HONG KONG MONETARY AUTHORITY 香港金融管理局		
Supervisory Policy Manual		
CA-S-10	**Financial Instrument Fair Value Practices**	V.1 – 30.12.2011

This module should be read in conjunction with the Introduction and with the Glossary, which contains an explanation of abbreviations and other terms used in this Manual. If reading on-line, click on blue underlined headings to activate hyperlinks to the relevant module.

Purpose

To set out the HKMA's expectations with regard to Authorized Institutions (AIs') governance, controls and risk management systems for the valuation of financial instruments measured at fair value, and describe the approach that the HKMA will adopt in the supervision of AIs' fair valuation processes for financial instruments held at fair value.

Classification

A non-statutory guideline issued by the HKMA as a guidance note.

Previous guidelines superseded

This guideline superseded CA-S-9: Use of the Fair Value Option for Financial Instruments dated 7 November 2006.

Application

To all AIs.

Structure

1. Introduction
   - 1.1 Background
   - 1.2 Scope of application
2. Supervisory approach to fair valuation process
3. Guidance for prudent valuation practices for all financial instruments measured at fair value

3.1 Key supervisory expectations
3.2 Governance
3.3 Valuation controls
3.4 Independent price verification
4. Elements of a sound valuation process
4.1 General
4.2 Use of relevant and reliable inputs
4.3 Valuation methodologies
4.4 Assessment of valuation uncertainty
4.5 Valuation adjustments
5 Audit
6 External reporting

1. Introduction

1.1 Background

1.1.1 Following the adoption of Hong Kong Accounting Standard 39 *Financial Instruments: Recognition and Measurement* (HKAS 39), a wider range of the financial instruments held by AIs are required to be measured at fair value. It is also the case that increasingly complex and less liquid financial instruments are required to be fair-valued. The importance of fair value measurement in the context of risk management, financial reporting and regulatory capital adequacy has therefore increased substantially and it is critical that AIs develop, implement and maintain robust risk management and control processes around the measurement of fair values and their reliability.

1.1.2 The Basel Committee on Banking Supervision (BCBS) has issued guidance (both pre and post the financial crisis which began in mid 2007) designed to strengthen, and promote transparency regarding, prudent fair valuation practices. [1] The accounting and auditing standard setters and other bodies have also been active in issuing reports and guidance in this area[2].

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[1] *Supervisory guidance on the use of fair value option by banks under IFRS* (issued in June 2006); *Fair value measurement and modelling: An assessment of challenges and lessons learnt from the market stress (issued in June 2008); and Supervisory guidance for assessing banks' financial instrument fair value practices* (issued in April 2009).

[2] In October 2008, the International Auditing and Assurance Standards Board (IAASB) issued a Staff Audit Practice Alert, *Challenges in Auditing Fair Value Accounting Estimates in the Current Market Environment*. The IAASB Staff Audit Practice Alert highlights international standards on auditing that are particularly relevant for external audits of fair value estimates and related disclosures. In October 2008, the International Accounting Standards Board (IASB) Expert Advisory Panel (EAP) issued a report entitled "*Measuring and disclosing the fair value of financial instruments in markets that are no longer active"* ("*IASB EAP Report*"). The *IASB EAP Report* aims to provide useful information and educational guidance for entities applying International Financial Reporting Standards (IFRSs) on practices for measuring and disclosing financial instruments when markets are no longer active. In May 2011, the IASB issued IFRS 13: *Fair Value Measurement which defines fair value, provides guidance on its determination and introduces consistent requirements for disclosures on fair value measurements*.

1.1.3 This module draws to some extent upon these international initiatives and a report by the Group of Thirty[3]. It is issued in recognition of the significance of fair value measurements for regulatory capital and risk management purposes and the concomitant need to ensure prudence and reliability in fair value estimates.

1.1.4 This module also incorporates the enhanced prudent valuation guidance (PVG) contained in the document *"Revisions to the Basel II market risk framework"* issued by the BCBS. The primary purpose of the PVG is to ensure that prudent valuation policies and procedures, which are the foundation upon which robust assessment of capital adequacy should be built, are adhered to at all times by banks for regulatory capital purposes. In particular, the PVG requires that valuation adjustments should be considered to reflect, among other factors, the illiquidity of positions. Where the application of the PVG would lead to a lower carrying value than actually recognized in the accounts, the absolute value of the difference should be deducted from Tier 1 capital in the case of locally incorporated AIs. Nevertheless, the PVG is not intended to require banks to change their valuation practices for financial reporting purposes. Rather, it requires consideration of appropriate valuation adjustments to meet the prudential objectives of regulatory capital.

1.2 Scope of application

1.2.1 An AI is expected to establish and maintain adequate governance arrangements, and systems and controls sufficient, to ensure that its valuation estimates for all financial instruments measured at fair value are prudent and reliable for financial and regulatory reporting purposes. An AI is expected to implement risk management practices and controls for fair valuation that

[3] Report by the Group of Thirty entitled "*Enhancing Public Confidence in Financial Reporting*" issued in December 2003.

are integrated into its overall corporate governance framework and risk management and control systems; to ensure that the effect of using fair value is understood; and that the use of the fair value measurement is managed, monitored and reported in a sound manner.

1.2.2 This module is consistent with paragraph 10 of the Seventh Schedule to the Banking Ordinance whereby AIs are required to maintain adequate accounting systems and adequate systems of control. These are essential for ensuring the prudent and efficient running of an AI's business, safeguarding the assets of the AI, minimising the risk of fraud, monitoring the risks to which the AI is exposed and complying with legislative and regulatory requirements.

1.2.3 To meet the objectives mentioned in paragraphs 1.2.1 and 1.2.2, the HKMA expects that an AI's governance, risk management and control processes around the measurement of fair values and their reliability should be designed and operated in a manner that is consistent both with applicable accounting and disclosure standards and the risk management and control guidance laid down in this module. However, the extent of application of the module should be commensurate with the significance and complexity of an AI's fair valued exposures.

1.2.4 This module does not purport to set out additional accounting requirements beyond those established by the financial reporting standards issued by the Council of the Hong Kong Institute of Certified Public Accountants. Rather, the supervisory guidance in this module focuses on supervisory expectations for sound practices that will promote effective risk management and controls and maintain the integrity of regulatory capital measures.

2. Supervisory approach to fair valuation process

2.1 The HKMA will, during the course of its risk-based supervision of AIs, examine the effectiveness of an AI's governance, policies, risk management and control processes around the

measurement of fair values and their reliability. The HKMA will assess if the risk management and controls of the AI are sound and consistent with the risk management guidance set out in this module. The HKMA's assessment will also cover the "quality" of valuations; the liquidity, credit and other risks pertaining to instruments measured at fair value; the volatility of the fair valuations; and the impact of fair valuation on earnings and capital adequacy.

2.2 The HKMA will communicate any supervisory concerns identified in its assessment to the AI's senior management and, if the concerns are significant, to the AI's board of directors (board). The HKMA will expect the AI's board and senior management promptly to address any deficiencies identified by the HKMA's examiners or by the AI's internal and external auditors with respect to the AI's valuation policies and practices (including related corporate governance, controls, risk management and disclosure).

2.3 Failure by the AI to take timely corrective measures in a manner satisfactory to the HKMA may result in the HKMA taking such supervisory measures as it considers appropriate. Such supervisory actions may include:

(a) commissioning an independent special review report from the AI's external auditors under section 59(2) of the Banking Ordinance concerning the AI's valuation practices and related risk management and controls;

(b) factoring the valuation deficiencies into the AI's supervisory CAMEL rating; and

(c) where the AI is locally incorporated, requiring the AI to :

(i) make adjustments to fair values of financial instruments included in the measurement of capital adequacy;

(ii) discontinue use of fair value measures for capital adequacy and regulatory reporting purposes; or

(iii) hold additional capital above the AI's existing minimum capital requirements.

2.4 Section 40(2) of Part 3 of the Banking (Capital) Rules (BCR) stipulates that, with the prior consent of the Monetary Authority (MA), an AI may include any unrealized fair value gains arising from its holding of equities and debt securities designated at fair value through profit or loss (i.e. "relevant gains" under the fair value option[4]) in its Core Capital for the purpose of determining capital base. In deciding whether to give consent for this purpose the MA will consider whether the AI's risk management and control policies and practices meet the risk management guidance set out in this module on a continuing basis. The MA may withdraw approval in the event that an AI's systems and controls for the use of the fair value option cease to meet the standards set out in this module.

2.5 Where an AI does not have the MA's approval pursuant to section 40(2) of the BCR, or after obtaining such approval fails to satisfy the MA that it meets the prescribed minimum prudential standards set out in this module, the AI will be required to exclude any relevant gains from its Core Capital and include such relevant gains in its Supplementary Capital, subject to a 55% haircut pursuant to section 42(1)(b)(ii) of Part 3 of the BCR.

3. Guidance for prudent valuation practices for all financial instruments measured at fair value

3.1 Key supervisory expectations

3.1.1 The HKMA expects an AI's valuation practices for all financial instruments that are measured at fair value to be in line with the following principles:

- the AI's board should ensure adequate governance structures and control processes for risk management and financial reporting purposes. The

[4] "Fair value option" refers to the option under HKAS 39 for an entity to designate a financial asset or financial liability as at fair value through profit or loss upon initial recognition subject to satisfying the prescribed criteria in HKAS 39, such that unrealized gains and losses arising from the change in fair value of the financial asset or financial liability are recognized in the profit or loss account.

structures, controls and procedures should be designed to ensure that the valuations are reliable;

- the AI should have adequate capacity, including during periods of stress, to establish and verify valuations for instruments which it holds or to which it is exposed;
- the AI's senior management should ensure that policies for categorising financial instruments on balance sheet are consistent, so far as possible, for accounting, regulatory and risk management purposes;
- the AI should have in place sound processes for the design and validation of methodologies used to produce valuations, including independent and rigorous validation and control processes in relation to the use of valuation models;
- the AI should maximise the use of relevant and reliable inputs and incorporate all other important information so that fair value estimates are as reliable as possible;
- the AI must undertake independent price verification (IPV) regularly so that market prices or model inputs used in the valuation process are verified for accuracy;
- the AI should have a rigorous and consistent process to determine valuation adjustments for risk management, regulatory and financial reporting purposes, where appropriate;
- the AI should have valuation and risk management processes that explicitly assess valuation uncertainty and which ensure that assessments of all material valuation uncertainty are communicated to the board (or a specialised committee of the board tasked, inter alia, with oversight of valuation policies and processes) and senior management; and

- the AI's external reporting should promote transparency by providing timely, relevant, reliable and decision-useful information.

3.1.2 For regulatory capital purposes, fair values should only be applied to financial instruments (both in banking book and trading book) for which the AI is able to reliably estimate fair values.

3.2 Governance

3.2.1 The board of an AI has the ultimate responsibility for understanding the risks run by the AI and putting in place adequate governance, senior management oversight, risk management and controls to ensure that the risks are properly managed. Supervisory expectations with regard to an AI's corporate governance and general risk management and controls are specified in SPM modules CG-1 and IC-1 respectively. Within the overall framework provided by CG-1 and IC-1, an AI should ensure adequate governance and control processes for the designation and valuation of financial instruments to be measured at fair value for financial reporting, risk management and regulatory capital purposes. The valuation governance structure and related processes should be embedded in the overall governance framework of the AI, and consistent for both risk management and reporting purposes.

3.2.2 The valuation governance structures within an AI should include:

- ensuring adequate capacity and capability within the AI to understand thoroughly, and establish and verify valuations for, instruments which the AI holds or to which it is exposed, including during stressed market conditions (see paragraphs 4.2.1 and 4.2.2). Where actual valuation processes are performed centrally by one central function for the whole banking group or are outsourced to a specialised valuation function, outside of the AI but within the same banking group,

this intra-group structure will be acceptable provided that, within the AI, there is adequate understanding of the valuation results produced by this function and adequate governance over the policies, procedures, monitoring and reporting used;

- developing, establishing and regularly reviewing written policies related to fair valuations;
- ongoing review of significant valuation model performance, escalation of issues to appropriate levels of management and mechanisms for approval of changes;
- ensuring adequate resources are devoted to the valuation process;
- articulating the AI's tolerance for exposures subject to valuation uncertainty and monitoring compliance with the board's overall policy settings at an aggregate firm-wide level;
- ensuring independence in the valuation process between risk taking and control units;
- ensuring appropriate internal and external audit coverage of fair valuations and related processes and controls;
- ensuring accounting and disclosures are consistent with the applicable accounting framework and supervisory expectations; and
- ensuring significant differences, if any, between accounting and risk management measurements are well documented and monitored.

3.2.3 The board plays an important role in the valuation governance structure and is ultimately responsible for the AI's valuation process. While the board may delegate some of the responsibilities mentioned in paragraph 3.2.2 to senior management, the board or a specialised committee of the board should:

- approve the AI's fair valuation policies and any significant adjustments to them;

- regularly review the fair valuation policies to ensure that they are working as intended;
- ensure senior management implements effective valuation processes and procedures in accordance with policies approved by the board;
- review reports produced by financial control and risk management functions that discuss any significant valuation issues that may have arisen. Any fair valuation issues that the board or its specialised committee has raised with management should be followed up to ensure that questions or concerns expressed by directors are properly addressed; and
- review the governance structure regularly to ensure it remains appropriate, especially if major acquisitions/disposals or business changes have occurred.

3.2.4 The fair valuation policy of an AI should be adequately documented and generally cover the following areas:

- the roles and responsibilities of the various parties involved in the valuation processes including those of the board;
- the accepted valuation processes and pricing sources to be used for each type of instrument which the AI holds or to which it is exposed and the tolerance levels for variances between the sources;
- for more complex instruments or instruments for which marking-to-market is not possible, the accepted methodology or procedure for arriving at a fair valuation;
- an outline of the approval process for the use of pricing models;
- the escalation or resolution process for situations in which tolerance levels for variances between sources of valuation are breached or where the degree of subjectivity or uncertainty in valuation is such that the

senior management, the board or its specialised committee should review; and

- the methods by which the AI will review and test fair value estimates to evaluate whether its valuation procedures are working as intended.

3.2.5 The valuation processes enshrined in the institution's valuation policy should be designed to ensure clear segregation of duties between the parties responsible for investment decisions and trading (front office) and those responsible for the determination of fair valuation (see paragraph 3.3.1).

3.2.6 To ensure effective oversight, senior management should ensure:

- the availability of adequate resources, with appropriate experience, training and reward, to ensure that risk management and controls are performed and implemented to the highest standards;
- the consistent application of valuation policies and pricing sources;
- the preparation of proper and complete documentation for their regular review for all processes involved in the determination and verification of fair values;
- the preparation of documentation setting out policies and processes related to IPV; and
- the strict adherence to, and the documentation of the implementation of, the escalation or resolution processes enshrined in the AI's valuation policy.

3.2.7 Senior management should also establish appropriate control policies and practices for initial classification of financial instruments on the balance sheet (and any subsequent reclassification) to ensure that:

- the classifications of financial instruments are in accordance with the applicable accounting standards and regulatory reporting requirements;

- the classifications for accounting, regulatory and risk management purposes are consistent so far as possible;
- any significant differences in classification for the purpose of measurement and management of risk and from that required by the applicable accounting framework are well documented and approved by senior management and advised to the board or the appropriate board level committees; and
- documentation supporting the initial classification and any subsequent transfer between asset categories is maintained.

3.3 Valuation controls

3.3.1 AIs should establish controls and procedures to ensure that the valuations of all financial instruments measured at fair value are reliable and that the processes for their production, assignment and verification are clear and robust. The controls and procedures should include:

- appropriate segregation of duties for the determination of fair value, such that:
  - the risk-taking units are functionally separate at all times from the units by which market prices or inputs are verified for accuracy; and
  - the financial control function is ultimately responsible for the determination of value included in the financial statements and ensuring adherence to the AI's policies and relevant accounting standards;
- documented policies and practices approved by the senior management covering:
  - all significant valuation methodologies (which should be reported to the board as frequently as necessary and at least annually); and
  - the range of acceptable practices for the initial

pricing, marking-to-market/model, valuation adjustments, observability and reliability of inputs, and periodic independent revaluation, depending on the nature of the financial instruments and sources of independent prices.

- the information feeds and thresholds for determining that model-based valuations may be challenged (e.g. objective thresholds when IPV, test trades or other cross-checks indicate significant differences with model-based valuations).

3.3.2 In addition, AIs should have documented procedures for new transaction types, products and markets and the related controls and risk management. The relevant approval processes should include all internal stakeholders relevant to risk measurement, risk control and financial reporting. The assignment and verification of valuations of financial instruments should be supported by a transparent, well-documented inventory of acceptable valuation methodologies that are specific and relevant to products and businesses.

3.3.3 Valuation controls should be applied consistently across similar instruments (risks) and across business lines (books). These controls should be subject to regular review by an internal audit function with adequate resources and expertise to identify and provide an effective review of practices.

3.3.4 For fair valuations where changes in fair value are reflected in the profit and loss statement, the profit and loss attribution processes should take place no less frequently than the risk management horizon and with a priority given to portfolios with significant valuation risk. This is to ensure that management understands the reliability and sources of profit and loss in a timely manner. The results of these processes should be fed back into periodic processes such as IPV and model validation.

3.4 **Independent price verification**

3.4.1 As part of the control process, AIs should put in place a periodic and robust IPV process through which market prices and model inputs used for marking-to-market and marking-to-model purposes are regularly verified for their appropriateness and accuracy.

3.4.2 Elements of an effective IPV process include:

- the conduct of IPV by personnel (or by a group of personnel) who are independent of the market risk-taking function[5], with appropriately experienced staff (e.g. product controllers, risk managers, valuation experts, qualified accountants, etc.) who should have significant "on the job" experience and specialist training;
- the assignment of responsibilities for the fair values used in the financial statements to the IPV group which forms part of the financial control; and
- the undertaking of a rigorous IPV process at least monthly (or, depending on the nature of the market or trading activity, more frequently[6]) to verify fair values. The results should be reported to senior management. Where fair value is a critical component of reported results, the board or its specialised committee should satisfy itself that the reported results are supported by satisfactory IPV results.

3.4.3 IPV may not be applicable where independent pricing sources are not available or pricing sources are more subjective (for example, only one available broker quote). In such cases, prudent measures such as valuation

[5] In the case of the trading book positions, while daily marking-to-market may be performed by dealers, verification of market prices and model inputs must be performed by a unit independent of the dealing room.

[6] More frequent IPV should especially be performed if the result of other procedures identifies potential or actual significant problems or inaccuracies in AIs' valuation processes or results respectively.

adjustments may be appropriate. See also "Valuation adjustments" in subsection 4.5 below.

4 Elements of a sound valuation process

4.1 General

4.1.1 AIs should put in place sound processes for the design and validation of valuation methodologies to ensure that all fair value estimates are reliable and determined in accordance with applicable accounting and supervisory standards and guidance, as applicable.

4.1.2 Evaluation of the soundness of an AI's fair valuation process includes consideration of the factors set out in paragraphs 4.2.1 to 4.5.9 below. More specifically, locally-incorporated AIs reporting fair valued financial instruments for regulatory capital purposes must follow the standards set out in paragraph 4.3 to 4.5. Where an AI fails to satisfy the HKMA that it meets these standards (and other standards in the module), this may result in supervisory requirements for adjustments in the calculation of regulatory capital (e.g. the exclusion from, or the making of adjustments to, Core Capital in respect of the unrealized gains of the fair valued positions concerned, or a requirement to hold additional capital).

4.2 Use of relevant and reliable inputs

Thorough understanding of the instrument being valued

4.2.1 AIs must have a thorough understanding of the instrument being valued including relevant markets where the instrument is traded. This allows an AI to identify and evaluate the relevant market information available about identical or similar instruments so that it can make use of such information to measure the fair value of its financial instruments.

4.2.2 AIs should be able to identify when active markets become inactive (for instance, under stressed market conditions) and put in place appropriate procedures for valuing financial instruments under such circumstances. Where any exposures involved represent material risks to an AI, the AI should ensure that it has the capacity to produce valuations using alternative methods in the event that primary inputs and approaches become unreliable, unavailable or not relevant due to market discontinuities or illiquidity. An AI should test and review the performance of the alternative methods under stress conditions so that it understands the limitations of these methods under stress conditions. At a minimum, such valuations may be the result of a best efforts estimation (to the extent possible based on empirical observations or values and accompanied by written reasoned justifications) by the risk management function of an AI which has sufficient expertise and which is independent of the AI's front office or business lines. The AI's valuation procedures (or alternative valuation methods) should be well documented and approved by the board.

Selection of inputs

4.2.3 Fair value is defined under HKAS 39 as the amount for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction. The objective of fair value measurement in HKAS 39 is to arrive at the price at which an orderly transaction would take place between market participants at the measurement date. A forced liquidation or distressed sale (i.e. forced transaction) at the measurement date is not an orderly transaction.

4.2.4 To meet the objectives of a fair value measurement, AIs should consider all relevant market information and other factors likely to have a material effect on an instrument's fair value when selecting the appropriate inputs to use in the valuation process. HKAS 39 provides that quoted prices in active markets are the best basis on which to determine fair value and must be used when available. In

the absence of such quoted market prices, fair value has to be determined using a valuation technique[7].

4.2.5 When estimating fair value using a valuation technique, AIs should maximise the use of relevant and reliable (observable) inputs and minimise the use of unobservable inputs. However, observable inputs or transactions may not be relevant, such as in a forced liquidation or distressed sale, or transactions may not be observable, such as when markets are inactive. In such cases, the observable data[8] should be considered but may not be determinative[9]. The chosen valuation technique should incorporate all risk factors that market participants would consider in setting a price, minimising entity-specific inputs, and should be consistent with accepted economic methodologies for pricing financial instruments. In all cases, AIs should document the reliability of the valuation in the process for estimating fair value.

Quality and verification of inputs

4.2.6 Where AIs obtain fair values directly from observable market prices they should ensure that the market in question is reasonably liquid and that the observable prices are representative of actual trades.

4.2.7 In assessing whether a source is reliable and relevant, AIs should consider the following factors:

- the frequency and availability of the prices/quotes and whether those prices represent actual regularly

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[7] The objective of using a valuation technique is to establish what the transaction price would have been on the measurement date in an arm's length exchange motivated by normal business considerations. Valuation techniques include using recent arm's length market transactions between knowledgeable, willing parties, if available; reference to the current fair value of another instrument that is substantially the same; discounted cash flow analysis and option pricing models.

[8] Examples include where there exists a very similar financial instrument that trades in a liquid market, or where an illiquid financial instrument can be rigorously decomposed into components for which prices can be obtained from liquid markets or from appropriate valuation approaches.

[9] To consider whether observable data is not determinative of fair value, AIs may refer to the accounting fair value guidance provided in the "*IASB EAP Report*" (see footnote 2).

occurring transactions on an arm's length basis, including whether the price/quote is an indicative price or a binding offer;

- whether the available prices are relatively consistent with available market information and if the prices vary significantly across market participants;
- whether prices are transparent and generally available to market participants;
- the timeliness of the pricing data relative to the frequency of valuations, considering that recent pricing data will tend to be more reliable than stale data;
- the number of independent sources that produce the quotes/prices while considering the dispersion of prices/quotes available;
- the maturity of the market;
- the similarity between the financial instrument sold in a transaction and the financial instrument held by the AI; and
- the nature of a transaction, especially in inactive markets, and whether it reflected a forced or distressed sale (which are not relevant) or otherwise involved a seller that needed to sell and one or very few buyers (which may require consideration of other information and management judgement in determining the implications for the estimate of fair value).

4.2.8 Where AIs make use of a third-party pricing service for fair valuation of financial instruments, the AIs' senior management should have a due diligence process in place by which they assess the third party pricing service so that they have a sufficient basis upon which to determine the appropriateness of the techniques it uses, the underlying assumptions and selection of inputs and the consistency of application. Use of a third-party pricing service would not relieve the board of its oversight

responsibility or senior management of its responsibility to ensure appropriate fair valuations and provide appropriate supervision, monitoring and management of risks.

4.3 Valuation methodologies

Marking-to-market

4.3.1 AIs should mark their positions to market whenever possible, on a regular and consistent basis. Marking-to-market is valuation of positions at readily available close out prices in orderly transactions (i.e. not a price under a forced transaction or distressed sale) that are sourced independently. Examples of readily available close out prices include exchange prices, screen prices, or quotes from several independent reputable brokers.

4.3.2 If an AI uses broker quotations in determining fair values, it should understand how a quotation provided by a broker has been arrived at and whether it meets the objective of a fair value measurement. The AI should also consider to what extent the quote obtained reflects actual market transactions or is consistent with any market information that is available. In addition, it would normally not be appropriate for an AI to rely on a single broker quote[10].

4.3.3 For regulatory capital adequacy purposes, locally incorporated AIs should use the more prudent side of the bid/offer close-out price unless the institution can demonstrate it is a significant market maker in a particular position type and has the ability to close out at mid-market price.

[10] Paragraphs 58 to 63 of the *"IASB EAP Report" (see footnote 2)* provide detailed guidance on the use of broker quotes.

Marking-to-model

4.3.4 If the financial instrument does not have a readily available market quotation, making marking-to-market not possible, the AI can then mark-to-model. Marking-to-model is valuation which has to be benchmarked, extrapolated or otherwise derived from a market input.

4.3.5 AIs valuing their positions by marking-to-model must be able to demonstrate that this is done in a prudent manner and reflects the economic substance of the transactions, using market-determined inputs or parameters, wherever possible. When marking-to-model, AIs should remain cognisant of the limitations of the model and apply an extra degree of conservatism.

4.3.6 The HKMA will consider the following in assessing whether a mark-to-model valuation is prudent:

- the extent of senior management's understanding of the elements of the trading book (or of other fair value positions) which are subject to mark-to-model and the materiality of the uncertainty this creates in the reporting of the performance of the business of the AI and the risks to which it is subject;
- the extent to which market inputs are sourced in line with market prices (i.e. externally), the appropriateness of market inputs[11] for a particular position being valued, and whether the parameters of the model are reviewed on a regular basis; and
- the extent to which generally accepted valuation methodologies for particular products, where available, are used.

[11] Frequently, valuation models require multiple parameter inputs. Where possible, market-determined (or observable) inputs or parameters should be used. Where observable data is not available for parameter inputs, other market information should be considered. For example, indicative broker quotes and consensus pricing information should be used to support parameter inputs where they are available. Where no observable information is available to support parameter inputs, then other relevant sources of information such as prices for similar transactions, historic data, economic fundamentals with appropriate adjustment to reflect the terms of the actual instrument being valued and current market conditions should be used.

Independent and rigorous model validation

4.3.7 A valuation model, including any material changes to it, must be verified by an appropriately qualified and experienced unit as part of a regular cycle of model validation to ensure that the model remains suitable for its intended use. Model validation processes should be conducted by an unit that is independent of the risk taking units. Such processes should be systematically applied for both internally generated and (to the extent possible) vendor provided models.

4.3.8 Model validation includes evaluations of:

- the model's theoretical soundness and mathematical integrity;
- the appropriateness of model assumptions, including consistency with market practices and relevant contractual terms of transactions;
- sensitivity analyses performed to assess the impact of variations in model parameters on fair value, including under stress conditions; and
- benchmarking of the valuation result with the observed market price at the time of valuation or with an independent benchmark model (i.e backtesting).

4.3.9 AIs must understand and document the conditions under which the performance of the model would not be acceptable, including the weaknesses/limitations of the models used and performance of the valuation model under possible stressed conditions. Appropriate action should be taken when performance of the model is not acceptable (e.g. valuation adjustments for model limitations or model risk, or changes to the model).

Integrated control processes

4.3.10 AIs should put in place policies defining a regular cycle for valuation model review that reflects the vulnerabilities of individual models. Policies should also identify specific triggers (e.g. indications of deterioration in model

performance or quality) that will cause the review cycle for a valuation model to be accelerated.

4.3.11 AIs should have explicit links between the results of the IPV process or indicators of performance of positions and the review process for models. Whenever possible, these links should be expressed in terms of explicit quantitative thresholds, the crossing of which should trigger a review of the valuation model and/or valuation procedure. These triggers should be consistent with sound practices in risk management.

4.4 Assessment of valuation uncertainty

4.4.1 AIs' valuation and risk measurement systems should systematically recognise and account for valuation uncertainty. In particular, valuation processes and methodologies should produce an explicit assessment of uncertainty related to the assignment of value for all instruments or portfolios, (i.e. to assess the likelihood of future values occurring,) and on how the risk surrounding changes in value can be managed.

4.4.2 Many factors can give rise to uncertainty about current valuations. Some valuation uncertainties are related to the characteristics of the instruments being valued. These may include, for example, longer term maturity and the absence of readily available market prices on closely related instruments that can guide the valuation through arbitrage and comparison. Uncertainty in valuations is generally greater for products that are less standardised, less frequently traded, and more complex and opaque. Other factors that can influence valuation certainty are related to the trading environment. For instance, the depth and breadth of the market in which the instrument is traded will affect its liquidity and hence the price at which a transaction can take place.

4.4.3 Furthermore, valuation uncertainty can arise from market disruption caused by unforeseen events such as financial, macroeconomic and political crises; characteristics of

either the valuation model or method used; and the degree of veracity that can be attached to the data inputs used in the valuation and their impact on the outcome. Hence, valuation uncertainty is not exclusive to any level of data inputs used for fair value measurement or any specific valuation methodology. Material uncertainty may still arise in valuation using Level 1 inputs (i.e. quoted prices (unadjusted) in active markets)[12] due to factors such as :

- the bid/offer spread;
- unexpected changes in prices at the moment the transaction is executed due to irregular behaviour of supply and demand; and
- the quality of the sources of market information used.

4.4.4 AIs should develop methodologies that provide, to the extent possible, quantitative assessments of valuation uncertainty. Methodologies for measuring valuation uncertainty may gauge the sensitivity of value to the use of alternative models and modelling assumptions (when applicable), to the use of alternative values for key input parameters to the pricing process; and to alternative scenarios to the presumed availability of counterparties. The extent of the quantitative assessment of valuation uncertainty should be commensurate to the importance of the specific exposure for the overall solvency of the institution.

4.4.5 Assessments of valuation uncertainty should be fully integrated into the internal decision-making process of the institution. Quantitative and qualitative assessments of

[12] According to Hong Kong Financial Reporting Standard (HKFRS) 7, an entity shall classify fair value measurements using a fair value hierarchy that reflects the significance of the inputs used in making the measurements. The fair value hierarchy have 3 levels: quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1); inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices) (Level 2); and inputs for the asset or liability that are not based on observable market data (Level 3).

uncertainty should accompany all internal reports of valuation information as well as the reports containing risk information across the institution. The assessment of uncertainty should be reported to all relevant bodies involved in the AI's investment and risk management decisions, including senior management and the board, with the same frequency and at the same time as information about value of positions and associated risks is communicated to the same bodies.

4.5 Valuation adjustments

4.5.1 Valuation adjustments are an integral part of the valuation process. AIs must establish and maintain procedures for considering valuation adjustments for the purpose of risk management, and regulatory and financial reporting, where appropriate.

4.5.2 AIs should, based on prevailing facts and circumstances including changes in market conditions, exercise judgement to determine whether an adjustment to a valuation estimate or a valuation input (including valuations provided by a third-party) is needed to reflect all appropriate risks, to be consistent with a market participant view, and to be in accordance with applicable standards and guidance.

4.5.3 AIs should consider, where relevant, making valuation adjustments for the following: unearned credit spreads, close-out costs, operational risks, early termination, investing and funding costs, future administrative costs, and model risk.

4.5.4 The policy for identifying the need for, and the type of, valuation adjustments to be applied to estimated valuations should form part of an overall governance and control framework. The approval and subsequent monitoring of valuation adjustments and any changes to the method of determining such adjustments should be reported to senior management.

4.5.5 Locally incorporated AIs must establish and maintain procedures for judging the necessity for, and calculating, an adjustment to the current valuation of less liquid positions or complex products for regulatory capital purposes. Such adjustments should where necessary be in addition to any adjustments to the value of the positions required for financial reporting purposes and should be designed to reflect current illiquidity whether the position is marked-to-market or marked-to-model. Less liquid positions could arise from both market events or institution-related situations e.g. concentrated positions and/or stale positions, complex products including, but not limited to, securitisation exposures and n-th-to-default credit derivatives[13].

4.5.6 For complex products, AIs must explicitly assess the need for valuation adjustments to reflect the model risk associated with using a possibly incorrect valuation methodology and the risk associated with using unobservable (and possibly incorrect) calibration parameters in the valuation model.

4.5.7 When determining the appropriateness of the adjustment for less liquid positions, AIs should consider all relevant factors, such as the amount of time it would take to hedge out the position or the risks within the position, the average volatility of bid/offer spreads, the availability of independent market quotes, the average and volatility of trading volumes (including trading volumes during periods of market stress), market concentrations, the aging of positions, the extent to which valuation relies on marking-to-model, and the impact of other risks not included in paragraphs 4.5.5 and 4.5.6 above.

4.5.8 For regulatory capital adequacy purposes, the adjustment to the current valuation of less liquid or complex product

[13] "n-th-to-default credit derivative" means a contract where the payoff is based on the n-th asset to default in a basket of underlying reference instruments. Once the n-th default occurs the transaction terminates and is settled.

positions made in accordance with paragraphs 4.5.5 to 4.5.7 should impact Core Capital.

4.5.9 AIs must review the appropriateness of the valuation adjustments for less liquid or complex products on an ongoing basis.

5 Audit

5.1 Internal and external audit are expected to devote considerable resources to reviewing the control environment for, and the availability and reliability of information or evidence used in, the valuation process as well as the reliability of estimated fair values. This includes the price verification processes and involves the testing of valuations for significant transactions. Audit programmes should also evaluate whether the disclosures about fair values made by an AI are in accordance with the applicable accounting standards.

5.2 In addition, internal audit should play an active role in the development and ongoing assessment of the risk management programme. At a minimum, internal audit should review the valuation procedures and control processes annually. Based on its risk assessment, internal audit should conduct periodic reviews of the appropriateness of an AI's valuation practices against the applicable accounting standards. AIs should promptly address any deficiencies identified in their valuation practices by internal and external auditors.

6 External reporting

6.1 Locally incorporated AIs are required to provide timely, relevant, reliable and decision-useful disclosures specifically related to fair value measurement in accordance with the Banking (Disclosure) Rules (BDR) and applicable accounting standards[14].

[14] Locally incorporated AIs are required to make disclosures about fair value measurement in compliance with HKFRS 7, enhanced disclosures related to fair value in HKFRS 13, and disclosure requirements as specified in section 41 of the BDR, as applicable. AIs may also make reference to Part 2 of the *IASB EAP Report (see footnote 2)*.

6.2 In terms of decision-useful information related to fair value measurement, the following information, some of which is already covered in existing accounting standards or guidance, is relevant:

- description of valuation governance and controls processes;
- description of valuation techniques used to determine fair value and the instruments to which they are applied;
- explanations of the valuation inputs and assumptions used in the fair value measurements; and
- sensitivity of fair value measurements to reasonably possible alternatives that would significantly affect the valuation.

6.3 As part of the supervisory review process, the HKMA may review the adequacy and accuracy of fair value disclosures, including those relating to an AI's policies and practices for using fair value. In this respect, the HKMA expects AIs to ensure that relevant fair value disclosures:

- are consistent with management's approach to risk management; and
- are properly balanced between qualitative disclosures (e.g. description of the framework for the management of various risk factors and the key risk metrics used in risk management) and quantitative information (e.g. information around each risk factor and the performance of risk estimates) with a view to providing a well-balanced view of the AI's overall risk profile.

If necessary, the HKMA will discuss any issues relating to these fair value disclosures with the AI's management and external auditor.