CFA二级培训项目

Financial Statement Analysis

Framework of CFA Level II

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Summary of Readings & Framework

SS 5

- Reading 15 Inventories
- Reading 16 Long-lived assets

SS 6

- Reading 17 Intercorporate Investments *
- Reading 18 Employee Compensation: Postretirement and Share-based *
- Reading 19 Multinational Operations *

SS 7

- Reading 20 Evaluating Financial Reporting Quality
- Reading 21 Integration of FSA Techniques *

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
- Reading 16: Long-lived Assets: Implications for Financial Statements and Ratios
- Reading 17: Intercorporate Investments
- Reading 18: Employee Compensation: Post-Employment and Share-Based
- Reading 19: Multinational Operations
- Reading 20 Evaluating Financial Reporting Quality
- Reading 21 Integration of FSA Techniques

LOS: Inventories

a. calculate and explain the effect of inflation and deflation of inventory costs on the financial statements and ratios of companies that use different inventory valuation methods (cost formulas or cost flow assumptions).
b. explain LIFO reserve and LIFO liquidation and their effects on financial statements and ratios.
c. convert a company's reported financial statements from LIFO to FIFO for purposes of comparison.
d. describe implications of valuing inventory at net realisable value for financial statements and ratios.
e. analyze and compare the financial statements and ratios of companies, including those that use different inventory valuation methods.
f. explain issues that analysts should consider when examining a company's inventory disclosures and other sources of information.

1. Inventory and changing price levels

- **Basic Equation**

EI=BI + P – COGS

BI: the beginning inventories

EI: the ending inventories

P: the purchase of goods

COGS: cost of goods sold

1. Inventory and changing price levels

- Inventory cost flow method
  - Specific identification
  - FIFO
  - LIFO (not allowed under IFRS)
  - Weighted average cost
- If the unit price (cost) is rising, the cheaper units gets in first.
  - FIFO: The expensive units stay in inventory account (B/S), the cheap units go to the COGS(I/S).
  - LIFO: The cheap units stay in inventory account (B/S), the expensive units go to the COGS (I/S).

Perpetual vs. Periodic Systems

- In a **periodic inventory system**:
  - Inventory values and COGS are determined at the end of the accounting period.
  - No detailed records of inventory are maintained; rather, inventory acquired during the period is reported in a Purchase account.
  - At the end of the period, purchases are added to beginning inventory to arrive at cost of goods available for sale.
  - To calculate COGS, ending inventory is subtracted from goods available for sale.
- In a **perpetual inventory system**:
  - Inventory values and COGS are updated continuously.
  - Inventory purchased and sold is recorded directly in inventory when the transactions occur. Thus, a Purchase account is not necessary.
- For the **FIFO** and **specific identification** methods, ending inventory values and COGS are the same whether a periodic or perpetual system is used.
- However, periodic and perpetual inventory systems can produce different values for inventory and COGS under the **LIFO** and **weighted average cost** methods.

Example 1

Jan 1 beginning inventory	2 units @$2 each
Jan 7 purchase	3 units @ $3 each
Jan 12 sale	4 units
Jan 19 purchase	5 units @ $5each
Jan 29 sale	3 units
Calculate COGS and ending inventory under the FIFO and LIFO cost flow method using the two inventory systems	

Example 1 – FIFO (Periodic)*

Jan sale of 7 units consists of:			
Units	From	Costs	$
2	Jan 1 beginning inventory	2 units @ $2each	4
3	Jan 7 purchase	3 units @$3 each	9
2	Jan 19 purchase	2 units @ $5 each	10
	Total		**23**
Jan ending inventory			
Units	From	Costs	$
3	Jan 19 purchase	3 units @$5 each	15
	Total		**15**

Example 1 – FIFO (Perpetual)*

Same result under FIFO

Jan 12 sale of 4 units consists of:			
Units	From	Costs	$
2	Jan 1 beginning inventory	2 units @$2 each	4
2	Jan 7 purchase	2 units @ $3 each	6
	Total		**10**
Jan 29 sale of 3 units consists of :			
Units	From	Costs	$
1	Jan 7 purchase	1 units @ $3 each	3
2	Jan 19 purchase	2 units @ $5each	10
	Total		**13**
Jan ending inventory			
Units	From	Costs	$
3	Jan 19 purchase	3 units @$5 each	**15**

COGS = $23

Example 1 – LIFO (Periodic)*

Jan sale of 7 units consists of:			
Units	From	Costs	$
5	Jan 19 purchase	5 units @ $5each	25
2	Jan 7 purchase	2 units @$3 each	6
	Total		**31**
Jan ending inventory			
Units	From	Costs	$
2	Jan 1 beginning inventory	2 units @$2 each	4
1	Jan 7 purchase	1 units @$3 each	3
	Total		**7**

Example 1 – LIFO (Perpetual)*

Different result under LIFO

Jan 12 sale of 4 units consists of:			
Units	From	Costs	$
3	**Jan 7 purchase**	**3 units @$3 each**	**9**
1	**Jan 1 beginning inventory**	**1 units @ $2 each**	**2**
	Total		**11**
Jan 29 sale of 3 units consists of :			
Units	From	Costs	$
3	**Jan 19 purchase**	**3 units @ $5each**	**15**
	Total		**15**
Jan ending inventory			
Units	From	Costs	$
1	**Jan 1 beginning**	**1 units @$2 each**	**2**
2	**Jan 19 purchase**	**2 units @$5 each**	**10**
	Total		**12**

COGS = $26

1. Inventory and changing price levels

- Financial impacts

In periods of rising prices and stable or increase in quantities of inventories:

LIFO results in:	***FIFO results in:***
Higher COGS	Lower COGS
Lower taxes	Higher taxes
Lower net income (EBIT & EAT)	Higher net income (EBIT & EAT)
Lower inventory balances	Higher inventory balances
High cash flows (less taxes paid)	Lower cash flows (more taxes paid)
Lower net and gross margins	Higher net and gross margins
Lower current ratio	Higher current ratio
Higher inventory turnover	Lower inventory turnover
D/A and D/E higher	D/A and D/E lower

2. LIFO method

- LIFO reserve
  - The difference between the reported LIFO inventory carrying amount and the inventory amount that would have been reported if the FIFO method had been used.
  - LIFO reserve = FIFO inventory – LIFO inventory
- LIFO to FIFO Conversion
  - $INV_F = INV_L + LIFO\ reserve$
  - $COGS_F = COGS_L - \triangle\ LIFO\ reserve$
  - B/S:
    - ✓ Asset: $+LIFO_{Reserve}$，
    - ✓ +Equity: (retained earnings) $LIFO_{Reserve}^{0} \times (1-t_{past}) + \Delta\ LIFO_{Reserve} \times (1-t_{current})$
    - ✓ - Reduction in cash: $-\ LIFO_{Reserve}^{0} \times t_{past} - \Delta\ LIFO_{Reserve} \times t_{current}$
  - I/S: $+NI + \Delta\ LIFO_{Reserve} \times (1-t_{current})$
    - ✓ $\Delta\ LIFO_{Reserve} = LIFO_{Reserve}^{1} - LIFO_{Reserve}^{0}$

Example 1

- Sauerbraten Corp. reported 2007 sales ($ in millions) of $2,157 and cost of goods sold of $1,827. The company uses the LIFO method for inventory valuation and discloses that if the FIFO inventory valuation method had been used, inventories would have been $63.3 million and $56.8 million higher in 2007 and 2006, respectively. If Sauerbraten used the FIFO method exclusively, it would have reported 2007 gross profit closest to
  - A. $324.
  - B. $330.
  - C. $337.
- Answer：
  - C is correct. Under FIFO, cost of goods sold would be lower than LIFO by an amount equal to the increase in the LIFO reserve (in this case, $63.3 — $56.8 = $6.5). So, $1,827 — $6.5 = $1,820.5 meaning gross profit is $2,157 — $1,820.5 = $336.5.

Example 2

- Sauerbraten Corp. reported 2007 sales ($ in millions) of $2,157 and cost of goods sold of $1,827. Inventories at year-end 2007 and 2006, respectively, were $553 and $562. The company uses the LIFO method for inventory valuation and discloses that if the FIFO inventory valuation method had been used, inventories would have been $63.3 million and $56.8 million higher in 2007 and 2006, respectively. Compared to the inventory turnover ratio reported, if Sauerbraten had exclusively used the FIFO method its inventory turnover ratio would have been closest to
  - A. 2.96.
  - B. 3.28.
  - C. 3.49.
- Answer：
  - A is correct. Inventory turnover is cost of goods sold divided by average inventory. As reported, this was $1,827/$557.5 = 3.28. Under FIFO, cost of goods sold would have been $1,820.5 and inventory would have been $616.3 and $618.8 (average $617.6). Adjusted inventory turnover would thus be 2.96.

2. LIFO method

- LIFO liquidation
  - A LIFO liquidation incurs when purchased volume is less sales volume. Or, the decrease in volume or quantity of inventory
  - In this case, the prices for goods being sold are no longer recent prices.
- Under LIFO liquidation, and if price is rising
  - COGS does not reflect current costs;
  - LIFO reserve may decline;
  - An analyst should adjust COGS for decrease in LIFO reserve.

LIFO & FIFO Conversion – Example 1

LIFO & FIFO Conversion

LIFO FIFO

- $INV_F = INV_L$ + LIFO reserve
- $COGS_F = COGS_L$ - change in the LIFO reserve

Example 1

An analyst gathered the following information about a company ($ million):

	2002	2003
Sales	234.9	283.5
Year-end inventory (LIFO)	53.7	81.4
LIFO reserve	21.8	36.4
Cost of goods sold (LIFO)	167.3	203.9

(If) Using the FIFO inventory method instead of LIFO, would the company's **2003** gross profit margin and current ratio, respectively, be higher or lower?

	Gross profit margin using FIFO	Current ratio using FIFO
A.	Lower	Higher
B.	Higher	Lower
C.	Higher	Higher

Answer: C.

$INV_F = INV_L$ + LIFO reserve = 81.4 + 36.4 = 117.8;

$COGS_F = COGS_L$ - change in the LIFO reserve = 203.9-(36.4-21.8)=189.3

Gross profit margin under LIFO = (283.5-203.9)/283.5=28.08%; under FIFO=(283.5-189.3)/283.5=33.23%.

Current ratio under FIFO is higher than LIFO because FIFO has higher inventory level than LIFO.

LIFO & FIFO – Example 2

Example 2

A company uses LIFO inventory valuation and has a 40 percent marginal tax rate. The company reports an increase in the LIFO reserve of $5,000 for the year. If the company had used FIFO instead of LIFO, the amount reported for

A. net income would be $3,000 higher

B. net income would be $5,000 higher

C. cost of goods sold would be $3,000 higher

Answer:

Answer: A

Using FIFO , cost of goods sold would be $5,000 lower and income before taxes $5,000 higher:

$5,000 (1 -tax rate) = $3,000 increase in net income using FIFO.

LIFO & FIFO – Example 3

- **Example**
- An adjustment to operating income for the effects of a change in LIFO reserves will most likely be required if the change in the LIFO reserve is the result of:
  - A. price declines.
  - B. price increases.
  - C. a decrease in the number of units held in inventory.
- Answer: C (LIFO liquidation)

3. Inventory adjustments

Inventory valuation method

- U.S.GAAP:
  - upward ⟶ ×, downward ⟶ √ Reversal prohibited
- IFRS
  - Lower of cost or NRV
  - NRV = sales price-selling cost
  - inventory can be written up but only limited to the loss recognized previously
- U.S.GAAP
  - Lower of cost or market
  - NRV-normal profit margin < market (replacement cost) < NRV
  - no write-up allowed under U.S.GAAP and no reversal after devaluation
- One exception is the inventories of producers of agricultural and forest products, producers of miners and mineral products can be measured at net realizable value

3. Inventory adjustments – Example 1

- 1. B Inc. sells digital cameras. Per-unit cost information pertaining to B's inventory is as follows:

Original cost	$ 210
Estimated selling price	$ 225
Estimated selling costs	$ 22
Net realizable value	$ 203
Replacement cost	$ 197
Normal profit margin	$ 12

- What are the per-unit carrying values of B's inventory under IFRS and under U.S. GAAP?

Answer :

- Under IFRS, inventory is reported on the balance sheet at the lower of cost or net realizable value. Since original cost of $ 210 exceeds net realizable value ($ 225 - $ 22 = $ 203), the inventory is written down to the net realizable value of $ 203 and a $ 7 loss ($ 203 net realizable value - $ 210 original cost) is reported in the income statement.
- Under U.S. GAAP, inventory is reported at the lower of cost or market. In this case, market is equal to replacement cost of $ 197, since net realizable value of $ 203 is greater than replacement cost, and net realizable value minus a normal profit margin ($ 203 - $ 12 = $ 191) is less than replacement cost. Since original cost exceeds market (replacement cost) , the inventory is written down to $ 197 and a $ 13 loss ($ 197 replacement cost - $ 210 original cost) is reported in the income statement .

3. Inventory adjustments – Example 2

- 2. Eric's Used Bookstore prepares its financial statements in accordance with U.S. GAAP. Inventory was purchased for $1 million and later marked down to $550,000. However, one of the books was later discovered to be a rare collectible item, and the inventory is now worth an estimated $3m.

The inventory is most likely reported on the balance sheet at

- A. $550,000.
- B. $1,000,000.
- C. $3,000,000.

- Answer: A. Under U.S. GAAP, inventory is carried at the lower of cost or market value. After being written down a new cost basis is determined and further revisions may only reduce the value further.

3. Inventory adjustments – Example 3

- 3. Fernando's Pasta purchased inventory and later wrote it down, though the current realizable value is higher than the value when written down. Fernando's inventory balance will most likely be
  - A. higher if it complies with IFRS.
  - B. higher if it complies with U.S. GAAP.
  - C. the same under U.S. GAAP and IFRS.
- Answer： A. IFRS permit the reversal of inventory write-downs, U.S. GAAP does not.

4. Effects of inventory write-downs on financial ratios

- An inventory writes-down reduces both profit and the carrying amount of inventory on the balance sheet and thus has a **negative** effect on profitability, liquidity, and solvency ratios.
- However, activity ratios (inventory turnover and total asset turnover) will be **positive** affected by a write-down because the asset base (denominator) is reduced.

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
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LOS: Long-lived Assets

a. explain and evaluate the effects on financial statements and ratios of capitalizing versus expensing costs in the period in which they are incurred.
b. explain and evaluate the effects on financial statements and ratios of the different depreciation methods for property, plant, and equipment.
c. explain and evaluate the effects on financial statements and ratios of impairment and revaluation of property, plant, and equipment, and intangible assets.
d. analyze and interpret the financial statement disclosures regarding long-lived assets.
e. explain and evaluate the effects on financial statements and ratios of leasing assets instead of purchasing assets.
f. explain and evaluate the effects on financial statements and ratios of finance leases and operating leases from the perspective of both the lessor and the lessee.

1. Capitalizing vs. expensing

- Capitalizing or Expensing an expenditure?
  - It's a very fundamental accounting concept.
  - It's always a hot topic in accounting;
  - How to treat an expenditure
    - ✓ Capitalize as an asset; or
    - ✓ Recognize as an expenses;
- Remember: The asset you capitalized today will be expensed in the future.
- Capitalized expenditures are classified as CFI
- Expensed expenditures are classified as CFO

1. Capitalizing vs. expensing

Impact on FS

Items	*Capitalizing*	*Expensing*
Shareholders' equity	Higher	Lower
Income variability	Lower	Higher
Net income—first year (ROA & ROE)	Higher	Lower
Net income—last year (ROA & ROE)	Lower	Higher
Total cash flow	Same	Same
Cash flow from operating	Higher	Lower
Cash flow from investing	Lower	Higher
Leverage ratios (debt/equity & debt/assets)	Lower	Higher
Interest coverage (subsequent years)	Lower	higher

Interest Capitalizing

Capitalizing interest costs (own use: fixed assets; to sell: inventory)

Items / Impacts	Interest expense	Income statement impacts	Net Income	Interest coverage ratio	CFI	CFO
First Year	No interest expense	no	Higher	Higher? The same?	Understate	Overstate
Later Years		Depreciation expense	Lower	Lower		

Implications for analysis

☞ **Accountant feel capitalized interest is a CFI outflow, however, an analyst feel it is still a CFO. So an analyst should "undo" the classification on F/S.**

Interest Capitalizing

Example

- During 2006 A company capitalized $20 of construction interest. The capitalized interest increased depreciation expense $5 for the year
- Total sales $4,000
- Operating profit $ 350
- Interest expense $ 50
- Long-term debt $ 610
- Equity $ 1,020

	Interest Capitalized	Interest Expensed
Total assets	2,060	
Interest coverage ratio	7.0	
Net profit margin	5%	
CFO	220	
CFI	-100	
Long-term debt-to-equity	59.8%	

Answer

- Adjusted total assets = $2,060 total assets - $20 capitalized interest + $5 related depreciation = 2,045
- Adjusted net profit margin = [200 net income (4,000*5%) – 20 interest expense +5 related depreciation] / 4,000 sales = 4.6%
- Adjusted interest coverage = EBIT / interest expense = (350 EBIT + 5 related depreciation) / (50 interest expense + 20 capitalized interest = 5.1
- Adjusted CFO = 220 reported CFO – 20 capitalized interest = 200
- Adjusted CFI = -100 reported CFI + 20 capitalized interest = -80
- Adjusted long-term debt-to-equity = 610 long-term debt / (1,020 reported equity - 20 capitalized interest + 5 related depreciation) = 60.7%

2. Research and development costs

- **Research and development costs:**
  - Under IFRS:
    - ✓ research costs (costs aimed at the discovery of new scientific or technical knowledge and understanding) are expensed as incurred.
    - ✓ However, development costs (translation of research findings into a plan or design of a new product or process) are capitalized.
  - Under U.S.GAAP, both research and development costs are generally *expensed* in the period incurred.
    - ✓ **Exception: Software development costs:**
      - ◆ for sales to others are *expensed* as incurred. However, once economic feasibility is established, subsequent costs to be capitalized. (U.S.GAAP)
      - ◆ Costs incurred when a firm develops software for its own internal use are also capitalized.

Impact of capitalizing vs. expensing R&D cost

Effects on	*Capitalizing*	*Expensing*
Current net income	Greater	Smaller
Future income - increasing expense	Greater	Smaller
Future income - decreasing expense	Smaller	Greater
Debt-equity ratio	Smaller	Greater
Return on asset-initial	Greater	Smaller
Return on assets-future	Smaller	Greater
Total cash flow	Same	Same
CFO	Greater	Smaller
CFI	Smaller	greater

3. Depreciation

- Depreciation methods
  - Straight line:

$$\text{depreciation expense} = \frac{\text{original cost} - \text{salvage value}}{\text{depreciable life}}$$

  - Double-declining balance (DDB)

$$\textit{depreciation in year } x = \frac{2}{\textit{depreciable life}} \times \textit{BV at the beginning of year } x$$

  - Units-of-production

$$\text{depreciation in year x} = \frac{\text{original cost - residual value}}{\text{life in output units}} \times \text{output units in the period}$$

3. Depreciation - Depreciation impact on financials (early years)

	Straight line	Accelerated (DDB)
Depreciation expense	Lower	Higher
Net income	Higher	Lower
Assets	Higher	Lower
Equity	Higher	Lower
ROA	Higher	Lower
ROE	Higher	Lower
Total asset turnover ratios	Lower	Higher
Cash flow	Same	Same

3. Depreciation

- Depreciation – Changes in some Assumptions
  - Change in asset lives or salvage value
    - ✓ **Changes in accounting estimate**

3. Depreciation – Depreciation analysis

Analysis (Asset quality)

$$\text{Average age} = \frac{\text{accumulated depreciation}}{\text{annual depreciation expense}}$$

☞ How many years passed?

$$\text{Average depreciable life} = \frac{\text{ending gross investment}}{\text{annual depreciation expense}}$$

$$\text{Remaining useful life} = \frac{\text{ending net investment}}{\text{annual depreciation expense}}$$

☞ how many years to pass?

3. Depreciation Analysis- Example

- Bobcat Company's balance sheet shows property, plant, and equipment valued at a historical cost of $22,983 million and accumulated depreciation of $7,879. Depreciation expense in the most recent year was $2,459. What is the average remaining useful life of Bobcat's assets?
  - A. 3.2 years.
  - B. 6.1 years.
  - C. 9.3 years.
- Answer: B is correct. The average remaining life is calculated as net PPE divided by annual depreciation expense. Net PPE is $15,104 ($22,983 — $7,879). Annual depreciation expense is $2,459, giving an average remaining life of 6.14 years ($15,104/$2,459).

$$\text{Average age} = \frac{\text{accumulated depreciation}}{\text{annual depreciation expense}}$$

$$\text{Average depreciable life} = \frac{\text{ending gross investment}}{\text{annual depreciation expense}}$$

$$\text{Average remaining useful life} = \frac{\text{ending net investment}}{\text{annual depreciation expense}}$$

4. Impairment

Impairments under IFRS

- The firm must annually assess whether events or circumstances indicate an impairment may have occurred.
  - ✓ For example, there may have been a significant decline in the market value of the asset or a significant change in the asset's physical condition. If so, then the asset is tested for impairment.
- An asset is impaired when its carrying (book) value (original cost less accumulated depreciation) > the recoverable amount.
  - ✓ The recoverable amount is max (fair value less any selling costs, value in use)
    - ◆ Value in use is DCF from continued use.
  - ✓ If impaired, the asset is written-down on the balance sheet to the recoverable amount, and an impairment loss, equal to the excess of carrying value over the recoverable amount, is recognized in the income statement.
- **Under IFRS, the loss can be reversed if the value of the impaired asset recovers in the future.**

4. Impairment

- **Impairment under US GAAP**
- The asset is tested for impairment only when events and circumstances indicate the firm may not be able to recover the carrying value through future use.
- Determining an impairment and calculating the loss potentially involves two steps.
  - In the first step, the asset is tested for impairment by applying a recoverability test.
  - If the asset is impaired, the second step involves measuring the loss.
- Recoverability: Impaired, carrying value (original cost - accumulated depreciation) > the asset's future ***undiscounted*** cash flow stream. (considerable management discretion)
- Loss measurement. If impaired, the asset is written-down to fair value on the balance sheet, and a loss = carrying value - fair value of the asset (or the ***discounted*** value of the future cash flows if the fair value is not known), is recognized in the income statement.
- **Under U.S. GAAP, loss recoveries are prohibited.**

4. Impairment – Revaluation to fair value

- **Under U.S. GAAP**, most long-lived assets are reported on the balance sheet at depreciated cost (original cost less accumulated depreciation and impairment charges).
  - Revaluing long-lived assets upward to fair value is generally prohibited.
  - One exception relates to long-lived assets held for sale.
    - ✓ Stop depreciation immediately
    - ✓ If BV>NRV, impairment happened and the impairment can be reversed
- **Under IFRS**, most firms also report long-lived assets at depreciated cost.
  - Alternatively, firms following IFRS can choose to report long-lived assets at revaluation model.
  - And for investment property, firms can choose to report at cost model of fair value model.

4. Impairment – Revaluation to fair value

- The impact of revaluation on the income statement depends on whether the initial revaluation resulted in a gain or loss.
- If the initial revaluation resulted in a loss (decrease in carrying value), the initial loss would be recognized in the income statement and a subsequent gain would be recognized in the income statement to the extent of the loss.
  - Revaluation gains beyond the initial loss would bypass the income statement and be recognized in other comprehensive income (shareholders' equity), under the heading of revaluation surplus.
  - If the initial revaluation resulted in a gain (increase in carrying value), the initial gain would bypass the income statement and be reported in other comprehensive income. Later revaluation losses would reduce other comprehensive income to the extent of the gains.

5. Impairment - Impact on F/S

Impairment Effects

Cash flow	No effect
Assets	Decrease
DTL	Decrease
DTA	Increase
Stockholder's equity	Decrease
Current net income, ROA,ROE	Decrease
Future net income, ROA,ROE	Increase
Depreciation expense	Decrease
Future asset turnover ratios	Increase
Debt/equity ratio	Increase

5. Impairment - Impact on F/S

- Under U.S.GAAP, upward revaluation of assets is generally prohibited (except for long lived assets held for sale) but permitted under IFRS
- Upward revaluation of assets will **increase** assets and equity, **decrease** leverage ratios and **increase** profitability in the period the revaluation occurs while in subsequent periods, **ROA and ROE are lower** than without the revaluation, as assets and equity are increased

5. Impairment - Impact on F/S - Example

- Fisherman Enterprises purchased $1 million of equipment with an estimated 10-year useful life and a $100,000 expected salvage value. The company uses the straight-line method of depreciation. At the end of five years it sells the equipment for $500,000. Fisherman's income statement will include a $50,000
  - A. loss recorded as a separate line-item.
  - B. gain recorded as a separate line-item.
  - C. offset to depreciation and amortization.
- Answer:
  - A is correct. Fisherman is depreciating $90,000 annually [($1,000,000 — $100,000)/10]. After five years the depreciation totals $450,000 and the book value of the asset is $550,000 ($1,000,000 — $450,000). It must record a $50,000 loss on the sale. Material losses are recorded as a separate line item.

Impairment—Summary

	IFRS	GAAP
Inventory Impairment	If cost>NRV 减值到NRV，减值计入expense 若减值发生回转 回转时减少COGS	Inventory is reported at the lower of cost or market; 将 replacement cost用下式判断后，满足条件成为market NRV-normal profit margin<M<NRV 减值到market，减值计入COGS，减值不允许回转
PP&E Impairment	Lower of cost or the recoverable amount The recoverable amount is max (fair value less any selling costs, value in use)	2步法： 判断比较：carrying value & Undiscounted Cash flow 减值到fair value（若不可得到，用discounted value of future cash flow）
PP&E Revaluation	Gain 计入OCI，Loss计入I/S。如果发生逆转，先抵原来帐户。	Generally prohibited, 除非held for sale

Classification of leases

- A lease is a contractual arrangement where by the **lessor** , the owner of the asset , allows the **lessee** to use the asset for a specified period of time *(lease term)* in return for periodic *lease payment.*
- Two partied involved in leases
  - Lessee
  - Lessor
- Two types of leases (Classification)
  - Operating lease
  - Finance lease (IFRS)/ Capital lease (U.S.GAAP)

Classification of leases

- By both lessee and lessor: IFRS

Finance lease	Operating lease
Transfers from lessor to lessee **substantially all the risks and rewards incidental to ownership** of an asset.	A lease **other than a finance lease**.

- By lessee: US GAAP

Finance lease	Operating lease
A lease transaction can be classified as a **Finance lease** by **lessee** if meet at least one of the following criteria ①The title to the leased asset is transferred to the lessee at the end of the lease period. ②A bargain purchase option exists. ③The lease period is at least **75%** of the asset's economic life. ④The present value of the lease payments is equal to or greater than **90%** of the fair value of the leased asset.	A lease not meeting any of those criteria is classified as an **Operating lease**

Classification of leases – U.S.GAAP

- By lessor

Lessee		Lessor
•Operating lease	→	•Operating lease
•Finance lease	Two additional conditions are not satisfied →	•Operating lease
	Two additional conditions are satisfied →	•Capital lease •If manufacturer, sales-type lease •If for financing, direct-finance lease

- Collectability of lease payment is reasonably certain
- The lessor has substantially completed performance

Accounting for lease - Lessee

	Financial Lease	Operating Lease
B/S-inception	**Leased asset = Lease liability = PV of Minimal lease payment (MLP)** •MLP = Future lease payment over lease term	No effect
B/S-periodic payment	Leased asset → Depreciation over lease term Lease liability → interest expense & principal repayment	No effect
I/S-periodic payment	An **interest expense** is separated from the lease payment and combined with **deprecation** both recognized in the income statement.	Lease payment is recognized as a rental expense in I/S
Cash Flow	Principal repayment – CFF Interest expense - CFO	CFO

Example 7

- GF leases a machine for its own use for 4 years with annual payments of 1000 paid in arrears ; The appropriate interest rate on the lease is 10%.
  - The appropriate interest rate on the lease is determined by:
    - ✓ Lower (leese's incremental borrowing rate, implicit interest rate)
  - Calculate the impact of the lease on GF' balance sheet and income statement for each of the 4 years, including the immediate impact.
  - Assuming GF depreciates all assets on SL basis.

Example 7

- **B/S** is affected by **Finance lease only**
- At the inception of the lease
  - Leased asset = lease liability =3169.87=3170

  N=4, I/Y=10, PMT=1000, FV=0, CPT PV -3168.87 = -3170
- Over the lease term
  - Leased asset → annual depreciation (SL) i.e. 3170 / 4years =792.5 p.a.
  - Lease liability → separate Interest expense & Lease payment

Calculation process

For the 1^{st} year:

$$INT_1 = BV_0 \times r_m = 3170 \times 10\% = 317$$

$$PMT_1 = 1000$$

$$PRN_1 = PMT_1 - INT_1 = 1000 - 317 = 683$$

$$BV_1 = BV_0 - PRN_1 = 3170 - 683 = 2487$$

For the 2^{nd} year:

$$INT_2 = BV_1 \times r_m = 2487 \times 10\% = 248.7 \approx 249$$

$$PMT_2 = 1000$$

$$PRN_2 = PMT_2 - INT_2 = 1000 - 249 = 751$$

$$BV_2 = BV_1 - PRN_2 = 2487 - 751 = 1786$$

Accounting for finance lease of lessee

T=0

B/S

Asset leased 3170	Lease obligation
	Current 683
	Long-term 2487

T=1

B/S

Asset leased 3170	Lease obligation
	Current 683
	Long-term 2487
A.D. -792.50	
Cash -1000.00	Amortization -683

I/S

Depr. Exps. -792.50

Interest Exps. -317

Interest Exps.=BV0 × interest rate=3167 × 10%=317

Amortization=Payment-Interest Exps.=1000-317=683

Comparison between finance and operating lease

Capital lease			Operating lease
Depreciation expense	Interest expense	Total expense	Lease expense
792.50	317	1109.5	1000
792.50	249	1041.5	1000
792.50	174	966.5	1000
792.50	91	883.5	1000
3170	830.00 =4000-3170	4000	4000

Comparison between finance and operating lease

	Operating Lease	Finance Lease		
Year	CFO	CFO	CFF	Total CF
1	1,000	317	683	1,000
2	1,000	249	751	1,000
3	1,000	174	826	1,000
4	1,000	91	910	1,000
Total	4,000			4,000
	Rental Stable p.a.	Interest expense **Decreasing**	Lease payment - interest expense **Increasing**	**Rental Stable p.a.**

Effect on Financial statements

		Finance Lease	Operating Lease
B/S	Assets	Higher	Reverse
	Liabilities	Higher	
I/S	EBIT	Higher	
	Net income in early years	Lower	
	Net income in later years	Higher	
	Total net income	**Same**	**Same**
CFS	CFO	Higher	Reverse
	CFF	Lower	
	Total CF	**Same**	**Same**

Effect on ratios

	Finance Lease	Operating Lease
Current ratio (↑Current liab)	Lower	Reverse
Working capital (↑ Current liab)	Lower	
Asset turnover (↑ Asset)	Lower	
ROA (in early years) (↓Net income)	Lower	
ROE	Lower	
Debt/asset (↑Liab)	Higher	
Debt/equity(↑Liab)	Higher	
Interest coverage ratio	Lower	

Classification of lease - Lessor

Lessee		Lessor
•Operating lease	→	•Operating lease
•Finance lease	Two additional conditions are not satisfied →	•Operating lease
	Two additional conditions are satisfied →	•Capital lease •If manufacturer, sales-type lease •If for financing, direct-financing lease

- Two conditions to be satisfied:
  - Cost certain
    - ✓ i.e. There are no significant uncertainties about the amount of unreimbursable costs yet to be incurred by the lessor
  - Assurance of receiving amount of lease
    - ✓ i.e. The collectivity of lease payments is predictable.

Classification of lease - Lessor

- **From the lessor's perspective**
  - **Under U.S. GAAP,** a capital lease is treated as either a *sales-type* lease or a *direct financing* lease.
    - ✓ If the present value of the lease payments exceeds the carrying value of the asset, the lease is treated as a ***sales-type lease***.
    - ✓ If the present value of the lease payments is equal to the carrying value, the lease is treated as a ***direct financing lease***.
  - **Under IFRS,** does not distinguish between a sales-type lease and a direct financing lease.
    - ✓ However, similar treatment to a sales-type lease is allowed under IFRS for finance leases originated by manufacturers or dealers. In this case, the present value of the lease payments likely exceeds the carrying value of the asset.

Sales type lease

- **Sales-type lease**
  - **Accounting treatment**
    - ✓ A sales-type lease is treated as if the lessor sold the asset for the present value of the lease payments and provided a loan to the buyer in the same amount.
    - ✓ Sales-type leases are typical when the lessor is a manufacturer or dealer because the cost (balance sheet value) of the leased asset is usually less than its fair value.
  - At the **inception of the lease**
    - ✓ the lessor recognizes a sale equal to the present value of the lease payments
    - ✓ cost of goods sold equal to the carrying value of the asset
    - ✓ the difference between the sales price and cost of goods sold is gross profit.
  - **In the cash flow statement**
    - ✓ the interest portion of the lease payment is reported as an inflow from operating activities, and the principal reduction is reported as an inflow from investing activities, just as with an amortizing loan.

Direct financing lease

- Direct financing lease
  - **Accounting treatment**
    - ✓ In a direct financing lease, no gross profit is recognized by the lessor at the inception of the lease.
  - **At the inception of the lease**
    - ✓ the lessor removes the asset from its balance sheet and creates a lease receivable in the same amount. As the lease payments are received, the principal portion of each payment reduces the lease receivable.
  - **In the income statement**
    - ✓ the lessor recognizes interest income over the term of the lease. The interest portion of each lease payment is equal to the lease receivable at the beginning of the period multiplied by the interest rate.
  - **In the cash flow statement**
    - ✓ the interest portion of the lease payment is reported as an inflow from operating activities and the principal reduction is reported as an inflow from investing activities.

Example 8 – Sales type lease

- GF leases a machine to an oil company for 4 years with annual lease payments of 1,000 in arrears. **It cost GF $3,000 to produce the machine**.
- At the end of the lease, the lessor regains possession of the asset, which will be sold for scrap value of $600. The collectability of the lease payments is predictable, and there are no significant uncertainties about GF' unreimbursable costs. The implicit rate on the lease is 10%.

Year	**Beginning**	**Interest income 10%**	**The receipt of lease payment from lessee**	**Net investment in lease**
1	3580	358	-1000	2938
2	2938	294	-1000	2232
3	2232	223	-1000	1455
4	1455	146	-1000	600
Total		1020	-4000	

Example 8 – Sales type lease

- The PV of lease payment = 3170 (previous example) = FV of leased asset
- The PV of salvage value =600/1.1^4=410
- The Cost of goods sold = 3000 - 410 = 2590
- The profit on the sales = 3170 - 2590 = 580
- The Net investment in the lease = 3170+410 = 3580

Both use 10% as discount rate

I/S

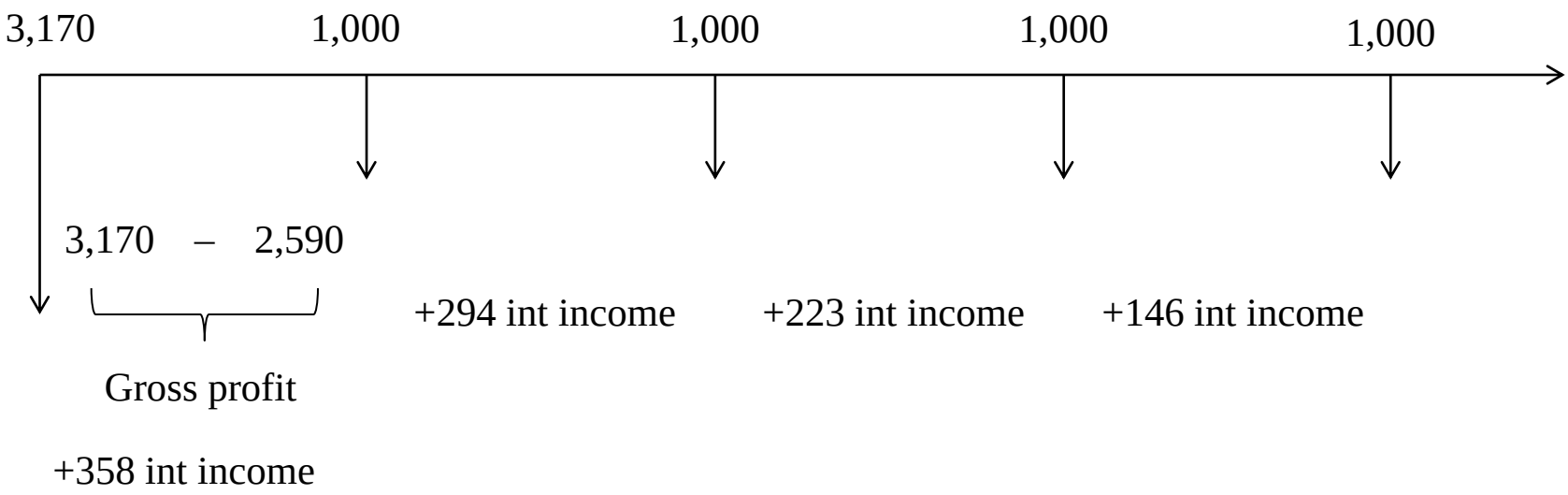
CFO ↑

CFI ↓

Asset on the B/S

i.e. lease receivable

Example 8 – Sales type lease



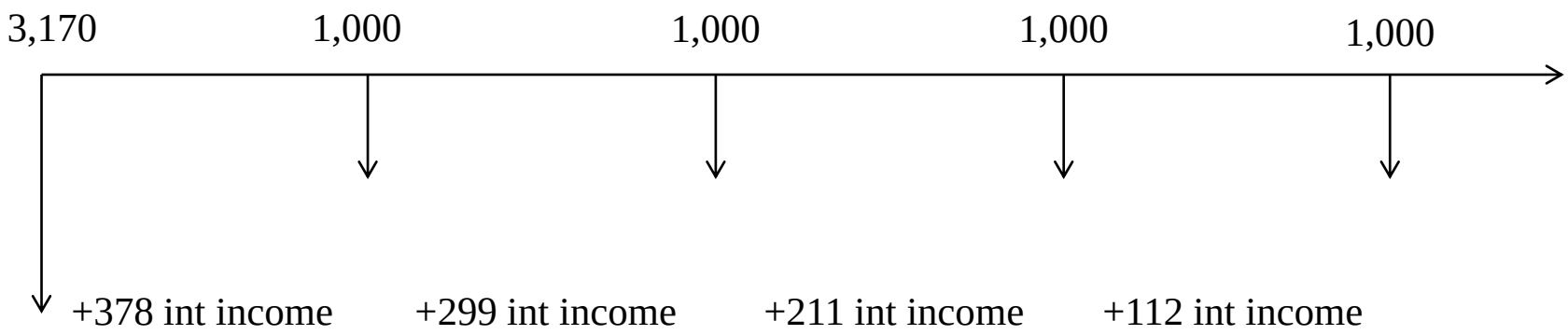
- For sales type lease
  - Only the first year recognized a 580 gross profit
  - The following years only have interest income
  - So, total income is 1600, which consists of 580 gross profit and 1020 interest income, but if we exclude salvage value 600…

Example 9 – Direct financing lease

- GF leases a machine to an oil company for 4 years with annual lease payments of 1000 in arrears . It cost GF $3000 to **purchase** the machine.
- At the end of the lease, the lessor regains possession of the asset .The collectability of the lease payments is predictable, and there are no significant uncertainties about GF' unreimbursable costs. The implicit rate on the lease is 10%.
- Net investment in the lease: IRR=12.589%, 12.6%

Year	Beginning	Interest income 12.6%	Receipt	Ending
1	**3000**	**378**	**-1000**	**2378**
2	**2378**	**299**	**-1000**	**1677**
3	**1677**	**211**	**-1000**	**888**
4	**888**	**112**	**-1000**	**0**
Total		**1000**	**-4000**	

Example 9 - Direct financing lease



- For Direct financing lease
  - There is no gross profit that recognized in the first year
  - All the four years recognized only interest income
  - Total income is 1,000, which is all interest income

Accounting for lease - Lessor

	Sales-type lease	Direct-financing lease
At inception- **I/S**	•Sales = PV of MLP (lease receivable) •Discount rate •= The interest rate implicit in the lease •COGS = Cost of assets – PV of salvage •Profit = Sales – COGS	No profit is recognized.
At inception- **B/S**	**Net investment in lease** = PV of MLP + PV of salvage value	**Net lease receivable** = cost of assets
Periodic - **I/S**	**Interest revenue** **= *implicit interest rate* * A_B**	
At inception- Cash Flow	No effect	
Periodic - Cash Flow	CFO – inflow CFI – inflow	

Operating Lease

- **Operating lease**
  - If the lease is treated as an **operating lease**, the lessor simply recognizes the lease payment as rental income.
  - the lessor will keep the leased asset on its balance sheet and depreciate it over its useful life.
- Total income over the life of the lease is the same for an operating lease and a direct financing lease.
  - However, in the early years of the lease, the income reported from the direct financing lease is higher than the income reported from the operating lease.

Direct financing lease vs. operating Lease

- Example： J company purchases an asset for $69,302 to lease to C company for four years with an annual lease payment of $20,000 at the end of each year. The implied interest rate in the lease is 6%.
- As direct financing lease:

	Beginning lease receivable	Interest income	Lease payment	Ending lease receivable
1	69,302	4,158	20,000	53,460
2	53,460	3,208	20,000	36,668
3	36,668	2,200	20,000	18,868
4	18,868	1,132	20,000	0

Direct financing lease vs. operating Lease

- Example
- If the lease is treated as an operating lease.

Direct financing lease		Operating lease		
year	Interest income	Rental income	Depreciation expense	Operating lease income
1	4,158	20,000	17,325.5	2,674.5
2	3,208	20,000	17,325.5	2,674.5
3	2,200	20,000	17,325.5	2,674.5
4	1,132	20,000	17,325.5	2,674.5
	$10,698			$10,698

Operating Lease

- Example：

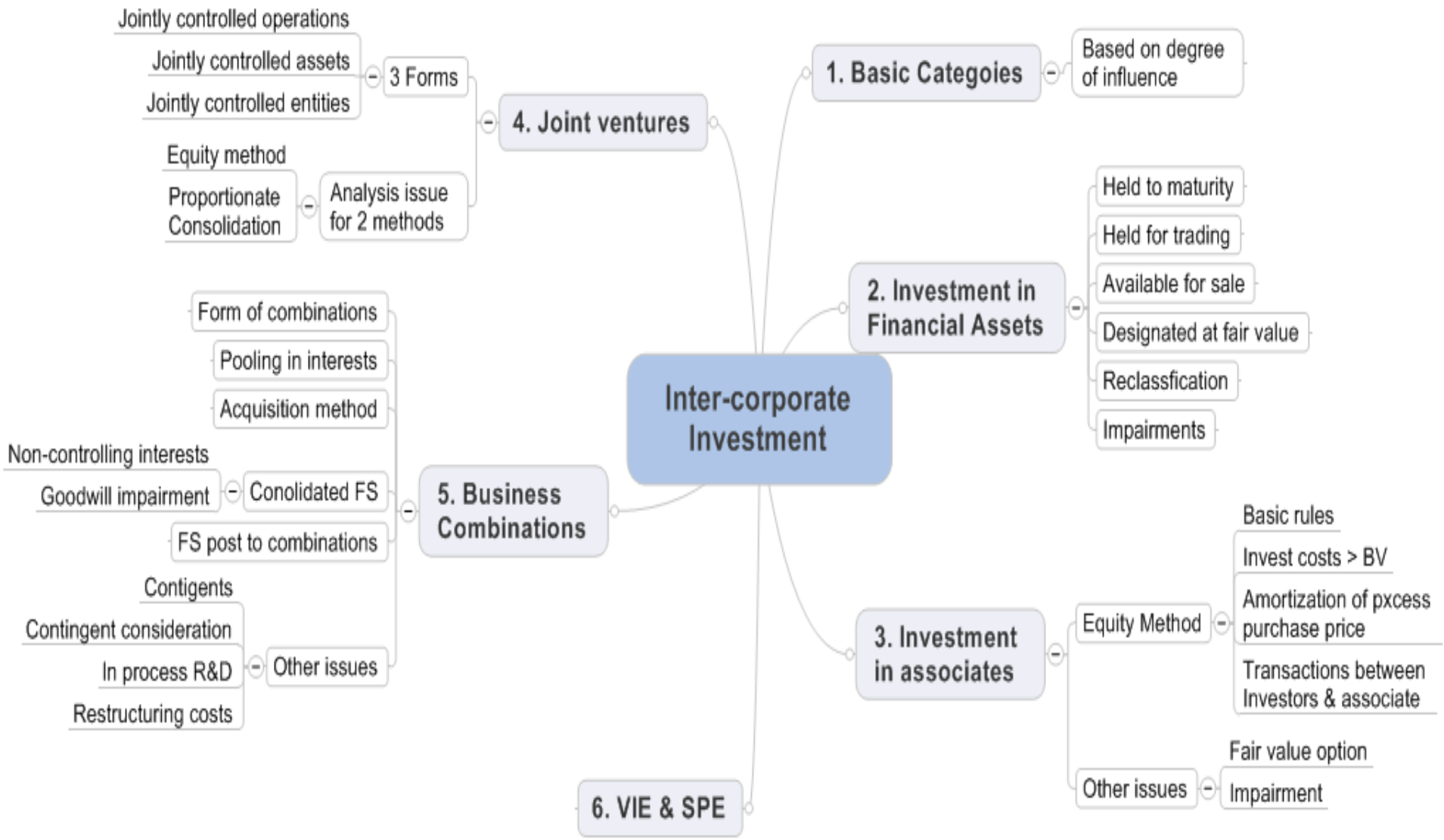
	Direct Financing Lease		Operating Lease
Year	*CFO*	*CFI*	*CFO*
1	**$4,158**	**$15,842**	**$20,000**
2	**3,208**	**16,792**	**20,000**
3	**2,200**	**17,800**	**20,000**
4	**1,132**	**18,868**	**20,000**

- Total cash flow is the same for an operating lease and a direct financing lease. However, cash flow from operations is higher with the operating lease. With a direct financing lease, the lease payment is separated into the interest portion (CFO) and principal portion (CFI).

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
- Reading 16: Long-lived Assets: Implications for Financial Statements and Ratios
- Reading 17: Intercorporate Investments
- Reading 18: Employee Compensation: Post-Employment and Share-Based
- Reading 19: Multinational Operations
- Reading 20: Evaluating Financial Reporting Quality
- Reading 21: Integration of FSA Techniques

Overview



LOS: Intercorporate Investments

a. describe the classification, measurement, and disclosure under International Financial Reporting Standards (IFRS) for
   - ✓ 1) investments in financial assets,
   - ✓ 2) investments in associates,
   - ✓ 3) joint ventures,
   - ✓ 4) business combinations, and
   - ✓ 5) special purpose and variable interest entities.

b. distinguish between IFRS and U.S. GAAP in the classification, measurement, and disclosure of investments in financial assets, investments in associates, joint ventures, business combinations, and special purpose and variable interest entities.

c. analyze effects on financial statements and ratios of different methods used to account for intercorporate investments.

1. Categorization of investment: overview

	Financial assets	Associates	Business combination	Joint Ventures
Degree of Influence	No significant	Significant	Control	Shared control
Typical % Interest	<20%	20% - 50%	> 50%	Varies
Term of investee	N/A	Associate	Subsidiary	N/A
Treatment – US GAAP	Cost or Market ▪ HTM; ▪ AFS ▪ Fair value through P/L（including TS & Designated at FV）	Equity Method	Acquisition method	Equity Method (In rare cases, proportionate consolidation)
Treatment – IFRS				

Percentage of interests held by investors is not the sole criterion of degree of influence. Other factors should be considered, such as, involvement in policy and decision making.

2. Financial assets

➢ **Financial assets**:

- This classification below only applies to debt or equity investment with no significant influence (percentage of interests < 20%)
- HTM only for debt securities
- AFS
- Fair value through P/L（including TS & Designated at FV）

➢ **Debt securities held-to-maturity:**

- are securities of which a company has the positive intent and ability to hold to maturity.
- This classification applies only to debt securities; it does not apply to equity investments.
- Initial recognition (similar under IFRS and US GAAP)
  - ✓ IFRS: fair value plus transaction costs;
  - ✓ US GAAP: at cost including transaction costs.
- Over the holding period, the discount or premium is amortized.

2. Financial assets

- Fair value through profit or loss
  - Debt and equity held for trading (TS)
    - ✓ are securities acquired for the purpose of selling them in the near term;
    - ✓ Financial assets are stated at fair value at each B/S date;
    - ✓ Both realized and unrealized gain or loss are recognized on I/S;
  - Designated at fair value
    - ✓ A financial assets is designated regardless the holding intention;
    - ✓ The treatment is similar to that of TS.

*IFRS 9——the new standards

*U.S. GAAP is similar to current IFRS 9.

2. Financial assets

- Debt and equity securities available-for-sale (AFS)
  - Not classified as HTM, TS or designated at fair value;
  - Financial assets are stated at fair value at each B/S date;
  - Only realized gain or loss are recognized on I/S,
  - The unrealized gain or loss are recognized on equity until selling
  - FX changes
    - ✓ Debt:
      - ◆ US GAAP, all to OCI;
      - ◆ IFRS, **FX changes into P/L; other changes in fair value into OCI;**
    - ✓ Equity:
      - ◆ under both IFRS and US GAAP, all changes in fair value into OCI.

2. Financial assets

- Summary of reporting methods for minority passive investment

	Held-to-Maturity (HTM)	Available-for-sale (AFS)	Fair value through profit or loss
Carrying value (Balance sheet)	Amortized cost	Fair value	Fair value
Return (Income statement)	• Interest; • Realized G/L;	• Interest; • Dividend; • Realized G/L; • *Unrealized G/L is recognized in equity (not in I/S) and released to I/S when realize.*	• Interest; • Dividend; • *Realized G/L* • *and unrealized G/L;*

2. Examples: Financial assets

- GF purchased a 9% bond with a face value of $100,000. The bond was issued for $96,209 to yield 10%. The coupon payments are made annually at year-end. Assume the fair value of the bond at the end of the year is $98,500.

  Determine the impact f the bond investment is classified as held-to-maturity, held for trading, and available for sale.

  - **Held-to-maturity**.
    - ✓ The balance sheet value is based on amortized cost.
    - ✓ At year-end, Midland recognizes interest revenue of $9,621 ($96,209 beginning bond investment * 10% market rate at issuance).
    - ✓ The interest revenue includes the coupon payment of $9,000 ($100,000 face value * 9% coupon rate) and the amortized discount of $621 ($9,621 interest revenue - $9,000 coupon payment).
    - ✓ At year-end, the bond is reported on the balance sheet at $96,830 ($96,209 beginning bond investment + $621 amortized discount).

2. Examples: Financial assets

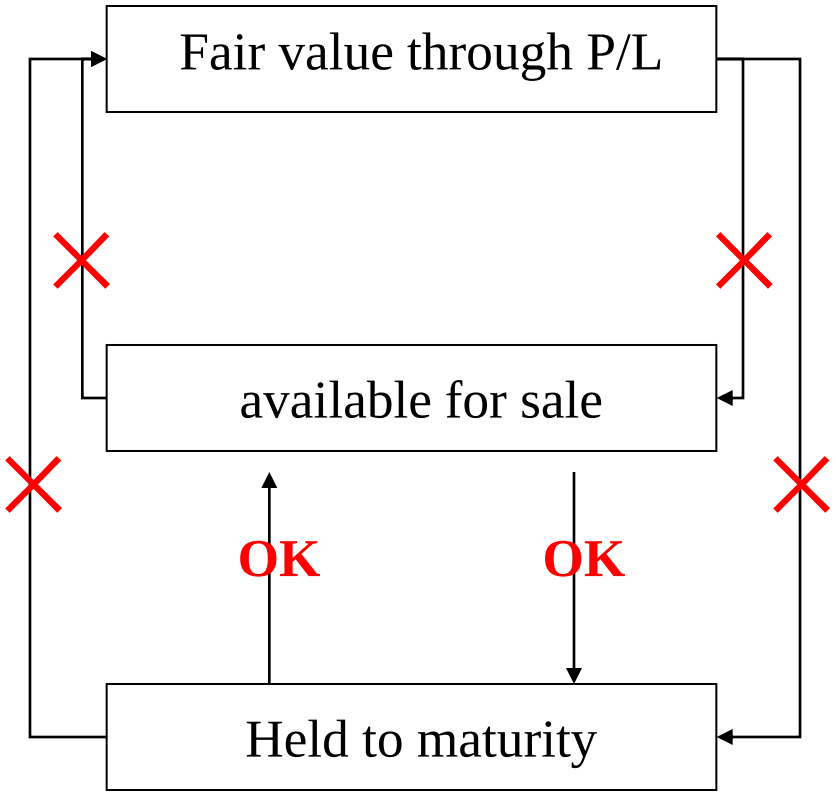
- **Fair value through profit or loss.**
  - ✓ The balance sheet value is based on fair value of $98,500.
  - ✓ Interest revenue of $9,621 ($96,209 beginning bond investment * 10% yield-to-maturity at issuance) and
  - ✓ an unrealized gain of $1,670 ($98,500 - $96,209 - $621) are recognized in the income statement.
- **Available-for-sale.**
  - ✓ The balance sheet value is based on fair value of $98,500.
  - ✓ Interest revenue of $9,621 ($96,209 beginning bond investment * 10% yield-to-maturity at issuance) is recognized in the income statement.
  - ✓ The unrealized gain of $1,670 ($98,500 - $96,209 - $621) is reported in stockholders' equity as a component of other comprehensive income (U.S. GAAP) or direct to equity (IFRS).

2. Examples: Financial assets

- Now let's assume the bonds are called on the first day of the next year for $101,000. Calculate the gain or loss recognition for each classification.
  - ✓ Held-to-maturity: A realized gain of $4,170 ($101,000 - $96,830 carrying value) is recognized in the income statement.
  - ✓ Fair value through profit or loss: A net gain of $2,500 ($1 01,000 - $98,500 carrying value) is recognized in the income statement.
  - ✓ Available-for-sale: The unrealized gain of $1,670 is removed from equity, and a realized gain of $4,170 ($101,000 - $96,830) is recognized in the income statement.

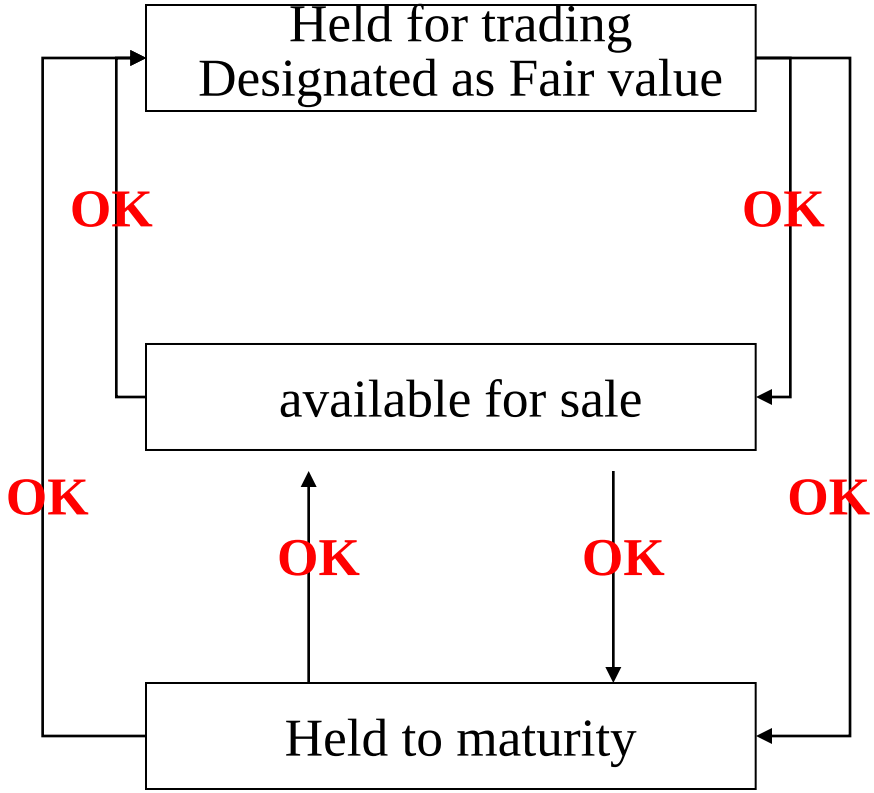
2. Financial assets - Reclassification

IFRS



U.S. GAAP

U. S. GAAP does permit securities to be reclassified.



2. Financial assets

- Impairments (IFRS)
  - HTM
    - ✓ Impaired if its carrying amount > PV of CF (expected permanently);
    - ✓ Impairment loss is recognized on I/S if impaired;
    - ✓ reversal of impairment is also recognized through I/S only when directly related with events resulting losses.
  - AFS
    - ✓ Carrying amount>Fair value (出现减值迹象）
    - ✓ Cumulative loss in OCI is reclassified to I/S＝Cost-FV-Losses recognized in I/S
    - ✓ Reversal
      - ◆ Debt: recognized through I/S only when directly related with original events resulting initial losses
      - ◆ Equity: can **NOT** be reversed through I/S
- Impairments (US GAAP)
  - AFS
    - ✓ Declining in value is other than temporary, the write-down to fair value is treated as a realized loss (i.e., recognized on I/S)
    - ✓ A subsequent reversal of impairment losses on I/S is not allowed.

2. Financial assets

- Exceptions summary:
  - Under IFRS
    - ✓ For AFS debt securities: (two exceptions)
      - ◆ foreign exchanges G/L recognized in P/L
      - ◆ impairment reversal only when directly related with original events resulting initial losses.

2. Financial assets

- IFRS 9 (new standards):
  - IFRS does away with held-for-trading, AFS, and HTM. Instead, the 3 classifications are amortized cost, FV through P/L(FVPL), and FV through OCI (FVOCI).
    - ✓ amortized cost (Debt only)——2 criteria
      - ◆ Business model test: debt securities are being held to collect contractual cash flows.
      - ◆ Cash flow characteristic test: the contractual cash flow are either principal, or interest on principal, only.
    - ✓ FVPL(D & E)
      - ◆ Debt——held-for-trading OR amortized cost results in accounting mismatch
      - ◆ Equity——held-for-trading must be classified as FVPL; others may be classified as either FVPL or FVOCI, irrevocable.
    - ✓ FVOCI (Equity only)
      - ◆ Same as AFS

3. Associate

- **Associates** refers to entity is significant influenced by an investor
  - With ***typical*** ownership interests between 20% and 50%;
  - Other criteria for significant influence:
    - ✓ Representation of board directors;
    - ✓ Participation in policy making;
    - ✓ Material transactions;
    - ✓ Interchange of managerial personnel; or
    - ✓ Technological dependency.

3. Associate

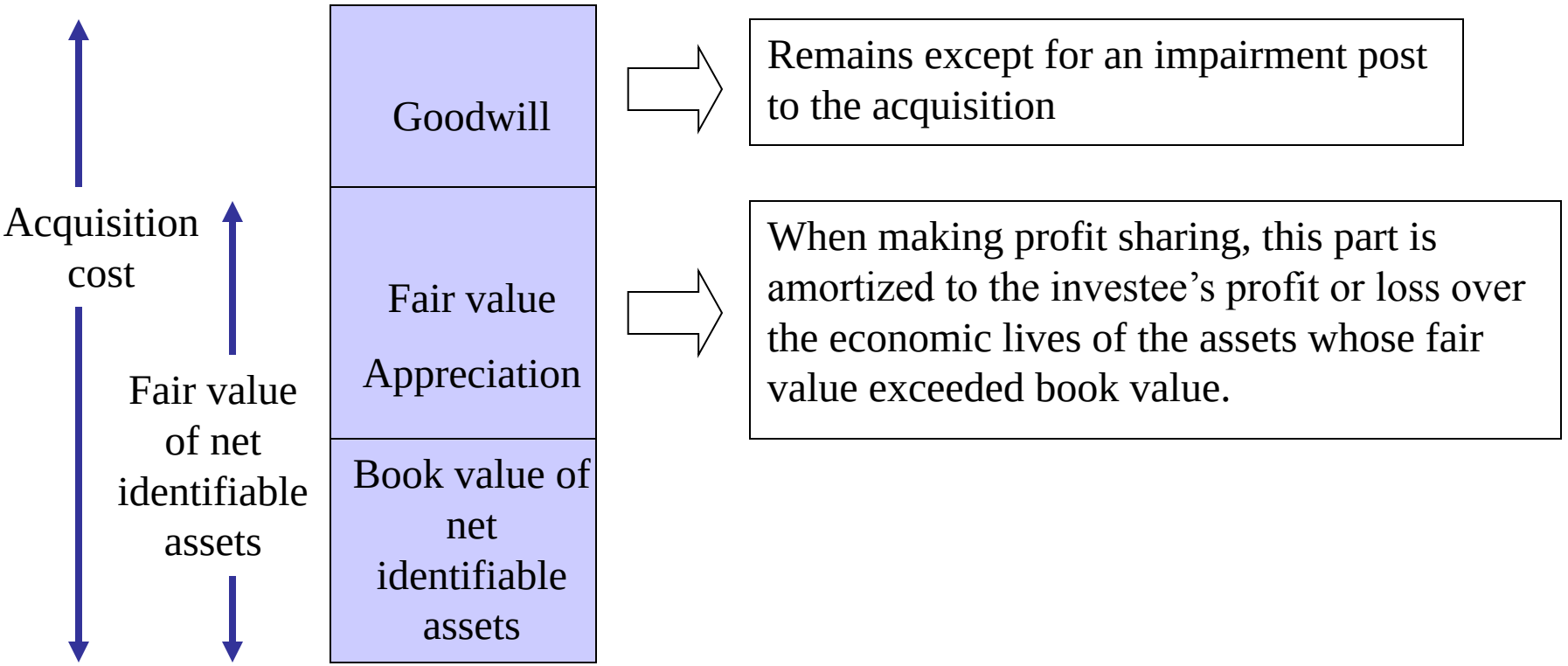
- Equity Method - Basic
  - Recognize the cost of investment at inception;
  - One-line consolidation;
  - Share the results of investee (investee's earnings increase the investment account;
  - decrease in the investment when dividend from investee declared) ;
- The carrying amount of investment in the B/S

  = cost of investment + (adj. accumulated net profit of the investee – accumulated dividends declared by the investee) X percentage of interest owned;
- I/S: a gain is recognized = current year's net profit of the investee X percentage of interest owned; (usually separated from operating income.)

3. Associate

Equity Method – More complicated issues

- If the interests in an associate is acquired with consideration in excess of book value, how to deal with it?



3. Associate

- Equity Method – More complicated issues

  Price in excess of book value.

  - Goodwill is the amount that consideration in acquiring the equity interests of investee in excess of related the fair value of equity.
  - Acquisition cost (consideration) is initially recognized as investment in associate, and comprises of two parts:
    - ✓ Fair value of the net assets acquired; and
    - ✓ Goodwill.
  - **The appreciation part arising from differences between fair value and book value of the net assets acquired will adjust the I/S of investor's equity income (not simply equals to the net income earned by investee multiplied by percentage of interests owned) after the acquisition.**
  - Impairment of investment in associate should be considered.

3. Associate

- Goodwill is the amount that consideration in acquiring the equity interests of investee in excess of related the book value of equity.
  - Goodwill is NOT amortized;
  - Goodwill is subject to an impairment test at least annually;

3. Associate - Equity Method – Example 2

- P acquired 20% of interests in E with cash 12,000 on 1 Jan 2007;
- In FY07, the E earned NI with 7,000 and paid dividend 1,000;
- The F/S of E and P as at incorporation and 31 Dec 2007 are as follows:

B/S

	E				P		
	01-Jan-07			31-Dec-07	01-Jan-07	31-Dec-07	
	book value	fair value	Diff	book value			
Assets							
Cash	10,000	10,000	-	20,000	50,000	60,200	
PP&E - cost	20,000	30,000	10,000	20,000			
PP&E - AD	(4,000)	-	4,000	(8,000)			
Investment	-	-		-	12,000	12,500	*12k+(0.7k-0.2k), see next page*
	26,000	40,000	14,000	32,000	62,000	72,700	
Equities							
Capital	20,000			20,000	30,000	30,000	
R/E	6,000			12,000	32,000	42,700	*32k+10.7k, see next page*
	26,000	40,000	14,000	32,000	62,000	72,700	

*Why not 7k*20%? Because of additional depreciation*

3. Associate

Equity Method – Example 2

- The useful live of PP&E is 5 years. And used for 1 year as at 1 Jan. 07.

	E	P
Operating profit margin	7,000	10,000
Dividend income	-	-
Equity income	-	700
PBT	7,000	10,700
Taxation	-	-
Net income	7,000	10,700

Equity income:	
NI of E	7,000
Dep. Adj.	(3,500)
Adjusted NI	3,500
Equity income of P	700

Investment cost - beginning		12,000
Representing		
- NBV of net assets	*26k*20%*	5,200
- Fair value appreciation	*(30k-(20k-4k))*20%*	2,800
- Goodwill		4,000
		12,000
share results		700
dividend		(200)
		12,500

Adjustment on depreciation	
Fair value of PP&E	30,000
Remaining useful lives	4
Annual depreciation - based on fair value	7,500
Annual depreciation - pre-acquisition	4,000
Adjustment on depreciation	3,500

3. Associate - Fair value option

- Fair value option
  - US GAAP allows equity method investments to be recorded at fair value. Under IFRS, the fair value option is only available to venture capital firms, mutual funds and similar entities.
  - The decision to use the fair value option is irrevocable.
  - Any changes in value (along with dividends) are recorded in I/S.

3. Associate - Impairment

- Impairment
  - Both standards require periodic reviews for impairment
    - ✓ IFRS:
      - the entire carrying amount of investment is tested for impairment by comparing its recoverable amount with its carrying amount.
      - The impairment loss is recognized on the IS, and the carrying amount of the investment on BS is either reduced directly or through the use of an allowance account.
    - ✓ US GAAP:
      - if the fair value of the investment declines below its carrying value and the decline is determined to be permanent.
      - Impairment loss to be recognized on IS, and the carrying value of the investment on BS is reduced to its fair value.
  - Both prohibit the reversal of impairment losses even if the fair value later increases.

3. Associate

- Equity Method – Transaction with associates
  - Transactions with associates (how to deal with unrealized profit?).
    - ✓ Upstream:
      - associates to investor;
      - All of profit is included in Investee's net income;
      - Investor must reduce its equity income of Investee by Investor's proportionate share of the unconfirmed profit.
    - ✓ Downstream:
      - investor to associates;
      - The investor has recognized all of profit;
      - Investor must reduce its equity income by the proportionate share of the unconfirmed profit.
  - Elimination of unrealized profit
    - ✓ Un-realized profit refers to the profit realized by the seller but not in the prospective of whole group.
    - ✓ It is eliminated to the extent of investor's interests in the associate.

3. Associate

- Equity Method – Example 2 – transactions with associate (upstream)
  - All else the same in Example 2, E sold goods to P and un-realized profit is RMB500.

	E	P
Operating profit margin	7,000	10,000
Dividend income	-	-
Equity income	-	600
PBT	7,000	10,600
Taxation	-	-
Net income	7,000	10,600

Investment cost - beginning	12,000
Representing	
- NBV of net assets	5,200
- Fair value appreciation	2,800
- Goodwill	4,000
	12,000
share results	600
dividend	(200)
	12,400

Equity income:	
NI of E	7,000
Dep. Adj.	(3,500)
Adjusted NI	3,500
Equity income of P	700
Less: un-realized profit	(100)
Adjusted equity income	600

← 500 * 20%

3. Associate

- Equity Method – Example 2 – transactions with associate (downstream)
  - All else the same in Example 2, P sold goods 9,600 to E for 16,000; and E resold 12,000.

	E	P
Operating profit margin	7,000	10,000
Dividend income	-	-
Equity income	-	380
PBT	7,000	10,380
Taxation	-	-
Net income	7,000	10,380

Investment cost - beginning	12,000
Representing	
- NBV of net assets	5,200
- Fair value appreciation	2,800
- Goodwill	4,000
	12,000
share results	380
dividend	(200)
	12,180

Equity income:	
NI of E	7,000
Dep. Adj.	(3,500)
Adjusted NI	3,500
Equity income of P	700
Less: un-realized profit	(320)
Adjusted equity income	380

Unrealized profit

Amt of goods un-sold	4,000
GP margin in P	40%
Total unrealized profit	1,600
To the extent of investor (20%)	320

16k-12k E resold

(16k-9.6k)/16k

3. Example—Equity Method

- GF purchased 30% of D for $80,000. On the acquisition date, the book value of D's identifiable net assets was $200,000. Also, the fair value and book value of D's assets and liabilities were the same except for D's equipment, which had a book value of $25,000 and a fair value of $75,000 on the acquisition date. D's equipment is depreciated over ten years using the straight-line method. At the end of the year, D reported net income of $100,000 and paid dividends of $60,000
  - Calculate the goodwill, GF's income at the end of the year from its investment in D.
  - Calculate the investment in D that appears on GF's year-end balance sheet.
    - ✓ The excess of purchase price over the proportionate share of D's book value is allocated to the equipment. The remainder is goodwill:

Purchase price:	$80,000
Less: Pro-rata book value of net assets:	60,000 ($200,000 book value * 30%)
Excess of purchase price:	$20,000
Less: Excess allocated to equipment:	15,000[($75,000 FV - $25,000 BV) * 30%]
Goodwill:	$5,000

3. Associate

- GF recognizes its proportionate share of D's net income for the year. Also, GF must recognize the additional depreciation expense that resulted from the purchase price allocation.

Red's proportionate share of Blue's net income:	$30,000 ($100,000 NI * 30%)
Less: Additional depreciation from excess of purchase price allocated to Blue's equipment:	1,500 [($75,000 – 25,000)*30% / 10 years)]
Equity income:	$28,500

- The beginning balance of Red's investment account is increased by the equity income from Blue and is decreased by the dividends received from Blue.

Investment balance at beginning of year:	$80,000 (Purchase price)
Equity income:	28,500 (From previous part)
Less: Dividends:	18,000($60,000 * 30%)
Investment balance at end of year:	$90,500

3. Associate

- Equity Method – Analyst issues
  - Whether the equity method is appropriate?
  - Under equity method, the assets and liabilities of the associates are not reflected on B/S of the investors but just one line of net assets shared by the investors.
  - The similar issue also exists on I/S, investors only record one line of equity income but not the full set of I/S of associates.
  - The quality of the equity method earnings. If cash is received?

4. Joint ventures — proportionate consolidation in rare cases

- Proportionate consolidation
  - similar to a business acquisition,
  - except the investor only reports the proportionate share of the assets, liabilities, revenues, and expenses of the joint venture.
  - Since only the proportionate share is reported, no minority owner's interest is necessary.

5. Controlling interest investment

- Framework for consolidation
  - If the investor obtains controlling interests in an entity, the investor is referred to as *Parent*, and the entity being controlled is referred to as *Subsidiary*;
  - If the controlling relationship exists, a separated set of financial statements which comprises those of the Parent and Subsidiary should be prepared. This set of FS refers to as *Consolidated Financial Statements*.
  - The consolidated FS is a combination of FS of Parent and Subsidiary with a certain elimination adjustments. It's NOT the FS for parent itself.

5. Controlling interest investment

- Framework for consolidation
  - The B/S and I/S of the Subsidiary and Parent are included in the consolidated financial statements;
  - Investment in the subsidiaries (item on Parent's B/S) are eliminated;
  - Minority Interests (MI) are recognized both in the income statements and balance which accounts for the net profits and net assets of the subsidiaries owned by the minority shareholders;
    - ✓ MI is regarded as an isolated item.
  - All transactions among the entities consolidated are eliminated;

5. Controlling interest investment

- Acquisition method – Example 3

	B/S					
	E		P (stand alone)		Acquisition method	
	01-Jan-07	31-Dec-07	01-Jan-07	31-Dec-07	01-Jan-07	31-Dec-07
Assets						
Cash	10,000	15,000	50,000	60,800	60,000	75,800
Investment	-	-	**8,000**	**12,000**	-	-
	10,000	15,000	58,000	72,800	60,000	75,800
MI	-	-	-	-	**2,000**	**3,000**
Equities						
Capital	10,000	10,000	30,000	30,000	30,000	30,000
R/E	-	5,000	28,000	42,800	28,000	42,800
	10,000	**15,000**	58,000	72,800	58,000	72,800
Total	10,000	15,000	58,000	72,800	60,000	75,800

5. Controlling interest investment

- Acquisition method – Example 3

Income statement			
	E	P	Acquistion method
Operating profit margin	6,000	10,000	16,000
Dividend income	-	-	-
Investment income	-	4,800	-
PBT	*6,000*	14,800	16,000
Taxation	-	-	-
MI	-	-	*(1,200)*
Net income	6,000	14,800	14,800

6. Effect of the methods

- Effect of choice of method on financial ratios
  - All three methods report the **same net income** .
  - Equity and proportionate consolidation report the same equity. Acquisition method equity will be higher by the amount of minority interest .
  - Assets and liabilities are highest under the acquisition method and lowest under the equity method; Proportionate consolidation is in-between .
  - Sales are highest under the acquisition method and lowest under the equity method ; proportionate consolidation is in-between .

Three methods—Summary

- GF has acquired the D company at the beginning of the year, if D reported a $60 earnings in that year, what impact will GF's income statement have if GF use equity method, acquisition or proportionate method?

D's I/S
Revenue = 100
-COGS= 40
NI=60

Note: All three method have the same net income!

- Equity method

GF's I/S
+48（60*80%）
NI_{GF} +48

- Proportionate method

GF's I/S
R_{GF} + 80
-($COGS_{GF+}$ 32)
NI_{GF} +48

- Acquisition method

GF's I/S
R_{GF} + 100
-($COGS_{GF+}$ 40)
- Minority int 12
NI_{GF} +48

7. Business combination

Conceptual framework – Form of Business combination

- Business combination refers to a combination of business, or so-called merger and acquisition. Business combination may can take several forms:
  - Merger
    A + B = A
  - Acquisition
    A + B = (A + B) (a group, controlling interests investment relationship)
  - Consolidation
    A + B = C
  - SPE or Variable Interests Entity
- IFRS and SFAS now require that all business combinations be accounted for as acquisitions, whereby one entity (the parent) takes management control of another entity (subsidiary, or the parent takes control of the subsidiary's assets and liabilities.

7. Business combination

➢ Conceptual framework – Diff. between Business Combination & Consolidation of FS

- Accounting for business combination involves how to treat the M&A transactions by the acquirer.
- Consolidation of financial statements refers to preparing a group's financial statements to include the financial statements of subsidiaries by investors if the controlling interests exist.
- Business combination may result in a controlling interest, Acquisition. Under this circumstances, consolidation of FS should be applied post to the completion of the M&A when preparing the FS of the acquirer.
- Business combination may not result in a controlling interest, Statutory Merger or Statutory Consolidation. Under this circumstances, consolidation of FS is not applicable as the acquirer and acquiree have been combined into one entity, ie. there is no separated FS for the acquirer and acquiree respectively.

7. Business combination – Acquisition method

Example – 4

- A acquired 100% of interests in T on 1 Jan 2007 (acquisition, T becomes the subsidiary of A post the acquisition);
- The total consideration is 500;
- The B/S of A and T are:
- The consolidated B/S as at 1 Jan 2007 post acquisition?

Balance sheet as at 1 Jan 2007				
	Historical			FV
	A	A	T	T
	Pre-acq	Post-acq		
Cash	600	100	30	30
Inventory	150	150	50	80
AR	150	150	50	50
	900	400	130	160
F/A	400	400	250	300
I/A	-	-	-	100
Invest.	-	500	-	-
	400	900	250	400
	1,300	1,300	380	560
AP	400	400	180	180
Capital	550	550	150	380
R/E	350	350	50	
	1,300	1,300	380	560

7. Business combination – Acquisition method

Balance sheet							
	T			A	Combined	Acquisition method Adj.	Acquisition method
	historical	FV adj.	Adjusted	Post-acq			
Cash	30	-	30	100	130		130
Inventory	50	30	80	150	230		230
AR	50	-	50	150	200		200
	130	30	160	400	560	-	560
F/A	250	50	300	400	700		700
I/A	-	100	100	-	100		100
Invest.	-	-	-	500	500	(500)	-
GW	-	120	120	-	120		120
	250	270	520	900	1,420	(500)	920
	380	300	680	1,300	1,980	(500)	1,480
AP	180	-	180	400	580		580
Capital	150	-	150	550	700	(150)	550
R/E	50	-	50	350	400	(50)	350
FV adj.	-	300	300	-	300	(300)	-
	380	300	680	1,300	1,980	(500)	1,480

GW=500-(560-180)=120

7. Business combination – Acquisition method

Example – 4

- Goodwill = consideration (acquisition cost) + fair value of minority interests – fair value of net asset of the Target;
- Under the this example, the controlling interest results from the acquisition, T becomes the subsidiary of A.
  - T prepares the FS of itself in a consistent way post acquisition as that prior to the acquisition.
  - When prepares consolidated FS, the assets and liabilities of T are adjusted by fair value at the acquisition date (only for the assets and liabilities exist prior to the acquisition);
  - During the period subsequent to the acquisition, adjustments are made both on B/S and I/S to amortize the fair value appreciation/depreciation, except for goodwill;
- If the target is merged to acquirer, no subsidiary and parent relationship, the assets and liabilities are combined to acquirer's FS at fair value at the acquisition date.

7. Business combination – Acquisition method

Example – 4

- The I/S in FY07 is as follows, assuming:
  - All inventories of T at beginning FY07 was sold in FY07;
  - Remaining useful lives of FA of T are 10 years;
  - Useful lives of IA are 10 years.
  - No transaction incurred in FY07 between A and T.

Inventory increased fair value of 30.

FA increased fair value of 50. 50/10=5

IA increased fair value of 100. 100/10=10

Income statement

	FY07				FY06		
	A	T	FV adj.	Acquisition method	A	T	Acquisition method
Sales	2,000	1,000	-	3,000	2,000	1,000	2,000
COGS	(1,000)	(600)	(30)	(1,630)	(1,000)	(600)	(1,000)
Depre. of F/A	(40)	(30)	(5)	(75)	(40)	(30)	(40)
Amort. of I/A	-	-	(10)	(10)	-	-	-
S&G Exp.	(300)	(200)	-	(500)	(300)	(200)	(300)
Taxation	(200)	(50)	-	(250)	(200)	(50)	(200)
Net income	460	120	(45)	535	460	120	460

7. Business combination – Acquisition method

Example – 4

- Key points for I/S post acquisition:
  - I/S of the target is included in consolidated I/S from the date of acquisition;
  - Some items might be adjusted due to the fair value adjustment:
    - ✓ COGS is adjusted to reflect the fair value of inventory of the target prior to acquisition;
    - ✓ Depreciation is adjusted to reflect the fair value of FA of the target prior to acquisition;
    - ✓ Amortization of I/A is also adjusted as similar with that in FA.
    - ✓ Please be noted, similar to B/S, under this example, T prepares its I/S in a way consistent with that prior to acquisition. **Only when prepares the consolidated FS, the fair value adjustments are made**.
    - ✓ In case a merger, with the combining of assets and liabilities of target at fair value into acquirer's FS, the impact on I/S post to the acquisition is also reflected.
  - Goodwill is not amortized.

7. Business combination – Acquisition method

Goodwill

- **Goodwill** is excess acquisition cost over fair value of identifiable assets and liabilities of the target.
  - Goodwill is not amortized;
  - Goodwill is subject to an impairment test at least annually;
  - Goodwill is impaired if the carrying value greater than the fair value;
  - An impairment provision is made to extent that carry value in excess of fair value;
  - **Full goodwill** under US GAAP; IFRS allows **partial goodwill or Full goodwill**
  - Negative Goodwill is,
    - ✓ Recognized as a gain after the re-assessment under IFRS;
    - ✓ Similar with IFRS from fiscal year after Dec 15, 2008.

Goodwill

Example: Goodwill

Wood Corporation paid $600 million for all of the outstanding stock of Pine Corporation. At the acquisition date, Pine reported the condensed balance sheet below:

Pine Corporation Condensed Balance Sheet

	Book Value (in millions)
Current assets	$80
Plant and equipment, net	760
Goodwill	30
Liabilities	400
Stockholders' equity	470

The fair value of the plant and equipment was $120 million more than its recorded book value. The fair values of all other identifiable assets and liabilities were equal to their recorded book values. Calculate the amount of goodwill Wood should report in its consolidated balance sheet.

Goodwill

Answer:

(in millions)

Purchase price		$600
Current assets	$80	
Plant and equipment, net	880	
Liabilities	(400)	
Less: Fair value of net assets		560
Acquisition goodwill		$40

Goodwill is equal to the excess of purchase price over the fair value of identifiable assets and liabilities acquired. The plant and equipment was *written-up* by $120 million to reflect fair value. The goodwill reported on Pine's balance sheet is an unidentifiable asset and is thus ignored in the calculation of Wood's goodwill.

Full goodwill vs. partial goodwill

Example: Full goodwill vs. partial goodwill

Continuing the previous example, suppose that Wood paid $450 million for 75% of the stock of Pine. Calculate the amount of goodwill Wood should report using the full goodwill method and the partial goodwill method.

Answer:

Full goodwill method:

Wood's balance sheet goodwill is the excess of the fair value of the subsidiary ($450 million / 0.75 = $600 million) over the fair value of identifiable net assets acquired, just as in the example above. Acquisition goodwill = $40 million.

Partial goodwill method:

Wood's balance sheet goodwill is the excess of the acquisition price over Wood's proportionate share of the fair value of Pine's identifiable net assets:

Purchase price		$450 million
Less: 75% of fair value of net assets	0.75 × $560 =	$420 million
Acquisition goodwill		$30 million

7. Business combination–non–controlling interests

- **Goodwill & MI process are different**
  - **Full goodwill**
    - ✓ Allowed in both US GAAP and IFRS
    - ✓ = consideration / % of interests acquired – fair value of net assets;
    - ✓ MI is stated **(% of MI shareholders own)** * (consideration / % of interests acquired);
  - **Partial goodwill**
    - ✓ Only allowed under IFRS;
    - ✓ = consideration – fair value of net assets X % of interests acquired.
    - ✓ MI is stated (% of MI shareholders own) * **FV of net assets**;

Examples: Full and Partial Goodwill

- Assume GF paid $450 million for 75% of the stock of company D. Calculate the amount of goodwill GF should report using the full goodwill method and the partial goodwill method.
  - **Full goodwill**: GF balance sheet goodwill is the excess of the fair value of the subsidiary ($450 million / 0. 75 = $600 million) over the fair value of identifiable net assets acquired, just as in the example above. Acquisition goodwill = $40 million.
  - **Partial goodwill**: GF balance sheet goodwill is the excess of the acquisition price over Wood's proportionate share of the fair value of Pine's identifiable net assets:

Purchase price		$450 million
Less: 75% of fair value of net	0.75 x $560 =	$420 million
assets Acquisition goodwill		$30 million

7. Acquisition method — Bargain Acquisition

- In rare cases, acquisition purchase price is less than the fair value of net assets acquired.
  - Both IFRS and US GAAP require that the difference between fair value of net assets and purchase price be recognized as a gain in the income statement.

7. Acquisition method – goodwill impairment

- Goodwill Impairment test
- Because of its inseparability, goodwill is valued at the reporting unit level.
  - Under IFRS, testing for impairment involves a single step approach. If the carrying amount of the cash generating unit (where the goodwill is assigned) > the recoverable amount, an impairment loss is recognized. If GW decreased to zero, the excess amount of losses is pro rata allocated to the asset of associate excluding cash, trade receivable, inventory, and assets to be traded.
  - Under U.S. GAAP, goodwill impairment potentially involves two steps. In the first step, if the carrying value of the reporting unit (including the goodwill) > the fair value of the reporting unit, an impairment exists. Maximum reduction is amount of GW
    - ✓ Once it is determined the goodwill is impaired, the loss is measured as the difference in the carrying value of the goodwill and the implied fair value of the goodwill.
    - ✓ The implied fair value of the goodwill is calculated in the same manner as goodwill at the acquisition date.
  - Under both standards: The impairment loss is recorded as a separate line item in the consolidated income statement.

Goodwill impairment

Example: Impaired goodwill

Last year, Parent Company acquired Sub Company for $1,000,000. On the date of acquisition, the fair value of Sub's net assets was $800,000. Thus, Parent reported acquisition goodwill of $200,000 ($1,000,000 purchase price – $800,000 fair value of Sub's net assets).

At the end of this year, the fair value of Sub is $950,000, and the fair value of Sub's net assets is $775,000. Assuming the carrying value of Sub is $980,000, determine if an impairment exists and calculate the loss (if applicable) under U.S. GAAP and under IFRS.

Goodwill impairment

Answer:

U.S. GAAP (two-step approach):

1. Since the carrying value of Sub exceeds the fair value of Sub ($980,000 carrying value > $950,000 fair value), an impairment exists.

2. In order to measure the impairment loss, the implied goodwill must be compared to the carrying value of the goodwill. At the impairment measurement date, the implied value of the goodwill is $175,000 ($950,000 fair value of Sub – $775,000 fair value of Sub's net assets). Since the carrying value of the goodwill exceeds the implied value of the goodwill, an impairment loss of $25,000 is recognized ($200,000 goodwill carrying value – $175,000 implied goodwill) thereby reducing goodwill to $175,000.

IFRS (one-step approach):

Goodwill impairment and loss under IFRS is 980,000 (carrying value) – 950,000 (fair value) = 30,000.

7. Business combination – Pooling of interests method

Accounting Treatment for Business Combination

- Purchase Method (is the predecessor of acquisition method, two method has a little difference which far go beyond our curriculum)
  - The assets and liabilities acquired by the Parent should be stated at their fair value in the consolidated financials statements.
  - The consideration in excess of the fair value of the net assets acquired is recognized as goodwill which is subject to an annual impairment test instead of amortization.
  - The income statements of the acquired business is consolidated from the date of acquisition onward.
- Pooling-of-Interests Method (has been eliminated from US GAAP and IFRS)
  - The target's assets and liabilities are stated at their book value in the consolidated financials statements. The prior years' income statements of the two firms are also consolidated after the restatement.
- **Now the acquisition method is required.**
  - All of the assets, liabilities, revenues, and expenses of the subsidiary are combined with parent.
  - Intercompany transactions are excluded.
- (Purchase method employs a more discretionary purchase-price-allocation approach, while acquisition method employs a more market driven recognition.)

7. Business combination – Pooling of interests method

- **Pooling method**
  - Combines the ownership interests of two companies and views the participants as equals-neither firm acquires the other;
  - Pooling of interests method is only allowed in a certain special circumstances with strict criteria under US GAAP. Under IFRS, it's not allowed.
  - Asset and liabilities of the two firms are combined (and any inter-company accounts are eliminated).
  - Major attributes of the pooling method are:
    1. The two companies are combined using accounting ***book values***.
    2. Operating results for prior periods are restated as though the two firms were always combined.
    3. Ownership interests continue, and former accounting bases are maintained.

7. Business combination – Comparison of 2 methods

- Acquisition vs. Pooling

Differences	Purchase	Pooling
Combination	Accounted for at fair value	Accounted for at book value
Pre-acquisition earnings	Not recognized	Acquire pre-acquisition earnings are recognized by acquirer
Post-acquisition earnings	Includes additional depreciation and amortization based on fair value	Dose not include additional depreciation and amortization because book value are retained
Profit margin	Lower (because of greater depreciation, etc)	Higher (no increase in expenses)
ROA	Lower (lower earnings and higher recorded asset base	Higher
ROE	Lower (lower earnings and higher recorded equity base)	Higher

8. SPE and VIE

- SPEs can be a legitimate financing mechanism for a company to segregate certain activities and thereby reduce risk.
- Under US GAAP, a term of VIE is used. **A VIE** is an entity that has one or both of the following characteristics:
  - 1. At-risk equity is insufficient to finance the entity's activities without additional financial support .
  - 2. Equity investors lack any one of the following:
    - ✓ Decision making rights .
    - ✓ The obligation to absorb losses .
    - ✓ The right to receive expected residual returns.

8. SPE and VIE

- If an SPE is considered a VIE , it must be consolidated by the primary beneficiary. The primary beneficiary is the entity that absorbs the majority of the risks or receives the majority of the rewards.
- The basis issue in regarding with VIE or SPE is to consider whether it should be consolidated by the Primary Beneficiary;
- Consolidation of VIE or SPE will significantly affect the financial position of the group.

Example: SPE

Example: Special purpose entity

Company P, a textile manufacturer, wants to borrow $100 million. It has two options:

Option A: Borrow $100 million from Bank B.
Option B: Sell $100 million worth of accounts receivable to Company S, an SPE created for this purpose. The SPE will fund the purchase by borrowing the money from Bank B.

Company P's balance sheet before the borrowing is provided below:

Assets	*$ millions*	*Liabilities and Equity*	*$ millions*
Cash	$50	Current liabilities	$500
Accounts receivable	$200	Debt	$1,200
Fixed assets	$2,000	Equity	$550
Total assets	$2,250	Total	$2,250

Prepare company P's balance sheet under both options assuming that the SPE in option B meets the requirements for consolidation.

Example: SPE

Answer:

Option A: Company P's cash and debt will both increase by the new borrowing of $100 million.

Company P's balance sheet after the borrowing:

Assets	*$ millions*	*Liabilities and Equity*	*$ millions*
Cash	$150	Current liabilities	$500
Accounts receivable	$200	Debt	$1,300
Fixed assets	$2,000	Equity	$550
Total	$2,350	Total	$2,350

Example: SPE

Option B: Company P's (non-consolidated) balance sheet will reflect a reduction in accounts receivable of $100 million and an increase in cash by the same amount.

Company P's balance sheet after the sale of accounts receivable to the SPE:

Assets	*$ millions*	*Liabilities and Equity*	*$ millions*
Cash	$150	Current liabilities	$500
Accounts receivable	$100	Debt	$1,200
Fixed assets	$2,000	Equity	$550
Total	$2,250	Total	$2,250

SPE's balance sheet after purchase of accounts receivable and bank loan:

Assets	*$ millions*	*Liabilities and Equity*	*$ millions*
Accounts receivable	$100	Debt	$100
Total	$100	Total	$100

Example: SPE

After consolidation, the SPE's debt gets included with company P's debt, and accounts receivable for company P increase by the same amount.

Company P's balance sheet after consolidation:

Assets	*$ millions*	*Liabilities and Equity*	*$ millions*
Cash	$150	Current liabilities	$500
Accounts receivable	$200	Debt	$1,300
Fixed assets	$2,000	Equity	$550
Total	$2,350	Total	$2,350

The balance sheet of company P under either option is the same. Company P cannot hide the borrowing "off the books."

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
- Reading 16: Long-lived Assets: Implications for Financial Statements and Ratios
- Reading 17: Intercorporate Investments
- Reading 18: Employee Compensation: Post-Employment and Share-Based
- Reading 19: Multinational Operations
- Reading 20 Evaluating Financial Reporting Quality
- Reading 21 Integration of FSA Techniques

LOS: Employee compensation

a. describe the types of post-employment benefit plans and the implications for financial reports.

b. explain and calculate measures of a defined benefit pension obligation (i.e., present value of the defined benefit obligation and projected benefit obligation) and net pension liability (or asset).

c. describe the components of a company's defined benefit pension costs.

d. explain and calculate the impact of a defined benefit plan's assumptions on the defined benefit obligation and periodic cost.

e. explain and calculate the effects on financial statements of adjusting for items of pension and other post-employment benefits that are reported in the notes to the financial statements .

f. interpret pension plan note disclosures including cash flow related information.

g. explain issues involved in accounting for share-based compensation.

h. explain the impact on financial statements of accounting for stock grants and stock options, and the importance of companies' assumptions in valuing these grants and options.

1. Post-retirement plan overview

- Many firms offer various types of benefits to their employees following retirement, such as:
  - Pension plan;
  - Medical insurance; and Life insurance.
- The typical post-retirement plans are:
  - Defined-contribution pension plan (DC);
    - ✓ The amount contributed by employers are defined but the future value of plan is unknown.
  - Defined-benefit pension plan (DB);
    - ✓ Employer promises to pay a certain annual amount to employees after retirement.
  - Other post-retirement benefits (OPB)
    - ✓ Life insurance premiums, health insurance. Similar to DB.

1. Post-retirement plan overview

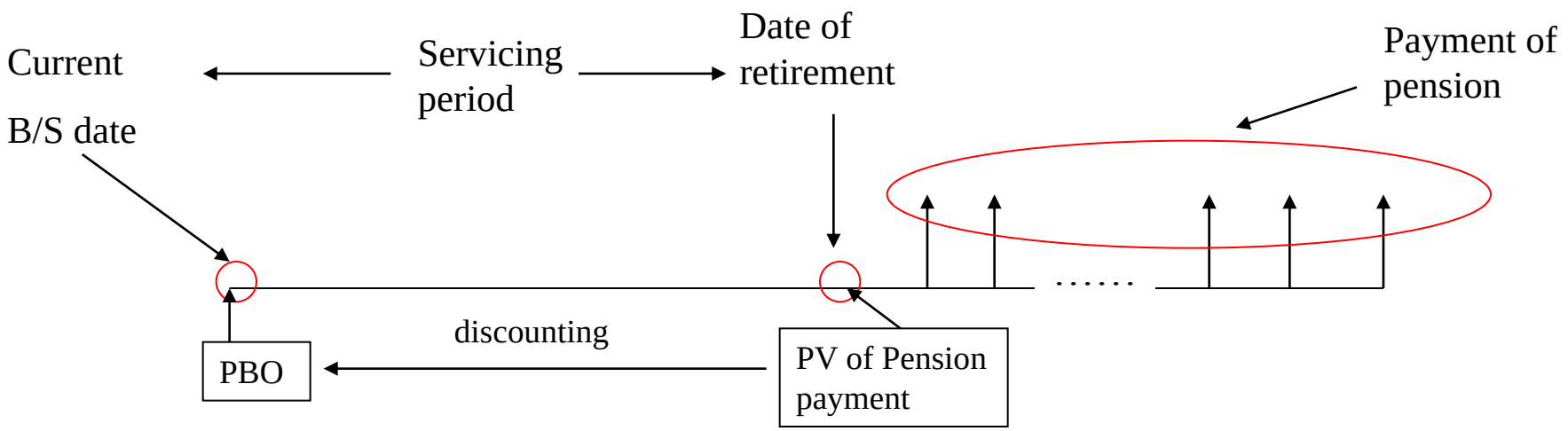
- **DC plan 缴费确定型**
  - Employer make periodical contributions to specific accounts;
  - The contribution made by employer is fixed or pre-determinable;
  - The obligation of employers is make contribution on time;
  - The amount received by employees after retirement depends on the fair value of the specific accounts accumulated;
  - The accounting for DC plan is quite simple, **expensed as incur**.
- **DB plan 收益确定型**
  - Employers promise to payment a certain amount to employees after their retirement;
  - The obligation of employer is pay a pre-determined amount to employees after their retirement; the amount received by employee is pre-determined;
  - Firms usually set up several funds to meet the future liabilities;
  - The accounting for DB plan is complicated.

1. Post-retirement plan overview

	DC	DB	OPB
Amount of benefit	✓Not determined; ✓Depends on future value of plan assets	✓ Pre-determined	✓Depends on specifications of plan
Investment risk	✓ Born by employee	✓ Born by employer	✓ Depends
Employer's obligation	✓ make periodic contributions	✓ Make pre-determined payment to retiree	✓ Similar to DB ✓Usually unfunded

- The key to identify DC or DB:
  - Who bear the investment risk
  - How about the employer's future obligation.
- OPB could be regarded as an extension of DB;

2. Illustration of DB



- The payment of pension after the retirement is committed by the firm. Therefore, these cost should be recognized during the servicing period of the employees. The present value of the cost as at the end of current year is called PBO
- The firm (sponsor) usually set up a fund to meet the liability.

2. Illustration of DB

Key Terminology

Effect on	Definition	Calculation base/Assumptions
Projected Benefit Obligation (PBO) Under US GAAP	the actuarial present value of all benefits attributed by the plan's benefit formula to employee service rendered prior to that date.	✓ expected future salary increases. ✓ Going concern ✓ Employee's continued service.

Known as **present value of defined benefit obligation (PVDBO)** under IFRS

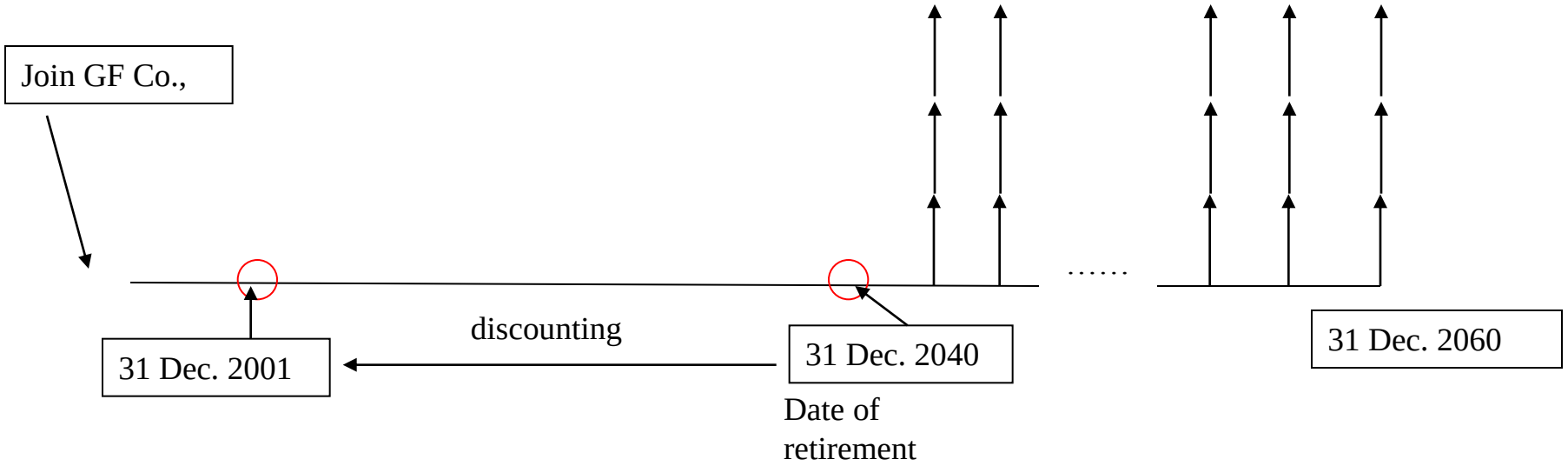
2. Illustration of DB

A typical DB plan – Example 1

John joins GF Co. on 1 January 2001 when he was 20. He the only one who are entitled to DB plan. In the plan, any 1 year of service by John, GF Co. agrees to pay a 1% at the salary for the year he retires until his death. The current salary of John for 2001 is $50,000 and is expected to increased to $200,000 when he retires at his 60 in accordance with salary increase trend. The expected life of John is 80.

- How much will GF Co., pay to John annually when he retires?
- What's the obligation as of 31 December 2001, 2002 and 2003?
- How is the PBO at those days? (assuming discount rate of 10%);

2. Illustration of DB



- For 1 year service, GF Co., should pay John additional $2,000 annually when he retires;
- If John retires at his 60, GF Co., should pay John $80,000 annually until his death (20 years after his retirement);

2. Illustration of DB

- The Obligation of GF as of 31 2001, 2002 and 2003 is as follows:

	As of 31 December,		
	2001	2002	2003
PV of obligation earn by John when he retires			
PMT	2,000	4,000	6,000
N	20	20	20
I/Y	10%	10%	10%
PV as of 31 Dec. 2040	17,027	34,054	51,081
Discounting to every Y/E			
Service periods (years)	39	38	37
PBO	414	910	1,502
Calculation of ABO			
PMT	500	1,000	1,500
PV as of 31 Dec. 2040	4,257	8,514	12,770
ABO	103	228	376

*50k*1%*

- PBO is a liability of the firm in term of DB plan;
- Firms usually set funds to meet the liabilities of DB plan, these funds are assets of the firms (the plan assets);
- On the B/S, PBO and the fair value of plan assets are recognized with net amount;

3.1 Balance sheet presentation

- **Both IFRS and US GAAP require a pension plan's funded status to be reported on the balance sheet.**
- **Funded status**
  - = Fair value of the plan assets - PV of the Defined benefit obligation.
  - If the plan has a deficit, an amount equal to the net underfunded pension obligation is reported on the balance sheet as a net pension liability.
  - ***If the plan has a surplus***, an asset equal to the overfunded pension obligation is reported on the balance sheet as a net pension asset
    - ✓ subject to a ceiling defined as the present value of future economic benefits, such as refunds from the plan or reductions of future contributions).

3.1 Determination of Amounts to be Reported on the Balance Sheet - example

- For company ABC, the present value of the company's defined benefit obligation is €6,723 and the fair value of the pension plan's assets is €4,880.
- For company DEF, the present value of the company's defined benefit obligation is €5,485 and the fair value of the pension plan assets is €5,998. In addition, the present value of available future refunds and reductions in future contributions is €326.
- For ABC
  - Company ABC would report the full underfunded status of its pension plan as a liability: €4,880 - €6,723=- €1,843.
- For DEF
  - Company DEF's pension plan is overfunded by €513 (€5,998 - €5,485).
  - However, when a company has a surplus in a defined benefit plan, the amount of asset that can be reported is the lower of the surplus and the asset ceiling of €326,
  - so the amount of company DEF's reported net pension asset would be limited to €326.

3.1 Funded Status of a Pension Plan

Plan Assets

Fair value at the beginning of the year

(+) Employer Contributions

(+) Actual return

(-) Benefit paid to employee

= fair value at the end of the year

PBO

PBO at the beginning of the year

(+) Service cost

(+) Interest cost

(+) Past service cost (plan amendments during the year)

(+) Actuarial losses

(-) Actuarial gains during the year

(-) Benefit paid to employee

= PBO at the end of the year

Difference is funded status of the plan

Plan asset > PBO—>Overfunded plan

Plan asset < PBO—>Underfunded plan

3.1 assumptions of defined benefit obligation

- **The firm discloses three assumptions:**
  - **Discount rate**: the interest rate used to compute the PV of the benefit obligation and the current service cost component of pension expense. Based on interest rates of high quality corporate fixed income investments with a maturity profile similar to the future obligation. Affects the PBO as well as pension expense.
  - **Rate of compensation growth**: is the average annual rate by which employee compensation is expected to increase over time.
  - **Expected vesting rate**: refers to a provision in pension plans whereby an employee gains rights to future benefits only after meeting certain criteria.
    - ✓ Such as: pre-specified number of years of service
      - ◆ If the employee leaves the company before meeting the criteria, he or she may be entitle to none or a portion of the benefits.

3.1 assumptions of defined benefit obligation

- An estimate of future compensation is made if the pension benefit formula is based on future compensation levels, examples include:
  - Pay-related plan
  - Final-pay plan
  - Final-average-pay plan
  - Career-average-pay plan
- In our CFA curriculum, we mostly take the final - pay plan.

3.2 Periodic pension cost - US GAAP

- The periodic pension cost is recognized in profit or loss (P&L) and/ or in other comprehensive income (OCI).
  - Current service cost: is the present value of benefits earned by the employees during the current period.
  - Interest cost: is the increase in the PBO due to the passage of time. It is calculated by multiplying the PBO at the beginning of the period by the discount rate.
  - Expected return on plan asset: the expected return on plan assets reduces pension expense.
  - Amortization of actuarial gains and losses: An increase or decrease in the PBO **from a change in actuarial assumptions** is combined with the deferred gains and losses that result from the **difference between the expected return and actual return** on plan assets.

Example – current service cost

- **Current Service cost:** Increase in Pension obligation due to service of employees. It is recognized on I/S as expenses directly.
  - Consider Example 1, what the service cost in year 2001, 2002 and 2003?

	For the year		
	2001	2002	2003
Obligation assumed by GF due John's current year service			
PMT	2,000	2,000	2,000
N	20	20	20
I/Y	10%	10%	10%
PV as of 31 Dec. 2040	17,027	17,027	17,027
Discounting to every Y/E			
Future service periods (years)	39	38	37
Service cost	414	455	501

Example – interest cost

- **Interest cost**

  Interest accrued on beginning PBO during the period. It is recognized on I/S as expenses directly.

  Consider Example 1, what the interest cost in year 2001, 2002 and 2003?

	As of 31 December,		
	2001	2002	2003
PBO at beginning	0	414	910
Discounting rate	10%	10%	10%
Interest cost	0	41	91
Service cost	414	455	501
Y/E PBO	414	910	1,502

910+91+501 = 1502

414+41+455 = 910

3.2 Periodic pension cost - US GAAP

- Under U.S. GAAP
  - the periodic pension costs recognised in P&L include
    - ✓ current service costs,
    - ✓ interest expense on plan liabilities,
    - ✓ expected returns on plan assets (which is a reduction of the cost),
    - ✓ the amortisation of past service costs, and actuarial gains and losses **to the extent not reported in OCI**
  - Amortization
    - ✓ Actuarial gains and loss are amortized using the corridor approach
      - ◆ Once the beginning balance of actuarial gains and losses exceed 10% of the greater of the beginning PBO or plan assets, amortization is required. Company can choose to amortize actuarial gains and losses more quickly than implied by the corridor method (must be consistent).
    - ✓ Amortization of past service costs: under US GAAP, it is reported as a part of OCI and amortized over the remaining service life of the affected employees.

3.2.1 Examples—Corridor approach

- **Example:** Assume that the beginning balance of the PBO is $5,000,000, the beginning balance of fair value of plan asset is $4,850,000, and the beginning balance of unrecognised actuarial losses is $610,000. The expected average remaining working lives of the plan employee is 10 years.
  - The corridor is $500,000, which is 10% of the PBO (selected as the greater of the PBO or the fair value of plan assets).
  - Because the balance of unrecognised actuarial losses exceeds the $500,000 corridor, amortisation is required.
  - The amount of the amortisation is $11,000, which is the excess of the unrecognised actuarial loss over the corridor divided by the expected average remaining working lives of the plan employees [($610,000-$500,000)/10 years]

3.3 Periodic pension cost - IFRS

- The periodic pension cost is recognised in profit or loss (P&L) and/ or in other comprehensive income (OCI). IFRS and U.S. GAAP differ in the way that the periodic pension cost is divided between P&L and OCI.
  - **Service cost:**
    - ✓ Current service cost is the amount by which a company's pension obligation increases as a result of employees' service in the current period.
    - ✓ Past service cost is the amount by which a company's pension obligation relating to employees' service in prior periods changes as a result of plan amendments or a plan curtailment.
    - ✓ Under IFRS, service costs (including both current service costs and past service costs) are recognised as an expense in P&L.
  - **Net interest expense/income:**
    - ✓ calculated by multiplying the net pension liability or net pension asset by the discount rate used in determining the present value of the pension liability.
    - ✓ Under IFRS, the net interest expense/income is recognised in P&L.
  - **Remeasurement:**
    - ✓ includes (a) actuarial gains and losses and (b) any differences between the actual return on plan assets and the amount included in the net interest expense/income calculation.
    - ✓ Under IFRS, remeasurement amounts are recognised in OCI. Remeasurernent amounts are not subsequently amortised to P&L.

3.3 Periodic pension cost - IFRS

- Under IFRS：
  - The periodic pension costs recognised in P&L include
    - ✓ service costs (both current and past)
    - ✓ net interest expense/income. (+ interest cost – expected return)
  - The periodic pension costs recognised in OCI
    - ✓ include remeasurements that comprise
      - ◆ **net return on plan assets (actual return–plan asset*interest rate)**
      - ◆ actuarial gains and losses.
    - ✓ **Actuarial gains and losses are not amortized to P & L**
  - Expected return on plan assets has no effect on the pension obligation, but reduces pension expenses.
    - ✓ **Under IFRS**, the expected return on plan assets is implicitly assumed to be the same as the discount rate used for computation of pension obligation. The difference in the expected return and the actual return is combined with “actuarial gains and losses” account.

3.4 Periodic pension cost - Comparison

- **Under U.S. GAAP**
  - Similar to IFRS
    - ✓ **current service cost** is recognised in P&L.
    - ✓ the periodic pension cost for P&L includes **interest expense** on pension obligations (which increases the amount of the periodic cost) and **returns on the pension plan assets** (which reduce the amount of the periodic cost).
  - Unlike IFRS
    - ✓ **Past service costs** are reported in OCI, and in subsequent periods, these past service costs are amortised to P&L over the average service lives of the affected employees.
    - ✓ **Interest expense** and **returns on assets** are not presented in net value and returns on plan assets use an expected return rather than the actual return.
      - ◆ Differences between the expected return and the actual return on plan assets represent another source of actuarial gains or losses.
      - ◆ As noted, actuarial gains and losses can also result from changes in the actuarial assumptions used in determining the benefit obligation.

3.4 Components of a Company's Defined Benefit Pension Periodic Costs

IFRS Component	IFRS Recognition	U.S. GAAP Component	U.S. GAAP Recognition
Service costs	Recognised in P&L. (both current and past)	Current service costs Past service costs	Current Recognised in P&L. Past Recognised in OCI and subsequently amortised to P&L over the service life of employees.
Net interest income/ expense	Recognised in P&L as the following amount: Net pension liability or asset * interest rate	Interest expense on pension obligation Expected return on plan assets	Recognised in P&L. Recognised in P&L as the following amount : Plan assets * expected return.
Remeasurements: Net return on plan assets and actuarial gains and losses	Recognised in OCI and not subsequently amortised to P&L ➢ Net return on plan assets = actual return – (plan assets * **interest rate**) ➢ Actuarial G&L = Changes in a company's pension obligation arising from changes in actuarial assumptions	Actuarial G&L including differences between the actual and expected returns on plan assets	Recognised in P&L as the following amount : Plan assets * expected return. Recognised immediately in P&L or, more commonly, recognised in OCI and subsequently amortised to P&L using the corridor or faster recognition method. ➢ Difference between expected and actual return on assets = actual return – plan assets * **expected return** ➢ Actuarial G&L = Changes in a company's pension obligation arising from changes in actuarial assumption

3.4 difference between recognition of components of pension cost under US GAAP and IFRS

Component	US GAAP	IFRS
Current service cost	I/S	I/S
Past service cost	OCI, amortized over service life	I/S
Interest cost	I/S	I/S
Expected return	I/S	I/S
Actuarial gains/losses	Amortized portion in I/S Unamortized in OCI.	All in OCI— not amortized (called “remeasurements”)

3.5 Period pension expense computation

- **Under GAAP**
  - Period pension expense recognized in P&L = current service cost + **interest cost** – expected return on plan assets + **amortization of past service cost** - amortization of actuarial gains (and + losses)
    - ✓ The following two parts are recognized in OCI
      - ◆ Unamortized past service cost
      - ◆ Unamortized actuarial gains (and + losses)

3.5 Period pension expense computation

➢ Under IFRS

- Period pension expense recognized in P&L

= current service cost + **net interest cost** +**past service cost**

  - ✓ Under IFRS, actuarial gains and losses are not amortized in OCI
  - ✓ Any difference between actual return is recognized in OCI

- Period pension expense recognized in OCI = actuarial gains and losses on the pension obligation + net return on plan assets.
  - ✓ net return on plan assets = actual return–plan asset*interest rate

3.6 assumptions of defined benefit obligation and periodic pension cost

- **The firm discloses three assumptions:**
  - **Discount rate**: the interest rate used to compute the PV of the benefit obligation and the current service cost component of pension expense. Based on interest rates of high quality corporate fixed income investments with a maturity profile similar to the future obligation. Affects the PBO as well as pension expense.
  - **Rate of compensation growth**: affects both the PBO and pension expense.
  - **Expected return on plan assets**: assumed long-term rate of return on the plan's investments. The expected return reduces pension expense and the difference between the expected return and actual return are deferred.
    - ✓ The expected return is assumed only under US GAAP.
    - ✓ Under IFRS, equal to the discount rate.

3.6.1 effect of changing pension assumption

- **Increasing the discount rate:**
  - Reduce PV; PBO is lower; improve the funded status.
  - Usually result in lower pension expense because of lower service cost. (the current service cost is a PV calculation)
  - Usually reduce interest cost (PBO * discount rate) unless the plan is mature.
- **Decreasing the compensation growth rate**:
  - Reduce future pension payments; PBO is lower; improve the funded status.
  - Reduce current service cost and lower interest cost; pension expense will decrease.
- **Increasing the expected return on plan assets (under US GAAP)**
  - Reduce pension expense
  - Not affect the benefit obligation or the funded status.

3.6.2 effect of changing pension assumption - summary

Effect on	Increase discount rate	Decrease rate of compensation growth	Increase expected rate of return
Balance sheet liability	Decrease	Decrease	No effect
Pension expense	Decrease (not mature plan)	Decrease	Decrease (US GAAP only)

3.7 accounting for other post-employment benefits

- The assumptions are similar for other post-employment benefits expect the compensation growth rate is replaced by a healthcare inflation rate. Generally, the presumption is the inflation will taper off and eventually become constant. This constant rate is known as the **ultimate healthcare trend rate.**
- All else equal, firms can reduce the post-employment benefit obligation and periodic expense by
  - decreasing the near term healthcare inflation rate,
  - by decreasing the ultimate healthcare trend rate or
  - by reducing the time needed to reach the ultimate healthcare trend rate.

3.7 accounting for other post-employment benefits

- Holding all else equal, each of the following assumptions would result in a higher benefit obligation and a higher periodic cost:
  - A higher assumed near-term increase in health care costs.
  - A higher assumed ultimate health care trend rate.
  - A later year in which the ultimate health care trend rate is assumed to be reached.
- Conversely, holding all else equal, each of the following assumptions would result in a lower benefit obligation and a lower periodic cost:
  - A lower assumed near-term increase in health care costs.
  - A lower assumed ultimate health care trend rate.
  - An earlier year in which the ultimate health care trend rate is assumed to be reached.

4.1 Analyst view: Disclosures of Pension and Other Post-Employment Benefits

- Several aspects of the accounting for pensions and other post-employment benefits can affect comparative financial analysis using ratios based on financial statements.
  - Differences in key assumptions can affect comparisons across companies.
  - Amounts disclosed in the BS are net amounts (plan liabilities - plan assets). Adjustments to incorporate gross amounts would change certain financial ratios.
  - Periodic pension costs may not be comparable. IFRS and U.S. GAAP differ in their provisions about costs recognised in P&L versus in OCI.
  - Reporting of periodic pension costs in P&L may not be comparable. Under U.S. GAAP, all of the components of pension costs in P&L are reported in operating expense on the income statement even though some of the components are of a financial nature (specifically, interest expense and the expected return on assets). However, under IFRS, the components of periodic pension costs in P&L can be included in various line items.
  - Cash flow information may not be comparable. Under IFRS, some portion of the amount of contributions might be treated as a financing activity rather than an operating activity; under U.S. GAAP, the contribution is treated as an operating activity.

Pension disclosure – Assumptions

- Evaluating the disclosure - assumptions
  - Sponsoring company discloses following assumptions:
    - ✓ Discount rate;
    - ✓ Expected compensation increases;
    - ✓ Medical expense inflation;
    - ✓ Expected return on plan assets.
  - Analyst should evaluate these assumptions, whether these assumptions:
    - ✓ Consistent with other comparable companies;
    - ✓ Consistent with economic environment;
    - ✓ Consistent internally;

4.2 Analyst view: Net Pension Liability (or Asset)

- Under both IFRS and U.S. GAAP standards, the amount disclosed in the balance sheet is a net amount.
- Analysts can use information from the notes to adjust a company's assets and liabilities for the gross amount of the benefit plan assets and the gross amount of the benefit plan liabilities.
- An argument for making such adjustments is that they reflect the underlying economic liabilities and assets of a company; Actual consolidation is precluded by laws protecting a pension or other benefit plan as a separate legal entity.
- At a minimum, an analyst will compare the gross benefit obligation (i.e., the benefit obligation without deducting related plan assets) with the sponsoring company's total assets, including the gross amount of the benefit plan assets, shareholders' equity, and earnings. If the gross benefit obligation is large relative to these items, a small change in the pension liability can have a significant financial impact on the sponsoring company.

4.3 Analyst view: Total periodic pension costs

- The total periodic cost of a company's DB pension plan is the change in the net pension liability or asset, excluding the effect of the employer's periodic contribution into the plan.
- Net periodic pension cost (i.e. total period pension cost)
  - = (Ending funded status – Beginning funded status) - employer's contribution
- The payment of cash out of a DB plan to a retiree does not affect the net pension liability or asset. Payment of cash out of a DB plan to a retiree reduces plan assets and plan obligations in an equal amount.

Example—total periodic pension expense

XYZ SA retirement plan information	
Employer contribution	1,000
Current service costs	200
Past service costs	120
Discount rate used to estimate plan liabilities	7%
Benefit obligation at beginning of year0	42,000
Benefit obligation at the end of year	41,720
Actuarial loss due to increase in plan obligation	460
Plan assets at beginning of year	39,000
Plan assets at end of year	38,700
Actual return on plan assets	2,700
Expected rate of return on plan assets	8%

- The retirement benefit paid?
- Total periodic cost?
- Period pension cost in P&L if under IFRS?
- Period pension cost in OCI if under IFRS?

Example—total periodic pension expense

- The retirement benefits paid during the year were closest to 4,000.
  - Benefit paid =The beginning obligation + current and past service costs + interest expense + increase in obligation due to actuarial loss - ending obligation equals benefits paid
    - ✓ = 42,000 + 200 + 120 + (42,000 * 0.07) + 460 - 41,720 = **4,000**
  - Alternatively, Benefit paid = Beginning plan assets + contributions + actual return on plan assets - ending plan assets equals benefits paid
    - ✓ = 39,000 + 1,000 + 2,700 - 38,700 = **4,000**
- The total periodic pension cost is the change in the net pension liability adjusted for the employer's contribution into the plan, which equal to:
  - **Ending funded status–Beginning funded status–employer's contribution**
    The net pension liability increased from 3000 to 3,020, and the employer's contribution was 1,000. The total periodic pension cost is **1,020.** This will be allocated between P&L and OCI.

Example—total periodic pension expense

- Under IFRS, the components of periodic pension cost that would be reported in P&L are
  - **current service cost + net interest cost +past service cost**
    - ✓ the service cost (composed of current service cost and prior service cost) ,the net interest expense or income, calculated by multiplying the net pension liability or net pension asset by the discount rate used to measure the pension liability
    - ✓ So, 200 +120 + (42,000 - 39,000) *7% = **530.**
- Under IFRS, the component of periodic pension cost that would be reported in OCI are
  - **actuarial G/L on the pension obligation + net return on plan assets**
    - ✓ Here, the actuarial loss was 460. the actual return on plan assets was 2,700, which was 30 lower than the return of 2,730 (= 39,000 x 0.07). Therefore, the total amounts are **490**.

4.4 Analyst view: periodic pension cost recognized in P&L vs. OCI

- An analyst comparing an IFRS-reporting company with a U.S. GAAP-reporting company could adjust the reported amounts of P&L to achieve comparability.
  - The analyst could adjust the U.S. GAAP company's P&L to make it similar to an IFRS company
    - ✓ by including past service costs arising during the period
    - ✓ excluding amortisation of past service costs arising in previous periods
    - ✓ including an amount of return on plan assets at the discount rate rather than the expected rate.
  - Alternatively, the analyst could use comprehensive income (net income from P&L plus OCI) as the basis for comparison.

4.5 Analyst view: classification of periodic pension costs recognized in P&L

- Amounts of periodic pension costs recognised in P&L (pension expense) are generally treated as operating expenses. But it can be argued that only the current service cost component is an operating expense, whereas the interest component and asset returns are both non-operating.
  - The interest expense component of pension expense is conceptually similar to the interest expense on any of the company's other liabilities, which is essentially equivalent to borrowing from employees, and the interest expense of borrowing can be considered a financing cost.
  - The return on pension plan assets is conceptually similar to returns on any of the company's other financial assets, These classification issues apply equally to OPB costs.

4.5 Analyst view: classification of periodic pension costs recognized in P&L

- To better reflect a company's operating performance, an adjustment can be made to operating income by adding back the full amount of pensions costs reported in the P/L (pension expense) and then subtracting only the service costs.
  - this adjustment excludes from operating income the amortisation of past service costs and the amortisation of net actuarial gains and losses.
  - This adjustment also eliminates the interest expense component and the return on plan assets component from the company's operating income.
  - The interest expense component would be added to the company's interest expense, and the return on plan assets would be treated as non-operating income.
  - Under either set of standards, an adjustment can incorporate the actual return, rather than expected return under US GAAP, or discount rate under IFRS.

Example: reclassifying pension expense for analytical purposes

Partial Income Statement	
Operating profit	145,000
Interest expense	-12,000
Other income	2,000
Income before tax	135,000
Other data	
Current service cost	7,000
Interest cost	5,000
Expected return on assets	8,000
Actual return on assets	9,500

Answer

- Reported pension expense of $4,000 ($7,000 current service cost + $5,000 interest cost - $8,000 expected return on assets) is added back to operating profit.
- Then, service cost of $7,000 is subtracted from operating profit
- interest cost of $5,000 is added to interest expense
- and the actual return on assets of $9,500 is added to other income.

Partial Income Statement	Reported	Adjustments	Adjusted
Operating profit	145,000	+4,000-7,000	142,000
Interest expense	-12,000	-5,000	-17,000
Other income	2,000	+9,500	11,500
Income before tax	135,000		136,500

4.6 Analyst view – Cash flow

- Cash flow impact: the amount of contribution and the amount of benefits paid.
  - If a sponsoring company's periodic contributions to a plan exceed the total pension costs of the period, the excess can be viewed from an economic perspective as a reduction of the pension obligation.
  - Conversely, a periodic contribution that is less than the total pension cost of the period can be viewed as a source of financing.
  - Where the amounts of benefit obligations are material, an analyst may choose to adjust the cash flows that a company presents in its statement of cash flows.

4.6 Analyst view – Cash flow

- **Analysis of cash flow:** The key is to compare the contribution with total periodic pension expenses:
  - Overcontribution: contribution > total periodic pension costs;
    - ✓ CFO +(Contribution - TPPC)*(1-t),
    - ✓ CFF - (Contribution - TPPC)*(1-t), repayment
  - Undercontribution: contribution < total periodic pension expenses
    - ✓ CFO - (TPPC - Contribution)*(1-t),
    - ✓ CFF+ (TPPC - Contribution)*(1-t), borrowing
  - The gap is to be adjusted to CFF from CFO.

GAP	Adjustment on CFO	Adjustment on CFF	Classification
Overcontribution	Increase	Decrease	Repayment to funds
Undercontribution	Decrease	Increase	Borrowing from employee

4.6 Cash flow - Example

- BC Inc. has a defined benefit pension plan in place. The company made a $340 million contribution to the plan during the year. Beginning funded status: $2,530. Ending funded status: $2,180. BC reported a net income during the year of $812 million. CFO and CFF were reported as $948 million and $112 million respectively. Tax rate was 40%.
- Solution:
  - Periodic pension cost = Ending funded status - Employer contributions - Beginning funded status = 2180 – 340 – 2530 = - 690
  - After tax shortfall = (690 - 340)*(1-40%) = 210
  - Adjusted CFO = 948 – 210 = 738
  - Adjusted CFF = 112 + 210 = 322

5. Share-based compensation - Overview

- The plans provide employees the opportunity to receive stock tied to firm performance.
- Stock compensation plan takes many forms:
  - Stock options;
  - Stock grants;

  } Equity settled

  - Stock appreciation rights;
  - Phantom shares.

  } Cash settled, like cash bonus plan.

5. Share-based compensation - Overview

- Disadvantages of share-based compensation:
  - Do not provide desired incentives as the managers may have limited influence over the market value;
  - Lead managers to be risk averse or excessive risk-taking as they cares about the market value;
  - May dilute the shareholders' interests.

5. Share – based compensation

- Stock options – **Call option**

Grant date — Vesting date

The first date the employee can actually exercise the option

Recognize the compensation expense over the service period based on:

Fair value method
Fair value of the stock option at the grant date (An option pricing model can be used to determine the fair value of stock options)

5. Share – based compensation

Sensitivity factor（Greek）	Input ↑	Value of call
Vega	Volatility (σ)	↑
Rho	Risk-free rate (r)	↑
Theta	Time to expiration (T)	↑
	Dividend	↓

- Some points to note:
  - Call Option在grant date 之后的公允价值变动与公司无关
  - 执行期权时，有减税效应（执行期权，确认compensation expense，费用增加，所得税费用减少，CFO增加）

Share – based compensation

② Stock grants

Recognize the compensation expense over the service period based on:

Fair value of the stock at the grant date

- Transfer of stock without condition
→ Vesting immediately at grant date
- Restricted stock
→ Transferred stock cannot be sold until vesting date
- Performance stock
→Contingent on meeting performance goals (EPS, ROA, ROE, etc.)
→May result in manipulation

5. Share-based compensation–accounting issues

- Share-based compensation accounting
  - Fair value at grant date is the basic;
    - ✓ How the fair value is determined (refer to B-S model);
  - The fair value is amortized over the vesting period in accordance with vesting schedule:
    - ✓ The amortization is charged to I/S as an expense;
    - ✓ It also increase the APIC in equity.
  - Stock appreciation rights (SARs)
    - ✓ Cash-settled share-based compensation
    - ✓ **Valued at fair value** and compensation expense is allocated over the service period of the employee
    - ✓ Unlike SARs, the phantom shares can be used by private companies, highly illiquid companies or business units within a company that are not publicly traded.

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
- Reading 16: Long-lived Assets: Implications for Financial Statements and Ratios
- Reading 17: Intercorporate Investments
- Reading 18: Employee Compensation: Post-Employment and Share-Based
- Reading 19: Multinational Operations
- Reading 20: Evaluating Financial Reporting Quality
- Reading 21: Integration of FSA Techniques

LOS: Multinational Operations

a. distinguish among presentation currency, functional currency, and local currency.
b. describe foreign currency transaction exposure, including accounting for and disclosures about foreign currency transaction gains and losses.
c. analyze the impact of changes in exchange rates on the translated sales of a subsidiary and parent company.
d. compare the current rate method and the temporal method, evaluate the effects of each on the parent company's balance sheet and income statement, and determine which method is appropriate in various scenarios.
e. calculate the translation effects, evaluate the translation of a subsidiary's balance sheet and income statement into the parent company's currency.
f. analyze how the current rate method and the temporal method affect a company's financial statement and ratios.
g. analyze how alternative translation methods for subsidiaries operating in hyperinflationary economies affect financial statement and ratios.
h. describe how multinational operations affect a company's effective tax rate.
i. explain how changes in the components of sales affect earnings sustainability.
j. analyze how currency fluctuations potentially affect financial results, given a company's countries of operation.

Overview

- Foreign currency transactions
  - Treatment of transactions dominated in foreign currency;
- Translation of foreign operations
  - Companies may have foreign subsidiaries and operations. This section addresses how to reflect the results of foreign operating units in the consolidated financial statements of the multinational parent.
- Translation issues in hyperinflationary economies

They are different concepts

1. Foreign currency transactions

- Foreign currency is a currency other than functional currency.
- Foreign currency transactions refers to transactions occurs dominated in foreign currency.
- Treatment of foreign currency transactions:
  - Transactions in foreign currencies are translated into the functional currency at the exchange rates at the date of transactions;
  - Monetary assets and liabilities dominated in foreign currencies at the balance sheet date are re-valued at the exchange rate at that date;
  - Differences arising on the transactions are recognized on the I/S

1. Foreign currency transactions

- Example – 1
- GF Inc, sold US10,000 to a foreign customers with accounts receivable on 1 November 2008. the accounts receivable is collected on 31 January 2009. Assume the F/X exchange rate is as follows (RMB per USD):
  - 8.00 @ 1 November 2008;
  - 7.50 @ 31 December 2008;
  - 7.30 @ 31 January 2009.
  - No other transactions in 2008, what's balance of A/R as at 1 Nov 2008, 31 Dec 2008.
  - What's FX G/L in 2008 and 2009?

1. Foreign currency transactions

Example – 1

Cash			
	73,000		
		R/E	
A/R		<sales>	80,000
	80,000	<cost>	(50,000)
	(5,000)	FX G/L	(5,000)
	(2,000)		(2,000)
	(73,000)		
Inventory			
	(50,000)		
	23,000		23,000

Income statement		
	FY08	FY09
Sales	80,000	0
COGS	(50,000)	0
GPM	30,000	0
FX G/L	(5,000)	(2,000)
PBT	25,000	(2,000)

1. Foreign currency transactions

- Summary of impact due to changes in Foreign Currency

Transactions	Types of Exposure	Foreign Currency	
		Appreciation	Depreciation
Export sales	Asset (A/R)	Gain	Loss
Import purchase	Liability (A/P)	Loss	Gain

1. Foreign currency transactions

Analytical issues and disclosure analysis

- Where is the FX G/L recognized on the I/S, operating or non-operating?
  - Both IFRS and US GAAP require recognize the foreign transaction gain or loss on the I/S;
  - However, neither standards indicates where on the I/S these G/L should be recognized;
  - In practice, 2 most common treatments:
    - ✓ As an operating income or expense;
    - ✓ As a non-operating income or expense.
- The key analysis on disclosure is to identify where the FX G/L is recognized, operating or non-operating.

2. Classification of currency

Currency Classification	Definition	Adoption in FS
Local Currency	Currency of the country in which the entity is located.	The financial Statement prepared by the entity is usually in local currency **(it's not the GAAP requirement but usually regulatory requirement)**
Functional Currency	Currency of the primary economic environment in which the entity generates and expends cash.	The functional currency best reflects the "substance" of the subsidiary economic activities. **In accordance with GAAP, the FS is recorded in functional currency**
Reporting Currency/ Presentation currency	The currency in which the entity reports its financial statement	The entity's financial statement shall be finally converted to reporting currency based on specific reporting requirement

Functional currency is the key in foreign currency analysis.

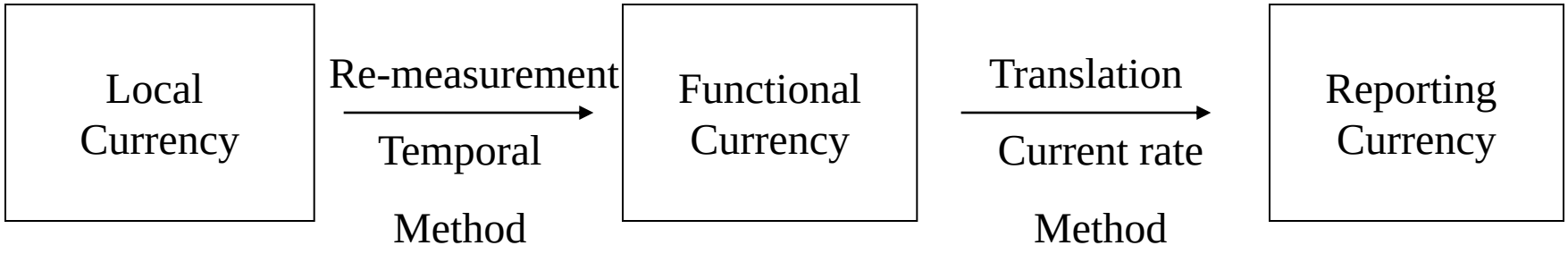
3. Translation of foreign currency FS

Overview

- Translation of foreign currency financial statements refers to the method used to translate the entity's financial statements to **Presentation Currency (reporting currency)**.
- The translation of foreign currency FS is a different with foreign currency transaction treatment.
- Two methods are usually adopted in the translation under different scenarios:
  - ✓ Current rate method, and
  - ✓ Temporal method

3. Translation of foreign currency FS

Adoption of 2 methods



Scenario	Treatment required	Applicable Method
Local currency is the functional currency	Translation only	Current rate method
Functional Currency is the Reporting currency	Re-measurement only	Temporal method
Neither of above	Both translation and re-measurement	Temporal method first, then current rate method

3. Translation of foreign currency FS

➢ Comparison of 2 methods – applicable FX rate (1)

B/S items	Rate under Temporal Method	Rate under Current Rate Method
Monetary Assets/Liabilities	Current	Current
Non-monetary assets/ Liabilities (inventories, FA, unearned revenue)	Historical	Current
Capital	Historical	Historical
R/E	Balancing	Balancing
Equity (as a whole)	Mixed (because the change in retained earnings is mixed)	Current

Note: Liability is usually regarded as monetary.

3. Translation of foreign currency FS

➢ Comparison of 2 methods – applicable FX rate (2)

I/S items	Rate under Temporal Method	Rate under Current Rate Method
Sales and other expenses	Average	Average
COGS	Historical	Average
Depreciation	Historical	Average
Revenue and other expenses	Average	Average
Translation G/L	Recognized on I/S (Affecting retained earnings, no CTA)	Recognized in **equity** (B/S, not through I/S) resulting in **C**TA (cumulative translation adjustment)

3. Translation of foreign currency FS

Several special items – inventories & COGS under temporal method

- Under Temporal Method, the inventories are re-measured at historical FX rate. The ending inventories are re-measured at the rate that existed when the inventories assumed to still be on hand at the B/S date was acquired.
  - Under FIFO, the ending inventories are re-measured at relatively recent rate;
  - Under LIFO, the ending inventories are re-measured at relatively older rate
- Therefore, the FX rate used in re-measuring the COGS will differ depending on the cost flow assumption, FIFO, LIFO and weighted average. The COGS is re-measured at the rate that existed when the inventories assumed to have been sold during the year were acquired.

3. Translation of foreign currency FS

Several special items – retained earnings (1)

- Retained earnings on the FS should be balanced:
  - Beginning R/E + Net income – Dividends = Ending R/E
- The translated R/E should also meet the above equation.
- Under Current Rate Method, the R/E is derived as follows:

Items in reporting currency	Sources
Beginning R/E	From L/Y's transaltion
+ Net Income	**Translated NI from I/S**
- Dividends	Translated at historical rate at date of declaratio
Ending R/E	Balancing

The translated NI equals to the NI in local currency multiplied by average F/X rate which is also used in translation of the whole I/S.

The amount we are going to calculate

3. Translation of foreign currency FS

Several special items – retained earnings (2)

- Under Temporal Method, the re-measured NI could not be derived from re-measured I/S directly as the translation G/L on I/S could not be calculated directly. The following procedures are used to figure out the key re-measured amount:
  - When all the assets and liabilities are re-measured, we can obtain the ending re-measured R/E which is a balancing figure on B/S;
  - Based on the R/E equation, we can calculate the re-measured NI;
  - When all other items of I/S are re-measured, the F/X translation G/L is derived from the balancing of re-measure NI and other re-measured I/S

Items in functional currency	Sources
Ending R/E	Balancing from re-measured B/S
- Beginning R/E	From L/Y's transaltion
+ Dividends	Translated at historical rate at date of declaratio
+ Net Income	Balancing

3. Translation of foreign currency FS

- **Treatment of translation G/L under 2 methods**
  - Under current rate method:
    - ✓ presented in Cumulative Translation Adjustment (CTA) on B/S (equity section).
    - ✓ This is a cumulative account, gain/loss of a specific year is added/subtracted to/from beginning CTA.
    - ✓ I/S unaffected.
    - ✓ As part of comprehensive income.
  - Under Temporal method:
    - ✓ recognized on I/S.

Example: current rate method

FlexCo International is a U.S. company with a subsidiary, Vibrant, Inc., located in the country of Martonia. Vibrant was acquired by FlexCo on 12/31/2014. FlexCo reports its financial results in U.S. dollars. The currency of Martonia is the loca (LC). Vibrant's financial statements for 2015 are shown in the following two figures.

Vibrant December 31, 2014 and 2015 Balance Sheet

	2014	*2015*
Cash	LC100	LC100
Accounts receivable	500	650
Inventory	1,000	1,200
Current assets	LC1,600	LC1,950
Fixed assets	800	1,600
Accumulated depreciation	(100)	(700)
Net fixed assets	LC700	LC900
Total assets	LC2,300	LC2,850

Example: current rate method

Accounts payable	400	500
Current debt	100	200
Long-term debt	1,300	950
Total liabilities	LC1,800	LC1,650
Common stock	400	400
Retained earnings*	100	800
Total equity	LC500	LC1,200
Total liabilities and equity	LC2,300	LC2,850

*Retained earnings on December 31, 2014, were $50.

Vibrant 2015 Income Statement

	2015
Revenue	LC5,000
Cost of goods sold	(3,300)
Gross margin	1,700
Other expenses	(400)
Depreciation expense	(600)
Net income	LC700

Example: current rate method

The following exchange rates between the U.S. dollar and the loca were observed:

- December 31, 2014: $0.50 = LC1.00.
- December 31, 2015: $0.4545 = LC1.00.
- Average for 2015: $0.4762 = LC1.00.
- Historical rate for equity: $0.50 = LC1.00.
- Historical rate for fixed assets: $0.4881 = LC1.00.
- Historical rate for accumulated depreciation = $0.4896 = LC1.00.
- Historical rate for COGS = $0.4834 = LC1.00.
- Historical rate for depreciation = $0.4878 = LC1.00.
- Historical rate for ending inventory = average rate during the year (for this example).

The majority of Vibrant's operational, financial, and investment decisions are made locally in Martonia, although Vibrant does rely on FlexCo for information technology expertise.

Use the appropriate method to translate Vibrant's 2015 balance sheet and income statement into U.S. dollars.

Example: current rate method

Answer:

Vibrant is relatively self-contained, which likely means the loca is the functional currency. Since the functional currency ≠ the parent's presentation currency, the current rate method is used to translate Vibrant's financial statements from the functional currency to the parent's presentation currency. The current rate method uses the current rate for all balance sheet accounts (except common stock, which is translated at the historical rate) and the average rate for all income statement accounts. The translation gain or loss is included in the CTA, which is reported in the equity section of the balance sheet as a part of other comprehensive income.

Vibrant's translated 2015 income statement is shown in the following table. Notice that we translate the income statement first with the current rate method to derive net income, which we then use to calculate retained earnings on the balance sheet.

Example: current rate method

Vibrant's 2015 Translated Income Statement Under the Current Rate Method			
	2015 (LC)	*Rate*	*2015 ($)*
Revenue	LC5,000	$0.4762	$2,381.0
Cost of goods sold	(3,300)	$0.4762	(1,571.5)
Gross margin	1,700		809.5
Other expenses	(400)	$0.4762	(190.5)
Depreciation expense	(600)	$0.4762	(285.7)
Net income	LC700		$333.3

Vibrant's 2015 translated balance sheet is shown in the next table.

Example: current rate method

Vibrant 2015 Translated Balance Sheet Under the Current Rate Method

	2015 (LC)	*Rate*	*2015 ($)*
Cash	LC100	$0.4545	$45.5
Accounts receivable	650	$0.4545	295.4
Inventory	1,200	$0.4545	545.4
Current assets	LC1,950		$886.3
Fixed assets	1,600	$0.4545	727.2
Accumulated depreciation	(700)	$0.4545	(318.2)
Net fixed assets	LC900		$409.0
Total assets	LC2,850		$1,295.3
Accounts payable	500	$0.4545	227.2
Current debt	200	$0.4545	90.9
Long-term debt	950	$0.4545	431.8
Total liabilities	LC1,650		$749.9
Common stock	400	$0.50	200.0
Retained earnings	800	(a)	383.3
Cumulative translation adjustment	—	(b)	(37.9)
Total equity	LC1,200		$545.4
Total liabilities and shareholders' equity	LC2,850		$1,295.3

(a) Beginning (2015) retained earnings were $50, so ending (2015) retained earnings are $50 + $333.3 = $383.3.

(b) The CTA is a plug figure that makes the accounting equation balance: $1,295.3 assets – $749.9 liabilities – $200.0 common stock – $383.3 retained earnings = –$37.9.

Notice the change in the CTA from 2014 to 2015 is equal to –$37.9 (–$37.9 ending CTA – $0 beginning CTA). Because Vibrant was acquired at the end of 2014, the CTA was zero on that date. Thus, the depreciating loca resulted in translation loss of $37.9 for the year ended 2015. The translation loss occurred because Vibrant had a net asset exposure (assets > liabilities) and the loca depreciated relative to the dollar.

Example: Temporal method

Example: The temporal method

Suppose instead that the majority of Vibrant's operational, financial, and investment decisions are made by the parent company, FlexCo. In this case, Vibrant's functional currency and FlexCo's presentation currency are likely the same; thus, the temporal method is used to remeasure the loca to the dollar. All other information is the same.

Use the appropriate method to translate Vibrant's 2015 balance sheet and income statement into U.S. dollars.

Under the temporal method, we'll start with the balance sheet.

Vibrant 2015 Remeasured Balance Sheet Under the Temporal Method

Example: Temporal method

	2015 (LC)	Rate	2015 ($)
Cash	LC100	$0.4545	$45.5
Accounts receivable	650	$0.4545	295.4
Inventory	1,200	$0.4762	571.4
Current assets	LC1,950		$912.3
Fixed assets	1,600	$0.4881	781.0
Accumulated depreciation	(700)	$0.4896	(342.7)
Net fixed assets	LC900		$438.3
Total assets	LC2,850		$1,350.6
Accounts payable	500	$0.4545	227.2
Current debt	200	$0.4545	90.9
Long-term debt	950	$0.4545	431.8
Total liabilities	LC1,650		$749.9
Common stock	400	$0.50	200.0
Retained earnings	800	(a)	400.7
Total equity	LC1,200		600.7
Total liabilities and shareholders' equity	LC2,850		$1,350.6

Example: Temporal method

(a) Retained earnings is a plug figure that makes the accounting equation balance: $1,350.6 assets – $749.9 liabilities – $200.0 common stock = $400.7 retained earnings.

Vibrant's remeasured income statement using the temporal method is shown in the following table. Remember the remeasurement gain or loss appears in the income statement under the temporal method.

Vibrant's 2015 Remeasured Income Statement Under the Temporal Method

	2015 (LC)	*Rate*	*2015 ($)*
Revenue	LC5,000	$0.4762	$2,381.0
Cost of goods sold	(3,300)	$0.4834	(1,595.3)
Gross margin	1,700		785.7
Other expenses	(400)	$0.4762	(190.5)
Depreciation expense	(600)	$0.4878	(292.7)
Income before remeasurement gain	700		302.5
Remeasurement gain	—	(b)	48.2
Net income	LC700	(a)	$350.7

Example: Temporal method

(a) Net income is derived from the beginning and ending balances of retained earnings and dividends paid: ($50.0 beginning balance + net income – $0 dividends paid = $400.7 ending balance). Solving for net income, we get $350.7.

(b) The remeasurement gain is a plug that is equal to the difference in net income and income before remeasurement gain: $350.7 – $302.5 = $48.2.

The remeasurement gain occurred because Vibrant had a net monetary liability exposure (monetary liabilities > monetary assets), and the loca depreciated relative to the dollar.

3. Translation of foreign currency FS

Exposure to translation

- The translation G/L is due to the exposure of assets and liabilities which are translated (or re-measured) at the ending FX rate.
- The exposure under each method is summarized as follows:
  - Temporal method:
    - ✓ the exposure = monetary assets – monetary liabilities
  - Current rate method:
    - ✓ the exposure = shareholders' equity.

Flow effect (in $) = change in exposure (in LC) * (ending rate – average rate)

Holding gain/loss effect (in $) = beginning exposure (in LC) * (ending rate – beginning rate)

Translation gain/loss (in $) =flow effect + Holding gain/loss effect 参考用

- The effect of FX translation G/L due to the changes in FX rate is similar with that in foreign currency transaction

3. Translation of foreign currency FS

➢ Summary of financial ratios under current rate method - the subsidiary

Scenario	Pure B/S and pure I/S ratios (compared with original subsidiary's)	B/S and I/S mix ratios (compared with original subsidiary's)
LC appreciating	The same (current ratio, quick ratio, LTD-to-capital)	✓ROA: Lower ✓ROE: Lower ✓Turnovers: Lower
LC depreciating	The same (current ratio, quick ratio, LTD-to-capital)	✓ROA: Higher ✓ROE: Higher ✓Turnovers: Higher

3. Translation of foreign currency FS

Comparison of ratios under 2 methods

LC Depreciation	Temporal	Current Rate
Current ratio	Higher	Lower
Quick ratio	Same	Same
A/R turnover	Same	Same
Inventory turnover (LIFO FIFO uncertain)	Uncertain	Uncertain
Fixed Asset turnover	Lower	Higher
Gross profit margin	Lower	Higher
Net profit margin, ROE, ROA (translation gain/loss uncertain)	Uncertain	Uncertain
Interest coverage	Lower	Higher
LTD-to-Total capital	Lower	Higher (equity used Mixed rate)

4. Translation of entity's FS in a hyperinflationary economy

- Hyperinflation Economies
  - 3 years and > cumulative 100% depreciation; (26%)
- Under US GAAP
  - Temporal method is adopted as if the parent's currency is the functional currency.
- Under IFRS (the foreign currency financial statements are restated for inflation and then translated using the current exchange rate.)
  - Monetary assets and liabilities are translated at ending rate;
  - Non-monetary assets and liabilities are restated for changes in the general purchasing power of the monetary unit;
  - All components of equity are restated by applying the change in the general price level from the beginning of the period;
  - All I/S items are restated by applying the changes in the general price index from the dates when the items were originally recorded to the B/S date;
  - The net G/L in purchasing power that arise from holding monetary assets and liabilities during a period of inflation is included in net income

Example: adjusting financial statements for inflation

Example: Adjusting financial statements for inflation

Imagine that a foreign subsidiary was created on December 31, 2014. The LC is the currency of the country where the foreign subsidiary is located. The subsidiary's balance sheets for 2014 and 2015, and income statement for the year-ended 2015, are shown below:

(in LCs)	*2014*	*2015*
Cash	5,000	8,000
Supplies	25,000	25,000
Total assets	30,000	33,000
Accounts payable	20,000	20,000
Common stock	10,000	10,000
Retained earnings	0	3,000
Liabilities and equity	30,000	33,000
Revenue		15,000
Expenses		(12,000)
Net income		3,000

Also, use the following price indices:

December 31, 2014	100
December 31, 2015	150
Average for 2015	125

Example: adjusting financial statements for inflation

Prepare an inflation adjusted balance sheet and income statement for 2015.

Answer:

(in LCs)	*2015*	*Adjustment Factor*	*Inflation Adjusted*
Cash	8,000		8,000
Supplies	25,000	150 / 100	37,500
Total assets	33,000		45,500
Accounts payable	20,000		20,000
Common stock	10,000	150 / 100	15,000
Retained earnings	3,000		10,500
Liabilities and equity	33,000		45,500
Revenue	15,000	150 / 125	18,000
Expenses	(12,000)	150 / 125	(14,400)
Net purchasing power gain			6,900
Net income	3,000		10,500

5. Tax Implications of Multinational Operations

- Earnings of multinational companies are subject to multiple tax jurisdictions; hence, the **statutory tax rate** often differs from the **effective tax rate**.
- Changes in effective tax rate on account of foreign operations can be due to:
  - Changes in the mix of profits from different countries (with varying tax rates).
  - Changes in the tax rates.

Example: analysis of reconciliation of effective tax rate

- The reconciliation between the statutory tax rate and effective tax rate for two companies (Alpha & Beta) for the year 2013 is provided below:

Item	Alpha	Beta
Statutory tax rate	25.0%	30.0%
Effect of disallowed expenses	3.0%	1.0%
Effect of exempt income	(2.0%)	(0.5%)
Effect of taxes in foreign jurisdictions	3.4%	(1.2%)
Effect of recognition of prior losses	(0.8%)	(3.0%)
Effective tax rate	28.6%	26.3%

1. Which company benefited from the lowering of tax expense on account of its foreign operations? (Beta)
2. If the mix of foreign operations for both companies is expected to increase over time, which company is most likely to report lower effective tax rate in the future? Assume that Statutory tax rates do not change.(Beta)

6. Revenue Growth Issue and Foreign Exchange Risks

- Revenues of multinational companies may be denominated in different currencies but are translated into the reporting currency for the purpose of preparing financial statements. Revenue growth can occur due to **price or volume changes** and due to **changes in exchange rates.** Analysts separate the two because the growth in revenues due to price or volume changes are more sustainable.
- Foreign exchange risks include the impact of changes in currency values on assets and liabilities of a business, as well as on future sales. **Disclosures** may enable an analyst to evaluate the impact of changes in currency values on company's business.

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
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1. The quality of financial reports

- The quality of financial reports → Financial reporting quality
- The quality of financial reports → Earnings (results) quality

	Financial Reporting Quality Low	Financial Reporting Quality High
Earnings Quality **High** (Results)	LOW financial reporting quality impedes assessment of earnings quality and impedes valuation.	HIGH financial reporting quality enables assessment. HIGH earnings quality increases company value.
Earnings Quality **Low** (Results)		HIGH financial reporting quality enables assessment. LOW earnings quality decreases company value.

1. The quality of financial reports

- Two basic points
  - The financial reports are GAAP-compliant and decision-useful.
  - The results (earnings) are high quality (adequate level of return)
- These two points provide a basic conceptual framework to assess the quality of a company's financial reports and to locate the company's financial reports along the quality spectrum.

Quality Spectrum of Financial Reports	Quality
GAAP, decision-useful, sustainable, and adequate returns	HIGH
GAAP, decision-useful, not sustainable, Low "earnings quality"	↓
Within GAAP, but biased choices	
Within GAAP, but "earnings management" (Real EM, Accounting EM)	
Non-compliant Accounting	
Fictitious transactions	LOW

1. The quality of financial reports

- **GAAP** refers generically to the generally accepted accounting principles or the accepted accounting standards of the jurisdiction under which the company reports. (IFRS,US GAAP)
- **Decision-useful information** embodies the characteristics of relevance and faithful representation.
- **High-quality earnings** provide an adequate level of return on investment (i.e., a return equal to or in excess of the cost of capital) and are sustainable.
- **Biased accounting choices** result in financial reports that do not faithfully represent economic phenomena. Choices are deemed to be "aggressive" if they increase the company's reported performance and financial position in the current period.
- **Earnings management** aims to understate earnings volatility, etc. Earnings volatility is decreased by understating earnings in periods when a company's operations are performing well and overstating in periods when the company's operations are struggling.

1.2 Potential problems of the quality of financial reports

➢ Measurement and Timing Issues

Sheet element	Recognition	Net income	Equity	liability	Asset
Revenue	Aggressive, premature, and fictitious	↑	↑	N/A	↑
Expenses	Omission and delayed	↑	↑	↓	↑

- Understatement of contingent liabilities results in understated expenses and overstated income or overstated OCI, and overstated equity.
- Overstatement of financial assets and understatement of financial liabilities, reported at fair value, results in overstated unrealized gains or understated unrealized losses, and overstated equity.
- Cash flow from operations may be increased by deferring payments on payables, accelerating payments from customers, deferring purchases of inventory, and deferring other expenditures related to operations, such as maintenance and research.

1.2 Potential problems of the quality of financial reports

Classification Issues

- Choices with respect to reported amounts and timing of recognition typically affect more than one financial element, financial statement, and financial period. Classification choices typically affect one financial statement. (B/S, comprehensive income, CF/S).

I/S	Possible actions/choices
• Overstated or accelerated revenue recognition • Understated expenses • Misclassification of revenue, gains, expenses, or losses	• Channel stuffing, bill and hold • Lessor use of finance (capital) leases • Fictitious (fraudulent) revenue • Capitalizing expenditures as assets • Lessee use of operating leases • Classifying non-operating income or gains as part of operations • Classifying ordinary expenses as non-recurring or non-operating • Reporting gains through net income and losses through other comprehensive income

1.2 Potential problems of the quality of financial reports

B/S	Possible actions/choices
• Over- or understatement of assets • Over- or understatement of liabilities • Misclassification of assets and/or liabilities	• Choice of models and model inputs to measure fair value • Classification from current to non-current • Over- or understating reserves and allowances • Understating identifiable assets and overstating goodwill

CF/S	Possible actions/choices
• Overstatement of cash flow from operations	• Managing activities to affect cash flow from operations • Misclassifying cash flows to positively affect cash flow from operations

1.2 Potential problems of the quality of financial reports

➢ Mergers and Acquisitions Issues

- The financial results of the combined companies are reported on a consolidated basis (acquisition method). Companies with faltering cash-generating ability may be motivated to acquire other companies to increase cash flow from operations.
- The acquisition will be reported in the investing cash flows if paid in cash, or not even appear on the cash flow statement if paid for with equity.
- The consolidated cash flow from operations will include the cash flow of the acquired company, effectively concealing the acquirer's own cash flow problems. Such an acquisition can provide a one-time boost to cash from operations that may or may not be sustainable.

1.2 Potential problems of the quality of financial reports

- **Financial Reporting that Diverges from Economic Reality**
  - Analysts should adjust the reported information to better reflect their view of economic reality.
    - ✓ When faced with a restructuring charge, an impairment charge:
      - ◆ If charges occur regularly, the analyst should attempt to "normalize" earnings by essentially spreading the current charges over past periods as well as the current period.
      - ◆ If charges are one-off items, the analyst is justified in "normalizing" earnings by excluding the item from earnings.

1.2 Potential problems of the quality of financial reports

➢ Financial Reporting that Diverges from Economic Reality (续)

- Items that are commonly encountered by analysts include the following:
  - ✓ Revisions to ongoing estimates, such as the remaining economic lives of assets, may lead an analyst to question whether an earlier change in estimate would have been more appropriate.
  - ✓ Sudden increases to allowances and reserves could call into question whether the prior estimates resulted in overstatement of prior periods' earnings instead of an unbiased picture of economic reality.
  - ✓ Large accruals for losses (e.g., environmental or litigation-related liabilities) suggest that prior periods' earnings may have been overstated because of the failure to accrue losses earlier.

1.3 Evaluating the quality of financial reports

- General Steps to Evaluate the Quality of Financial Reports
  - Develop an understanding of the company and its industry.
  - Learn about management.
  - Identify significant accounting areas.
  - Make comparisons:
    - ✓ Compare the company's financial statements and significant disclosures in the current year's report with the financial statements and significant disclosures in the prior year's report.
    - ✓ Compare the company's accounting policies with those of its closest competitors.
    - ✓ Using ratio analysis
  - Check for warnings signs of possible issues with the quality of the financial reports.
  - Growth potential of a company's each segment.
  - Use appropriate quantitative tools to assess the likelihood of misreporting.

1.3 Evaluating the quality of financial reports

- Beneish Model

M-score = Score indicating probability of earnings manipulation

= –4.84 +0.92 DSRI + 0.528GMI + 0.404AQI + 0.892SGI + 0.115DEPI – 0.172SGAI + 4.67Accruals – 0.327LEVI

- **DSRI** (days sales receivable index) = $(\text{Receivables}_t/\text{Sales}_t)/(\text{Receivables}_{t-1}/\text{Sales}_{t-1})$.
- **GMI** (gross margin index) = $\text{Gross margin}_{t-1}/\text{Gross margin}_t$.
- **AQI** (asset quality index) = $[1 – (\text{PPE}_t + \text{CA}_t)/\text{TA}_t]/[1 – (\text{PPE}_{t-1} + \text{CA}_{t-1})/\text{TA}_{t-1}]$,
- **SGI** (sales growth index) = $\text{Sales}_t/\text{Sales}_{t-1}$.
- **DEPI** (depreciation index) = $\text{Depreciation rate}_{t-1}/\text{Depreciation rate}_t$, where Depreciation rate = Depreciation/(Depreciation + PPE).
- **SGAI** (sales, general, and administrative expenses index) = $(\text{SGA}_t/\text{Sales}_t)/(\text{SGA}_{t-1}/\text{Sales}_{t-1})$.
- **Accruals** = (Income before extraordinary items – Cash from operations)/Total assets.
- **LEVI** (leverage index) = $\text{Leverage}_t/\text{Leverage}_{t-1}$.
  Leverage ratio = D/A.

1.3 Evaluating the quality of financial reports

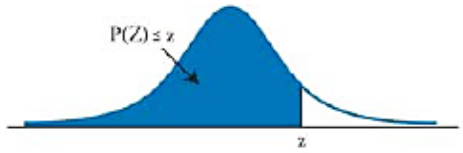
- Beneish Model
  - **DSR**: changes in the relationship between receivables and sales could indicate inappropriate revenue recognition.
  - **GMI**: deterioration in margins could predispose companies to manipulate earnings.
  - **AQI**: change in the percentage of assets other than in PPE and CA could indicate excessive expenditure capitalization.
  - **SGI**: managing the perception of continuing growth and capital needs from actual growth could predispose companies to manipulate sales and earnings.
  - **DEPI**: Declining depreciation rates could indicate understated depreciation as a means of manipulating earnings.
  - **SGAI**: an increase in fixed SGA expenses suggests decreasing administrative and marketing efficiency, which could predispose companies to manipulate earnings.
  - **Accruals**: higher accruals can indicate earnings manipulation.
  - **LEVI**: increasing leverage could predispose companies to manipulate earnings.

1.3 Evaluating the quality of financial reports

- Beneish Model
  - The *M*-score in the Beneish model is a normally distributed random variable with a mean of 0 and a standard deviation of 1.0. ***M*-scores of –1.49 and –1.78 indicate that the probability of earnings manipulation is 6.8% and 3.8%, respectively. Higher *M*-scores (i.e., less negative numbers) indicate an increased probability of earnings manipulation.** The probability is given by the amount in the left side of the distribution.
  - The cutoff value for classification minimizes the cost of misclassification. The likely relevant cutoff for investors is a probability of earnings manipulation of 2.9% (an *M*-score exceeding –1.78).
- Example:

  ABC Corporation M-score = -1.231, probability of manipulation = 10.91%
  - XYZ is likely a manipulator. The M-score is higher than the cutoff of –1.78, indicating a higher-than-acceptable probability of manipulation.

Z-table



CUMULATIVE Z-TABLE

STANDARD NORMAL DISTRIBUTION
$P(Z \leq z) = N(z)$ FOR $z \geq 0$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319

1.3 Evaluating the quality of financial reports

- Limitation of Beneish Model
  - The Beneish model relies on accounting data, which may not reflect economic reality. Deeper analysis of underlying relationships may be warranted to get a clearer picture.
  - Managers may begin to game the measures used if they become aware of the use of specific quantitative tools.

2.1 The quality of earnings

- High-quality earnings are:
  - Sustainable: Expected to recur in future.
  - Adequate: Cover company's cost of capital.
    - ✓ Sustainability of earnings excluding items that are obviously non-recurring and persistence of growth in those earnings.
      - ◆ Assumption: more persistent earnings are more useful inputs for equity valuation models involving earnings forecasts.
- Persistence can be expressed as the coefficient on current earnings in a simple model:
  - $\text{Earnings}_{t+1} = \alpha + \beta_1 \text{Earnings}_t + \varepsilon$
  - $\text{Earnings}_{t+1} = \alpha + \beta_1 \text{Cash flow}_t + \beta_2 \text{Accruals}_t + \varepsilon$
    - ✓ Persistent earnings are driven by the cash flow element of earnings
    - ✓ A higher coefficient (β1) represents more persistent earnings.

2.2 Mean reversion in earnings

Mean reversion in earnings

- Mean reversion in earnings:
  - ✓ Phenomenon that tendency of earnings at extreme levels to revert back to normal level.
- Due to this empirically observation, extreme earnings should not be expected to continue indefinitely because:
  - ✓ Abandoned poorly performing businesses and segments—increase return
  - ✓ Capital migrates toward more profitable businesses and segments—decrease return

2.3 Evaluate the earnings quality

Revenue recognition

Issues	Range of problems	Warning sign
Revenue misstatement	Bring forward or delay the revenue recognition	Large changes in account associated with A/R, unearned revenue, etc. (large increases in A/R, large decreases in unearned revenue)
Accelerating revenue	Accelerate the recognition of revenue by reporting revenue in current period that should be reported in future when it's hard to assess the progress of earning. To analyze the ratio of revenue to cash collected from customers is a good way to detect acceleration of revenue recognition.	▪ Significant revenue without cash collection; ▪ Seeking for additional financing; ▪ Significant options vested by management. ▪ Maintain its track record of successively meeting analyst forecasts
Nonrecurring or non-operating as revenue	Report the non-recurring items or non-operating gain as revenue.	Temporal inconsistency with respect to the included revenues and expenses in a company's definition of operating income

2.3 Evaluate the earnings quality

Expense recognition

Issues	Range of problems	Warning sign
Understating expenses(see example 4)	▪ Aggressive depreciation or amortization method and assumptions; ▪ Un-recorded allowance for obsolete inventories	▪ Ratios of depreciation; ▪ Inventory turnover ratios;
Deferring expenses	Improper capitalization of cost which should be expensed.	▪ Track growth in net non-current assets
Ordinary as nonrecurring or non-operating (see example 5 and 6)	Report the ordinary expenses or cost as non-recurring items or non-operating losses.	Check ratio: (sales – COGS – SG&A) / sales

3.1 Indicators of cash flow quality

- Discussions of cash flow quality typically focus on operating cash flow (OCF).
- Evaluate the context of the corporate life cycle
  - Start-up company: have negative operating and investing cash flows, financed by financing cash flows.
  - Established company: have positive operating cash flow from investing cash flow.
    - ✓ The characteristics of high-quality cash flow:
      - ◆ Positive OCF
      - ◆ OCF derived from sustainable sources
      - ◆ OCF adequate to cover capital expenditures, dividends, and debt repayments
      - ◆ OCF with relatively low volatility

3.1 Indicators of cash flow quality

- OCF is generally viewed as being less easily manipulated than operating or net income. Large differences between earnings and OCF or increases in such differences can be an indication of earnings manipulation.
  - Timing issues
    - ✓ Selling receivables to a third party
    - ✓ Delaying paying account payables

    } boost OCF.
  - Classification issues
    - ✓ Shifting positive cash flow items from investing or financing activities to operating activities to inflate OCF.

3.2 Evaluate the cash flow quality

- The steps of evaluating the statement of cash flow:
  - Checking for any unusual items or items that have not shown up in prior years.
  - Checking revenue quality.
    - ✓ Aggressive revenue recognition → A/R ↑ → OCF ↓)
  - Checking for strategic provisioning.
    - ✓ Provisions for restructuring charges show up as an inflow in the year of the provision and then as an outflow when ordinary operating expenses are channeled through such reserves.

4.1 The quality of balance sheet

- For the balance sheet, high financial reporting quality is indicated by completeness, unbiased measurement, and clear presentation.
- **Completeness**
  - Off-balance-sheet obligations
    - ✓ A balance sheet with significant amounts of off-balance-sheet debt would lack the completeness aspect of financial reporting quality.
      - ◆ Take-or-pay contracts: obligate a party to either take delivery of goods or pay a specified amount.
      - ◆ Operating lease
  - Intercorporate investments

4.1 The quality of balance sheet

➢ **Unbiased measurement**

- Unbiased measurement is a particularly important aspect of financial reporting quality for assets and liabilities for which valuation is subjective.
  - ✓ Value of the pension liability.
  - ✓ Value of investment in debt or equity of other companies for which a market value is not readily available.
  - ✓ Goodwill value.
  - ✓ Inventory valuation.
  - ✓ Impairment of PP&E and other assets.

➢ **Clear presentation**

- A company's financial statements can provide useful indicators of financial or operating risk.
  - ✓ While accounting standards specify which items should be included in the balance sheet, they do not typically specify how such items must be presented. (in determining which line items should be shown separately and which should be aggregated into a single total)

5. Sources of information about risk

- Several sources of information about the financial, operating, and other risks
  - Financial statements
    - ✓ High leverage ratios (or, similarly, low coverage ratios) derived from financial statement data can signal financial risk.
    - ✓ Highly variable operating cash flows or negative trends in profit margins can signal operating risks.
  - Auditor's report
    - ✓ An audit opinion(s) can provide some information about reporting risk.
      - **Notice**: an audit opinion relates to historical information and would not provide information on a timely enough basis to be a useful source of information about risk.
  - Notes to financial statements
    - ✓ The notes typically contain information that is useful in understanding a company's risk. For example, both IFRS and US GAAP require specific disclosures about risks related to contingent obligations, pension and post-employment benefits, and financial instrument risks.

5. Sources of information about risk

- Management Commentary (MD&A)
  - MD&A can give users helpful in assessing the company's risk exposures and approaches to managing risk.
- SEC from "NT"
  - In the United States, SEC from "NT" is filed when a firm is unable to file required reports in a timely manner. Delays in filing are often the result of accounting difficulties. (i.e., internal disagreement on an accounting principle or estimate, the lack of adequate financial staff, or the discovery of an accounting fraud). In general, an NT filing is highly likely to signal problems with financial reporting quality.
- Financial press
  - The financial press can be a useful source of information about risk when, for example, a financial reporter uncovers financial reporting issues that had not previously been recognized. An analyst should undertake additional investigation of any issue identified.

Framework of FSA

- Reading 15: Inventories: Implications for Financial Statements and Ratios
- Reading 16: Long-lived Assets: Implications for Financial Statements and Ratios
- Reading 17: Intercorporate Investments
- Reading 18: Employee Compensation: Post-Employment and Share-Based
- Reading 19: Multinational Operations
- Reading 20: Evaluating Financial Reporting Quality
- Reading 21: Integration of FSA Techniques

1. The Framework

Phase	Sources of Info	Output
1. Define the purpose and context	▪ Nature of the function; ▪ Communication; ▪ Institutional guideline	▪ Statement of purpose; ▪ Questionnaire; ▪ Report's content; ▪ timetable
2. Collect input	▪ FS, other data; ▪ Discussion with all parties; ▪ Site visits	▪ FS; ▪ Financial data tables; ▪ Completed questionnaire;
3. Process data	▪ From step 2	▪ Adjusted FS; ▪ Common-sized FS; ▪ Ratios & graphs; ▪ Forecasts;
4. Analyze or interpret the data	▪ From step 2 and 3	▪ results

1. The Framework

Phase	Sources of Info	Output
5. Develop and communicate conclusions and recommendations	▪ Analytical results and previous report; ▪ Institutional guidelines	▪ Statement of purpose; ▪ Questionnaire; ▪ Report's content; ▪ timetable
6. Follow up	▪ Periodically updated information	▪ Updated reports;

2. Case 1: the LT Equity Investment

- Purpose:
  - Find out the drivers of financial success;
  - Assessing the sustainability;
  - Risks to maintaining the sustainability;
- Collect input data
- Process & Analyze/Interpret data
  - Dupont analysis;
  - Analysis of composition of asset base;
  - Capital structure analysis;
  - Segments and allocation of capital analysis;
  - Examination of accruals;
  - C/F study;
  - Decomposition and analysis of the company's valuation

2. Case 1: the LT Equity Investment

- Dupont analysis
  - Extended analysis

    ROE = (net income/EBT) X (EBT/EBIT) X (EBIT/revenue) X (revenue/total assets) X (total assets/total equity)

    = [(tax burden) X (interest burden) X (EBIT margin) X (asset turnover) X (financial leverage)
  - What's the key to increasing of ROE in 3 years in this case?

2. Case 1: the LT Equity Investment

- Capital structure analysis
  - The target is de-leverage;
  - Make it less financial risky;
- Segment analysis/Capital allocation
- Accruals of earnings quality
  - Refer to SS 26.
- CF relations
- Decomposition and analysis of Valuation

3. Case 2: Off-BS leverage from operating lease

- Purpose:
  - Looking for any off-BS leverage impact
- Collect input data
  - PV factor
- Process & Analyze/Interpret data
  - Lease expenses analysis;
  - Payment analysis;
  - PV of lease payment is capitalized to recalculate the ratios.

4. Case 3: Anticipating effects of changes in accounting

- Purpose:
  - Evaluate the impact of changes in consolidation
- Collect input data
  - 10-K;
  - MD&A
- Process & Analyze/Interpret data
  - Add back assets and liabilities;
  - Then make analysis.

Financial reporting quality

- The larger proportion of accrual component in the earning, the faster the reversion will occur.
  - Larger proportion——accounting distortions are greater, accrual component of earnings has lower persistence

Financial reporting quality

Measure earning quality - overview

- Earning quality refers to earning properties：
  - Persistence and sustainability.
- Earnings are decomposed into the accrual component and cash component:
  - Aggregated accruals = accrual-based earnings – cash earnings
- Two approaches to decomposition:
  - B/S approach;
  - CF approach.
    - ✓ CF approach is preferred because it generates a cleaner measure which is free from the effects of non-cash acquisitions and foreign currency translation adjustment effects.

Financial reporting quality

Measure earning quality

- Decomposition with B/S approach
  - Net operating assets (NOA) is the difference between operating assets and operating liabilities:

    NOA = (total assets – cash) – (total liabilities – total debt)
    - ✓ **Exclude cash and debt as they are essentially discretion free.**
  - Aggregated accruals (AA), under B/S approach, refers to the changes in NOA during a fiscal period:

    $\mathbf{AA^{B/S} = NOA_{t} - NOA_{t-1}}$

    $\mathbf{Accrual\ ratio,\ (AR)^{B/S} = AA^{B/S} / [(NOA_{t} + NOA_{t-1})/2]}$
  - In order to analyze the sub-components of accrual activity, relevant line of accrued items could be further analyzed with deflated by average NOA.
- Decomposition with CF approach
  - $AAC/F = NI_{t} - (CFO_{t} + CFI_{t})$
  - $ARC/F = AAC/F / [(NOA_{t} + NOA_{t-1})/2]$
    - ✓ CFO: current operating piece of cash
    - ✓ CFI: non-current operating piece of cash