out of the net risk position.	Complex in respect of the tracking of the hedge adjustment due to changes in hedged proportions, frequent re-designations and "late hedges".
Portfolio valuation attributable to the hedged risk on the basis of the net position with a constant hedged proportion (here 100%)	**Visible** through the non-compensated measurement of the hedging instruments.	**Visible** through the non-compensated measurement of the hedged items (net risk position).	**Visible**. Each prepayment triggers a complete release of the related hedge adjustment (100%).	**Visible** for the entire net risk position. This might include compensating effects within the portfolio.	No tracking of the hedge adjustments due to uniform hedged proportion for all items (100%) and immediate consideration of changes to the portfolio (no "late hedge"). Valuation of the entire net risk position, not only the designated portion. Complexity dependent on level of synergies with the valuation approach applied by risk management.
Bottom layer (for accounting purposes) to reflect the net risk position (layer of a gross position that represents the net risk)	**Not visible** to the extent that hedging instruments are covered by the layer (gross position).	**Not visible**.	**Not visible** to the extent that prepayment risk does not lead to a decrease or breach of the layer. Additional buffer results from the gross designation.	**Dependent** on the flexibility regarding the definition of layers, esp. in relation to non-homogeneous portfolios (in respect of the terms) – selection problem, definition of repricing risk.	Most simple approach as long as the layer is not changing. Changes to the designated layer lead to similar tracking issues as with hedge accounting but on a portfolio level.