Interest Rate Risk Management

by the Banking Policy Department

In December 2002, the HKMA issued a guidance note on "Interest Rate Risk Management" together with a revised "Return of Interest Rate Risk Exposures" (IRR return). The guidance note sets out the HKMA's supervisory approach to interest rate risk and the principles and sound practices relating to interest rate risk management. In particular, it provides guidance to authorized institutions (AIs) on effective systems for measuring, monitoring and controlling interest rate risk in the banking book. The IRR return was revised to facilitate the HKMA's monitoring of AIs' level and trend of interest rate risk exposures. On-line access to the guidance note and revised IRR return is available under the "Supervisory Policy Manual" in the HKMA's public website (www.hkma.gov.hk).

AIs are given a period of one year (i.e. until the end of 2003) to comply with the relevant requirements of the guidance note. This recognises the fact that some may need time to develop or enhance their internal systems for monitoring interest rate risk. AIs are required to report on the revised IRR return starting from the end-December 2003 position.

This memo addresses some common questions raised by AIs regarding the revised supervisory and reporting framework for interest rate risk. The opportunity is also taken to clarify the reporting method of inverse-floater debt securities in the IRR return. This type of debt securities has a coupon rate set at a fixed rate less a reference market rate (e.g. 6-month HIBOR). Unlike conventional floating rate debt securities, holders of such securities will benefit if interest rates fall.

GUIDANCE NOTE ON INTEREST RATE RISK MANAGEMENT

Q1. Are the requirements of the guidance note applicable to all AIs?

A1. While the guidance note is of general application to all AIs, some of the best practices recommended in the guidance note (e.g. use of sophisticated interest rate risk measurement techniques) are relevant only to AIs with significant and complex operations involving interest rate risk. The general principle is that AIs should have adequate systems for managing interest rate risk that are appropriate to the nature and complexity of their interest rate risk exposures.

In respect of the monitoring of AIs' interest rate risk under the economic value approach, the 20% benchmark mentioned under paragraph 4.5.5 of the guidance note does not apply to overseas incorporated AIs (see also Q4 below).

Q2. Are AIs expected to use complex models to measure their interest rate risk?

A2. The use of complex models to measure interest rate risk is not mandatory. The key consideration is whether the measurement techniques employed by AIs are commensurate with the nature of their portfolios and risks involved.

As a minimum, AIs should be capable of using the simpler techniques such as gap analysis for measuring interest rate risk. However, AIs having relatively complex risk profiles (e.g. material interest rate risk arising from different business activities and products) are expected to employ more sophisticated techniques such as simulation approaches for evaluating the possible effects of interest rate risk. A sample simulation model of net interest income is presented in Annex C of the guidance note.

Q3. Are the risk tolerance limits set by AIs on their interest rate risk exposures subject to the HKMA's endorsement?

A3. AIs are not required to seek the HKMA's endorsement for their internal limits on interest rate risk. Nevertheless, the HKMA will assess the adequacy and effectiveness of such limits, based on the principles set out in subsection 6.5 of the guidance note, through regular on-site examinations.

Q4. Based on the results of hypothetical stress scenarios reported in the revised IRR return, the HKMA may identify some AIs that have a significant level of repricing risk or basis risk, or whose interest rate risk leads to an economic value decline of more than 20% of their capital base as a result of applying a standardised interest rate shock[1] to the banking book (i.e. the 20% benchmark). What actions will the HKMA take in respect of these AIs?

A4. The HKMA will further analyse information from the AI's internal management reports (e.g. maturity/repricing gaps, earnings and economic value simulation estimates and results of stress tests conducted) and discuss with its management to understand its strategies for managing such risks and assess its capacity to absorb the risk of loss. If the HKMA is of the view that the AI's level of interest rate risk is posing excessive risk to its financial position, the AI may be asked to strengthen its capital position (in the case of a locally incorporated AI) or reduce its interest rate risk (through, for example, hedging or restructuring existing positions), depending on the circumstances of each case. The AI may also be subject to additional reporting requirements for its interest rate risk exposures.

Q5. AIs are required to conduct stress tests on their interest rate risk exposures. Would it be acceptable to the HKMA if a foreign AI uses the stress tests conducted by its head office on a group basis for this purpose?

A5. AIs are expected to integrate stress-testing on interest rate risk into their risk management process. The HKMA understands that in some cases the stress tests may be conducted by a foreign AI's head office on a group basis. This is generally acceptable for the purpose of this guidance note so long as the stress tests can reflect the interest rate risk characteristics of the AI's portfolio. AIs having such an arrangement should discuss this with the HKMA.

[1] This interest rate shock measures the impact of a rise in interest rates by 200 basis points on an AI's economic value (expressed as a percentage of its capital base).

REVISED IRR RETURN

Q6. What are the new features of the revised IRR return?

A6. The revised IRR return enables the collection of new information to enhance the HKMA's monitoring and assessment of AIs' interest rate risk exposures. This is achieved by:

- adding new time bands for the reporting of interest rate repricing positions;
- obtaining breakdown of repricing positions for residential mortgage loans and customer deposits;
- applying a standardised 200 basis-point interest rate shock to an AI's interest rate risk exposures. The results will be used for identifying "outlier" AIs against the 20% benchmark (re: paragraph 4.5.5 of the guidance note); and
- using two hypothetical stress scenarios for assessing the impact of basis risk on AIs' earnings.

Q7. Are all AIs subject to the same reporting basis under the revised IRR return?

A7. The reporting basis differs depending on whether the AI is locally incorporated and subject to the market risk capital adequacy regime.[2]

Locally incorporated AIs that are subject to the market risk capital adequacy regime are only required to report their interest rate risk exposures in the banking book in the revised IRR return. This is because their trading positions in interest rate risk are monitored through the "Return of Market Risk Exposures [MA(BS)3A]".

To simplify the reporting framework, other AIs (i.e. locally incorporated AIs that are exempted from the market risk capital adequacy regime[3] and overseas incorporated AIs) are required to report under the revised return the aggregate of their interest rate risk exposures in both the trading book and the banking book. Where necessary, the HKMA may request individual overseas incorporated AIs that have material trading positions to comply with additional reporting requirements in order to distinguish between their trading and non-trading activities for monitoring purposes.

Q8. Under the revised IRR return, the economic value impact of applying the standardised interest rate shock will be separately reported for HKD, USD and other major foreign currencies. How will the HKMA aggregate the overall impact arising from all the reported currencies for the purpose of identifying "outlier" AIs?

A8. The HKMA will sum the absolute amounts of the economic value impact (i.e. regardless of the direction of the impact) on an AI calculated for different currencies to derive the overall economic value impact due to the interest rate shock.[4] The result is then related to the AI's capital base. This means that no correlation among the interest rate risk of different currencies is assumed. For example, if the economic value impact as a percentage of an AI's capital base for HKD and USD are +8% and -13% respectively, the aggregate impact is 21% (i.e. 8% + 13%).

[2] Details of the market risk capital adequacy regime and the de minimis exemption criteria as well as the requirements relevant to exempted AIs are set out in the module "Maintenance of Adequate Capital Against Market Risk" of the Supervisory Policy Manual.

[3] The trading positions of exempted AIs are regarded as immaterial.

[4] This is based on the methodology adopted in the Basel Consultative Paper on "Principles for Management and Supervision of Interest Rate Risk" (January 2001).

Q9. Can AIs use behavioural maturity for the purpose of reporting interest rate risks in the revised IRR return?

A9. AIs that meet the minimum criteria set out in Annex 2 of the revised IRR return may, subject to the HKMA's approval, slot their positions into different time bands based on their estimation of the respective behavioural maturity. The following summarises the key points of the minimum criteria:

- an AI's assumptions need to be consistent and reasonable for each interest rate scenario used;
- an AI should avoid selecting assumptions that are arbitrary and not verified by experience and performance;
- the length of the underlying historical observation period used for the analyses and models must be at least one year;
- senior management should ensure that key assumptions are evaluated at least annually for reasonableness;
- an AI's key assumptions and their impact should be reviewed by the board of directors, or a committee thereof, at least annually; and
- the types of analyses underlying key assumptions should be documented.

In determining whether the criteria are met, the HKMA may request additional information on those positions where the behavioural maturity is different from the contractual maturity. It may also review AIs' internal processes and assumptions for determining the behavioural maturity of interest rate risk positions in their portfolios.

Q10. The revised IRR return is to be reported at the end of each quarter starting from the end-December 2003 position. This is different from the reporting months of the existing IRR return (i.e. February, May, August and November). When will be the last reporting position for the existing IRR return?

A10. The end-August 2003 position will be the last reporting position based on the existing IRR return. It will not be necessary for AIs to file a return for the end-November 2003 position.

REPORTING INVERSE-FLOATER DEBT SECURITIES IN THE IRR RETURN

Q11. How should inverse-floater debt securities be reported in the IRR return [MA(BS)12]?

A11. Unlike conventional floating rate debt securities, the coupon payments of inverse-floater debt securities increase with declines in the reference interest rates (e.g. HIBOR). On the other hand, the coupon payments decrease with rises in the reference interest rates with a floor of 0%. This feature is constructed by embedding interest rate derivatives in the inverse-floater debt securities. The following example illustrates how to report this type of securities in the existing IRR return. AIs can apply the same reporting principles under the revised IRR return with some adaptation (see footnotes 5 and 6). As such securities may have different structures, AIs should consult the HKMA in case of doubt about the reporting method.

Example:

An AI holds the following inverse-floater debt security:

Principal:	HK$1 mn
Coupon payment:	Higher of [7% less 6-month HIBOR] and 0% semi-annually
Time to maturity:	3 years

The AI's holding of the security can be decomposed into the following positions:

(i) A fixed rate debt security with a coupon of x%.

(ii) An interest rate swap in which the AI receives a fixed rate of y% and pays 6-month HIBOR.

(iii) A semi-annual interest rate cap (long position) with a strike of 7%.

(iv) The notional and time to maturity of the above positions are HK$1 mn and 3 years respectively.

(v) The fixed rate of the debt security and that of the interest rate swap should add up to 7% (i.e. x% + y% = 7%).

If 6-month HIBOR is currently below 6% (i.e. more than 1% below 7%), the AI should report the above positions in the existing IRR return (Hong Kong dollar) as follows:

(i) Report HK$1 mn in item 2 (fixed rate assets) under the next repricing date of more than 1 year. The yield of x% is determined by the AI.

(ii) Report HK$1 mn in item 19 L (interest rate swaps) under the next repricing date of more than 1 year — the fixed leg. The yield of y% is determined by the AI.

(iii) Report HK$1 mn in item 19 S (interest rate swaps) under the next repricing date of more than 3 months up to 6 months — the floating leg.

(iv) The AI may simply neglect the interest rate cap.[5]

If the current 6-month HIBOR is above 6% (i.e. less than 1% below 7%), the AI should only report the position of HK$1 mn in item 2 (fixed rate assets) without any other off-balance sheet position according to the reporting method set out in paragraph 10 of the Completion Instructions of the existing IRR return.[6]

If the AI is the issuer of the inverse-floater debt security, the positions mentioned above are reversed in terms of assets/liabilities and long/short positions.

If the inverse-floater debt security is booked in a locally incorporated AI's trading book, the exposures should be reported as a fixed rate debt security, an interest rate swap and a cap according to the reporting methods set out in the Completion Instructions of the "Return of Market Risk Exposures [MA(BS)3A]" for these instruments.

[5] The AI may separately report the delta equivalent value of the cap if it wishes. Under the revised IRR return, the delta equivalent value of the cap position should be reported explicitly.

[6] The AI may report the positions based on the decomposed instruments if it wishes. Under the revised IRR return, the individual instruments should be reported separately, regardless of whether the 6-month HIBOR is below or above 6%.