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Interest Rate Risk in the Banking Book

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I INTRODUCTION

1 Purpose

1 This consultation paper sets out the Hong Kong Monetary Authority's (HKMA) proposals for updating the current Supervisory Policy Manual (SPM) module IR-1 "Interest Rate Risk Management"[1] and the return of "MA(BS)12 – Interest Rate Risk Exposures"[2] (IRR return).

2 The HKMA invites comments on the proposals in this paper, as well as the draft SPM and IRR return, by 11 August 2017.

3 Following the close of this consultation, the HKMA will further refine its proposals taking into account the feedback received. We intend to publish the final SPM in Q3 2017, with the expectation that AIs should be ready to measure and report interest rate exposure measures based on the new standardised framework by 1 January 2018.

2 Background

4 In April 2016 the Basel Committee on Banking Supervision (BCBS) issued new standards on "Interest rate risk in the banking book"[3] (IRRBB). These standards are intended to replace an earlier guidance set out in the 2004 "Principles for the management and supervision of interest rate risk"[4], which laid out the principles and the methods expected to be used by banks for measuring, managing, monitoring and controlling interest rate risk.

5 Under the new BCBS standards, banks are required to calculate their IRRBB exposures based on the impact on economic value of equity (EVE) under a set of prescribed interest rate shock scenarios, either using the standardised framework or internal models. Banks that have IRRBB exposures exceeding 15% of their Tier 1 capital are identified as "outliers" and considered as potentially having undue IRRBB and subject to review. In addition, banks are required to disclose their IRRBB exposures to the public on a regular basis.

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1 www.hkma.gov.hk/media/eng/doc/key-functions/banking-stability/supervisory-policy-manual/IR-1.pdf
2 www.hkma.gov.hk/media/eng/doc/key-functions/banking-stability/supervisory-policy-manual/IR-1-return.pdf
3 www.bis.org/bcbs/publ/d368.htm
4 www.bis.org/publ/bcbs108.htm

6 The HKMA proposes to implement the new BCBS framework locally, building on the proposals set out in this paper, from 1 January 2018. The updated SPM will set out the key elements of the standardised framework, as well as the HKMA's approach to the supervision of AI's IRRBB management and monitoring of AI's IRRBB exposures. AIs will be required to calculate and report their IRRBB exposures based on the standardised framework under the updated IRR return. The detailed proposals are set out in sections II, III and IV. The revised SPM and IRR return can be found at www.hkma.gov.hk/eng/key-functions/banking-stability/basel-3/consultation_on_implementation_of_irrbb.shtml.

II APPLICATION

3 Scope

7 The new BCBS framework is applicable to all internationally active banks. National supervisors may however extend the framework to a wider range of banks. Consistent with the current SPM and IRR return, and in line with our policy on the local implementation of BCBS standards, we propose that the new framework should be applicable to all authorized institutions (AIs). Nonetheless, the HKMA adopts a risk-based supervisory approach and will monitor and supervise AIs' management of IRRBB having regard to the nature and complexity of their activities.

8 While overseas incorporated AIs are not subject to the capital adequacy regime in Hong Kong, they should be able to measure and report their IRRBB exposures according to the new framework. Nevertheless, overseas incorporated AIs will not be subject to the outlier test (see Subsection 5 below). In addition, some of the IRRBB management guidelines, e.g. the guideline on capital adequacy assessment process (CAAP), only apply to locally incorporated AIs.

9 Currently, the IRR return is completed by locally incorporated AIs on a solo basis. However, to be consistent with the BCBS standards, we propose that the new framework should be applied to locally incorporated AIs on a consolidated basis. The scope of consolidation should follow that used for the purpose of Capital Adequacy Ratio (CAR) requirements as defined in the Banking (Capital) Rules. For overseas incorporated AIs, the reporting scope will stay the same, i.e. covering the positions of their Hong Kong operations only.

10 The current IRR return excludes all internal deals (except in the case where an overseas incorporated AI executes a deal with entities outside its reporting scope). Under the new framework, we propose to define internal deals as transactions

between units within the relevant reporting scope of the institution. Internal deals within the banking book should not be reported under the IRR return. For internal deals between the banking book and the trading book, the banking book leg of the internal deal should be reported if and only if the trading book leg of the deal is recognised under the market risk capital framework in the Banking (Capital) Rules.

4 Measurement of IRRBB

11 The new BCBS framework allows banks to use either the standardised framework or internal models to calculate EVE-based measures of IRRBB. We consider the standardised framework, with its six prescribed shock scenarios, to be both relevant and appropriate for the purposes of measuring the IRRBB exposures of all AIs. It is therefore our intention to require all AIs to be able to measure their IRRBB exposures based on the standardised EVE risk measure. The proposed changes to the SPM and the IRR return, following the standardised framework, are summarised in Sections III and IV.

12 To clarify, the use of the standardised framework is required for the purpose of regulatory reporting and identification of outliers only. AIs are still expected to use their internal methods for risk management purposes and CAAP. The HKMA may review the outputs of such internal methods, especially for (i) AIs that have been identified as outliers and (ii) outputs that differ substantially from those derived under the standardised framework.

13 Under the new BCBS framework, the measurement of IRRBB should be based on outcomes of EVE as well as earnings-based measures. While we will not provide a standardised methodology for calculating earnings-based measures of IRRBB, AIs are expected to use a methodology commensurate with their business activities and risk profile, in accordance with the IRRBB management principles in the updated SPM. In addition, AIs are required to publicly disclose their earnings-based IRRBB exposures on a regular basis (see Subsection 12).

5 Outlier test

14 The current SPM (para. 4.5.5) states that when reviewing the capital adequacy of locally incorporated AIs, the HKMA will be particularly attentive to "outlier AIs" – those with a decline in EVE of more than 20% of their capital base as a result of applying the standardised interest rate shock. Following the new BCBS framework, we propose to update the threshold to 15% of Tier 1 capital. In addition, an AI will be

identified as an outlier if its decline in EVE exceeds the threshold under any one of the six standardised interest rate shock scenarios.

15 Once identified as an outlier, the AI may be asked to strengthen its capital position or reduce its interest rate risk exposures, depending on the circumstances of each case. However, the outlier AI may not need to take any action if it can demonstrate that its outlier status results from the AI's specific IRRBB profile that is not adequately captured by the standardised framework and that the AI's firm-specific internal model would be able to better reflect its actual IRRBB exposure.

III THE STANDARDISED FRAMEWORK

6 Basic calculation methodology

16 This section describes our proposed changes to the SPM and the IRR return for the purpose of measuring IRRBB exposures, largely based on the BCBS framework. The calculation of the standardised EVE risk measure involves the following key steps:

- For a given currency c and time band k, calculate the net position $CF_{0,c}(k)$ (and $CF_{i,c}(k)$ under interest rate shock scenario i) by slotting cash flows into time bands based on their earliest interest rate repricing dates, both under current conditions and under each of the six interest rate shock scenarios (see Subsection 8). Both notional principals and coupon cash flows should be slotted (see Subsection 9.2 below). Note that the net position under interest rate shock scenarios may vary depending on the way cash flows with optionality are slotted (see Subsection 7).

- For each scenario i, calculate the impact on EVE ($\Delta E_{i,c}(k)$) for a given currency and time band as

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

  where $r_{0,c}(k)$ denotes the current risk-free rate (at the midpoint of the time band), $r_{i,c}(k)$ denotes the risk-free rate under scenario i (at the midpoint of the time band) and t_k denotes the midpoint of each time band k (measured in years – see Subsection 9.1).

- Calculate the interest rate option risk measure $KAO_{i,c}$ under each scenario i as the current net value of interest rate options ($VAO_{0,c}$) minus the net value of interest rate options under the interest rate shock scenario ($VAO_{i,c}$), i.e. $KAO_{i,c} = VAO_{0,c} - VAO_{i,c}$. The net value of interest rate options under the interest rate shock scenario should be calculated using the new yield curve under

scenario i, and assuming a relative increase in the implicit volatility of 25%. See Subsection 7.4 for more details on interest rate options.

- Calculate the impact on EVE across all time bands for a given currency and scenario as

$$\Delta E_{i,c} = \max\left(0, \sum_k \Delta E_{i,c}(k) + KAO_{i,c}\right)$$

- Repeat the above for all applicable currencies, including HKD and USD, as well as other currencies in which the AI has significant positions (see paragraph 17 below). In addition, AIs are required to treat onshore Renminbi (CNY) and offshore Renminbi (CNH) as separate currencies. AIs should treat their 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.
- The aggregate EVE risk measure (ΔE) across all applicable currencies is calculated as the maximum loss across the six interest rate shock scenarios:

$$\Delta E = \max_{i \in \{1,2,\ldots,6\}} \left(\sum_c \Delta E_{i,c}\right)$$

17 The BCBS framework requires AIs to slot all future repricing cash flows (including coupon cash flows – see Subsection 9.2) from:

- interest rate-sensitive assets, which are not deducted from Common Equity Tier 1 (CET1) capital and which exclude (i) fixed assets such as real estate or intangible assets and (ii) equity exposures in the banking book;
- interest rate-sensitive liabilities, (including all non-remunerated deposits), other than CET1 capital under the Basel III framework; and
- interest rate-sensitive off-balance sheet items.

The Completion Instructions of the current IRR return will be amended to reflect the definition above. Most notably, non-remunerated deposits (e.g. deposits in current accounts) will need to be reported as non-maturity deposits under interest-bearing liabilities.

18 The methodology for slotting cash flows into time bands is similar to the one in the Completion Instructions of the current IRR return, i.e. according to the earliest interest repricing date. However, there is a separate methodology for slotting cash flows with optionality, including fixed rate loans subject to prepayment risk, term deposits subject to early redemption risk, non-maturity deposits and automatic interest rate options – see Subsection 7 for details.

19 As in the Completion Instructions of the IRR return, an AI would be regarded as having a significant position in a currency if the sum of its on-balance sheet assets or liabilities, whichever is the larger, in that currency and its off-balance sheet positions in the same currency is more than 5% of its total on-balance sheet assets in all currencies. Additionally, we propose to set a cap on total positions in non-reported currencies. That is, the total positions in non-reported currencies could not exceed 10% of an AI's total on-balance assets in all currencies. If an AI's total positions in non-reported currencies exceeded 10% of its total assets, the AI should report these positions, starting from the largest, until the remaining positions in non-reported currencies fall below 10% of its total assets.

20 AIs also need to identify the risk-free rate for the midpoint of each time band and for each currency at the reporting date ($r_{0,c}(k)$). This may be determined, for example, based on a secured interest rate swap curve. AIs may add commercial margins and other spread components to this rate only if they have been included in the cash flows (see Subsection 9.2 below).

7 Slotting cash flows with optionality

7.1 *Fixed rate loans subject to prepayment risk*

21 Fixed rate loans subject to prepayment risk are fixed rate loan products where the full economic cost of prepayments cannot be charged, or charged only for prepayments above a certain threshold, to the borrower.

22 Non-retail fixed rate loans subject to prepayment risk should be treated as an asset with embedded options and decomposed into a standard fixed rate loan and an automatic interest rate option. Retail loans are defined as loans satisfying the criteria in section 64(1)(a) and 64(1)(b) of the Banking (Capital) Rules.

23 For retail fixed rate loans subject to prepayment risk, AIs should determine, using own estimates, the baseline conditional prepayment rate $CPR_{0,c,p}$ for a given portfolio p of homogeneous loan products subject to prepayment risk denominated in a given currency c, under the prevailing term structure of interest rates.[5] The conditional prepayment rate under interest rate shock scenario i is then given by:

$$CPR_{i,c,p} = \min\left(1, \gamma_i \cdot CPR_{0,c,p}\right)$$

[5] The base CPR may vary over the life of the loan. In this case, it is denoted $CPR_{0,c,p,k}$.

where $CPR_{0,c,p}$ is the (constant) baseline CPR and γ_i is a multiplier for scenario i as given in Table 1.

24 The prepayments on the fixed rate loans can be broken down to scheduled payments adjusted for prepayment and uncompensated prepayments[6]. The cash flows to be slotted into time band k are given by:

$$CF_{i,c,p}(k) = CF_{S,c,p}(k) + CPR_{i,c,p} \cdot NO_{i,c,p}(k-1)$$

where $CF_{S,c,p}(k)$ refers to the scheduled interest payment[7] and principal repayment, and $NO_{i,c,p}(k-1)$ denotes the notional outstanding at the end of the previous period.[8] AIs should repeat the above for each loan portfolio and currency to calculate the aggregate position in each time band.

Scenario number (i)	Interest rate shock scenarios	γ_i (scenario multiplier)
1	Parallel up	0.8
2	Parallel down	1.2
3	Steepener	0.8
4	Flattener	1.2
5	Short rate up	0.8
6	Short rate down	1.2

Table 1

7.2 *Term deposits subject to early redemption risk*

25 Term deposits subject to early redemption risk are term deposits that can be withdrawn early at the discretion of the customer. Term deposits may only be treated as a standard fixed rate deposit and be slotted into the time band according to their contractual maturity dates if:

- the depositor has no legal right to withdraw the deposit; or

[6] Uncompensated prepayments are prepayments where the full economic cost of prepayments cannot be charged, or charged only for prepayments above a certain threshold, to the borrower.

[7] The scheduled interest payment should only be included when reporting net positions including coupon cash flows in the IRR return.

[8] For simplicity, we have assumed there is no annual limit on prepayments. If an AI has an annual limit on uncompensated prepayments, this limit will apply.

- an early withdrawal results in a significant penalty that at least compensates for the loss of interest between the date of withdrawal and the contractual maturity date and the economic cost of breaking the contract.[9]

If neither of these conditions is met, the depositor holds an option to withdraw and the term deposits are deemed to be subject to early redemption risk.

26 Non-retail term deposits or bonds subject to early redemption risk should be treated as a liability with embedded options and decomposed into a standard term deposit and an automatic interest rate option. Retail deposits are defined as deposits placed with a bank by individual persons. Deposits made by small business customers, as defined in Rule 39 of Banking (Liquidity) Rules, can also be treated as retail deposits. Deposits from legal entities, sole proprietorships or partnerships should be categorised as non-retail deposits.

27 For retail term deposits, AIs should calculate the cash flows using the following methodology. For each homogeneous portfolio p of term deposits in a given currency c, AIs must determine the baseline term deposit redemption ratio $TDRR_{0,c,p}$ and use it to slot the notional repricing cash flows. Term deposits which are expected to be redeemed early should be slotted into the overnight time band ($k = 1$).

28 The term deposit redemption ratio for time band k under scenario i is obtained by multiplying $TDRR_{0,c,p}$ by a scalar u_i as follows:

$$TDRR_{i,c,p} = \min\left(1, u_i \cdot TDRR_{0,c,p}\right)$$

where the values of the scalars u_i are set out in Table 2.

29 The notional repricing cash flows which are expected to be withdrawn early under interest rate shock scenario i are given by:

$$CF_{i,c,p}(1) = TD_{0,c,p} \cdot TDRR_{i,c,p}$$

where $TD_{0,c,p}$ is the outstanding amount of term deposits in portfolio p. AIs should repeat the above for each loan portfolio and currency to calculate the aggregate position in each time band.

[9] The economic cost of breaking the contract is the additional funding cost the AI would incur due to the early redemption, assuming the AI obtained term funding at the current interest rate, or the interest rate under the relevant interest rate shock scenario, to cover the remaining life of the original term deposit.

Scenario number (i)	Interest rate shock scenarios	u_i (scenario multiplier)
1	Parallel up	1.2
2	Parallel down	0.8
3	Steepener	0.8
4	Flattener	1.2
5	Short rate up	1.2
6	Short rate down	0.8

Table 2

7.3 *Non-maturity deposits*

30 Non-maturity deposits (NMDs) are deposits without a set maturity date that can be withdrawn at any time without notice, but a portion of which tend to remain with the AI in practice (i.e. core deposits). Non-interest-bearing deposits (e.g. deposits in current accounts) are also included in NMDs.

31 In the current IRR return (see para. 27 of the Completion Instructions), managed rate liabilities (including NMDs) are slotted into the appropriate time bands according to the earliest date on which their interest rates can be adjusted. We propose that AIs retain this option, but can alternatively choose to slot them based on behavioural maturity according to the standardised framework below.

32 NMDs should first be segmented into retail and non-retail categories. Retail deposits should be considered as held in a transactional account when regular transactions are carried out in that account (e.g. when salaries are regularly credited) or when the deposit is non-interest bearing. Other retail deposits should be considered as held in a non-transactional account.

33 AIs should first identify stable NMDs, i.e. those that are found to remain undrawn with a high degree of likelihood, using observed volume changes over the past 10 years. AIs should then identify core deposits, which are stable NMDs that are unlikely to reprice even under significant changes in the interest rate environment. All other NMDs are non-core deposits. AIs are required to estimate the level of core deposits using this two-step procedure for each NMD category, subject to the caps in Table 3.

34 NMDs should finally be slotted into the appropriate time band. Non-core deposits should be considered as overnight deposits and accordingly should be placed into the overnight time band. Core deposits should be slotted according to their average behavioural maturity, which should be determined by AIs using an appropriate procedure subject to the caps in Table 3.

	Cap on proportion of core deposits to total NMDs (%)	Cap on average maturity of core deposits (years)
Retail/transactional	90	5
Retail/non-transactional	70	4.5
Non-retail	50	4

Table 3

7.4 *Automatic interest rate options*

35 As described in Subsection 6, AIs should take into account the value of their interest rate options when calculating the standardised EVE risk measure. Under the standardised framework, interest rate options (also known as automatic interest rate options[10]) include both standalone options[11] and embedded options.[12] Prepayment options on non-retail loans (see Subsection 7.1) and early redemption options on non-retail deposits or bonds (see Subsection 7.2) should also be treated as embedded options. We propose that all bought and sold interest rate options should be included in the calculation of the standardised EVE risk measure.

36 Following the BCBS framework, AIs should report the estimated value of the option contracts to the option holder (see Subsection 6), which are to be calculated according to the reporting AI's proprietary options pricing model. Under interest rate shock scenarios, the option values should be calculated using a full-revaluation approach, i.e. AIs should re-calculate the value of interest rate options by assuming:

- a yield curve in the given currency under the interest rate shock scenario i; and
- a relative increase in the implicit volatility of 25%.

7.5 *Off-balance sheet commitments*

37 The new BCBS standards included fixed rate loan commitments as a common product with behavioural optionality. 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. Such commitments can also give rise to interest rate risk and therefore need to be taken into account in the management of IRRBB.

[10] These are called automatic interest rate options because they will almost certainly be exercised if it is in the holder's financial interest to do so. This is in contrast with behavioural options embedded implicitly or within the terms of financial contracts, such that changes in interest rates may affect the behaviour of the client.

[11] For example, exchange-traded or over-the-counter option contracts.

[12] 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 their financial interest to do so. An example of a product with embedded options is a floating rate mortgage loan with embedded caps and/or floors.

38 We propose to require AIs to include fixed rate loan and fixed rate deposit commitments in the calculation of IRRBB exposures. Both retail and wholesale commitments should be included. While the HKMA will not provide a standardised methodology, AIs 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 in the off-balance sheet section (item 15) of the IRR return, following the reporting method for forward arrangements for fixed rate loans and fixed rate deposits.

8 Interest rate shock scenarios

39 Following the BCBS framework, the change in the risk-free interest rate $\Delta r_{i,c}(k)$ for interest rate shock scenario i, currency c and time band k is proposed to be calculated according to the equations below (see Table 4 for values of $\bar{R}$):

(i) parallel shock up:

$$\Delta r_{1,c}(k) = \bar{R}_{parallel,c}$$

(ii) parallel shock down:

$$\Delta r_{2,c}(k) = -\bar{R}_{parallel,c}$$

(iii) steepener shock:

$$\Delta r_{3,c}(k) = -0.65 \cdot \bar{R}_{short,c} \cdot e^{\frac{-t_k}{4}} + 0.9 \cdot \bar{R}_{long,c} \cdot \left(1 - e^{\frac{-t_k}{4}}\right)$$

(iv) flattener shock:

$$\Delta r_{4,c}(k) = 0.8 \cdot \bar{R}_{short,c} \cdot e^{\frac{-t_k}{4}} - 0.6 \cdot \bar{R}_{long,c} \cdot \left(1 - e^{\frac{-t_k}{4}}\right)$$

(v) short rates shock up:

$$\Delta r_{5,c}(k) = \bar{R}_{short,c} \cdot e^{\frac{-t_k}{4}}$$

(vi) short rates shock down:

$$\Delta r_{6,c}(k) = -\bar{R}_{short,c} \cdot e^{\frac{-t_k}{4}}$$

40 The BCBS framework allows national supervisors to set floors to the post-shock interest rates at their discretion. We propose to set a floor of −2%, so that the final post-shock interest rate is given by:

$$r_{i,c}(k) = \max\left(r_{0,c}(k) + \Delta r_{i,c}(k), -2\%\right)$$

41 Table 4 will be updated from time to time based on parameter updates provided by the BCBS. AIs should contact the HKMA if they need to report a currency that is not in the table.

Specified size of interest rate shocks ($\bar{R}$, in bps)								
	ARS	AUD	BRL	CAD	CHF	CNY	CNH	EUR
Parallel	400	300	400	200	100	250	250	200
Short	500	450	500	300	150	300	300	250
Long	300	200	300	150	100	150	150	100

	GBP	HKD	IDR	INR	JPY	KRW	MXN
Parallel	250	200	400	400	100	300	400
Short	300	250	500	500	100	400	500
Long	150	100	350	300	100	200	300

	RUB	SAR	SEK	SGD	TRY	USD	ZAR
Parallel	400	200	200	150	400	200	400
Short	500	300	300	200	500	300	500
Long	300	150	150	100	300	150	300

Table 4

9 Other

9.1 *Time bands and midpoints*

42 The current IRR return has 15 time bands. We propose to use a more granular list of time bands (20 in total[13]), which can be found in Table 5. Each time band includes its upper limit but not its lower limit, e.g. the '3 to 4 years' time band can be expressed as $3y < t \leq 4y$.

43 In the current IRR return, the time weight of each time band is calculated using 365 days in a year. Following the BCBS standards, we propose to use 360 days in a year, and calculate the time weights based on the midpoints of each time band (measured in years) as listed in Table 5. The detailed formula used to compute the time weights can be found in the Completion Instructions of the updated IRR return.

[13] These include the 19 time bands from the BCBS standardised framework, plus an additional one (2 to 7 days) to be consistent with other HKMA returns.

Time band	Midpoints	Time band	Midpoints
Next day or less	$\frac{1}{360} = 0.0028$	3 to 4 years	3.5
2 to 7 days	$\frac{4.5}{360} = 0.0125$	4 to 5 years	4.5
8 days to 1 month	$\frac{19}{360} = 0.0528$	5 to 6 years	5.5
1 to 3 months	$\frac{60}{360} = 0.1667$	6 to 7 years	6.5
3 to 6 months	$\frac{135}{360} = 0.375$	7 to 8 years	7.5
6 to 9 months	$\frac{225}{360} = 0.625$	8 to 9 years	8.5
9 to 12 months	$\frac{315}{360} = 0.875$	9 to 10 years	9.5
1 to 1.5 years	1.25	10 to 15 years	12.5
1.5 to 2 years	1.75	15 to 20 years	17.5
2 to 3 years	2.5	More than 20 years	25

Table 5

44 The standardised framework requires AIs to slot the cash flows to time bands first, and then discount them using the interest rate at the midpoint of each time band.[14] For example, a 3.9-year loan will be discounted using the 3.5-year interest rate. The HKMA would like to seek the views of the industry on whether they would prefer to discount each cash flow using the interest rate that corresponds exactly to the timing of the cash flow, i.e. to discount a 3.9-year loan using the 3.9-year interest rate, etc. This might be less costly for AIs that already discount their cash flows this way in their risk management systems.

9.2 *Coupon cash flows*

45 In the current IRR return, only the notional principal of the positions need to be slotted into time bands. To be consistent with the BCBS standards, we propose that coupon payments should also be slotted from the economic value perspective. For fixed rate positions, coupon payments should be slotted into the appropriate time bands according to their payment schedule until the contractual maturity[15]. For

[14] AIs will also have the option to slot cash flows onto time band midpoints rather than time bands when calculating the standardised EVE risk measure. This option requires splitting up notional repricing cash flows between two adjacent time band midpoints. For example, a 3.9-year loan will need to be split between the 3.5-year midpoint and the 4.5-year midpoint, and then discounted using the relevant interest rates.

[15] In the case of cash flows with optionality (see Subsection 7), the cash flows slotted to each time band should be adjusted to take into account the expected prepayment or early withdrawal behaviour.

floating rate positions, coupon payments should be slotted into the appropriate time bands according to their payment schedule until the next repricing date. We propose to add a new column to the IRR return template where AIs should report net positions including coupon cash flows.

46 Regarding commercial margins and other spread components, AIs have an explicit choice to either include or exclude them in the cash flows. If institutions have 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[16], 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.

47 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 is 2% and the next repricing date is in a year's time.

	Including spread components	Excluding spread components
Next day or less:		
2 to 7 days:		
8 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		

48 The example below shows how coupon payments should be slotted for a fixed rate loan with a notional amount of HKD 100 million. The loan expires after ten years. The

[16] 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.

interest rate on the loan, payable annually, is 5% including spread components and 4% excluding spread components.

	Including spread components	Excluding spread components
Next day or less:		
2 to 7 days:		
8 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		

9.3 *Impact on earnings*

49 Consistent with the BCBS framework, we propose to require AIs to report the impact on earnings under two interest rate shock scenarios: parallel up and parallel down (see Subsection 8). When computing the earnings impact, AIs are required to re-calculate the net positions, as they may vary under interest rate shock scenarios depending on the way cash flows with optionality are slotted (the net positions should be consistent with those used for EVE impact – see Subsection 7). Otherwise, the methodology for computing the earnings impact remains largely the same as in the current IRR return, with minor modifications reflecting the new time bands and time weights.

IV OTHER AMENDMENTS

10 IRR return amendments

10.1 *Reporting scope and frequency*

50 We propose that locally incorporated AIs should report the return both on a solo basis (combined positions of local and overseas offices) and on a consolidated basis (where

applicable). Overseas incorporated institutions are required to report the positions of their Hong Kong operations only. The return should be submitted to the HKMA no later than six weeks after the end of each quarter.

10.2 *Amendments to the IRR return template*

51 The revised IRR return template (available on the HKMA website) does not show the tracked changes. For the ease of reference, the following is a list of proposed amendments to the IRR return template:

- More granular time bands
- New columns under Item 2 "Fixed rate assets": "Residential mortgage loans subject to prepayment risk" and "Other assets subject to prepayment risk".
- New columns under Item 6 "Fixed rate liabilities": "Deposits subject to early redemption risk" and "Other liabilities subject to early redemption risk".
- Replaced "Variable rate" with "Floating rate".
- Rows A to T under Item 14 "Options" have been greyed out.
- New row under Item 18 "Economic value perspective": "Options".
- New columns under Item 16 "Net positions": "Excluding coupon cash flows" and "Including coupon cash flows".
- Item 17a "Time weight on earnings" and 18a "Weighting factor for standardised interest rate shock" will be replaced by a single item 17a "Time band midpoint (years)". AIs should calculate the appropriate time weights based on the time band midpoints, according to the Completion Instructions in the updated IRR return.
- New column under Item 17 "Earnings perspective": Impact on earnings over the next 12 months (parallel down).
- New columns under Item 18 "Economic value perspective" for the current EVE and the impact on EVE under each of the six interest rate shock scenarios.

10.3 *Other*

52 We updated the example calculation in Annex 1, and deleted Annex 2 and Annex 3.

11 SPM amendments

53 Following the BCBS framework, we made a number of updates to the IRRBB management principles in the SPM, such as factors to be considered when developing stress-testing scenarios and assessing capital adequacy for interest rate risk as part of the CAAP. We also updated the BCBS principles for the management of IRRBB in

Annex A, and added a list of factors influencing the exercise of behavioural options in Annex B. The original Annex B and Annex C are deleted. Additionally, we made a number of changes in the title and main text of the SPM to clarify that the main focus of the SPM is on interest rate risk *in the banking book*. Detailed changes can be found in the revised SPM on the HKMA website.

12 Public disclosure

54 According to the BCBS standards, banks should disclose their interest rate risk exposures to the public on an annual basis. We plan to implement this disclosure requirement as part of the second phase of the BCBS Pillar 3 review. The timing of the implementation of the BCBS Pillar 3 review in Hong Kong will be communicated to AIs separately in due course.

13 Supplementary IRR return

55 The return of "MA(BS)12(i) – Interest Rate Risk Exposures (Supplementary Information)"[17] (supplementary IRR return) collects supplementary information on the weighted average interest costs of interest bearing liabilities denominated in Hong Kong dollars of AIs on a monthly basis. The reporting items are the same as those of interest bearing and noninterest bearing liabilities in Hong Kong dollars in the current IRR return. The information collected in the supplementary IRR return will be used for the compilation of the monthly composite interest rate for Hong Kong, which aims to provide an overall picture of the average interest cost of funds in the banking sector, and its changes over time.

56 Given that the supplementary IRR return is primarily used for statistical purposes, we plan to keep the existing layout of the supplementary IRR return. In addition, for locally incorporated AIs, the supplementary IRR return will continue to be reported on a solo basis. However, the definition of reporting items[18] and the methodology for slotting of cash flows should be consistent between the IRR return and the supplementary IRR return.

57 Reflecting the above, we have revised the Completion Instructions of the supplementary IRR return, which can be found on the HKMA website at www.hkma.gov.hk/eng/key-functions/banking-stability/basel-3/consultation_on_implementation_of_irrbb.shtml.

[17] www.hkma.gov.hk/eng/key-functions/banking-stability/banking-policy-and-supervision/regulatory-framework/12i.shtml

[18] For example, non-remunerated deposits will need to be reported under interest bearing liabilities as in the IRR return.