Accounting Estimate and Fair Value

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Today's Agenda

- Accounting Estimates and Fair Value
- Audit of Accounting Estimates (HKSA 540)
- Auditing Fair Value Measurements and Disclosures (HKSA 545)
- Using the Work of an Expert (HKSA 620)

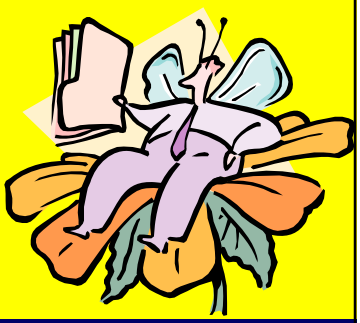
Financial Reporting?

Auditing?

Finance?

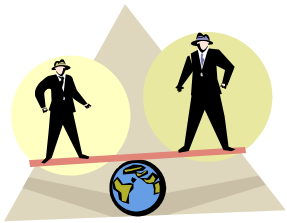
Today's Agenda

Accounting Estimates and Fair Value



What is Accounting Estimate?

- **Accounting estimate** means
  - an approximation of the amount of an item in the absence of a precise means of measurement. (HKSA 540.3)
- HKAS 8 states:
  - As a result of the uncertainties inherent in business activities, many items in financial statements cannot be measured with precision but can only be estimated
  - Estimation involves judgements based on the latest available, reliable information.



What is Accounting Estimate?

Example

- Suggest some examples of accounting estimate.

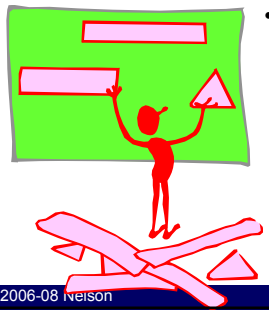
Examples of accounting estimate include:

- Allowances to reduce inventory to their estimated realizable value
- Impairment loss on trade receivable
- Depreciation on property, plant and equipment and their estimated useful lives
- Accrued revenue
- Deferred tax
- Provision for a loss from a lawsuit
- Losses on construction contracts in progress
- Provision to meet warranty claims

What is Accounting Estimate?

A change in accounting estimate

- is defined in HKAS 8 as:
  - an adjustment of the carrying amount of an asset or a liability, or the amount of the periodic consumption of an asset,
  - that results from the assessment of the present status of, and expected future benefits and obligations associated with, assets and liabilities.
- Changes in accounting estimates result from new information or new developments and, accordingly, are not corrections of errors



What is Accounting Estimate?

- The effect of a change in an accounting estimate, other than a change to which the following point applies, shall be recognised prospectively by including it in profit or loss in:
  a) the period of the change, if the change affects that period only; or
  b) the period of the change and future periods, if the change affects both.
- To the extent that a change in an accounting estimate gives rise to changes
  – in assets and liabilities, or
  – relates to an item of equity,

  it shall be recognised by adjusting the carrying amount of the related asset, liability or equity item in the period of the change.

What is Fair Value?

- **Fair value** is defined as:
  – the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction

Knowledgeable, Willing Parties

Arm's length transactions

What is Fair Value?

Knowledgeable, Willing Parties

Arm's length transactions

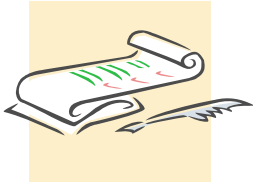
- Under HKFRSs, there are the following characteristics embedded in fair value:
  - Normally transaction price, unless consideration is for something other than the assets/liabilities involved
  - Between knowledgeable, willing parties
  - In arm's length transactions
  - No deduction for transaction costs, which may be incurred on sale or other disposal
  - Time-specific as of a given date

What is Fair Value?

- The best evidence for fair value is the current bid price in an active market
- If no such price in an active market, the information from a variety of sources can be considered, for example:
  a) prices of most recent transactions
  b) current prices in a less active market
  c) value derived from valuation techniques, including
     - using recent arm's length market transactions between knowledgeable, willing parties
     - discounted cash flow analysis
     - option pricing models
     - other valuation techniques commonly used in the market

What is Fair Value?

- Fair value measurements of assets, liabilities and components of equity may arise from both
  - the initial recognition and measurement, and
  - the subsequent measurement.
- Changes in fair value measurements that occur over time may be treated in different ways under different financial reporting frameworks, and under HKFRSs, changes in fair value are accounted for
  - in equity in some HKFRSs and
  - in income statement in some other HKFRSs.



What is Fair Value?

Example

- Fair value can be applied to
  - initial measurement,
  - subsequent measurement, or
  - both

Applied to both initial and subsequent measurement:
- Inventories (HKAS 2)
- Financial assets and liabilities at fair value through P/L (HKAS 39)
- Available for sale financial assets (HKAS 39)
- Agriculture (HKAS 41)

Applied to initial measurement but not subsequent measurement:
- Held-to-maturity (HKAS 39)
- Loans and receivables (HKAS 39)
- Business combination (HKFRS 3)

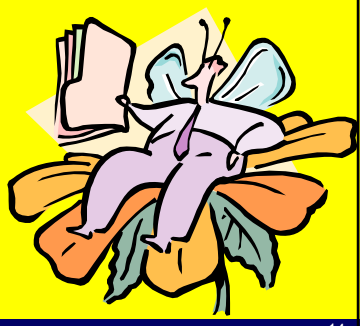
Not applied to initial measurement but applied to subsequent measurement (incl. selective):
- Property, plant and equipment (HKAS 16)
- Intangible assets (HKAS 38)
- Investment property (HKAS 40)

Fair Value vs. Revaluation Model

Fair value model (HKAS 40)	Revaluation model (HKAS 16)
• Refers to fair value	• Refers to fair value
• Changes in fair value recognised in profit or loss	• Changes in fair value recognised in equity (or other comprehensive income)
• No depreciation or amortisation is required	• Depreciation or amortisation is required
• Revalued at each reporting date	• Not clearly defined, only require sufficient regular that no material different from fair value
• N/A	• Deficit about fair value below depreciated cost is recognised in profit or loss

Today's Agenda

Audit of Accounting Estimates
(HKSA 540)



What is Accounting Estimate?

- Management is responsible for making accounting estimates included in financial statements.
  - These estimates are often made in conditions of uncertainty regarding the outcome of events that have occurred or are likely to occur and involve the use of judgment.
- When accounting estimates are involved,
  - the risk of material misstatement is greater
- In some cases the auditor may determine that the risk of material misstatement related to an accounting estimate is a significant risk
  - a significant risk would require special audit consideration

What is Accounting Estimate?

- The determination of an accounting estimate may be simple or complex depending upon the nature of the item.
- Accounting estimates
  - may be determined as part of the routine information system relevant to financial reporting operating on a continuing basis, or
  - may be non-routine, operating only at period end.

- The uncertainty associated with an item, or the lack of objective data may make the item incapable of reasonable estimation,
  - in which case the auditor needs to consider whether the auditor's report needs modification to comply with HKSA 701, "Modifications to the Independent Auditor's Report."

The Requirements of HKSA 540

- The auditor should obtain sufficient appropriate audit evidence regarding accounting estimates. (HKSA 540.2)
- The auditor should design and perform **further audit procedures**
  - to obtain sufficient appropriate audit evidence as to whether the entity's accounting estimates are reasonable in the circumstances and, when required, appropriately disclosed. (HKSA 540.8)

Gain an Understanding of the Entity (incl. environ. & int. controls)

Assess the Risk of Material Misstatement

Design Further Audit Procedures for assertion level risks

Responsive to Assessed Risk

- The auditor's understanding of the entity and its environment, including its internal control,
  - assists the auditor in identifying and assessing the risks of material misstatement of the entity's accounting estimates.
- An understanding of the procedures and methods, including relevant control activities, used by management in making the accounting estimates is important for the auditor
  - to identify and assess risks of material misstatement
  - in order to design the nature, timing and extent of the further audit procedures.

Gain an Understanding of the Entity (incl. environ. & int. controls)

Assess the Risk of Material Misstatement

Design Further Audit Procedures for assertion level risks

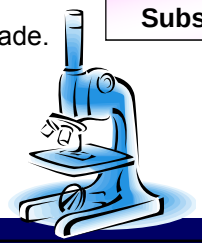
Responsive to Assessed Risk

- The auditor should adopt one or a combination of the following approaches in the audit of an accounting estimate:
  1. Review and test the process used by management to develop the estimate;
  2. Use an independent estimate for comparison with that prepared by management; or
  3. Review of subsequent events which provide audit evidence of the reasonableness of the estimate made. (HKSA 540.10)

Test Management's Process

Compare Independent Estimate

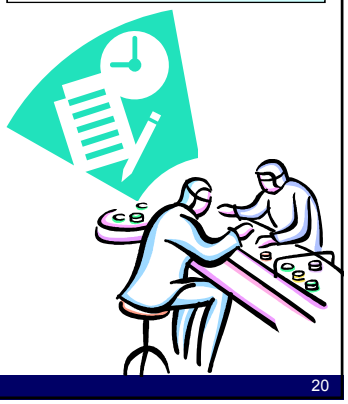
Review Subsequent Events



1. Test Management's Process

- The steps ordinarily involved in reviewing and testing of the process used by management are:
  a) Evaluation of the data and consideration of assumptions on which the estimate is based;
  b) Testing of the calculations involved in the estimate;
  c) Comparison, when possible, of estimates made for prior periods with actual results of those periods; and
  d) Consideration of management's approval procedures.

Test Management's Process



1. Test Management's Process

Evaluation of Data and Consideration of Assumptions

- In respect of the data, the auditor would
  - evaluate whether the data on which the estimate is based is accurate, complete and relevant
  - seek audit evidence from sources outside the entity
  - evaluate whether the data collected is appropriately analyzed and projected to form a reasonable basis for determining the accounting estimate

Test Management's Process

1. Test Management's Process

Example

- Entity A estimates the provision for inventory obsolescence by reference to anticipated future sales.
- What kinds of internal and external information can Melody CPA be based to audit the estimated provision?

- When examining a provision for inventory obsolescence calculated by reference to anticipated future sales,
  - Melody CPA may examine internal data such as past levels of sales, orders on hand and marketing trends,
  - It can also seek audit evidence from industry-produced sales projections and market analyses from external sources.

1. Test Management's Process

Evaluation of Data and Consideration of Assumptions

- In respect of the assumptions, the auditor would
  - evaluate whether the entity has an appropriate base for the principal assumptions used in the accounting estimate, such as government statistics, say inflation rate
  - consider whether the assumptions are
    - reasonable in light of actual results in prior periods
    - consistent with those used for other accounting estimates
    - consistent with management's plans which appear appropriate

Test Management's Process

Pay attention to those which are
- sensitive to variation,
- subjective,
- susceptible to material misstatement

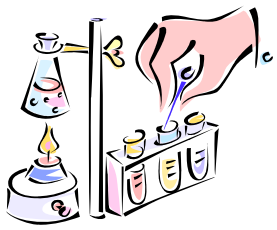
For complex estimates involving specialised techniques, the work of an expert may be relied upon

1. Test Management's Process

Comparison of Previous Estimates with Actual Results

- When possible, the auditor would compare accounting estimates made for prior periods with actual results of those periods to assist in:
  a) Obtaining audit evidence about the general reliability of the entity's estimating procedures and methods, including relevant control activities;
  b) Considering whether adjustments to estimating formulae may be required; and
  c) Evaluating whether differences between actual results and previous estimates have been quantified and that, where necessary, appropriate adjustments or disclosures have been made.

Test Management's Process



1. Test Management's Process

Example

- Entity A made a provision for warranty on its sales amounting to $2 million which is the same as that last year.
- What kinds of audit procedures you would perform in order to obtain sufficient appropriate audit evidence?

1. Test Management's Process

Example

- Provision for warranty is an accounting estimate
- Audit procedures in accordance with HKSA 540 *Audit of Accounting Estimates* should be undertaken to obtain sufficient appropriate audit evidence to conclude as to
  - whether the accounting estimates for warranty made by the management is reasonable in the circumstances and
  - whether the provision is appropriately disclosed.

1. Test Management's Process

Example

- In this case, it is appropriate for the auditor to review and test the process used by management to develop the estimate.
  - Given that provisions for warranty claims usually take time to realise, it is unlikely that review of subsequent transactions may provide the auditor with further audit evidence regarding an accounting estimate made by management
  - However, the auditor may still be required to perform normal procedures on subsequent events, for example, by reviewing whether the claims after year-end have been changed unexpectedly
  - It is also unlikely that an independent estimate for comparison with that prepared by management is necessary.

1. Test Management's Process

Example

- In reviewing and testing of the process used by management, the auditor would ordinarily perform the following procedures:
  - Ensure the provision satisfies the recognition criteria under the relevant financial reporting standard (i.e. HKAS 37)
  - Evaluate the data and consider the assumptions on which the provision for warranty was based
  - Review and/or re-perform the calculations involved in the estimate
  - Compare last year's estimates, with the actual warranty costs incurred to determine whether last year's estimate was accurate
  - Consider management's approval procedures
  - Obtain management representation

Source from HKICPA

1. Test Management's Process

HKAS 37 states that:

- Use of estimates
  - an essential part of the preparation of financial statements
  - does not undermine their reliability
  - especially true in the case of provisions, which by their nature are more uncertain than most other balance sheet items.
- An entity (except in extremely rare cases)
  - will be able to determine a range of possible outcomes and
  - can therefore make an estimate of the obligation that is sufficiently reliable to use in recognising a provision.

1. Test Management's Process

- The estimates of outcome and financial effect are determined by the judgement of the management of the entity, supplemented by experience of similar transactions and, in some cases, reports from independent experts.
- The evidence considered includes any additional evidence provided by events after the balance sheet date.
- Uncertainties surrounding the amount to be recognised as a provision (and also in other estimates) are dealt with by various means according to the circumstances.
- Where the provision being measured involves a large population of items, the obligation is estimated by weighting all possible outcomes by their associated probabilities.
- The name for this statistical method of estimation is "expected value".

1. Test Management's Process

Example

- Entity A is involved in a court case about the negligent claim on some product defects.
- Legal opinion seems to indicate that Entity A will lose the case.
- Entity A estimates that
  - the most likely outcome (60% chance) will be a settlement payment of costs and penalties of $1 million in 2 years' time
  - the best case scenario (30% chance) is deemed to be a settlement payment of $500,000 in one year's time and
  - the worst case scenario (10% chance) will be a settlement payment of $2 million in 3 years' time (discount rate is 5%)

1. Test Management's Process

Example

- As regards the negligent case the following table illustrates the potential outcomes (present values at 5%):

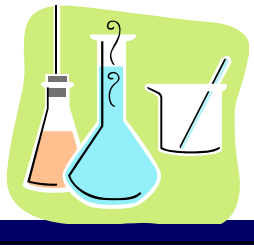
	$000	*Year*	Present *value*	*Probability*	*Total ($)*
Best case	500	1	476	30%	142,857
Most likely	1,000	2	907	60%	544,218
Worse case	2,000	3	1,728	10%	172,768
					859,843

- As compared with the most likely outcome, which indicates a provision of $907,000, the expected value of the provision as above is $859,843.
- The difference, while an accounting estimate has been used, is not material.
- In consequence, a provision of $860,000 can be made as it is estimated by a more scientific approach.

2. Compare Independent Estimate

- The auditor
  - may make or obtain an independent estimate and compare it with the accounting estimate prepared by management,
  - would ordinarily evaluate the data, consider the assumptions and perform audit procedures on the calculation procedures used in its development.
  - compare accounting estimates made for prior periods with actual results of those periods.

Compare Independent Estimate



3. Review Subsequent Events

- Transactions and events which occur after period end, but prior to completion of the audit, may provide audit evidence regarding an accounting estimate made by management.
  - The auditor's review of such transactions and events may reduce, or even remove, the need for the auditor to review and perform audit procedures on the process used by management to develop the accounting estimate or to use an independent estimate in assessing the reasonableness of the accounting estimate.

Review Subsequent Events

Evaluate Results of Procedures

- The auditor should make a final assessment
  - of the reasonableness of the entity's accounting estimates based on the auditor's understanding of the entity and its environment and
  - whether the estimates are consistent with other audit evidence obtained during the audit. (HKSA 540.24)

Evaluate Results of Procedures

- When there is a difference between
  - the auditor's estimate of the amount best supported by the available audit evidence and
  - the estimated amount included in the financial statements,

  the auditor would determine whether such a difference requires adjustment.

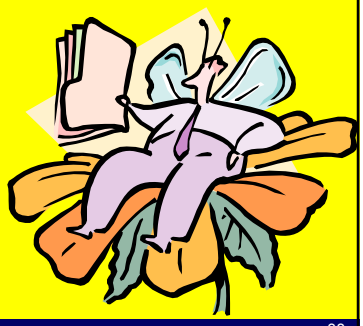
- If the auditor believes the difference is unreasonable, management would be requested to revise the estimate.
- If management refuses to revise the estimate,
  - the difference would be considered a misstatement and would be considered with all other misstatements in assessing whether the effect on the financial statements is material.

Evaluate Results of Procedures

- The auditor
  - would also consider whether individual differences which have been accepted as reasonable are biased in one direction,
    - so that, on a cumulative basis, they may have a material effect on the financial statements In such circumstances,
  - would evaluate the accounting estimates taken as a whole.

Today's Agenda

Auditing Fair Value Measurements and Disclosures (HKSA 545)



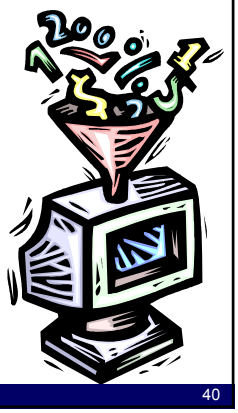
HKSA 545 Fair Value Measurement

Points for Discussion

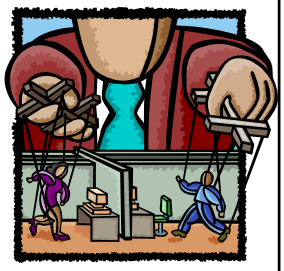
1. Introduction
2. Understanding the Entity's Process
3. Evaluating the Appropriateness of Fair Value Measurements and Disclosures
4. Using the Work of an Expert
5. Audit Procedures Responsive to Assessed Risks
6. Disclosures about Fair Values
7. Evaluating the Results of Audit Procedures
8. Management Representations
9. Communication with Those Charged with Governance

1. Introduction

- The auditor should obtain sufficient appropriate audit evidence that fair value measurements and disclosures are in accordance with the entity's applicable financial reporting framework, such as HKFRSs. (HKSA 545.3)
- While HKSA 545 provides guidance on auditing fair value measurements and disclosures, audit evidence obtained from other audit procedures also may provide audit evidence relevant to the measurement and disclosure of fair values.
  - For example, inspection procedures to verify existence of an asset measured at fair value also may provide relevant audit evidence about its valuation, such as the physical condition of an investment property.



1. Introduction



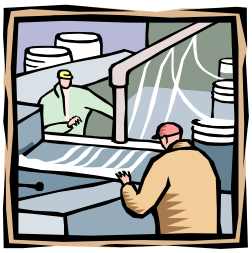
- Management is responsible for making the fair value measurements and disclosures included in the financial statements.
- As part of fulfilling its responsibility, management needs to
  - establish an accounting and financial reporting process for determining the fair value measurements and disclosures,
  - select appropriate valuation methods,
  - identify and adequately support any significant assumptions used,
  - prepare the valuation and
  - ensure that the presentation and disclosure of the fair value measurements are in accordance with the entity's applicable financial reporting framework.

2. Understand the Entity's Process

- As part of the understanding of the entity and its environment, including its internal control,
  - ➢ the auditor should obtain an understanding of the entity's **process for determining fair value measurements and disclosures** and of the **relevant control activities**
    - **sufficient** to identify and assess the risks of material misstatement at the assertion level and to design and perform further audit procedures. (HKSA 545.10)

2. Understand the Entity's Process

- After obtaining an understanding of the entity's process for determining fair value measurements and disclosures,
  - the auditor should identify and assess the risks of material misstatement at the assertion level related to the fair value measurements and disclosures in the financial statements to determine the nature, timing and extent of the further audit procedures. (HKSA 545.14)



3. Evaluate Appropriateness

- The auditor should evaluate whether the fair value measurements and disclosures in the financial statements are in accordance with the entity's applicable financial reporting framework. (HKSA 545.17)
- The auditor should
  - obtain audit evidence about management's intent to carry out specific courses of action, and
  - consider its ability to do so,

  where relevant to the fair value measurements and disclosures under the entity's applicable financial reporting framework. (HKSA 545.22)

It may affect the appropriateness of the entity's use of fair value in some financial reporting framework

3. Evaluate Appropriateness

Example

- Suggest audit procedures in respect of management's intent to carry out specific course of action.

  - The auditor's procedures ordinarily include inquiries of management, with appropriate corroboration of responses, for example, by:
    - Considering management's past history of carrying out its stated intentions with respect to assets or liabilities.
    - Reviewing written plans and other documentation, including, where applicable, budgets, minutes, etc.
    - Considering management's stated reasons for choosing a particular course of action.
    - Considering management's ability to carry out a particular course of action given the entity's economic circumstances, including the implications of its contractual commitments.
  - The auditor also considers management's ability to pursue a specific course of action if ability is relevant to the use, or exemption from the use, of fair value measurement under the entity's applicable financial reporting framework.

3. Evaluate Appropriateness

- Where alternative methods for measuring fair value are available under the entity's applicable financial reporting framework, or where the method of measurement is not prescribed,
  - the auditor should evaluate whether the method of measurement is appropriate in the circumstances under the entity's applicable financial reporting framework. (HKSA 545.24)
- The auditor should evaluate whether the entity's method for its fair value measurements is applied consistently. (HKSA 545.27)

3. Evaluate Appropriateness

Example

- The audit procedures to evaluate whether a valuation method is appropriate.

  - Given a particular method, the auditor obtains an understanding of management's rationale for its selection by discussing with management its reasons for selecting the valuation method.
  - The auditor considers whether:
    a) Management has sufficiently evaluated and appropriately applied the criteria, if any, provided in the applicable financial reporting framework to support the selected method;
    b) The valuation method is appropriate in the circumstances given the nature of the asset or liability being valued and the entity's applicable financial reporting framework; and
    c) The valuation method is appropriate in relation to the business, industry and environment in which the entity operates.

4. Using the Work of an Expert

- The auditor should determine the need to use the work of an expert. (HKSA 545.29)
- The auditor
  - may have the necessary skill and knowledge to plan and perform audit procedures related to fair values or
  - may decide to use the work of an expert.
- In making such a determination, the auditor considers the matters discussed HKSA 620, "*Using the Work of an Expert*." (to be discussed)

5. Audit Procedures

- HKSA 545 requires that: "The auditor should design and perform further audit procedures in response to assessed risks of material misstatement of assertions relating to the entity's fair value measurements and disclosures." (HKSA 545.33)
- Audit procedures, for example, may involve:
  1. Testing management's significant assumptions, the valuation model, and the underlying data
  2. Developing independent fair value estimates to corroborate the appropriateness of the fair value measurement
  3. Considering the effect of subsequent events

Testing Assumption, Model and Data

Developing Independent Fair Value Estimates

Effect of Subsequent Events

5. Audit Procedures

- The existence of published price quotations in an active market ordinarily is the best audit evidence of fair value.
- Some fair value measurements, however, are inherently more complex than others.
- This complexity arises either
  - because of the nature of the item being measured at fair value or
  - because of the valuation method required by the applicable financial reporting framework or selected by management.
    - For example, the absence of quoted prices in an active market for a particular item

Testing Assumption, Model and Data

Developing Independent Fair Value Estimates

Effect of Subsequent Events

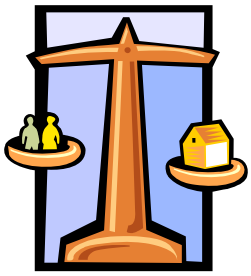
5. Audit Procedures

Testing Assumption, Model and Data

- The auditor's understanding of the reliability of the process used by management to determine fair value is an important element in support of the resulting amounts and therefore affects the nature, timing, and extent of further audit procedures.
- When obtaining audit evidence about the entity's fair value measurements and disclosures, the auditor evaluates whether:
  a. The **assumptions** used by management are reasonable;
  b. The fair value measurement was determined using an **appropriate model**, if applicable; and
  c. Management used **relevant information** that was reasonably available at the time.

5. Audit Procedures

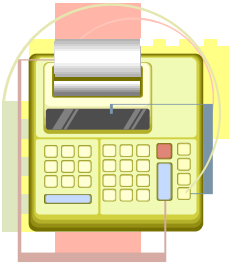
Testing Assumption, Model and Data



- HKSA 545 specifically states that:
  – Where the auditor determines there is a **significant risk** related to fair values, or where otherwise applicable,
    - the auditor should evaluate whether the significant assumptions used by management in measuring fair values, taken individually and as a whole, provide a reasonable basis for the fair value measurements and disclosures in the entity's financial statements. (HKSA 545.39)

5. Audit Procedures

Testing Assumption, Model and Data



- Assumptions ordinarily are supported by differing types of audit evidence from internal and external sources that provide objective support for the assumptions used.
- The auditor assesses the source and reliability of audit evidence supporting management's assumptions, including
  - consideration of the assumptions in light of historical information and
  - an evaluation of whether they are based on plans that are within the entity's capacity.

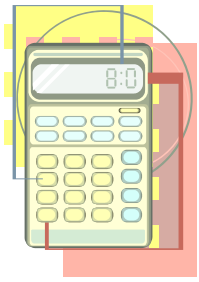
5. Audit Procedures

Testing Assumption, Model and Data

- Audit procedures dealing with management's assumptions are performed in the context of the audit of the entity's financial statements.
- The objective of the audit procedures
  - is therefore not intended to obtain sufficient appropriate audit evidence to provide an opinion on the assumptions themselves.
  - Rather, the auditor performs audit procedures to consider whether the assumptions provide a reasonable basis in measuring fair values in the context of an audit of the financial statements taken as a whole.

5. Audit Procedures

Testing Assumption, Model and Data



- Identifying those assumptions that appear to be significant to the fair value measurement requires the exercise of judgment by management.
- The auditor focuses attention on significant assumptions.
- Generally, significant assumptions cover matters that materially affect the fair value measurement and may include those that are:
  a) Sensitive to variation or uncertainty in amount or nature. For example, assumptions about short-term interest rates may be less susceptible to significant variation compared to assumptions about long-term interest rates; and
  b) Susceptible to misapplication or bias.

5. Audit Procedures

Testing Assumption, Model and Data

- The auditor **considers the sensitivity** of the valuation to changes in significant assumptions, including market conditions that may affect the value.
- Where applicable, the auditor encourages management to use such techniques as sensitivity analysis to help identify particularly sensitive assumptions.
- In the absence of such management analysis, the auditor considers whether to employ such techniques.
- The auditor also considers whether the uncertainty associated with a fair value measurement, or the lack of objective data may make it incapable of reasonable estimation under the entity's applicable financial reporting framework.

5. Audit Procedures

Testing Assumption, Model and Data

Example

- Parent A acquired a subsidiary, Subsidiary S during the year.
- The purchase consideration is HK$75 million with a resulting goodwill of HK$45 million.
- In accordance with HKAS 36, Parent A prepared a value in use calculation by using a constant growth model in discounting the free cash flow with the following attributes:
  - Forecasted cash flows of $5 million in 2009 ($FCF_1$)
  - Growth rate of 5% (g)
  - Estimated discount rate of 10% (R)
- The resulting calculation is:

$$V_0 = \frac{FCF_0(1+g)}{R-g} = \frac{FCF_1}{R-g} = \frac{\$5M}{10\% - 5\%} = \$100M$$

- Discuss how to examine Parent A's significant assumptions relating to the fair value measurement, in particular sensitivity analysis

5. Audit Procedures

Testing Assumption, Model and Data

Example

	Base Case	Option 1	Option 2
Estimated cash flows, CF_1	$ 5 M	$ 4 M	$ 6 M
Estimated growth rate, *g*	5%	5%	5%
Estimated discount rate, *R*	10%	10%	10%

$$V_0 = \frac{FCF_0(1+g)}{R-g} = \frac{FCF_1}{R-g} = \frac{\$5M}{10\% - 5\%} = \$100M \qquad = \$80M \qquad = \$120M$$

5. Audit Procedures

Testing Assumption, Model and Data

Example

Information	
Estimated cash flows, CF_1	$ 5 M
Actual entity growth rate, g_a	15%
Actual market growth rate, g_m	5%
Estimated market growth rate, g_e	8%
Estimated discount rate, R	10%

Last for?

3 years ……

Last for?

5 years ……

Lower or higher

5. Audit Procedures

Testing Assumption, Model and Data

- The consideration of whether the assumptions provide a reasonable basis for the fair value measurements
  - relates to the whole set of assumptions
  - as well as to each assumption individually.
- Assumptions are frequently interdependent, and therefore, need to be internally consistent.
- A particular assumption that may appear reasonable when taken in isolation may not be reasonable when used in conjunction with other assumptions.
- The auditor considers whether management has identified the significant assumptions and factors influencing the measurement of fair value.

5. Audit Procedures

Testing Assumption, Model and Data

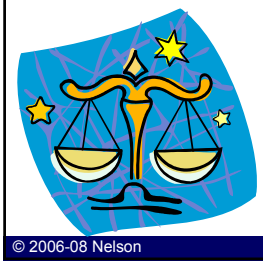
Example

- To be reasonable, the assumptions, individually and taken as a whole, of a valuation model need to be realistic and consistent with:
  1. The general economic environment and the entity's economic circumstances;
  2. The plans of the entity;
  3. Assumptions made in prior periods, if appropriate;
  4. Past experience of, or previous conditions experienced by, the entity to the extent currently applicable;
  5. Other matters relating to the financial statements, for example, assumptions used by management in accounting estimates for financial statement accounts other than those relating to fair value measurements and disclosures; and
  6. If applicable, the risk associated with cash flows, including the potential variability of the cash flows and the related effect on the discounted rate.

5. Audit Procedures

Testing Assumption, Model and Data

- If management relies on historical financial information in the development of assumptions,
  - the auditor considers the extent to which such reliance is justified.
- For items valued by the entity using a **valuation model**,
  - the auditor is not expected to substitute his or her judgment for that of the entity's management.
  - Rather, the auditor reviews the model, and evaluates whether the model is appropriate and the assumptions used are reasonable.
- For example, discounted cash flow method may not be used in valuing an equity investment in a start-up entity without cash revenue initially.



5. Audit Procedures

Testing Assumption, Model and Data

- HKSA 545 also requires:
  - The auditor should
    - perform audit procedures on the **data** used to develop the fair value measurements and disclosures and
    - evaluate whether the fair value measurements have been properly determined from such data and management's assumptions. (HKSA 545.50)

5. Audit Procedures

Testing Assumption, Model and Data

Example

- In 2007, Entity A grants share options to its employees at an exercise price of HK$10 each
- The employees can entitle to the option when they are still employed from 1 July 2007 to 30 June 2011
- According to HKFRS 2, Entity A is required to recognise the fair value of options granted to employees as expenses over the vesting period of the share option granted.
- Determine the audit procedures that you would perform to examine Entity A's significant assumptions relating to the fair value measurement and disclosures of the share option granted

5. Audit Procedures

Testing Assumption, Model and Data

Example

- Market prices of share options granted to employees are usually not available, because the options granted are subject to terms and conditions that do not apply to traded options
- The fair values of the options granted usually have to be estimated by applying an option pricing model, say
  - Binominal model or
  - Black-Scholes model
- Option pricing model take into account, as a minimum, the following factors:
  - The exercise price of the option (i.e. HK$10 per option)
  - The term of the option (i.e. from 1 July 2007 to 30 June 2011)
  - The current price of the underlying shares
  - The expected volatility of the share price
  - The risk-free interest rate for the life of the option

5. Audit Procedures

Testing Assumption, Model and Data

Example

The Black-Scholes formula calculates the price of a call option to be:

$$C = S\,N(d_1) - X\,e^{-rT}\,N(d_2)$$

where

C = price of the call option
S = price of the underlying stock
X = option exercise price
r = risk-free interest rate
T = current time until expiration
$N()$ = area under the normal curve
$d_1 = [\ln(S/X) + (r + \sigma^2/2)\,T] / \sigma\,T^{1/2}$
$d_2 = d_1 - \sigma\,T^{1/2}$

http://www.quickmba.com/finance/black-scholes/

5. Audit Procedures

Testing Assumption, Model and Data

Example

- In accordance with HKSA 545, where the auditor determines there is a significant risk related to fair values of the share options or where otherwise applicable, the auditor should evaluate
  - whether the significant assumptions used by management of Entity A in measuring fair values, taken individually and as a whole, provide a reasonable basis for the fair value measurements and disclosures in Entity A's financial statement
- The principal assumptions used in the estimate in this case would be:
  - The expected volatility of Entity A's share price
  - The risk free interest rate from 1 July 2007 to 30 June 2011

5. Audit Procedures

Testing Assumption, Model and Data

Example

- The expected volatility is usually estimated from historically volatility of the share prices.
  - To satisfy that the assumed volatility is reasonable, the auditor should compare the assumed volatility with historical volatility satisfy that the assumed volatility (individually and taken as a whole) is realistic and consistent with the auditor's historical volatility, unless there is strong evidence to assume otherwise.
- The risk free interest rate from 1 July 2007 to 30 June 2011 is mainly affected by the general economic environment.
  - To satisfy that the assumed risk free interest rate for the period is reasonable, the auditor should compare the assumed rate with histrocial rate and forecasted rates available in the market.

5. Audit Procedures

Testing Assumption, Model and Data

Example

- The objective of these audit procedures
  - is not intended to obtain sufficient appropriate audit evidence to provide an opinion the assumptions themselves.
- The auditor performs these audit procedures to consider
  - whether the assumptions adopted by Entity A provide a reasonable basis in measuring fair values of the share options in the context of an audit of the financial statements taken as a whole.

5. Audit Procedures

Developing Independent Fair Value Estimates

- The auditor may make <u>an independent estimate of fair value</u> (e.g., by using an auditor-developed model) to corroborate the entity's fair value measurement.
  - When developing an independent estimate <u>using management's assumptions</u>, the auditor evaluates those assumptions as discussed before.

Using management's assumptions

- Instead of using management's assumptions,
  - the auditor may <u>develop separate assumptions</u> to make a comparison with management's fair value measurements.

Using separate set of assumptions

- In that situation, the auditor nevertheless understands management's assumptions.
- The auditor uses that understanding
  - to determine that the auditor's model considers the significant variables and
  - to evaluate any significant difference from management's estimate.

Follows the requirements in HKSA 520 "*Analytical Procedures*"

5. Audit Procedures

Developing Independent Fair Value Estimates

Example

- Refer back to the previous example ……
- Parent A acquired a subsidiary, Subsidiary S during the year.
- The purchase consideration is HK$75 million with a resulting goodwill of HK$45 million.
- In accordance with HKAS 36, Parent A prepared a value in use calculation by using a constant growth model in discounting the free cash flow with the following attributes:
  - Expected cash flows of $5 million in 2009 (CF)
  - Growth rate of 5% (g)
  - Estimated discount rate of 10% (R)
- The resulting calculation is:

$$V_0 = \frac{FCF_0(1+g)}{R-g} = \frac{FCF_1}{R-g} = \frac{\$5M}{10\% - 5\%} = \$100M$$

- Develop independent value for impairment review

5. Audit Procedures

Developing Independent Fair Value Estimates

Example

Alternative discount cash flow models include:

Basic Model: $$V_0 = \frac{FCF_1}{(1+R)^1} + \frac{FCF_2}{(1+R)^2} + \ldots\ldots = \sum_{t=1}^{\infty} \frac{FCF_t}{(1+R)^t}$$

Constant Growth Model: $$V_0 = \frac{FCF_0(1+g)}{R-g} = \frac{FCF_1}{R-g}$$

Zero Growth Model: $$V_0 = \frac{FCF_0}{R}$$

2-Stage Growth Model: $$V_0 = \sum_{t=1}^{n} \frac{FCF_t}{(1+R)^t} + \frac{V_n}{(1+R)^n} \quad \text{where} \quad V_n = \frac{FCF_{n+1}}{R-g}$$

FCF: Forecasted cash flow *R*: Discount rate *g*: Growth rate

5. Audit Procedures

Developing Independent Fair Value Estimates

Example

Information	
Estimated cash flows, CF_1	\$ 5 M
Actual entity growth rate, g_a	15%
Actual market growth rate, g_m	5%
Estimated market growth rate, g_e	8%
Estimated discount rate, R	10%

Last for? 3 years ……

Last for? 0 years ……

2-Stage Growth Model: $V_0 = \sum_{t=1}^{n} \frac{FCF_t}{(1+R)^t} + \frac{V_n}{(1+R)^n}$ where $V_n = \frac{FCF_{n+1}}{R-g}$

FCF: Forecasted cash flow *R*: Discount rate *g*: Growth rate

5. Audit Procedures

Developing Independent Fair Value Estimates

Example

Information	
Estimated cash flows, CF_1	\$ 5 M
Actual entity growth rate, g_a	15%
Actual market growth rate, g_m	5%
Estimated market growth rate, g_e	8%
Estimated discount rate, R	10%

Last for? 3 years ……

Last for? 0 years ……

$$V_0 = \underbrace{\frac{5(1+15\%)}{(1+10\%)} + \frac{5(1+15\%)^2}{(1+10\%)^2} + \frac{5(1+15\%)^3}{(1+10\%)^3}}_{\text{Growth Period } = \$15\text{ M}} + \underbrace{\frac{5(1+15\%)^3(1+5\%)}{(10\%-5\%)} \Big/ (1+10\%)^4}_{\text{Maturity Period } = \$109\text{ M}}$$

5. Audit Procedures

Effect of Subsequent Events

- The auditor should consider the effect of subsequent events on the fair value measurements and disclosures in the financial statements. (HKSA 545.53)
- Transactions and events that occur after period-end but prior to completion of the audit,
  - may provide appropriate audit evidence regarding the fair value measurements made by management.

For example, a sale of investment property shortly after the period-end may provide audit evidence relating to the fair value measurement.

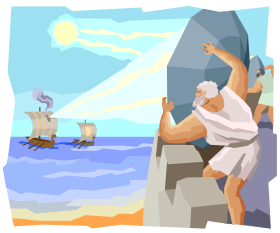
- In the period after a financial statement period-end, however, circumstances may change from those existing at the period-end.
  - Fair value information after the period-end may reflect events occurring after the period-end and not the circumstances existing at the balance sheet date.

For example, the prices of actively traded marketable securities that change after the period-end ordinarily

6. Disclosures about Fair Value

- The auditor should evaluate whether the disclosures about fair values made by the entity are in accordance with its financial reporting framework. (HKSA 545.56)

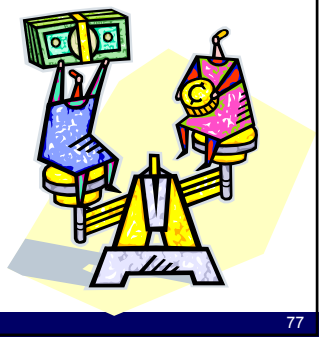
Same for Measurement and Disclosure



- When auditing fair value measurements and related disclosures included in the notes to the financial statements, (whether required by the applicable financial reporting framework or disclosed voluntarily),
  - the auditor ordinarily performs essentially the **same** types of audit procedures as those employed in auditing a fair value measurement recognized in the financial statements.

7. Evaluate Results of Procedures

- In making a final assessment of whether the fair value measurements and disclosures in the financial statements are in accordance with the entity's applicable financial reporting framework, the auditor should evaluate
  - the sufficiency and appropriateness of the audit evidence obtained
  - as well as the consistency of that evidence with other audit evidence obtained and evaluated during the audit. (HKSA 545.61)



7. Evaluate Results of Procedures

Example

- When assessing whether the fair value measurements and disclosures in the financial statements are in accordance with the entity's applicable financial reporting framework, the auditor evaluates the consistency of
  - the information and audit evidence obtained during the audit of fair value measurements with
  - other audit evidence obtained during the audit,

  in the context of the financial statements taken as a whole.
- For example, the auditor considers whether there is or should be a relationship or correlation between
  - the interest rates used to discount estimated future cash flows in determining the fair value of an investment property and
  - interest rates on borrowings currently being incurred by the entity to acquire investment property.

8. Management Representations

- The auditor should obtain written representations from management regarding
  - the reasonableness of significant assumptions, including
    - whether they appropriately reflect management's intent and ability to carry out specific courses of action on behalf of the entity where relevant to the fair value measurements or disclosures. (HKSA 545.63)
- HKSA 580, "*Management Representations*" discusses the use of management representations as audit evidence.

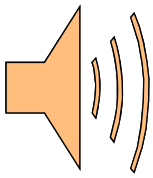
8. Management Representations

Example

- For fair value measurement and disclosure, suggest the points to be included in the management representations.
  - Depending on the nature, materiality and complexity of fair values, management representations about fair value measurements and disclosures contained in the financial statements also may include representations about the following:
    1. The appropriateness of the measurement methods, including related assumptions, used by management in determining fair values within the applicable financial reporting framework, and the consistency in application of the methods.
    2. The basis used by management to overcome the presumption relating to the use of fair value set forth under the entity's applicable financial reporting framework.
    3. The completeness and appropriateness of disclosures related to fair values under the entity's applicable financial reporting framework.
    4. Whether subsequent events require adjustment to the fair value measurements and disclosures included in the financial statements.

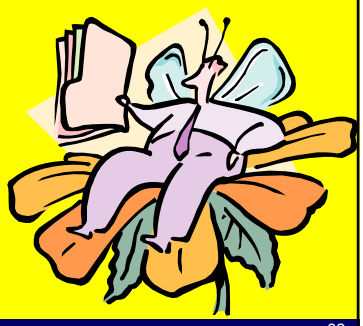
9. With Those Charged with Governance

- HKSA 260, "*Communication of Audit Matters with Those Charged with Governance*" requires auditors to communicate audit matters of governance interest with those charged with governance.
- Because of the uncertainties often involved with some fair value measurements, the potential effect on the financial statements of any significant risks may be of governance interest.
- For example, the auditor considers communicating
  - the nature of significant assumptions used in fair value measurements,
  - the degree of subjectivity involved in the development of the assumptions, and
  - the relative materiality of the items being measured at fair value to the financial statements as a whole.
- The auditor considers the guidance contained in HKSA 260 when determining the nature and form of communication.



Today's Agenda

Using the Work of an Expert (HKSA 620)



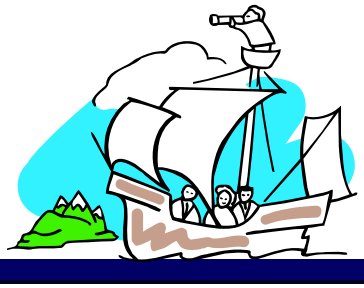
The Requirements of HKSA 620

- **Expert** means a person or firm possessing special skill, knowledge and experience in a particular field other than accounting and auditing.
- HKSA 620 requires that:
  - When using the work performed by an expert, the auditor should obtain sufficient appropriate audit evidence that such work is adequate for the purposes of the audit. (HKSA 620.2)

The Requirements of HKSA 620

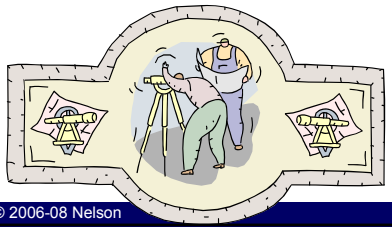
Points for Discussion

1. Expert employed by the audit firm
2. Determining the need to use the work of an expert
3. Competence and objectivity of the expert
4. Scope of the expert's work
5. Evaluating the work of the expert
6. Reference to an expert in the auditor's report



1. Expert Employed by Audit Firm

- An expert may be contracted or employed by the entity or the auditor.
- When the auditor uses the work of an expert employed by the audit firm,
  - the auditor will be able to rely on the firm's systems for recruitment and training that determine that expert's capabilities and competence, as explained in HKSA 220, "*Quality Control for Audits of Historical Financial Information*" instead of needing to evaluate them for each audit engagement.



2. Determining the Need of An Expert

- In obtaining an understanding of the entity and performing further procedures in response to assessed risks,
  - the auditor may need to obtain, in conjunction with the entity or independently, audit evidence in the form of reports, opinions, valuations and statements of an expert.
- When determining the need to use the work of an expert, the auditor would consider:
  a) The engagement team's knowledge and previous experience of the matter being considered;
  b) The risk of material misstatement based on the nature, complexity, and materiality of the matter being considered; and
  c) The quantity and quality of other audit evidence expected to be obtained.

2. Determining the Need of An Expert

Example

- Examples in which an expert is needed:
  - Valuations of certain types of assets
    - For example, land and buildings, plant and machinery, works of art, and precious stones.
  - Determination of quantities or physical condition of assets
    - For example, minerals stored in stockpiles, underground mineral and petroleum reserves, and the remaining useful life of plant and machinery.
  - Determination of amounts using specialized techniques or methods
    - For example, an actuarial valuation and valuation of share .
  - The measurement of work completed and to be completed on contracts in progress.
  - Legal opinions concerning interpretations of agreements, statutes and regulations.

3. Competence and Objectivity

To use the work of an expert, the auditor should evaluate the following of the expert:

Professional Competence

This will involve considering the expert's:

a) Professional certification or licensing by, or membership in, an appropriate professional body; and

b) Experience and reputation in the field in which the auditor is seeking audit evidence.

Objectivity

The risk that an expert's objectivity will be impaired increases when the expert is:

a) Employed by the entity; or

b) Related in some other manner to the entity, for example, by being financially dependent upon or having an investment in the entity.

3. Competence and Objectivity

To use the work of an expert, the auditor should evaluate the following of the expert:

Professional Competence

Objectivity

- The auditor, if he is concerned regarding the competence or objectivity of the expert,
  - needs to discuss any reservations with management
  - considers whether sufficient appropriate audit evidence can be obtained concerning the work of an expert
  - may need to undertake additional audit procedures or seek audit evidence from another expert

4. Scope of the Expert's Work

- The auditor should obtain sufficient appropriate audit evidence that the scope of the expert's work is adequate for the purposes of the audit. (HKSA 620.11)
- Audit evidence may be obtained through a review of the terms of reference which are often set out in written instructions from the entity to the expert.

4. Scope of the Expert's Work

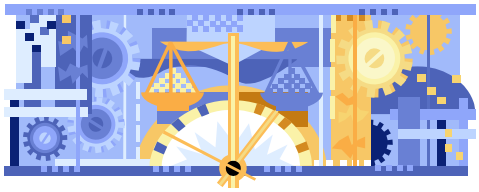
Example

- Suggest some matters to be included in the instructions to the expert.

  - Instructions to the expert may cover matters such as the following:
    - The objectives and scope of the expert's work.
    - A general outline as to the specific matters the auditor expects the expert's report to cover.
    - The intended use by the auditor of the expert's work, including the possible communication to third parties of the expert's identity and extent of involvement.
    - The extent of the expert's access to appropriate records and files.
    - Clarification of the expert's relationship with the entity, if any.
    - Confidentiality of the entity's information.
    - Information regarding the assumptions and methods intended to be used by the expert and their consistency with those used in prior periods.

4. Scope of the Expert's Work

- In the event that the scope of the expert's work are not clearly set out in written instructions to the expert
  - ➢ the auditor may need to communicate with the expert directly to obtain audit evidence in this regard.
- In obtaining an understanding of the entity,
  - the auditor also considers whether to include the expert during the engagement team's discussion of the susceptibility of the entity's financial statements to material misstatement.



5. Evaluating the Expert's Work

- The auditor should evaluate the appropriateness of the expert's work as audit evidence regarding the assertion being considered.
- This will involve evaluation of whether the substance of the expert's findings
  - is properly reflected in the financial statements or
  - supports the assertions, and
  - consideration of:
    - **source data used**;
    - **assumptions and methods used** and their **consistency** with prior periods; and
    - **results of the expert's work** in the light of the auditor's overall knowledge of the business and of the results of other audit procedures.

5. Evaluating the Expert's Work

- When considering whether the expert has used **source data** which is appropriate in the circumstances, the auditor would consider the following procedures:
  a) Making inquiries regarding any procedures undertaken by the expert to establish whether the source data is relevant and reliable.
  b) Reviewing or testing the data used by the expert.

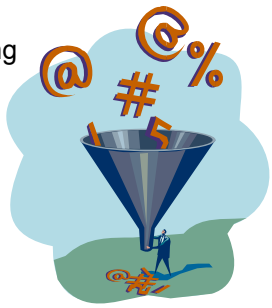
5. Evaluating the Expert's Work

- The appropriateness and reasonableness of **assumptions and methods used** and their application are the responsibility of the expert.
- The auditor does not have the same expertise and, therefore, cannot always challenge the expert's assumptions and methods.
- However, the auditor will need
  - to obtain an understanding of the assumptions and methods used and
  - to consider whether they are appropriate and reasonable,

  based on the auditor's knowledge of the business and the results of other audit procedures.

5. Evaluating the Expert's Work

- The auditor should resolve the following matters
  - if **the results of the expert's work** do not provide sufficient appropriate audit evidence or
  - if the results are not consistent with other audit evidence. (HKSA 620.15)
- This may involve
  - discussions with the entity and the expert,
  - applying additional audit procedures, including possibly engaging another expert, or
  - modifying the auditor's report.



5. Evaluating the Expert's Work

Example

- You have recently been engaged in the audit of the financial statement of Big Property Limited.
- In accordance with the accounting policy, Big Property Limited appointed Surveyor AA Limited, a firm of property consultants, to prepare a valuation report on investment property.
- Explain
  - Why you may decide to rely on the work of Surveyor AA
  - How you would satisfy that Surveyor AA is a suitable candidate to reply on.

5. Evaluating the Expert's Work

Example

- The education and training that auditors receive and their experience as auditors enable them to be knowledgeable about business matters in general,
  - but auditors do not normally have the expertise of a person such as an actuary, engineer or as in this case a property valuer, trained and qualified to engage in and practice their said profession.
- If the auditors determine that it is appropriate to use the work of an expert,
  - the auditors may need to obtain, in conjunction with the entity or independently, audit evidence in the form of reports, opinions, valuations and statements of an expert.

5. Evaluating the Expert's Work

Example

- An example is the valuation of certain types of assets such as investment property as in this case.
- If the auditors are unable to obtain sufficient appropriate evidence, by relying on the work of Surveyor AA or other experts engaged directly by the auditors, the auditors should consider the implications for their report in accordance with HKSA 700.
- To ensure that Surveyor AA is a suitable candidate to rely on, the auditors need to assess whether Surveyor AA is professionally competent and objective.

5. Evaluating the Expert's Work

Example

- For this purpose, you needs to consider the following:
  - Are the surveyors involved in the valuation professionally qualified? (Are they qualified members of a professional surveying bodies, like the Royal Institution of Chartered Surveyors or the Hong Kong Institute of Surveyors?)
  - Do the surveyors involved in the valuation have appropriate experience in the valuation of residential properties under development in Hong Kong?
  - Does Surveyor AA rely heavily on work (valuation as well as other works normally performed by a firm of surveyors) initiated by the company?
  - Does Surveyor AA or any of its management or staff have a financial interest in the company?
  - Does Surveyor AA or any of its management or staff have any close personal relationship with the directors of the company?

6. Reference in Auditor's Report

- When issuing an unmodified auditor's report, the auditor should not refer to the work of an expert. (HKSA 620.16)
  - Such a reference might be misunderstood to be a qualification of the auditor's opinion or a division of responsibility, neither of which is intended.

6. Reference in Auditor's Report

- If, as a result of the work of an expert, the auditor decides to issue a modified auditor's report,
  - in some circumstances it may be appropriate, in explaining the nature of the modification, to refer to or describe the work of the expert (including the identity of the expert and the extent of the expert's involvement).
- In these circumstances, the auditor would obtain the permission of the expert before making such a reference.
  - If permission is refused and the auditor believes a reference is necessary, the auditor may need to seek legal advice.

Accounting Estimate and Fair Value

26 April 2008

Full version of the slides can be found in
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26 April 2008

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