Completion Instructions

Return of Interest Rate Risk in the Banking Book (IRRBB) (Form MA(BS)12A)

Introduction

1. This return collects information on the interest rate risk exposures of Authorized Institutions (AIs) and will be used to help assess the potential impact of movements in interest rates on institutions' earnings and economic value.

2. The Completion Instructions contain three sections. Section A describes the general reporting requirements. Section B provides definitions and clarification of certain items. Section C explains the specific reporting requirements for each item in the return form.

Section A : General Instructions

3. All locally incorporated AIs as well as AIs incorporated outside Hong Kong that are not exempted from the local IRRBB framework [1] are required to complete this return showing their positions as at the last calendar day of each quarter and submit the return to the HKMA not later than six weeks after the end of each quarter. If the submission deadline falls on a public holiday, it will be deferred to the next working day. Locally incorporated institutions should complete the return both on a solo basis, reporting the combined positions of their local and overseas offices (if any), and on a consolidated basis (where applicable), following the scope of consolidation used for the purpose of Capital Adequacy Ratio (CAR) requirements as defined in the Banking (Capital) Rules. Overseas incorporated institutions that are not exempted from the local IRRBB framework are required to report the positions of their Hong Kong operations only.

4. This return captures both on- and off-balance sheet positions. Locally incorporated institutions subject to the market risk capital adequacy regime [2] ("non-exempted institutions") are required to report positions of the banking book only. Other institutions, i.e. those locally incorporated and exempted from the market risk capital adequacy regime ("exempted institutions") and overseas incorporated AIs that are not exempted from the local IRRBB framework, should report aggregate positions of the banking book and trading book.

5. The interest rate risk positions for each selected currency should be reported separately using the same four-page return form. Transactions denominated in gold or composite currencies such as the SDR should be reported as separate currencies. Onshore Renminbi (CNY) and offshore Renminbi (CNH) should be treated as separate currencies [3]. Institutions should report all these positions in aggregate on one return form. As a basic requirement, institutions should complete the return forms for at least two currencies,

[1] Details of the exemption are set out in the circular to all AIs dated 31 August 2018.

[2] The details of the market risk capital adequacy regime, including the de-minimis exemption criteria and other requirements relevant to exempted institutions, are set out in the Banking (Capital) Rules.

[3] Institutions should treat assets or liabilities as denominated in CNH if the associated interest rates are priced (either directly or indirectly) based on offshore reference rates (such as CNH HIBOR), and vice versa.

showing their interest rate risk exposures arising from assets and liabilities denominated in Hong Kong dollars and in US dollars respectively (nil returns are required for these two currencies). Institutions which have significant positions in other currencies should report such positions on separate return forms (see paragraph 8 below). The total positions in non-reported currencies could not exceed 10% of an institution's total on-balance sheet interest rate-sensitive assets or liabilities, whichever is the larger, in all currencies[4,5,6]. The submitted forms should be sequentially numbered.

6. All the positions captured by this return should be slotted into the appropriate time bands according to the earliest interest repricing date (see paragraph 11 below). Each time band includes its upper but not its lower limit, e.g. the "3 to 4 years" time band can be expressed as $3y < t \leq 4y$. For retail fixed rate loans subject to prepayment risk, retail term deposits subject to early redemption risk, and non-maturity deposits (NMDs), institutions should follow the steps in section 5.2 of the Supervisory Policy Manual (SPM) IR-1 "Interest Rate Risk in the Banking Book" to determine the repricing maturities.

7. Unless otherwise stated, notional values should be used for reporting purposes. Amounts are to be shown to the nearest million, in Hong Kong dollars or Hong Kong dollar equivalent in the case of foreign currencies. The middle market T/T rates ruling as at the close of business on the reporting date should be adopted for conversion of foreign currencies to Hong Kong dollars.

Section B : Definitions and Clarification

8. An institution would be regarded as having a significant position in a currency ("major currency") if the sum of its on-balance sheet interest rate-sensitive assets or liabilities, whichever is the larger, in that currency together with its off-balance sheet positions (see paragraph 9 below) in the same currency is more than 5% of its total on-balance sheet interest rate-sensitive assets or liabilities, whichever is the larger, in all currencies[6].

9. The off-balance sheet positions are defined as the sum of the notional principal of each interest rate-sensitive off-balance sheet contract that is to be included under items 10 to 15 of this return[7]. For the avoidance of doubt, a foreign exchange contract which involves the simultaneous buying and selling of two currencies should be regarded as one contract under each of the currencies concerned while a single currency interest rate swap which involves both the receipt and payment of interest in the same currency is counted once in the relevant currency.

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[4] If an institution's total positions in non-reported currencies exceed 10% of its total on-balance sheet interest rate-sensitive position (assets or liabilities, whichever is the larger) in all currencies, the institution should report these positions, starting from the largest, until the remaining positions in non-reported currencies fall below 10% of its total on-balance sheet interest rate-sensitive position in all currencies.

[5] The 10% limit applies at both the solo level and consolidated level.

[6] Positions in a given currency and total on-balance sheet interest rate-sensitive exposures include banking book positions only for non-exempted institutions. For exempted institutions and overseas incorporated institutions that are not exempted from the local IRRBB framework, both the banking book and trading book should be included.

[7] Item 14 must be reported as the delta-adjusted notional value. See paragraph 39.

10. All on-balance sheet interest rate-sensitive assets[8] and liabilities[9] are to be classified into fixed rate items, floating rate items and managed rate items. Fixed rate items are those assets and liabilities with interest rates fixed up to their final maturities. Floating rate items are those which will automatically be repriced at the next repricing date during the life of the items in accordance with movements in the relevant "reference rates" (e.g. HIBOR) and include those items for which the interest rates can be varied at the discretion of the counterparty (see also the definition of managed rate that follows). Managed rate items are those variable rate items for which there are no fixed repricing dates, and the interest rates can be adjusted at any time at the discretion of the reporting institution. These would include, for example, non-maturity deposits and mortgage loans priced on the prime rate.

11. In respect of different interest rate-sensitive assets and liabilities, the earliest interest repricing date means:

    (a) for fixed rate items, the maturity dates of the assets or liabilities concerned; in the case of retail fixed rate loans subject to prepayment risk[10] and retail term deposits subject to early redemption risk[11], institutions should follow the methodology in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book";

    (b) for floating rate items, the next repricing date of the assets and liabilities concerned; in the case of those items for which the interest rates can be varied at the discretion of the counterparty, the earliest date on which the interest rates could be repriced assuming that the reference rates on which the interest rates are based are adjusted on the business day immediately following the reporting date; and

    (c) for managed rate items, the earliest date on which it would be possible for the interest rates of the assets and liabilities concerned to be adjusted assuming that the reference rates (e.g. prime or standard savings rate) on which the interest rates are based are adjusted on the business day immediately following the reporting date. For non-maturity deposits[12], institutions also have the option to slot them into different time bands based on the methodology in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book".

12. For the purpose of this return, interest rate-sensitive assets and liabilities include those which do not involve any formal payment of interest but the values of which are sensitive to interest rate movements. Typically, these include financial instruments which are sold at a discount such as Exchange Fund Bills and zero coupon bonds. They should be reported as fixed rate items according to residual maturity.

13. In respect of on-balance sheet interest rate-sensitive assets, institutions should report under items 1b to 4b a breakdown of the amount of residential mortgage loans pertaining to those items. Residential mortgage loans are loans to professional and private individuals for the purchase of residential properties, as defined under item H5b of the

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[8] Interest rate-sensitive assets exclude assets that are deducted from Common Equity Tier 1 (CET1) capital, fixed assets such as real estate or intangible assets, and equity exposures.

[9] Liabilities exclude CET1 capital under the Basel III framework.

[10] These are fixed rate loan products where the economic cost of prepayments cannot be charged, or charged only for prepayments above a certain threshold, to the borrower.

[11] These are term deposits that can be withdrawn early at the discretion of the customer.

[12] These are deposits without a set maturity date that can be withdrawn at any time without advance notice. Non-interest-bearing deposits (e.g. deposits in current accounts) are also included in non-maturity deposits.

Quarterly Analysis of Loans and Advances and Provisions (Form MA(BS)2A). Institutions should also report under item 2c and 2d a breakdown of retail loans subject to prepayment risk and non-retail loans subject to prepayment risk, as defined in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book". Items 2b, 2c and 2d may overlap and may not add up to the total (item 2a). In respect of on-balance sheet interest rate-sensitive liabilities, institutions should report under items 5b to 8b a breakdown of the amount of deposits pertaining to those items. Deposits are deposit liabilities due to non-bank customers, as defined under item 6 of Form MA(BS)1. Institutions should also report under item 6c and 6d a breakdown of retail deposits subject to early redemption risk and non-retail liabilities subject to early redemption risk, as defined in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book". Items 6b, 6c and 6d may overlap and may not add up to the total (item 6a).

14. In respect of assets or liabilities with embedded automatic interest rate options[13], institutions should decompose them into embedded automatic interest rate options and underlying assets or liabilities. The embedded automatic interest rate options should be reported under off-balance sheet positions (see paragraph 39 below) and the underlying assets or liabilities should be slotted into the appropriate time bands according to their earliest interest repricing date (see paragraph 11 above).

15. Assets and liabilities which are repayable by instalments rather than by one lump sum at maturity should be broken down into individual tranches and slotted into the appropriate time bands according to the repricing date of each tranche. For example, a fixed rate loan of HKD 100 million repayable by two semi-annual instalments of HKD 50 million each should be regarded as two separate loans, one repayable in six months and the other in one year, and slotted into the appropriate time bands according to their residual maturities. In the case of a floating rate loan of HKD 100 million repayable by two semi-annual instalments of HKD 50 million each, it should also be regarded as two separate loans and be slotted into the appropriate time bands according to the next repricing date of each tranche.

16. In the case of a managed rate mortgage loan, the entire amount of such loan, less the amount of principal repayable before the earliest repricing date (see paragraph 11(c) above), should be reported in the appropriate time bands into which the repricing date falls. The principal amount repayable between the reporting date and the earliest repricing date should be slotted into the appropriate time bands according to the payment dates contracted for. For example, consider a mortgage loan of HKD 5 million that can be repriced in two months' time, and HKD 0.02 million of the principal amount is repayable between two days and one month. Then HKD 0.02 million should be reported in row (B) of item 4 and the balance of the loan (i.e. HKD 4.98 million) should be reported in row (C) of the same item.

17. For the purpose of this return, internal deals are transactions between units within the relevant reporting scope (see paragraph 3 and 4 above) of the institution. Internal deals within the banking book should not be reported. For internal deals between the banking

[13] These are explicitly embedded within the contractual terms of an otherwise standard financial instrument where the holder will almost certainly exercise the option if it is in his financial interest to do so. An example of a product with embedded automatic interest rate options is a floating rate mortgage loan with embedded caps and/or floors. Prepayment options on non-retail loans (see paragraph 19) and early redemption options on non-retail deposits or bonds (see paragraph 26) should also be treated as embedded automatic interest rate options. Options embedded in mortgage loans subject to prime rate (managed rate) caps do not have to be decomposed.

book and the trading book, ***non-exempted institutions*** should report the banking book leg of the internal deal only if the trading book leg of the deal is recognised under the market risk capital framework in the Banking (Capital) Rules; ***exempted institutions and overseas incorporated AIs that are not exempted from the local IRRBB framework*** should not report such internal deals.

Section C : Specific Instructions

18. Item 1 rows (A) to (S) – Total interest rate-sensitive assets

Report the sum of items 2a, 3a and 4a under item 1a of the same row. Regarding residential mortgage loans, report the sum of items 2b, 3b and 4b under item 1b of the same row. Report the sum of items 1a and 1b for all time bands in Total (A to S) under the respective items.

Report the weighted average yield of total interest rate-sensitive assets and residential mortgage loans under items 1c and 1d respectively of the same row. All the rates reported should be rounded to 2 decimal places. An example showing the method of calculation is given in Annex 1. Interest rates applicable at the reporting date should be used for the purpose of calculation.

19. Item 2 - Fixed rate assets

Fixed rate assets with no prepayment risk should be slotted into the appropriate time bands according to their residual maturities. Retail fixed rate loans subject to prepayment risk, as defined in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book", should be slotted into the appropriate time bands according to the methodology in that section. Where a non-retail loan is subject to prepayment risk, this should be treated as an asset with embedded automatic interest rate options according to paragraph 14.

20. Item 3 - Floating rate assets

These should be slotted into the appropriate time bands according to the next interest rate fixing date. Such assets include, for example, floating rate CDs/notes, and other loans which are automatically priced in accordance with movements in the relevant reference rates. During the period between the final repricing date and final maturity, these assets should continue to be reported as floating rate assets and slotted into the appropriate time bands according to their residual maturities.

21. Item 4 - Managed rate assets

These assets are those for which the interest rate does not change automatically in line with the movement in the reference rate but may be varied at the discretion of the reporting institution. Mortgage loans priced on prime are examples of managed rate assets. These assets should be slotted into the appropriate time bands according to the earliest date on which their interest rates can be adjusted assuming that the reference rate (e.g. prime) is adjusted on the business day immediately following the reporting date.

The optionality in managed rate products, that is floating rate assets subject to prime rate (managed rate) caps, should not be treated as embedded automatic interest rate options. The following is the reporting procedure for floating rate assets subject to prime rate caps:

(i) report the asset as a managed rate asset if the prime rate cap is binding, and as a floating rate asset otherwise. The optionality can be ignored for the purpose of calculating the EVE impact.

(ii) when reporting item 19 on basis risk, AIs should take into account the effect of the prime rate cap – see paragraph 44 for details.

22. Item 1 row (T) – Total interest rate-sensitive assets (book value)

Enter the aggregate book value of assets covered in item 1a rows (A) to (S).

23. Item 1 row (U) – Total non-interest rate-sensitive assets (book value)

Enter book value of positions. These include, for example, properties, shares, fixed assets and other receivables which are non-interest rate-sensitive. Properties and fixed assets should be reported net of depreciation. Any portion of interest rate-sensitive capital items (e.g. preference shares, contingent convertible bonds and subordinated debt) not deducted from CET1 capital should be reported under items 2a, 3a, or 4a as appropriate.

24. Item 1 Total (T to U) – Total assets (book value)

Report the sum of total interest rate-sensitive assets (book value) and non-interest rate-sensitive assets (book value). The amount reported may not necessarily be the same as the amount of "Total liabilities (book value)" reported under item 5 Total (T to V).

25. Item 5 rows (A) to (S) – Total interest rate-sensitive liabilities

Report the sum of items 6a, 7a and 8a under item 5a of the same row. Regarding deposits, report the sum of items 6b, 7b and 8b under item 5b of the same row. Report the sum of items 5a and 5b for all time bands in Total (A to S) under the respective items.

Report the weighted average costs of total interest rate-sensitive liabilities and deposits under items 5c and 5d respectively of the same row. All the rates reported should be rounded to 2 decimal places. An example showing the method of calculation is given in Annex 1. Interest rates applicable at the reporting date should be used for the purpose of calculation.

26. Item 6 - Fixed rate liabilities

These liabilities, such as fixed rate CDs, money market deposits and term deposits are to be slotted into the appropriate time bands according to their residual maturities provided they are not subject to early redemption risk. Retail term deposits subject to early redemption risk, as defined in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book", should be slotted into the appropriate time bands according to the methodology in that section. Where a non-retail deposit or bond is subject to early redemption risk, this should be treated as a liability with embedded automatic interest rate options according to paragraph 14.

27. Item 7 - Floating rate liabilities

These liabilities should be slotted into the appropriate time bands according to the next interest rate fixing date. They include, for example, floating rate debt instruments issued by the reporting institution where the interest rate is adjusted automatically on the repricing date in accordance with movements in the relevant reference rates. As with floating rate assets, these liabilities should continue to be classified as floating rate liabilities according to their residual maturities during the period between the final repricing date and the maturity date.

28. Item 8 - Managed rate liabilities

Such liabilities include, for example, deposits for which interest rates can be adjusted at the discretion of the deposit-taking institution. They should be slotted into the appropriate time bands according to the earliest date on which their interest rates can be adjusted assuming that the reference rates (e.g. standard savings rates) are adjusted on the business day immediately following the reporting date. For non-maturity deposits, institutions also have the option to slot them into different time bands based on the methodology in section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book".

29. Item 5 row (T) – Total interest rate-sensitive liabilities (book value)

Report the aggregate book value of liabilities covered in item 5a rows (A) to (S).

30. Item 5 row (U)+(V) – Total non-interest rate-sensitive liabilities (book value)

Report the sum of equity capital (book value) and other non-interest rate-sensitive liabilities (book value).

31. Item 5 row (U) – Equity capital (book value)

Report the book value. These include the capital, reserves (including retained earnings) and profit and loss accounts of the reporting institution. They should be reported in the base currency of the reporting institution or in the currency in which the capital is denominated. Interest rate-sensitive capital items (e.g. preference shares, contingent convertible bonds and subordinated debt) should be reported under items 6a, 7a or 8a as appropriate.

32. Item 5 row (V) - Others (book value)

Report the book value of other non-interest rate-sensitive liabilities. These include, for example, payables/liabilities which are non-interest rate-sensitive, and loan loss provisions etc. Non-remunerated deposits (e.g. deposits in some current accounts) should be reported as non-maturity deposits (i.e. managed rate liabilities) under interest-rate-sensitive liabilities.

General provisions should be reported in the base currency of the reporting institution. Other provisions should be reported in the currency of the underlying assets.

33. Item 5 Total (T to V) - Total liabilities (book value)

Report the sum of total interest rate-sensitive liabilities (book value) and non-interest rate-sensitive liabilities (book value). The amount reported may not necessarily be the same as the amount of "Total assets (book value)" reported under item 1 Total (T to U).

34. Item 9 – Total off-balance sheet positions

Report in item 9a, the sum of all long positions reported under items 10a to 15a of the same row.

Report in item 9b, the sum of all short positions reported under items 10b to 15b of the same row.

35. Item 10 - Forward foreign exchange contracts

Forward foreign exchange contracts include unmatured spot contracts that are for value not more than two business days after the transactions are contracted. They should be reported in the relevant page of the return for the currencies concerned and should be slotted into the appropriate time bands according to the residual maturity of the individual contracts. For example, a five-month forward contract to sell Hong Kong dollars for US dollars should be slotted in the return for the Hong Kong currency as a short position under item 10b of row (D) and in the return for the US currency as a long position under item 10a of row (D).

36. Item 11 - Interest rate swaps

An interest rate swap contract obligates an institution to both receive and remit interest payments that are based on the notional amount of the swap contract. Depending on the contract, the institution may receive fixed rate and pay floating rate interest on the notional principal or vice versa. For example, an interest rate swap under which an institution is receiving floating rate interest and paying fixed rate would be treated as a long position in a floating rate instrument of maturity equivalent to the period until the next interest fixing date and a short position in a fixed rate instrument of maturity equivalent to the residual life of the swap. The two positions should then be slotted into the appropriate time bands according to their respective maturities.

37. Item 12 - Cross currency swaps

The reporting treatment of a cross currency swap is similar to that of an interest rate swap, except for the fact that its long and short positions should be reported in the relevant time bands of the currencies concerned.

38. Item 13 - Futures / Forward rate agreements (FRAs)

These should be treated in the same way as a combination of a long and a short position in government securities. The maturity of a future or an FRA would be the period until delivery or exercise of the contract, plus – where applicable – the life of the underlying instruments. For example, a long position in a June three-month interest rate future should be reported in April in the same way as a long position in a government security with a maturity of five months and a short position in a government security with a maturity of two months. Similarly, a seller of a 2 x 5 months FRA should report the transaction as a

long position in a government security with a maturity of five months and a short position in a government security with a maturity of two months. In respect of a futures contract, where a range of deliverable instruments may be delivered to fulfil the contract, the institution would be free to elect which deliverable security goes into the maturity ladder.

39. Item 14 - Options

Report option contracts that are related to interest rate instruments and currencies[14]. All bought and sold interest rate options should be reported. Embedded automatic interest rate options that have been decomposed (see paragraph 14) should also be reported here. Option contracts should be reported from the perspective of the option holder by using the delta equivalent value of these contracts, which is calculated by multiplying the principal value of the underlying by the delta or, in the case of options on debt instruments, the market value of such debt instruments by the delta. Such deltas are to be calculated according to the reporting institution's proprietary options pricing model. Bought options should be reported as a long position and sold options should be reported as a short position. Report the total value of options only, i.e. no need to slot cash flows into time bands, under item 14 row (T) Total Options.

40. Item 15 - Others

Report any other debt derivatives and off-balance sheet items the values of which are sensitive to changes in interest rates. This includes forward arrangements for fixed rate loans and fixed rate deposits which have been contracted but remain undrawn as at the reporting date. A forward loan should be reported as a long position at the time the loan matures and as a short position at the time when the loan is to be drawn. For forward deposits, the reporting method is the reverse.

Institutions should also include fixed rate loan and fixed rate deposit commitments[15] under this item. Both retail and wholesale commitments should be included. Institutions should estimate the proportion of commitments that will be drawn down and the expected tenor, based on historical data and using a sound and prudent methodology. The estimated cash flows should be reported following the reporting method for forward arrangements for fixed rate loans and fixed rate deposits.

Where securities are sold subject to a repurchase agreement, the terms of which transfer substantially all risks and rewards of ownership to the buyer, the transaction should be separately accounted for as an outright sale plus a commitment to repurchase. The securities sold under such an agreement should not be reported in this return but the commitment to repurchase should be reported as a forward purchase of the securities.

Where securities are purchased subject to a resale agreement, the terms of which transfer substantially all risks and rewards of ownership to the reporting institution, the transaction should be separately accounted for as an outright purchase plus a

[14] Currency options that are sensitive to interest rate movements in two currencies should be reported in the returns for both currencies. When calculating the value of the currency options under interest rate shock scenarios (paragraph 43), institutions only need to consider the direct impact of the new yield curve on the option value but not the indirect impact via changes in foreign exchange rates or the increase in implicit volatility.

[15] These are commitments by banks to allow customers to draw down a loan or place a deposit at a fixed rate within a limited future period.

commitment to sell back. The securities purchased under such an agreement should be reported as an asset and the commitment to sell back as a forward sale of the securities.

41. Item 16 - Net positions

Item 16a (net positions excluding coupon cash flows) is the net amount of items 1a, 5a, 9a and 9b. Show figures in brackets to indicate a short position in any of the time bands.

Item 16b (net positions including coupon cash flows) corresponds to item 16a plus any scheduled coupon cash flows[16]. For fixed rate positions, coupon payments should be slotted into the appropriate time bands according to their payment schedule until the contractual maturity[17]. For floating and managed rate positions, coupon payments should be slotted into the appropriate time bands according to their payment schedules until the the next repricing date. Coupon cash flows on assets should be netted against coupon cash flows on liabilities if they are slotted into the same time band. Coupon cash flows from off-balance sheet positions should also be included[18].

Regarding commercial margins and other spread components, institutions have an explicit choice to either include or exclude them in the cash flows[19]. If an institution has chosen to include commercial margins and other spread components in the cash flows, the spread components must be slotted according to their payment schedule until the contractual maturity[20], irrespective of whether the notional principal has been repriced or not, provided that the notional principal has not yet been repaid and that the spread components do not reprice.

Coupon cash flows of non-maturity deposits that are slotted according to behavioural maturity should be slotted like fixed rate loans using (i) the overnight risk-free rate when slotting coupon payments excluding spread components; or (ii) the prevailing non-maturity overnight deposit rate when slotting coupon payments including spread components.

The following example illustrates how coupon payments should be slotted for a floating rate loan with a notional amount of HKD 100 million. The loan expires after ten years and the interest rate is HIBOR+3% (payable annually). The current HIBOR rate (which in the example coincides with the risk-free rate) is 2% and the next repricing date is in one year's time. When including spread components, the total coupon cash flow should be slotted before the next repricing date, and only spread components should be slotted after the next repricing date. When excluding spread components, only the risk-free rate before the next repricing date should be slotted. Coupon cash flows of managed rate positions that are slotted according to the earliest repricing date should be slotted like floating rate positions.

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16 These include any interest payment on a tranche of principal that has not yet been repaid or repriced.

17 In the case of cash flows with optionality (see section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book"), the cash flows slotted to each time band should be adjusted to take into account the expected prepayment or early withdrawal behaviour.

18 For interest rate swaps, the coupon cash flows of the floating and fixed rate positions should be slotted in a similar manner to those of floating and fixed rate loans or deposits. For fixed rate loan or deposit commitments, coupon cash flows only need to be slotted when commercial margins and spread components are included.

19 The choice should be consistent across all positions and currencies of the institution. However, for derivative positions, institutions can assume there are no commercial margins and other spread components.

20 In the case of floating rate loans subject to prepayment risk, the spread components slotted to each time band should be adjusted to take into account the expected prepayment behaviour.

	Including spread components	***Excluding spread components***
Next day or less:		
2 days to 1 month:		
1 to 3 months:		
3 to 6 months:		
6 to 9 months:		
9 to 12 months	*5*	*2*
1 to 1.5 years		
1.5 to 2 years	*3*	
2 to 3 years	*3*	
3 to 4 years	*3*	
4 to 5 years	*3*	
5 to 6 years	*3*	
6 to 7 years	*3*	
7 to 8 years	*3*	
8 to 9 years	*3*	
9 to 10 years	*3*	
10 to 15 years		
15 to 20 years		
More than 20 years		

The following example illustrates how coupon payments should be slotted for a fixed rate loan with a notional amount of HKD 100 million. The loan is issued today and expires after ten years. The interest rate on the loan, payable annually, is 5%. The current 10-year risk-free interest rate is 4%. When including spread components, the total coupon cash flow should be slotted for the remaining life of the loan. When excluding spread components, the corresponding risk-free rate from the yield curve at the time the loan was issued, with the same maturity as the original maturity of the loan, should be slotted for the remaining life of the loan.

	Including spread components	***Excluding spread components***
Next day or less:		
2 days to 1 month:		
1 to 3 months:		
3 to 6 months:		
6 to 9 months:		
9 to 12 months	*5*	*4*
1 to 1.5 years		
1.5 to 2 years	*5*	*4*
2 to 3 years	*5*	*4*
3 to 4 years	*5*	*4*
4 to 5 years	*5*	*4*
5 to 6 years	*5*	*4*
6 to 7 years	*5*	*4*
7 to 8 years	*5*	*4*
8 to 9 years	*5*	*4*
9 to 10 years	*5*	*4*
10 to 15 years		
15 to 20 years		
More than 20 years		

42. Item 17 – Earnings perspective (impact / scenario analysis)

Institutions should calculate the impact of the parallel up and parallel down scenarios (see section 5.3 of the SPM IR-1 "Interest Rate Risk in the Banking Book") on the earnings of the reporting institution in a period of 12 months. For a given currency c and under scenario i, institutions should calculate the new net position (excluding coupon cash flows), as net positions under interest rate shock scenarios may vary depending on the way cash flows with optionality are slotted[21]. The new net position $N_{i,c}(k)$ at each time band k should be weighted by a time weight $(t_k - 1) \cdot \Delta r_{i,c}(k)$, where $\Delta r_{i,c}(k)$ denotes the change in interest rates under scenario i and t_k denotes the mid-point of each time band (under item 17a). For example, for a parallel increase of 200 basis points across the yield curve, the time weights of individual time bands should be computed as follows [22]:

[21] The net positions should be consistent with those used for economic value impact – see section 5.2 of the SPM IR-1 "Interest Rate Risk in the Banking Book". Notable exceptions are products with embedded automatic interest rate options. Given that option positions are not slotted into individual time bands (see item 14), they are omitted for simplicity in the 1-year horizon investigated in the ΔNII calculation. AIs that wish embedded automatic interest rate options to be reflected in the ΔNII calculations have the option to adjust repricing cash flows. For example, if an AI has issued callable bonds, an interest rate shock scenario may lead the AI to call the bond. In this circumstance, the AI has the option to slot the bond on the next call date for the ΔNII calculation (as opposed to the contractual maturity date for the ΔEVE calculation). Note that AIs which choose to follow this option must do so consistently for their portfolios and over time. Also note that, in case the AI chooses to follow the option, all positions reported on Forms 1 to 3 of the IRRBB Return as well as item 16 should reflect those positions used by the AI for the calculation of the ΔEVE.

[22] Institutions may also use 365 days to calculate the time weights.

Next day or less:	$\left(\frac{1}{360}-1\right)\cdot 2\%$	$=-1.994\%$
2 days to 1 month:	$\left(\frac{15}{360}-1\right)\cdot 2\%$	$=-1.917\%$
1 to 3 months:	$\left(\frac{60}{360}-1\right)\cdot 2\%$	$=-1.667\%$
3 to 6 months:	$\left(\frac{135}{360}-1\right)\cdot 2\%$	$=-1.250\%$
6 to 9 months:	$\left(\frac{225}{360}-1\right)\cdot 2\%$	$=-0.750\%$
9 to 12 months	$\left(\frac{315}{360}-1\right)\cdot 2\%$	$=-0.250\%$

Report the weighted net position $N_{i,c}(k)\cdot(t_k-1)\cdot\Delta r_{i,c}(k)$ under items 17b and 17c of each time band. The total impact on earnings over the next 12 months should be calculated by summing the weighted positions in different time bands up to 12 months, as reported under item 17. The amounts reported, with short positions shown in brackets, should be rounded to the nearest HKD million without decimal place.

43. Item 18 – Economic value perspective (impact / scenario analysis)

Institutions should calculate the impact of the six interest rate shock scenarios (see section 5.3 of the SPM IR-1 "Interest Rate Risk in the Banking Book") on economic value of equity (EVE). For each given currency c, the impact of the shock is calculated as follows:

- identify the current risk-free rate[23], denoted by $r_{0,c}(k)$, at the mid-point of each time band k;

- report under item 18a the current EVE $(E_{0,c}(k))$ for each time band k (with mid-point t_k under item 17a), by multiplying the net position $CF_{0,c}(k)$ reported under item 16b by a continuously compounded discount factor[24,25].

$$E_{0,c}(k)=CF_{0,c}(k)\cdot exp\left(-r_{0,c}(k)\cdot t_k\right);$$

- report in row (T) under item 18a the net value of interest rate options (the fair value of all option positions given the yield curve on the valuation date has to be calculated according to the reporting institution's proprietary options pricing model).

[23] This may be determined, for example, based on a secured interest rate swap curve. Institutions may include commercial margins and other spread components in the risk-free rate only if they have been included in the cash flows in item 16 (see paragraph 41).

[24] For the purpose of calculating the EVE impact only, institutions also have the option to slot cash flows into time band mid-points (under item 17a) rather than time bands. This option requires splitting up notional repricing cash flows between two adjacent time band mid-points. Institutions using this option should re-calculate the net positions on this basis and then discount them using the relevant interest rates.

[25] For the purpose of calculating the EVE impact only, institutions may also discount each cash flow using the interest rate that corresponds exactly to the timing of the cash flow, rather than slotting them into time bands.

- for each scenario i, identify the new interest rate $r_{i,c}(k)$ at the mid-point of each time band k, calculate the new net position $CF_{i,c}(k)$ (as net positions under interest rate shock scenarios may vary depending on the way cash flows with optionality are slotted), and calculate the impact on EVE as

$$\Delta E_{i,c}(k) = E_{0,c}(k) - CF_{i,c}(k) \cdot exp\big(-r_{i,c}(k) \cdot t_k\big);$$

- report the amount (with short positions shown in brackets) under item 18b to 18g of each time band and round the amount to the nearest HKD million without decimal place;

- calculate the net (fair) value of interest rate options $VAO_{i,c}$ using the new yield curve under each interest rate shock scenario i, and assuming a relative increase in the implicit volatility of 25%;

- report in row (T) under item 18b to 18g the interest rate option risk measure $KAO_{i,c}$ under each scenario i, calculated as $KAO_{i,c} = VAO_{0,c} - VAO_{i,c}$, where $VAO_{0,c}$ denotes the current net value of interest rate options (as reported in row (T) under item 18a);

- report the sum of the positions in Total (A to T) under item 18; report zero if the sum is less than zero, i.e.

$$\Delta E_{i,c} = max\big(0, \textstyle\sum_k \Delta E_{i,c}(k) + KAO_{i,c}\big);$$

- report the Tier 1 capital of the institution at the reporting date in row (U) under item 18. The amount reported should be consistent with the amount of "Tier 1 Capital After Deductions" reported in the Form MA(BS)3. For overseas incorporated AIs that are not exempted from the local IRRBB framework, they should report the Tier 1 capital of their head office; and

- express the impact on EVE as a percentage of Tier 1 capital under item 18.

- report the total interest rate-sensitive position in the given currency as a percentage of total on-balance sheet interest rate-sensitive position across all currencies (as defined in paragraph 8), in row (V) under item 18.

44. <u>Item 19 – Basis risk (impact / scenario analysis)</u>

Impact on earnings of an institution due to basis risk is measured by the following two scenarios:

(i) all rates except for fixed and managed rates on interest rate-sensitive assets are subject to the parallel up shock; and

(ii) managed rates on interest rate-sensitive assets are subject to the parallel down shock while other rates remain unchanged.

The impact on earnings is calculated under item 19 by assuming that the changes in interest rates last for different periods of time (one month, three months, six months and 12 months) under both scenarios. Both on- and off-balance sheet positions should be included. The calculation is similar to that under the earnings perspective (see paragraph 42 above) except that different types of interest rates are subject to different changes. Nevertheless, for floating rate assets that are subject to prime rate (managed rate) caps, they should be re-classified as managed rate assets if the cap becomes binding under scenario (i) for the purpose of calculating the impact on earnings due to basis risk.

For example, assume an institution has a HKD 1 billion floating rate mortgage loan priced at HIBOR+200bps, to be repriced in 2 months, subject to a prime rate cap. The current HIBOR rate is 0.5% and the prime rate is at 4%. Under scenario (i), the prime rate cap on the mortgage loan would become binding. Assuming the scenario lasts for 3 months (assuming that all positions are repriced at the mid-point of each time band), the impact on earnings is an increase of HKD 1.25 million, calculated as:

$$1000 \cdot \frac{(60-90)}{360} \cdot \Big(\min[4\%, 0.5\% + 2\% + 2\%] - 0.5\% - 2\%\Big) = -1.25$$

Under scenario (ii), if an institution has total managed rate assets of HKD 50 million and HKD 950 million respectively in the second (2 days to 1 month) and the third (1 to 3 months) time bands, a drop of 200 basis points in managed rates for three months (assuming 90 days) would reduce interest income from the assets by approximately HKD 1.791 million during the period. The computation (assuming that all positions are repriced at the mid-point of each time band) is as follows:

Time Band	Time Weight (for a drop of 90 days)	Position HKD million	Impact on earnings HKD million
Next day or less:	$\frac{(1-90)}{360} \cdot -2\% = 0.49$	*0*	*0*
2 days to 1 month:	$\frac{(15-90)}{360} \cdot -2\% = 0.417\%$	*50*	*0.208*
1 to 3 months:	$\frac{(60-90)}{360} \cdot -2\% = 0.167\%$	*950*	*1.583*
3 to 6 months:	*NA*	*0*	*NA*
6 to 12 months:	*NA*	*0*	*NA*
		Total =	*1.791*

Hong Kong Monetary Authority
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Annex 1

Computation of weighted average yield / weighted average interest costs

The following is an example showing the method of calculating the weighted average yield / interest costs: (Please note that the rates used are for illustration only. Reporting institutions should use the actual rates that are applicable to their interest rate-sensitive assets and liabilities.)

Items 1a, 1b / Items 5a, 5b	Amount reported	Of which
Row (A)	100	20 are priced at 2% per month and 80 are priced at 8% per annum
Row (B)	350	200 are priced at 10% and 150 are priced at 9% per annum
Row (C)	50	50 are priced at 12% per annum
Row (D)	0	
Row (E)	0	
Row (F)	0	
Row (G)	0	
Row (H)	0	
Row (I)	500	200 are priced at 13% and 300 are priced at 14% per annum
Row (J)	0	
Row (K)	0	
Row (L)	0	
Row (M)	0	
Row (N)	0	
Row (O)	0	
Row (P)	0	
Row (Q)	0	
Row (R)	0	
Row (S)	0	
Total (A to S)	***1000***	

Weighted average yield / interest costs to be reported in items 1c, 1d / items 5c, 5d are calculated as follows:

(i) for *row (A)*
$(20 \times ((1 + 2\%)^{12} - 1) + 80 \times 8\%) \div 100 \times 100\% = 11.20\%$

(ii) for *row (B)*
$(200 \times 10\% + 150 \times 9\%) \div 350 \times 100\% = 9.57\%$

(iii) for *row (C)*
$(50 \times 12\%) \div 50 \times 100\% = 12.00\%$

(iv) for *row (I)*
$(200 \times 13\% + 300 \times 14\%) \div 500 \times 100\% = 13.60\%$